Ministry of Higher Education

Higher Institute of Engineering and Technology at Manzala

Quality Assurance Unit

# Architecture Engineering

## Courses Specification

2026-2025

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Engineering Mathematics (1) | | |
| Course Code (according to the bylaw) | BS011 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory Year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr. Hamouda Abu Eldahab | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Differentiation and Integration: Function Concept - Function Classification - Inverse Function - Elementary Functions (Trigonometric, logarithmic, Exponential, Hyperbolic and its inverse functions)- Limits - limits theorem - mean value theorem-Derivation, derivation rules - First function derivations - Series theorem - Barometric derivation - higher order derivation - partial derivation - applications on the differentiation - l'Hopital rule -Taylor expansion - Maclaurin Series - Curve drawing - Maximum and Minimum values - unlimited integration - integration theorem and properties.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Illustrate the concept of function and its classification for different types such as trigonometric, exponential, logarithmic functions and polynomials. Apply the concepts of linear algebra. |
| | | CLO2 | Identify the concepts of limits and continuity. |
| | | CLO3 | Illustrate the derivative of trigonometric, exponential, logarithmic functions and polynomials. |
| | | CLO4 | Apply the binomial theorem to expand algebraic expressions, and Perform the algebraic operations on complex numbers. |
| | | CLO5 | Explain the mathematical operations of matrices and recognize the solutions of linear systems. |
| | | CLO6 | Apply mathematical techniques for modeling, solving and analyzing real problems. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☐ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-2 | Revision in the basic definitions of mathematics. Function Concept and classification. | 10 | 4 | 4 | 2 | |
| 3-4 | Limits - limits theorem. Continuity. | 10 | 4 | 4 | 2 | |
| 5 | Elementary Functions (Trigonometric, logarithmic, Exponential, Hyperbolic and its inverse functions) | 5 | 2 | 2 | 1 | |
| 6 | Derivation, derivation rules - First function derivations, higher order derivation, Explicit and parametric differentiation. | 5 | 2 | 2 | 1 | |
| 7 | Binomial theorem | 5 | 2 | 2 | 1 | |
| 8 | **Mid Term Exam** | | | | | |
| 9 | Theory of equations | 5 | 2 | 2 | 1 | |
| 10 | Partial fractions. | 5 | 2 | 2 | 1 | |
| 11 | Complex numbers. | 5 | 2 | 2 | 1 | |
| 12 | Determinates and Solving linear system. | 5 | 2 | 2 | 1 | |
| 13 | Matrices concept, operation on matrices, Inverse of matrix. | 5 | 2 | 2 | 1 | |
| 14-15 | Applications on the differentiation. Integration theorem and properties. | 10 | 4 | 4 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 9 | 6% |
| 2. | Mid-Term Examination | 8 | 27 | 18% |
| 3. | Final Examination | (As Schedule) | 90 | 60% |
| 4. | Lab Exam | (As Schedule) | - | - |
| 5. | Activities and assignments | Every week | 24 | 16% |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Marvin L. Bittinger, David J. Ellenbogen, Scoot A. Surgent, Calculus and its applicationsm Tenth Edition, Pearson Education, 2012. |
| | **Other References** | Lecture notes. |
| | **Electronic Sources** (Links must be added) | Website |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| **Supportive facilities & equipment for teaching and learning *** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program, Mathematica |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-2 | Revision in the basic definitions of mathematics, Function Concept and classification. | 4 | 4 | X | | | | | |
| 3-4 | Limits - limits theorem, Continuity. | 4 | 4 | X | X | | | | |
| 5 | Elementary Functions (Trigonometric, logarithmic, Exponential, Hyperbolic and its inverse functions) | 2 | 2 | X | | X | | | |
| 6 | Derivation, derivation rules - First function derivations, higher order derivation, Explicit and parametric differentiation. | 2 | 2 | X | | X | | | |
| 7 | Binomial theorem | 2 | 2 | | | | X | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | Theory of equations | 2 | 2 | X | | X | | | |
| 10 | Partial fractions. | 2 | 2 | X | | | | | |
| 11 | Complex numbers. | 2 | 2 | | | | X | | |
| 12 | Determinates and Solving linear system. | 2 | 2 | | | | | X | X |
| 13 | Matrices concept, operation on matrices, Inverse of matrix. | 2 | 2 | | | | | X | X |
| 14-15 | Applications on the differentiation. Integration theorem and properties. | 4 | 4 | X | | | | | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | X | X | X |
| Group discussion | | | X | | | |
| Self-Learning | | | | | | |
| Research and reporting | | | | | X | X |
| Brain storming | X | | X | | X | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | X |
| Mid-term Exam | X | X | X | X | | |
| Quizzes | X | X | X | X | X | X |
| Research assignments | X | X | X | | X | X |
| In-class questions (formative assessment) | X | X | X | X | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Hamouda Abu Eldahab | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Physics (1) | | |
| Course Code (according to the bylaw) | BS012 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Prof. Dr. Ali Samir | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Material properties - Physical quantities - Standard units and dimensions -periodic motion- mechanical properties for materials -fluid properties - viscosity - surface tension-sound waves - waves in elastic media - Heat and thermodynamics: heat transfer - Gas motion theory - First law of thermodynamics - entropy and second law of thermodynamics - temperature measurements and thermometers.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Demonstrate an ability to understand a systems of units, conversion factors, and dimensions and solve many of examples on its and study the mechanical properties for matter such as stress, strain elasticity, plasticity,...etc. |
| | | CLO2 | Illustrate the different types of oscillation and associated concepts such as amplitude, periodic time, frequency and the angular frequency, deduce the relation of mechanical energy of simple harmonic motion, and Study the speed of sound and its associated phenomena. |
| | | CLO3 | List the properties of static fluid and dynamic fluid. |
| A2. | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO4 | Name the temperature scales, thermometers, quantity of heat and specific heat. |
| | | CLO5 | Rephrase the types thermal expansion, heat transfer and understand the theory of kinetic gases and thermodynamic. |
| | | CLO6 | Perform laboratory experiments about the properties of matter and heat |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☐ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-2 | Units and Dimensions: (Material properties-Physical quantities-conversion factors) | 12 | 4 | 4 | 4 | |
| 3-4 | Mechanical properties of matter : (stress-strain-Hook law- modulus-factor of safety) | 10 | 4 | 4 | 2 | |
| 5-6 | Periodic motion and Oscillations-simple harmonic motion-damped and forced oscillation) | 11 | 4 | 4 | 3 | |
| 7 | Sound waves - waves in elastic media-Doppler effect – police radar ) | 6 | 2 | 2 | 2 | |
| 8 | Mid Term | | | | | |
| 9-10 | Properties of fluids-viscosity-tension surface – Bernoulli's principle) | 10 | 4 | 4 | 2 | |
| 11-12 | Thermometers and Quantity of heat: ( Thermometers- quantity and units of heat – heat capacity – calorimetry – latent heat ) | 10 | 4 | 4 | 2 | |
| 13-14 | Thermal Expansion and Heat transfer: (linear, area and volume expansion- convection-radiation – conduction ) | 12 | 4 | 4 | 4 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 15 | Theory of gases and thermodynamic: (ideal gas law- first and second law of thermodynamic-hent engines) | 5 | 2 | 2 | 1 | |
| 16 | Final term exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 5 | 3.3% |
| 2. | Mid-Term Examination | 8 | 20 | 13.3% |
| 3. | Final Examination | (As Schedule) | 90 | 60% |
| 4. | Lab Exam | (As Schedule) | 10 | 6.7% |
| 5. | Activities and assignments | Every week | 25 | 16.7% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) * | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | Hugh D. Young; Roger A Freedman, University Physics 12E with Modern Physics, 15th Edition, Pearson, 2020. |
| | Other References | Serway.R. A. & Jewett, J. Physics for Scientists and Engineers (6th ed.). |

| | | |
|---|---|---|
| | | Halliday, D, Resnick, R, & Walker. Fundamentals of Physics (8th ed.) |
| | **Electronic Sources** (Links must be added) | Website , EKB, Software simulation |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning *** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

### 7.1 Lecture contents:

| Week | Topics | Lec | T/L | 4.Course Learning outcomes "CLO's" On completing this course, students must able to: | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-2 | Units and Dimensions: (Material properties- Physical quantities- conversion factors) | 4 | 4 | X | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3-4 | Mechanical properties of matter : (stress-strain-Hook law-modulus-factor of safety) | 4 | 4 | X | | | | | X |
| 5-6 | Periodic motion and Oscillations-simple harmonic motion-damped and forced oscillation) | 4 | 4 | | X | | | | X |
| 7 | Sound waves - waves in elastic media-Doppler effect – police radar ) | 2 | 2 | | X | | | | X |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9-10 | Properties of fluids-viscosity- tension surface – Bernoulli's principle) | 4 | 4 | | | X | | | X |
| 11 | Thermometers and Quantity of heat: ( Thermometers- quantity and units of heat – heat capacity – calorimetry – latent heat ) | 2 | 2 | | | X | | | X |
| 12-13 | Thermal Expansion and Heat transfer: (linear, area and volume expansion- convection-radiation –conduction ) | 4 | 4 | | | | | X | |
| 14-15 | Theory of gases and thermodynamic: (ideal gas law- first and second law of | 4 | 4 | | | | | X | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | thermodynamic-heat engines) | | | | | | | | |
| 16 | **Final Exam** | | | | | | | | |

7.2 Practical Contents:

| Week | Topics | Lab Hrs | LOs |
|---|---|---|---|
| 1 | Experiment 1 fine measurements | 2 | CLO6 |
| 2 | Experiment 2 simple pendulum | 2 | CLO6 |
| 3 | Experiment 3 tension surface of liquid | 2 | CLO6 |
| 4 | Experiment 4 hook's law | 2 | CLO6 |
| 5 | Experiment 5 determination of young's modulus | 2 | CLO6 |
| 6 | Experiment 6 determination of rigidity modulus | 2 | CLO6 |
| 7 | Experiment 7 Archimedes' Principle | 2 | CLO6 |
| 8 | **Mid term** | | |
| 9 | Experiment 8 speed of sound in air | 2 | CLO6 |
| 10 | Experiment 9 viscosity of liquid | 2 | CLO6 |
| 11 | Experiment 10 specific heat of solid using mixing method | 2 | CLO6 |
| 12 | Experiment 11 determination of the melting point of wax | 2 | CLO6 |
| 13 | Revision | 2 | CLO6 |
| 15 | Practical Exam | - | CLO6 |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | 4.Course Learning outcomes "CLO's" On completing this course, students must able to: | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | X | X | |
| Group discussion | | | | | | X |
| Laboratory | | | | | | X |
| Self-Learning | | | | | | |

| Teaching and Learning Methods | 4.Course Learning outcomes "CLO's" On completing this course, students must able to: | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Research and reporting | | | X | | | |
| Brain storming | | X | | | X | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | 4. Course Learning outcomes "CLO's" On completing this course, students must able to: | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | |
| Mid-term Exam | X | X | | X | | |
| Quizzes | X | X | X | X | X | |
| Research assignments | | | X | | X | |
| Lab Exam | | | | | | X |
| In-class questions (formative assessment) | X | | X | | X | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Ali Samir | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Mechanics (1) | | |
| Course Code (according to the bylaw) | BS013 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Prof. Dr. Attia Aref | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Engineering Statics: Vectors and spatial Forces - Torque - Couple moment - equilibrium of particle and rigid body - gravity center and geometric center - distributed forces - Applications on beams and hydrostatics - friction and its applications on bolts and beams.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Rephrase states of matter and units of measurements. |
| | | CLO2 | Develop the ability to solve resolution of forces in two dimensions. |
| | | CLO3 | Explain and study equilibrium of bodies and apply it into trusses. |
| | | CLO4 | Rephrase Theory of Equations and to solve problems on center of gravity. |
| | | CLO5 | Show ability to collaborate and communicate with others positively and effectively |
| | | CLO6 | Demonstrate willingness to help and assist other colleagues. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 2 | Units of measurements. Vectors and spatial Forces | 10 | 4 | 4 | 2 | |
| 3 - 4 | Resolution of two forces and equilibrium. | 10 | 4 | 4 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | Torque | | | | | |
| 5 - 6 | Forces in 3 dimensions and equilibrium. Distributed forces | 10 | 4 | 4 | 2 | |
| 7 | Moment in 2 dimensions. | 5 | 2 | 2 | 1 | |
| 8 | Mid Term Exam | | | | | |
| 9-10 | Moment in 3 dimensions. | 10 | 4 | 4 | 2 | |
| 11 | Couple in two and three dimensions. | 5 | 2 | 2 | 1 | |
| 12 | Equilibrium of bodies. | 5 | 2 | 2 | 1 | |
| 13 | Friction. | 5 | 2 | 2 | 1 | |
| 14-15 | Center of gravity. Applications on beams and hydrostatics | 10 | 4 | 4 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 6 | 6% |
| 2. | Mid-Term Examination | 8 | 18 | 18% |
| 3. | Final Examination | (As Schedule) | 60 | 60% |
| 4. | Lab Exam | (As Schedule) | 0 | 0% |
| 5. | Activities and assignments | Every week | 16 | 16% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| Learning resources (books, scientific | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | Beer, F. p and Johnston, E. R., "Vector Mechanics for Engineering Dynamics", McGraw-Hill Book Company, USA, 1990. |
|---|---|---|

| | | |
|---|---|---|
| references, etc.) * | Other References | Beer, F. p and Johnston, E. R., "Vector Mechanics for Engineering Dynamics", McGraw-Hill Book Company, USA, 1990. |
| | Electronic Sources (Links must be added) | Website |
| | Learning Platforms (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | Other (to be mentioned) | |
| | | |
| Supportive facilities & equipment for teaching and learning * | Devices/Instruments | Projectors, audio-visual systems, and Computers with internet access. |
| | Supplies | Whiteboards and smart boards. |
| | Electronic Programs | Microsoft Office program, Acrobat Reader |
| | Skill Labs/ Simulators | -- |
| | Virtual Labs | -- |
| | Other (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 - 2 | Units of measurements, Vectors and spatial Forces | 4 | 4 | X | X | | | | |
| 3 - 4 | Resolution of two forces and equilibrium, Torque | 4 | 4 | X | | X | | | |
| 5 - 6 | Forces in 3 dimensions and equilibrium, Distributed forces | 4 | 4 | | | X | X | | |
| 7 | Moment in 2 dimensions. | 2 | 2 | | | X | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-10 | Moment in 3 dimensions. | 4 | 4 | | | X | | | |
| 11 | Couple in two and three dimensions. | 2 | 2 | | | X | | | |
| 12 | Equilibrium of bodies. | 2 | 2 | | X | | | X | X |
| 13 | Friction. | 2 | 2 | | X | | | X | X |
| 14-15 | Center of gravity, Applications on beams and hydrostatics | 4 | 4 | X | | | X | | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Online education | | | | | | |
| Tutorial / Exercise | X | X | | X | | |
| Group discussion | | | | | X | |
| Self-Learning | | | | | | |
| • Presentation | | | | X | X | X |
| Brain storming | | | X | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | | |
| Mid-term Exam | X | X | X | | | |
| Quizzes | X | X | X | | | |
| Research assignments | | | | | X | X |
| In-class questions (formative assessment) | | | | | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Attia Aref | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Engineering Drawing and Projection (1) | |
| Course Code (according to the bylaw) | MEC014 | |
| Department/s participating in offering the course | Basic Science Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 3 | 4 | 7 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Preparatory year | |
| Academic Program | All Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Yassin EL Sayed Yassin | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Skills of the engineering drawing- engineering processes- orthogonal projection on two planes- point projection- straight line, and plane-projection of simple bodies- auxiliary projection- sphere, conical and cylindrical- surfaces intersections.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3. | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | Apply the drawing tools in the correct ways and practice them. |
| | | CLO2 | Identify and define fundamental concepts and principles of engineering drawing and projection. |
| | | CLO4 | Utilize various projection methods to create accurate technical drawings. |
| A8. | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLO3 | Explain and demonstrate the correct uses of engineering drawing tools to the student. |
| | | CLO5 | Explain the significance of scale, dimensioning, and annotation in engineering drawings. |
| | | CLO6 | Evaluate different projection techniques and their applications in engineering design and communication. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☐ Site visit
- ☒ Self-learning
- ☐ Presentation

☒ Group discussion
☐ Laboratory
☐ Mini project
☒ Research and reporting (self-learning)
☐ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-2 | Introduction of engineering drawing - Types of engineering drawing - Types of lines and their applications | 16 | 6 | 8 | 2 | |
| 3-4 | Engineering processes | 16 | 6 | 8 | 2 | |
| 5-6 | Descriptive Engineering and Orthogonal projection - Point projections | 17 | 6 | 8 | 3 | |
| 7 | straight line and plane - Projection of simple bodies – auxiliary projection | 10 | 3 | 4 | 3 | |
| 8 | Mid Term | | | | | |
| 9-10 | Engineering individuals for prism, pyramid and cube | 18 | 6 | 8 | 4 | |
| 11-12 | Engineering individuals for Sphere, conical and cylindrical Surface intersections -Projection types - Projection methods - | 16 | 6 | 8 | 2 | |
| 13-14 | Orthogonal and isometric projection treatment- air pollution. | 18 | 6 | 8 | 4 | |
| 15 | Construction of orthographic projection of isometric | 10 | 3 | 4 | 3 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 16 | Final term exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 11.25 | 6.43 % |
| 2. | Mid-Term Examination | 8 | 22.5 | 12.86 % |
| 3. | Final Examination | (As Schedule) | 100 | 57.14 % |
| 4. | Lab Exam | (As Schedule) | -- | -- % |
| 5. | Activities and assignments | Every week | 41.25 | 23.57% |
| 6. | Final Oral Exam (if exists) | - | -- | --% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) * | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | K.L .Naraya, Kannaih, and K, VenKata, Machine Drawing, 4th Edition, 2009. |
| | Other References | G.R. Nagpal, Machine Drawing, 2th Edition,2006. |
| | Electronic Sources (Links must be added) | AutoCAD |
| | Learning Platforms (Links must be added) | https://lms.manzalaacademy.edu.eg/ |

| | | |
|---|---|---|
| | **Other**<br>(to be mentioned) | V .La Kshminarayanan, M.L .Mathur , Machine Drawing , 7th E.,1986.<br>P .L, Sah, Fundamentals of Machine Drawing, 2th, Edition ,2015. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

#### 7.1 Lecture contents:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-2 | Introduction of engineering drawing - Types of engineering drawing - Types of lines and their applications | 6 | 8 | X | | | | | |
| 3-4 | Engineering processes | 6 | 8 | X | | X | | | |
| 5- 6 | Descriptive Engineering and Orthogonal projection - Point projections | 6 | 8 | X | | X | X | | |
| 7 | straight line and plane - Projection of simple bodies – auxiliary projection | 3 | 4 | X | | X | | | |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9-10 | Engineering individuals for prism, pyramid and cube | 6 | 8 | | X | | | X | X |

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 11-12 | Engineering individuals for Sphere, conical and cylindrical | 6 | 8 | | X | | | X | |
| 12-13 | Surface intersections - Projection types - Projection methods - | 6 | 8 | | X | | | X | X |
| 13-14 | Orthogonal and isometric projection | 6 | 8 | | X | | | X | |
| 15 | Construction of orthographic projection of isometric | 3 | 4 | | | | X | X | |
| 16 | Final Exam | | | | | | | | |

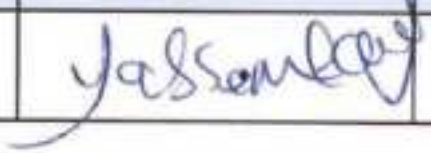
### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | LO1 | LO2 | LO3 | LO4 | LO5 | LO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | X | X | |
| Group discussion | | | | | X | X |
| Self-Learning | | | | | | |
| Research and reporting | | X | | | X | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | LO1 | LO2 | LO3 | LO4 | LO5 | LO6 |
| Final written exam | X | X | X | X | X | |
| Mid-term Exam | X | X | X | | | |
| Quizzes | X | X | X | X | | |
| Research assignments | | | X | | X | |
| In-class questions (formative assessment) | | X | | | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Ass. Prof. Yassen EL Sayed Yassen |  | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf |  | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Introduction in Computer and programming | | |
| Course Code (according to the bylaw) | BS015 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Prof. Dr. Ahmed Salama | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Introduction to computer science- computer system and its components - data organization input and output devices- storage and processing devices- programming principles- program flow chat - decision making tables- Communication systems and Computer Networks-Numbering systems-Internet- practical applications: office package - elementary programming.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program spees) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Discover the input and output devices in computers. |
| | | CLO2 | Illustrate the types of data: binary-hexadecimal-decimal. |
| | | CLO3 | Trace the execution of programs written in any programming language. |
| A5. | Practice research techniques and methods of investigation as an inherent part of learning. | CLO4 | Apply software codes using programming language. |
| | | CLO5 | Classify communication systems and Computer Networks Numbering systems-Internet practical applications. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☐ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-2 | Introduction to computer science | 10 | 4 | 4 | 2 | |
| 3-4 | Computer system and its components | 10 | 4 | 4 | 2 | |
| 5-6 | Data organization input and output devices | 10 | 4 | 4 | 2 | |
| 7 | Storage and processing devices Programming principles | 5 | 2 | 2 | 1 | |
| 8 | Mid Term | | | | | |
| 9-10 | Program flow chat | 10 | 4 | 4 | 2 | |
| 11 | Decision making tables | 10 | 2 | 2 | 1 | |
| 12 | Communication systems and Computer Networks | 5 | 2 | 2 | 1 | |
| 13 | Numbering systems-Internet | 5 | 2 | 2 | 1 | |
| 14-15 | Practical applications: office package - elementary programming. | 10 | 4 | 4 | 2 | |
| 16 | Final term exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4 | 4 % |
| 2. | Mid-Term Examination | 8 | 18 | 18% |
| 3. | Final Examination | (As Schedule) | 60 | 60% |

| | | | | |
|---|---|---|---|---|
| 4. | Lab Exam | (As Schedule) | -- | --% |
| 5. | Activities and assignments | Every week | 18 | 18% |
| 6. | Final Oral Exam (if exists) | - | -- | --% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Donald E. Knuth, Fundamental Algorithms: Art Of Computer Programming, Addison-Wesley Professional PTG, 2nd edition, 1998. |
| | **Other References** | Sinha, P. K., Sinha P., Computer Fundamentals: Concepts, Systems & Application, 4th edition, BPB. |
| | **Electronic Sources** (Links must be added) | https://ieeexplore.ieee.org/ |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1 - 2 | Introduction to computer science | 4 | 4 | | | X | | |
| 3 - 4 | Computer system and its components | 4 | 4 | | | X | | |
| 5 - 6 | Data organization input and output devices | 4 | 4 | | | X | X | |
| 7 | Storage and processing devices Programming principles | 2 | 2 | X | | X | | X |
| 8 | **Mid Term** | | | | | | | |
| 9-10 | Program flow chat | 4 | 4 | X | X | X | | |
| 11 | Decision making tables | 2 | 2 | | X | | | X |
| 12 | Communication systems and Computer Networks | 2 | 2 | X | | | X | |
| 13 | Numbering systems-Internet | 2 | 2 | X | | | | X |
| 14-15 | Practical applications: office package - elementary programming. | 4 | 4 | | | | X | |
| 16 | **Final term exam** | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| **Face to face lecture** | X | X | X | X | X |
| **Tutorial / Exercise** | X | X | | X | |
| **Group discussion** | | | | X | |
| **Self-Learning** | | | | | |
| • **Presentation** | | X | X | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Final written exam | X | X | X | X | X |
| Mid-term Exam | X | X | X | | |
| Quizzes | X | X | | | |
| Research assignments | | X | | | |
| In-class questions (formative assessment) | X | | X | | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Ahmed Salama | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | | English for Engineering (1) | |
| Course Code (according to the bylaw) | | BS016 | |
| Department/s participating in offering the course | | Basic Science Department | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 0 | 2 | 2 | |
| Course Type | | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | | Preparatory year | |
| Academic Program | | All Program | |
| Faculty/Institute | | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | | Manzalla Academy | |
| Name of Course Coordinator | | Prof. Dr. Abdelrahman Al Adl | |
| Course Specification Appeoval Date | | 16 August 2025 | |
| Course Specification Approval | | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

This is the first course in the English course series - students will learn to develop skills in listening , speaking , reading , and writing, with a special emphasis on reading. The structure of the course is designed such that the students will develop both listening and writing abilities through examples brought from articles taken from a variety of literatures, and from writing assignments. Both listening and speaking skills are developed by practicing with experienced English Coordinator.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A8. | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLO1 | Clarify that the main emphasis of the course will be on listening, speaking, and writing rather than memorizing technical vocabulary. |
| | | CLO2 | Recall information, main ideas, and details after reading a text.. |
| | | CLO3 | Expand vocabulary knowledge and utilize conventions of grammar and usage specific to the context. |
| | | CLO4 | Enhance students' writing skills in composing paragraphs and reports. |
| | | CLO5 | Apply both listening and speaking skills by practicing with an experienced English Coordinator. |
| | | CLO6 | Develop their communicative functions or conversational skills. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☐ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Pronunciation Focus-speaking-reading and writing | 4 | 0 | 2 | 2 | |
| 2 | Active listening techniques | 4 | 0 | 2 | 2 | |
| 3 | Writing Skills (Paragraphs & Comparative Essay) | 4 | 0 | 2 | 2 | |
| 4 | Skimming and scanning for key information<br>Analyzing different types of texts (fiction, non-fiction, technical) | 3 | 0 | 2 | 1 | |
| 5 | Language Functions | 4 | 0 | 2 | 2 | |
| 6 | Exploring themes and characters in selected texts | 4 | 0 | 2 | 2 | |
| 7 | Reading Comprehension | 4 | 0 | 2 | 2 | |
| 8 | **Mid Term** | | | | | |
| 9 | Vocabulary Study | 4 | 0 | 2 | 2 | |
| 10 | Contextual vocabulary acquisition | 4 | 0 | 2 | 2 | |
| 11 | Communication Skills Presentations) | 4 | 0 | 2 | 2 | |
| 12 | Grammar & Sentence Structure | 4 | 0 | 2 | 2 | |
| 13 | Technical Abbreviations, Terms & Symbols | 4 | 0 | 2 | 2 | |
| 14-15 | Structuring paragraphs and essays | 6 | 0 | 4 | 2 | |
| 16 | **Final term exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) * | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 1.5 | 3% |
| 2. | Mid-Term Examination | 8 | 6.75 | 13.5% |
| 3. | Final Examination | (As Schedule) | 35 | 70% |
| 4. | Lab Exam | (As Schedule) | 0 | 0% |
| 5. | Activities and assignments | Every week | 6.75 | 13.5% |
| 6. | Final Oral Exam (if exists) | - | - | -% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | A, S. Betty, Fundamentals of English Grammar, 3rd edition; Pearson Education, NY 10606, 2003. |
| | **Other References** | • M. Bates, and T. D. Evans, Nucleus English for Science and Technology. Mc Corquodale (Newton) Ltd. 1980.<br>• B. J. Cohen, Medical Terminology: An Illustrated Guide., 5th edition; Lippincott Williams & Wilkins, USA, 2007.<br>• E. C. Collins, A Short Course in Medical Terminology: Enhanced Reprint, 1st edition, Lippincott Williams & Wilkins, USA, 2008. |
| | **Electronic Sources** (Links must be added) | https://www.bbc.co.uk/learningenglish/english/features/english-at-work |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |

| | | |
|---|---|---|
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

### 7.1 Lecture contents:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO |
| 1 | Pronunciation Focus-speaking-reading and writing | - | 2 | X | X | X | | | X |
| 2 | Active listening techniques | - | 2 | | X | | X | | |
| 3 | Writing Skills (Paragraphs & Comparative Essay) | - | 2 | X | | X | | | |
| 4 | Skimming and scanning for key information Analyzing different types of texts (fiction, non-fiction, technical) | - | 2 | X | | X | X | | |
| 5 | Language Functions | - | 2 | X | | X | X | | |
| 6 | Exploring themes and characters in selected texts | - | 2 | | X | X | | | |
| 7 | Reading Comprehension | - | 2 | X | | X | | | |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9 | Vocabulary Study | - | 2 | X | | X | | | |

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 10 | Contextual vocabulary acquisition | - | 2 | X | | X | | | |
| 11 | Communication Skills Presentations) | - | 2 | | X | | | X | X |
| 12 | Grammar & Sentence Structure | - | 2 | | | | | | |
| 13 | Technical Abbreviations, Terms & Symbols | - | 2 | | X | | | X | X |
| 14-15 | Structuring paragraphs and essays | - | 4 | | | | | | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | | X | | X | X | X |
| Group discussion | | | | X | | X |
| Self-Learning | | | | | | |
| Presentation | | X | X | | X | |
| Research and reporting | | X | | X | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | | |
| Mid-term Exam | X | X | | | | |
| Quizzes | X | X | X | | X | |
| Research assignments | | X | | X | | |

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| In-class questions (formative assessment) | X | X | X | | | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Abdelrahman Al Adl | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Engineering Mathematics (2) | | |
| Course Code (according to the bylaw) | BS021 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory Year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr. Hamouda Abu Eldahab | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Integration: Integration methods- integration by substitution -partial fractions - Trigonometric substitution - definite integral and its properties- higher and lower Rieman - basic theorem in eventuation and integration - integration application - calculation areas- rotational volumes - integration by approximation Simpson rule - polar coordinates and its applications - analytical geometry - second order equations equation of a pair of straight lines - circles and circles groups – conical sections - analytical geometry in space - coordinate system - line and plane equations - sphere - cylinder and cone.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program spees) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Illustrate the concept of integration and its properties. Identify the different integration rules and methods. |
| | | CLO2 | Explain the integration of trigonometric, exponential, logarithmic functions and polynomials. |
| | | CLO3 | Identify the concepts of Line integrals Surface and volume integrals. |
| | | CLO4 | Show an understanding of the concepts of Analytical Geometry just as Line, Circle and Conic Sections in 2D and 3D. |
| | | CLO5 | Handle with Change and Moving the Origin for various shapes and planes. |
| | | CLO6 | Identify mathematical techniques for modeling, solving and analyzing real problems. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☐ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-2 | Revision on differentiation rules. | 10 | 4 | 4 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | Integration rules. | | | | | |
| 3-4 | Integration methods: Integration of Inverse Trigonometric Functions, Integration by Partial Fractions, Integration by Completing Square. | 10 | 4 | 4 | 2 | |
| 5 | Integration by Parts, Integration by Substitution.. | 10 | 4 | 4 | 2 | |
| 6 | Definite Integral and its properties - higher and lower Riemann. | 10 | 4 | 4 | 2 | |
| 7 | Revision on differentiation rules. Integration rules. | 5 | 2 | 2 | 1 | |
| 8 | Mid Term Exam | | | | | |
| 9 | Definite Integral and its properties - higher and lower Riemann. | 5 | 2 | 2 | 1 | |
| 10 | Area Between Under the Curve, Area Between Two Curves. | 5 | 2 | 2 | 1 | |
| 11 | Analytical Geometry: Coordinates, Straight Line in 2D. | 5 | 2 | 2 | 1 | |
| 12 | Follow Straight Line in 2D, Circle. - Conic Sections. | 5 | 2 | 2 | 1 | |
| 13 | 3D Coordinates, Change the Origin (Moving), Straight line in 3D, Plane, Sphere. | 5 | 2 | 2 | 1 | |
| 14-15 | Second order equations equation of a pair of straight lines. | 10 | 4 | 4 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 7.5 | 6% |

| | | | | |
|---|---|---|---|---|
| 2. | Mid-Term Examination | 8 | 22.5 | 18% |
| 3. | Final Examination | (As Schedule) | 75 | 60% |
| 4. | Lab Exam | (As Schedule) | - | - |
| 5. | Activities and assignments | Every week | 20 | 16% |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Marvin L. Bittinger, David J. Ellenbogen, Scoot A. Surgent, Calculus and its applicationsm Tenth Edition, Pearson Education, 2012. |
| | **Other References** | Lecture notes. |
| | **Electronic Sources** (Links must be added) | -- |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | -- |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program, Mathematica |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | -- |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 - 2 | Revision on differentiation rules. Integration rules. | 4 | 4 | X | | | | | |
| 3 - 4 | Integration methods: Integration of Inverse | 4 | 4 | X | X | | | | |

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| | Trigonometric Functions, Integration by Partial Fractions, Integration by Completing Square. | | | | | | | | |
| 5 - 6 | Integration by Parts, Integration by Substitution.. | 4 | 4 | X | X | | | | |
| 7 | Definite Integral and its properties - higher and lower Riemann. | 2 | 2 | X | | X | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | Definite Integral and its properties - higher and lower Riemann. | 2 | 2 | X | | X | | | |
| 10 | Area Between Under the Curve, Area Between Two Curves. | 2 | 2 | X | | X | | | X |
| 11 | Analytical Geometry: Coordinates, Straight Line in 2D. | 2 | 2 | | | | X | X | |
| 12 | Follow Straight Line in 2D, Circle. - Conic Sections. | 2 | 2 | | | | X | | X |
| 13 | 3D Coordinates, Change the Origin (Moving), Straight line in 3D, Plane, Sphere. | 2 | 2 | | | | X | X | X |
| 14-15 | Second order equations equation of a pair of straight lines. | 4 | 4 | | | | | X | X |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | X | X | X |
| Group discussion | X | X | X | X | X | X |

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Self-Learning | | | | | | |
| Research and reporting | | | | | X | X |
| Brain storming | X | X | | X | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | X |
| Mid-term Exam | X | X | X | X | | |
| Quizzes | X | X | X | X | X | X |
| Research assignments | X | X | X | X | X | X |
| In-class questions (formative assessment) | X | X | X | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Hamouda Abu Eldahab | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | **Physics (2)** | | |
| Course Code (according to the bylaw) | **BS022** | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Assoc. Dr. Ali Samir | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Electricity and magnetism: charge and substance- electric field-column's law- electric flux- Gauss law- electric volt- condenser and insulation materials-current , resistance and electric force - ohm's law and simple circuits- magnetic field- Babot and savart laws -magnetic flux and gauss law- Faraday law - Magnetic impedance topics : engineering light - light properties for spherical surfaces -lenses and mirrors - wave properties for light and Hygen's principle - interference - polarization- and diffraction -nuclear physics :- nuclear construction - Bohar theorem - principle of quantum theory- laser - optical - electric phenomenon.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Demonstrate an ability to understand properties of electric charges to compute electric force by using coulomb's law and solve a lot of examples about electric field and apply Gauss's Law to determine the electric field inside any enclosed surface in case conducting sphere or insulating sphere. |
| | | CLO2 | Explain phenomenon of electric field production from changing magnetic fields as do the applications of this phenomenon in electrical devices such as generators and motors. |
| | | CLO3 | Study electric potential energy and electric potential due to point charges and definitional of capacitance and find it in case of Parallel-Plate, Cylindrical and Spherical Capacitors |
| | | CLO4 | Demonstrate an ability to understand Ohm's law to find the equivalent resistance, current and potential difference in circuit in case of series or parallel. |
| A2. | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO6 | Perform laboratory experiments about electrical, and magnetic properties.li |
| | | CLO5 | Apply ray-tracing rules to determine the location, orientation and magnification of images produced by mirrors and lenses, interpret optics phenomena that include propagation, refraction, interference, and diffraction, and explain the concept of nuclear physics. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)

☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 2 | Electrostatic force: charge and substance Coulomb's law - the principle of conservation and quantization of charge | 10 | 4 | 4 | 2 | |
| 3 - 4 | -The electric field - The electric field resulting from a point charge - Definition of the dipole and calculating the final field at a distant point - The electric field resulting from (linear distribution of charges - Surface distribution of charges) - The effect of the electric field on (point charge - The electric dipole) - Movement of a charge in the field The electrician. | 10 | 4 | 4 | 2 | |
| 5 - 6 | Electric Flow and Gauss's Law: Electric Field Flow - Gauss's Law - | 10 | 4 | 4 | 2 | |
| 7 | Applications of Gauss's Law -Conductors in Static Fields. | 5 | 2 | 2 | 1 | |
| 8 | **Mid Term Exam** | | | | | |
| 9-10 | Electric potential: electric potential energy - potential and potential difference - field calculation of potential - electric potential energy for a system of point charges. | 10 | 4 | 4 | 2 | |
| 11 | Capacitor: Connecting capacitors in electrical circuits and capacitance laws | 5 | 2 | 2 | 1 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | -Electrical circuits: ohm's law and simple circuits- Magnetic field- Babot and savart laws. | | | | | |
| 12 | Engineering light - Light propagation for spherical surfaces (mirrors and lens)- Light phenomena (propagation- reflection- refraction) | 5 | 2 | 2 | 1 | |
| 13 | Wave properties for light and Hygen's principle - Interference – Diffraction- Polarization and its application- | 5 | 2 | 2 | 1 | |
| 14-15 | nuclear construction - Bohar theorem - principle of quantum theory- laser. | 10 | 4 | 4 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 5 | 4% |
| 2. | Mid-Term Examination | 8 | 15 | 12% |
| 3. | Final Examination | (As Schedule) | 75 | 60% |
| 4. | Lab Exam | (As Schedule) | 10 | 8% |
| 5. | Activities and assignments | Every week | 20 | 16% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| Learning resources | The main (essential) reference for the course | Hugh DeYoung and Roger A. Freedman,University Physics 12E with Modern Physics. |
|---|---|---|

| | | |
|---|---|---|
| (books, scientific references, etc.) * | (must be written in full according to the scientific documentation method) | |
| | **Other References** | Serway, R. A., & Jewett, J. W. Physics for Scientists and Engineers (6th Ed.).<br>Halliday, D., Resnick, R., & Walker, J .Fundamentals of Physics (8th Ed.).<br>Serway, R. A., & Faughn, J. S. College Physics (8th Ed.). |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader - Software simulation |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | 4.Course Learning outcomes "CLO's" On completing this course, students must able to: | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-2 | Electrostatic force: charge and substance Coulomb's law - the principle of conservation and quantization of charge | 4 | 4 | X | | | | | |
| 3-4 | -The electric field - The electric field resulting from a point charge - Definition of the dipole and calculating the final field at a distant | | | X | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | point - The electric field resulting from (linear distribution of charges - Surface distribution of charges) - The effect of the electric field on (point charge - The electric dipole) - Movement of a charge in the field The electrician. | 4 | 4 | | | | | | |
| 5-6 | Electric Flow and Gauss's Law: Electric Field Flow - Gauss's Law - | 4 | 4 | | X | | | | |
| 7 | Applications of Gauss's Law -Conductors in Static Fields. | 2 | 2 | | X | | | | |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9-10 | Electric potential: electric potential energy - potential and potential difference - field calculation of potential - electric potential energy for a system of point charges. | 4 | 4 | | | X | | | |
| 11 | Capacitor: Connecting capacitors in electrical circuits and capacitance laws -Electrical circuits: ohm's law and simple circuits- Magnetic field- Babot and savart laws. | 2 | 2 | | | | X | X | X |
| 12 | Engineering light - Light propagation for spherical surfaces (mirrors and lens)- Light phenomena (propagation- reflection- refraction) | 2 | 2 | | | | | X | X |
| 13 | Wave properties for light and Hygen's principle - Interference – Diffraction- Polarization and its application- | 2 | 2 | | | | | X | X |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 14-15 | Nuclear construction - Bohar theorem - principle of quantum theory- laser. | 4 | 4 | | | | | X | X |
| 16 | Final Exam | | | | | | | | |

| Week | Topics | Lab Hrs | CLOs |
|---|---|---|---|
| 1 | Experiment 1 Introduction | 2 | CLO6 |
| 2 | Experiment 2 metric bridge (determine unknown resistance ) | 2 | CLO6 |
| 3 | Experiment 3 Ohm's law | 2 | CLO6 |
| 4 | Experiment 4 capacitors | 2 | CLO6 |
| 5 | Experiment 5 comparison between two magnetics torque | 2 | CLO6 |
| 6 | Experiment 6: galvanometer of shadow | 2 | CLO6 |
| 7 | Experiment 7 transformers | 2 | CLO6 |
| 8 | Mid term | | |
| 9 | Experiment 8 prism | 2 | CLO6 |
| 10 | Experiment 9 lenses-mirrors | 2 | CLO6 |
| 11 | Experiment 10: liquid lenses | 2 | CLO6 |
| 12 | Revision | 2 | CLO6 |
| 15 | Practical Exam | - | LO6 |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | 4.Course Learning outcomes "CLO's" On completing this course, students must able to: | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | |
| Tutorial / Exercise | X | X | X | X | X | |
| Group discussion | | | | | | X |
| Laboratory | | | | | | X |
| Self-Learning: | | | | | | |
| Presentation | | | X | | | |
| Research and reporting | | | X | | X | |
| Brain storming | | X | | X | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | 4. Course Learning outcomes "CLO's" On completing this course, students must able to: | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | |
| Mid-term Exam | X | X | | | | |
| Quizzes | X | X | X | | | |
| Lab Exam | | | | | | X |
| Research assignments | X | X | X | X | | |
| In-class questions (formative assessment) | X | X | X | X | X | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Ali Samir | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Mechanics (2) | | |
| Course Code (according to the bylaw) | BS023 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Prof. Dr. Attia Aref | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Engineering Statics: Vectors and spatial Forces - Torque - Couple moment - equilibrium of particle and rigid body - gravity center and geometric center - distributed forces - Applications on beams and hydrostatics - friction and its applications on bolts and beams.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Rephrase states of matter and units of measurements. |
| | | CLO2 | Develop the ability to solve resolution of forces in two dimensions. |
| | | CLO3 | Explain and study equilibrium of bodies and apply it into trusses. |
| | | CLO4 | Rephrase Theory of Equations and to solve problems on center of gravity. |
| | | CLO5 | Show ability to collaborate and communicate with others positively and effectively |
| | | CLO6 | Demonstrate willingness to help and assist other colleagues. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 2 | Units of measurements. Vectors and spatial Forces | 10 | 4 | 4 | 2 | |
| 3 - 4 | Resolution of two forces and equilibrium. Torque | 10 | 4 | 4 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 5 - 6 | Forces in 3 dimensions and equilibrium. Distributed forces | 10 | 4 | 4 | 2 | |
| 7 | Moment in 2 dimensions. | 5 | 2 | 2 | 1 | |
| 8 | Mid Term Exam | | | | | |
| 9-10 | Moment in 3 dimensions. | 10 | 4 | 4 | 2 | |
| 11 | Couple in two and three dimensions. | 5 | 2 | 2 | 1 | |
| 12 | Equilibrium of bodies. | 5 | 2 | 2 | 1 | |
| 13 | Friction. | 5 | 2 | 2 | 1 | |
| 14-15 | Center of gravity. Applications on beams and hydrostatics | 10 | 4 | 4 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 6 | 6% |
| 2. | Mid-Term Examination | 8 | 18 | 18% |
| 3. | Final Examination | (As Schedule) | 60 | 60% |
| 4. | Lab Exam | (As Schedule) | 0 | 0% |
| 5. | Activities and assignments | Every week | 16 | 16% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Beer, F. p and Johnston, E. R., "Vector Mechanics for Engineering Dynamics", McGraw-Hill Book Company, USA, 1990. |

| | | |
|---|---|---|
| references, etc.) * | **Other References** | Beer, F. p and Johnston, E. R., "Vector Mechanics for Engineering Dynamics", McGraw-Hill Book Company, USA, 1990. |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 - 2 | Units of measurements. Vectors and spatial Forces | 4 | 4 | X | X | | | | |
| 3 - 4 | Resolution of two forces and equilibrium. Torque | 4 | 4 | X | | X | | | |
| 5 - 6 | Forces in 3 dimensions and equilibrium. Distributed forces | 4 | 4 | | | X | X | | |
| 7 | Moment in 2 dimensions. | 2 | 2 | | | X | | | |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9-10 | Moment in 3 dimensions. | 4 | 4 | | | X | | | |
| 11 | Couple in two and three dimensions. | 2 | 2 | | | X | | | |
| 12 | Equilibrium of bodies. | 2 | 2 | | X | | | X | X |
| 13 | Friction. | 2 | 2 | | X | | | X | X |
| 14-15 | Center of gravity. Applications on beams and hydrostatics | 4 | 4 | X | | | X | | |
| 16 | **Final Exam** | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | | X | | |
| Group discussion | | | | | X | |
| Self-Learning | | | | | | |
| • Presentation | | | | X | X | X |
| Brain storming | | | X | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | | |
| Mid-term Exam | X | X | X | | | |
| Quizzes | X | X | X | | | |
| Research assignments | | | | | X | X |
| In-class questions (formative assessment) | | | | | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Attia Aref | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Engineering Drawing and Projection (2) | | |
| Course Code (according to the bylaw) | MEC024 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 3 | 5 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr. Yassin EL Sayed Yassin | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Projection of simple bodies - Dimensioning writing- drawing of engineering bodies- engineering sections drawing- missing projections - drawing simple engine parts- metal connection drawing- orthogonal and oblique drawing- electrical symbols introduction to drawing using the computer(auto CAD).

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3. | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | Apply the drawing tools in the correct ways and practice them. |
| | | CLO2 | Identify and define fundamental concepts and principles of engineering drawing and projection. |
| | | CLO3 | Explain and demonstrate the correct uses of engineering drawing tools to the student. |
| A8. | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLO4 | Utilize various projection methods to create accurate technical drawings. |
| | | CLO5 | Explain the significance of scale, dimensioning, and annotation in engineering drawings. |
| | | CLO6 | Evaluate different projection techniques and their applications in engineering design and communication. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 2 | Projection of simple bodies | 12 | 4 | 6 | 2 | |
| 3 - 4 | Dimensioning writing | 12 | 4 | 6 | 2 | |
| 5 - 6 | Drawing of engineering bodies | 12 | 4 | 6 | 2 | |
| 7 | Engineering sections drawing | 6 | 2 | 3 | 1 | |
| 8 | **Mid Term Exam** | | | | | |
| 9-10 | Missing projections | 12 | 4 | 6 | 2 | |
| 11 | Drawing simple engine parts | 6 | 2 | 3 | 1 | |
| 12 | metal connection drawing | 6 | 2 | 3 | 1 | |
| 13 | Orthogonal and oblique drawing | 6 | 2 | 3 | 1 | |
| 14-15 | Electrical symbols introduction to drawing using the computer (auto CAD). | 12 | 4 | 6 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 7.5 | 6% |
| 2. | Mid-Term Examination | 8 | 22.5 | 18% |
| 3. | Final Examination | (As Schedule) | 75 | 60% |
| 4. | Lab Exam | (As Schedule) | 0 | 0% |
| 5. | Activities and assignments | Every week | 20 | 16% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) * | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | K.L .Narayan. Kanniah, and K. VenKata Reddy, Machine Drawing, 4th Edition.2009. |
| | Other References | V .La Kshminarayanan and M.L .Mathur ,Machine Drawing , , 7th E.,1986. |
| | Electronic Sources (Links must be added) | |
| | Learning Platforms (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | Other (to be mentioned) | |
| | | |
| Supportive facilities & equipment for teaching and learning * | Devices/Instruments | Projectors, audio-visual systems, and Computers with internet access. |
| | Supplies | Whiteboards and smart boards. |
| | Electronic Programs | Microsoft Office program, Acrobat Reader Auto CAD |
| | Skill Labs/ Simulators | -- |
| | Virtual Labs | -- |
| | Other (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-2 | Projection of simple bodies | 4 | 6 | X | | | | | |
| 3-4 | Dimensioning writing | 4 | 6 | X | | X | | | |
| 5- 6 | Drawing of engineering bodies | 4 | 6 | X | | X | X | | |
| 7 | Engineering sections drawing | 2 | 3 | X | | X | | | |
| 8 | Mid term | | | | | | | | |
| 9-10 | Missing projections | 4 | 6 | | X | | | X | X |
| 11 | Drawing simple engine parts | 2 | 3 | | X | | | X | X |
| 12 | metal connection drawing | 2 | 3 | | X | | | X | X |
| 13 | Orthogonal and oblique drawing | | 3 | | X | | | X | X |

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| | | 2 | | | | | | | |
| 14-15 | Electrical symbols introduction to drawing using the computer (auto CAD). | 4 | 6 | | | | X | X | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | X | X | X |
| Group discussion | | | | | X | X |
| Self-Learning | | | | | | |
| Presentation | | | | X | | |
| Research and reporting | | | | | X | X |
| Brain storming | | | X | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | |
| Mid-term Exam | X | X | X | | | |
| Quizzes | X | X | X | X | | |
| Research assignments | | | | | X | X |
| In-class questions (formative assessment) | | | | | X | X |

Course coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Ass. Prof. Yassen EL Sayed Yassen | | 2025-2026 |

Program coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | | Chemistry | |
| Course Code (according to the bylaw) | | BS025 | |
| Department/s participating in offering the course | | Basic Science Department | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr. Reda Shaaban Ali Salama | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Introduction to material properties - introduction to chemical thermodynamics- Thermal chemistry- solutions- chemical equilibrium- electrical chemistry- chemical reaction- thermal and balance in combustion processes and different cement industry- fertilizers industry- corrosion- water pollution and its treatment- air pollution.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Identify states of matter, gas laws, and units of measurements, solutions properties, thermodynamic laws, chemical equilibrium and electrochemistry. |
| | | CLO2 | Demonstrate an understanding of water analysis, wastewater treatment and cement industry. |
| | | CLO3 | Solve problems on gases, Thermo chemistry and electrochemistry equations |
| A2. | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO4 | Perform laboratory experiments in titration of acid base, oxidation reduction titration and precipitation. |
| A7. | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | CLO5 | Collaborate and communicate with others positively and effectively |
| | | CLO6 | Demonstrate willingness to help and assist other colleagues. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☐ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-2 | Introduction to material properties ) | 11 | 4 | 4 | 3 | |
| 3-4 | Introduction to chemical thermodynamics- Thermal chemistry | 10 | 4 | 4 | 2 | |
| 5-6 | Periodic motion and Oscillations-simple harmonic motion-damped and forced oscillation) | 11 | 4 | 4 | 3 | |
| 7 | Electrical chemistry | 7 | 2 | 2 | 3 | |
| 8 | Mid Term | | | | | |
| 9-10 | Chemical reaction – Thermal and balance in combustion processes | 12 | 4 | 4 | 4 | |
| 11-12 | Different cement industry- fertilizers industry- corrosion | 10 | 4 | 4 | 2 | |
| 13-15 | Water pollution and its treatment- air pollution. | 16 | 6 | 6 | 4 | |
| 16 | Final term exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5 % |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5 % |
| 3. | Final Examination | (As Schedule) | 60 | 60% |

| | | | | |
|---|---|---|---|---|
| 4. | Lab Exam | (As Schedule) | 10 | 10 % |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | -- | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | T. L. Brown, H. E. LeMay, Jr. and Bruce E. Bursten, Chemistry, The Central Science, 14th edition, Prentice-Hall International, 2017 |
| | **Other References** | Lecture material and experimental sheets. |
| | **Electronic Sources** (Links must be added) | www.GeneralchemistryResearch.com. |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

### 7.1 Lecture contents:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 - 2 | Introduction to material properties | 4 | 4 | X | | | | | |
| 3 - 4 | Introduction to chemical thermodynamics- Thermal chemistry | 4 | 4 | X | | X | | | |
| 5 - 6 | Periodic motion and Oscillations-simple harmonic motion-damped and forced oscillation) | 4 | 4 | X | | X | X | | |
| 7 | Electrical chemistry | 2 | 2 | X | | X | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-10 | chemical reaction – Thermal and balance in combustion processes | 4 | 4 | X | | X | | | |
| 11-12 | Different cement industry- fertilizers industry- corrosion | 4 | 4 | | X | | | X | X |
| 13-15 | Water pollution and its treatment- air pollution. | 6 | 6 | | X | | | X | X |
| 16 | Final Exam | | | | | | | | |

### 7.2 Practical Contents:

| Week | Topics | Lab Hrs | LOs |
|---|---|---|---|
| 1 | Experiment 1 Titration of Acids and Bases | 2 | CLO4 |
| 2 | Experiment 2 determination of the acidity of vinegar by acid-base titration | 2 | CLO4 |
| 3 | Experiment 3 Measurements of Density | 2 | CLO4 |
| 4-5 | Experiment 4 Oxidation – Reduction Titration | 4 | CLO4 |
| 6-7 | Experiment 5 Iodometric Titration | 4 | CLO4 |
| 9 | Experiment 6 Gravimetric Analysis (determination of chlorides) | 2 | CLO4 |
| 10 | Experiment 7 Gravimetric Analysis (determination of Sulfate) | 2 | CLO4 |
| 11 | Experiment 8 Buffer Solution | 2 | CLO4 |
| 12 | Revision | 2 | CLO4 |
| 15 | Practical Exam | - | CLO4 |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | | X | | |
| Group discussion | X | X | X | | X | X |
| Laboratory | X | | | X | | |
| Self-Learning | | | | | | |
| • Research and reporting | | | | | X | X |
| Brain storming | | X | | X | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | | | |
| Mid-term Exam | X | X | X | | | |
| Quizzes | X | X | X | | | |
| Lab Exam | | | | X | | |
| Research assignments | | | | | X | X |
| In-class questions (formative assessment) | | X | | | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Reda Shaaban Ali Salama | Reda Salama | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Production Engineering | |
| Course Code (according to the bylaw) | MEC026 | |
| Department/s participating in offering the course | Basic Science Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 3 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Preparatory year | |
| Academic Program | All Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Yassin EL Sayed Yassin | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Introduction to Engineering Materials- Ferrous and non- Ferrous metals- Steel and cast iron production furnaces- Introduction to technological processes- Metal casting- Metal forming- rolling-drawing-Bending- Welding- Milling- Drilling- Grinding- Lathing-Simple Measuring tools- Production quality-Industrial safety-practices in different workshops.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A2. | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO1 | Demonstrate the essential knowledge to classify engineering materials. |
| | | CLO2 | Identify different types of welding, different methods of metal bonding, and the types of gases used in gas welding. |
| | | CLO3 | Identify the workbench processes and study of special equipment used to conduct them. |
| A3. | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO4 | Recognize the tools and the methods that used in designing and manufacturing of casting processes. |
| | | CLO5 | Demonstrate the essential knowledge to understand and conduct forming and cutting processes. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Industrial safety | 6 | 2 | 3 | 1 | |
| 2-3 | Introduction to engineering materials – Ferrous and non-ferrous metals – steel and cast-iron production furnaces | 12 | 4 | 6 | 2 | |
| 4-5 | Simple measuring tools | 12 | 4 | 6 | 2 | |
| 6 | Introduction to technological processes | 6 | 2 | 3 | 1 | |
| 7 | Metal casting – metal forming – rolling – drawing – bending | 6 | 2 | 3 | 1 | |
| 8 | **Mid Term Exam** | | | | | |
| 9-10 | Welding – milling – | 12 | 4 | 6 | 2 | |
| 11-12 | Lathing – production quality | 12 | 4 | 6 | 2 | |
| 13-14 | Practices in different workshops | 12 | 4 | 6 | 2 | |
| 15 | drilling – grinding | 6 | 2 | 3 | 1 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 5 | 4% |
| 2. | Mid-Term Examination | 8 | 15 | 12% |
| 3. | Final Examination | (As Schedule) | 75 | 60% |
| 4. | Lab Exam | (As Schedule) | 10 | 8% |
| 5. | Activities and assignments | Every week | 20 | 16% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 0 | 0% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | • K.L .Narayan . Kannaih, and K, VenKata Reddy ,Machine Drawing , 4th Edition,2009 .<br>• G.R. Nagpal, Machine Drawing , 2th Edition,2006. |
| | **Other References** | • V .LaKshminarayanan and M.L .Mathur ,Machine Drawing , 7th E.,1986.<br>• R .B .Gupta, Machine Drawing ,7th ?Edition , 1997<br>• P .L .Sah, Fundamentals of Machine Drawing ,2th Edition ,2015. |
| | **Electronic Sources** (Links must be added) | -- |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | -- |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | -- |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Industrial safety | 2 | 3 | X | | | | X | |
| 2-3 | Introduction to engineering materials – Ferrous and non-ferrous | 4 | 6 | X | | X | | X | |

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| | metals – steel and cast-iron production furnaces | | | | | | | | |
| 4-5 | Simple measuring tools | 4 | 6 | X | | X | X | | |
| 6 | Introduction to technological processes | 2 | 3 | X | | X | | | X |
| 7 | Metal casting – metal forming – rolling – drawing – bending | 2 | 3 | X | | X | | X | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-10 | Welding – milling – | 4 | 6 | X | X | X | | X | X |
| 11-12 | Lathing – production quality | 4 | 6 | X | X | | | X | |
| 13 - 14 | Practices in different workshops | 4 | 6 | X | | X | | X | X |
| 15 | Drilling – grinding | 2 | 3 | X | | | | X | |
| 16 | Final Exam | | | | | | | | |

7.2. Practical contents:

| Week | Topics | Lab (Hrs) | LOs |
|---|---|---|---|
| 1-2 | **Workshop 1: Carpentry** | 6 | CLO3 |
| 3-4 | **Workshop 2: Blacksmithing and measuring instrumentation** | 6 | CLO3 |
| 5-6 | **Workshop 3: Workbench Processes** | 6 | CLO3 |
| 7 | **Workshop 4: Welding** | 3 | CLO2 |
| 8 | **Mid Term Exam** | | |
| 9 | **Workshop 4: Welding** | 3 | CLO2 |
| 10 | **Workshop 5: Lathing** | 3 | CLO5 |

| | | | |
|---|---|---|---|
| 11 | Workshop 6: Machine | 3 | CLO5 |
| 12 | Workshop 7: Electricity | 3 | CLO3 |
| 13 | Workshop 8: Models and Casting Processes | 3 | CLO4 |
| 14 | Practical Exam | – | |

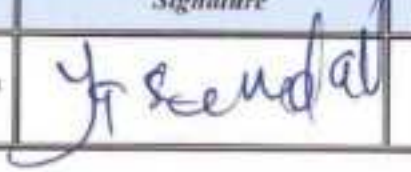
### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | | | |
| laboratory | | | | X | | |
| Group discussion | | | | X | | |
| Self-Learning | | | | | | |
| • Presentation | | | X | | X | |
| • Research and reporting | X | | | | X | |
| Brain storming | | | X | | | |

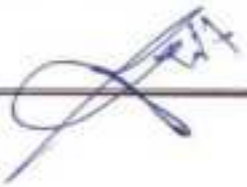
### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | X |
| Mid-term Exam | X | X | X | | X | |
| Lab Exam | | X | | X | X | |
| Quizzes | X | X | X | | | |
| Research assignments | | | X | | | X |

Course coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Ass. Prof. Yassen EL Sayed Yassen |  | 2025-2026 |

Program coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf |  | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Engineering and environment | | |
| Course Code (according to the bylaw) | BS027 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 0 | 2 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Preparatory year | | |
| Academic Program | All Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Prof. Dr. Attia Aref | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Engineering Statics: Vectors and spatial Forces - Torque - Couple moment - equilibrium of particle and rigid body - gravity center and geometric center - distributed forces - Applications on beams and hydrostatics - friction and its applications on bolts and beams.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4. | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO2 | Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. |
| | | CLO4 | Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. |
| | | CLO5 | Learn principles of environmental engineering applied to the design and implementation of water supply schemes. |
| | | CLO6 | Illustrate the impact of engineered systems on the environment and apply current Engineering technologies to protect the environment (water, air and soil). |
| A7. | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | CLO1 | Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. |
| | | CLO3 | Rephrase function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 2 | Introduction to environmental science: Why studying environmental science- Integration of environmental components (elements). | 6 | 4 | 0 | 2 | |
| 3 - 4 | Modern technology and its effect on the environment. | 6 | 4 | 0 | 2 | |
| 5 - 6 | Environment and industrial planning- for environment protection- pollution and methods of controlling it. | 6 | 4 | 0 | 2 | |
| 7 | Engineering Entrance: what is engineering- Brief of the Engineering history. | 3 | 2 | 0 | 1 | |
| 8 | Mid Term Exam | | | | | |
| 9-10 | Performance supports for the engineering history. | 6 | 4 | 0 | 2 | |
| 11 | Performance supports for the engineering work. | 3 | 2 | 0 | 1 | |
| 12 | Engineering work branches- International classification of the engineering jobs. | 3 | 2 | 0 | 1 | |
| 13 | Planning and its important to the engineering work. | 3 | 2 | 0 | 1 | |
| 14-15 | Increasing the ability of production and developing the productivity. | 6 | 4 | 0 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 1.5 | 3% |

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 2. | Mid-Term Examination | 8 | 6.75 | 13.5% |
| 3. | Final Examination | (As Schedule) | 35 | 70% |
| 4. | Lab Exam | (As Schedule) | 0 | 0% |
| 5. | Activities and assignments | Every week | 6.75 | 13.5% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | • Dr. B.C. Punmia ،Ashok Kr. Jain ،Arun Kr. Jain, Environmental Engineering 1: Water Supply Engineering: B. 2nd Edition, Laxmi Publications (P) Ltd.<br>• Jha, N. K. (2018). Environment, Sustainability, and Mechanical Engineering. EESD 2018, 126. |
| | **Other References** | G. S. Birdie and J. S. Birdie ,Water Supply and Sanitary Engineering, Dhanpat Rai Publishing Company, New Delhi. |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| **Supportive facilities & equipment for teaching and learning *** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 - 2 | Introduction to environmental science: Why studying environmental science- Integration of environmental components (elements). | 4 | - | X | | | | X | |
| 3 - 4 | Modern technology and its effect on the environment. | 4 | - | | X | | | | |
| 5 - 6 | Environment and industrial planning- for environment protection- pollution and methods of controlling it. | 4 | - | | | | X | | |
| 7 | Engineering Entrance: what is engineering- Brief of the Engineering history. | 2 | - | X | | | | | X |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9-10 | Performance supports for the engineering history. | 4 | - | X | X | | X | | |
| 11 | Performance supports for the engineering work. | 2 | - | X | X | X | | | |
| 12 | Engineering work branches- International classification of the engineering jobs. | 2 | - | | X | | | X | |
| 13 | Planning and its important to the engineering work. | 2 | - | | X | | | | X |
| 14-15 | Increasing the ability of production and developing the productivity. | 4 | - | | | X | | X | |
| 16 | **Final Exam** | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | | | |
| Group discussion | | | | X | | |
| Self-Learning | | | | | | |
| • Presentation | | | X | | X | |
| • Research and reporting | | X | | | X | X |
| Brain storming | X | X | | X | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | X |
| Mid-term Exam | X | X | X | | X | |
| Quizzes | X | X | X | | | |
| Research assignments | | X | | X | | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Attia Aref | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Ouf | | 2025-2026 |

## 1. Basic Information:

| | |
|---|---|
| Course Title (according to the bylaw) | **Practical Training (1)** |
| Course Code (according to the bylaw) | **TRN 011** |
| Department/s participating in offering the course | **Basic Science department** |

Course Marks

| Discussion | Report | Institution's Assessment | Total |
|---|---|---|---|
| 40% | 30% | 30% | Pass/Not Pass |

Hours/ Weeks

| 48 total hours/4 weeks | | |
|---|---|---|
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Preparatory Year | |
| Academic Program | All Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Institute's staff | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Students complete this training after completing the preparatory year, during the summer period for four weeks at the institute, four days per week. This training covers relevant subjects, depending on the nature of the program (engineering drawing training, workshop training, laboratory training, and ICDL training courses (Word, PowerPoint, Excel).

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A2. | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO2 | Assess the quality, accuracy, and effectiveness of work completed during practical training. |
| | | CLO3 | Use Microsoft Word, PowerPoint, and Excel to enhance students' academic and professional communication skills. |
| | | CLO4 | Introduce students to scientific methods, data collection, and analysis, preparing them for advanced laboratory work in engineering disciplines. |
| A3. | Utilize engineering design methodologies to create cost-efficient solutions that fulfil defined requirements while accounting for global, cultural, social, economic, environmental, ethical, and relevant factors within the framework of sustainable design and development principles. | CLO1 | Recall fundamental concepts and tools used in engineering drawing, workshop tasks, laboratory experiments, professional-quality documents, and presentations. |
| A8. | Communicate effectively using written, oral, graphical, and presentational skills. | CLO5 | Apply foundational engineering principles, collaborate in teams, and communicate effectively across various mediums |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)

☐ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Engineering drawing Training | 12 | - | - | 3 | |
| 2 | Workshop Training | 12 | - | - | 2 | |
| 3 | laboratory Training | 12 | - | - | 2 | |
| 4 | ICDL Training courses (Word, PowerPoint, Excel) | 12 | - | - | 2 | |
| Total | 48 total hours | | | | | |

### 5. Methods of students' assessment

| No. | Assessment Methods | Weeks | Percentage of Total Course Marks |
|---|---|---|---|
| 1. | Report | -- | 30% |
| 2. | Mini-Project Assignment | -- | - |
| 3. | Discussion | -- | 40% |
| 4. | Institution's Assessment | -- | 30% |
| Total | | 100% | |

### 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) * | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | El-Sayed, A. M., Hassan, H. K., Abdel Rahman, M. T., Mohammed, S. R., & Lotfy, K. W. (2023). Practical training manual for first-year engineering students (5th ed.). Cairo University Pres |
| | Other References | Cairo University, Faculty of Engineering. (2023). *Practical training manual for first-year* |

| | | |
|---|---|---|
| | | *engineering students* (5th ed.). Cairo University Press. |
| | **Electronic Sources** (Links must be added) | https://www.gcflearnfree.org/microsoft-word-basics/ https://www2.mae.ufl.edu/directory/pdf/Engineering_Dr |
| | **Learning Platforms** (Links must be added) | |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Hrs | Course Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|---|---|
| | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1 | Engineering drawing Training | 12 | X | X | | | |
| 2 | Workshop Training | 12 | | X | | | X |
| 3 | laboratory Training | 12 | | | | X | |
| 4 | ICDL Training courses (Word, PowerPoint, Excel) | 12 | | | X | | X |
| Total | 48 total hours | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Face-to-face lecture | X | X | X | X | X |
| Exercise | | | | X | X |

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Group discussion | X | | X | X | |
| Laboratory | X | | | X | |
| Self-Learning | | | | | |
| Presentation | | X | X | | |
| Research and reporting | | X | | X | |
| Brain storming | X | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Oral Discussion | X | X | | X | X |
| Research assignments | | | X | X | |
| In-class Question | X | | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Institute's staff | | 2025-2026 |

Head of Department:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Ali Samir | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Mathematics, Statistics and Programming | | |
| Course Code (according to the bylaw) | BS 111 | | |
| Department/s participating in offering the course | Basic Science Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | First year | | |
| Academic Program | Architecture Engineering Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Prof. Dr. Osama Mohareb | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Partial differential - maximum values of multivariable functions - quadratic integrals - applications - ordinary quadratic and first order differential equations - engineering applications - elementary theory of numerical analysis - approximation - finding equation roots - systems of linear equations - principles of statistics.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Understand multi variables functions and its applications and statistics. |
| | | CLO2 | Develop the ability to solve Mathematical applications. |
| | | CLO6 | Demonstrate willingness to help and assist other colleagues. |
| A3. | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO3 | Understand and study differential equations. |
| | | CLO4 | Understand Theory of numerical analysis. |
| A6. | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | CLO5 | Show ability to collaborate and communicate with others positively and effectively |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☐ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 2 | Multi Variables Functions- maximum values of multivariable functions | 10 | 4 | 4 | 2 | |
| 3 - 4 | Partial Derivatives and Applications. | 10 | 4 | 4 | 2 | |
| 5 - 6 | Multiple Integrals. | 10 | 4 | 4 | 2 | |
| 7 | Differential equations | 5 | 2 | 2 | 1 | |
| 8 | **Mid Term Exam** | | | | | |
| 9-10 | Ordinary quadratic and first order differential equations- engineering applications | 10 | 4 | 4 | 2 | |
| 11 | Numerical Analysis | 5 | 2 | 2 | 1 | |
| 12 | Approximation | 5 | 2 | 2 | 1 | |
| 13 | finding equation roots - systems of linear equations | 5 | 2 | 2 | 1 | |
| 14-15 | Statistics | 10 | 4 | 4 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 3 | 3% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | - | - | -% |
| 5. | Activities and assignments | Every week | 13.5 | 13.5% |
| 6. | Final Oral Exam (if exists) | .. | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references,** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | W. Briggs, L. Cochran, B. Gillett, "Calculus", Pearson Inc, 2011. |
| | **Other References** | Lecture Notes |

| | | |
|---|---|---|
| etc.) * | **Electronic Sources** (Links must be added) | -- |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | -- |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader Wolfram Mathematica; Modern Technical Computing |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L. | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 - 2 | Multi Variables Functions- maximum values of multivariable functions | 4 | 4 | X | | | | | |
| 3 - 4 | Partial Derivatives and Applications. | 4 | 4 | X | | | | | |
| 5 - 6 | Multiple Integrals. | 4 | 4 | X | | | | | |
| 7 | Differential equations | 2 | 2 | | | X | | | X |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9-10 | Ordinary quadratic and first order differential equations- engineering applications | 4 | 4 | | | X | | | |
| 11 | Numerical Analysis | 2 | 2 | X | | | X | | |
| 12 | Approximation | 2 | 2 | | X | | X | | X |
| 13 | finding equation roots - systems of linear equations | 2 | 2 | X | | | | X | X |
| 14-15 | Statistics | 4 | 4 | X | | | | | |
| 16 | **Final Exam** | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | | X | X | X |
| Group discussion | | | X | | | X |
| Self-Learning | | | | | | |
| Presentation | | | | X | | |
| Brain storming | | | X | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | | |
| Mid-term Exam | X | X | X | X | | |
| Quizzes | X | X | X | | | |
| Research assignments | | | | | X | X |
| In-class questions (formative assessment) | | | | | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Osama Mohareb | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Architectural Design (1) | | |
| Course Code (according to the bylaw) | ARE 111 | | |
| Department/s participating in offering the course | Architecture Engineering Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 4 | 6 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | First Year | | |
| Academic Program | Architectural Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Introduction to architectural design - training the student to study and solve simple design problems - developing skills and abilities to multiple types and techniques of presentation for architectural design projects.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning. | CLo3 | Discuss and explain the philosophical role of various data in the compatibility of the basics of architectural drawing with the era and the main architectural elements. |
| | | CLo4 | Explain the aesthetics of architectural drawing. |
| | | CLo7 | Analyze different ideas, views, and knowledge from a range of sources to select the suitable design elements for projects. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. | CLo1 | Recognize the concept of architectural drawing, its elements, and components of architectural drawing paintings. |
| | | CLo2 | Identify the technical terminology of architectural drawing and their technical implications. |
| B3 | Generate ecologically responsible environmental conservation and rehabilitation designs through understanding structural design, construction, technology and engineering problems associated with building designs. | CLo5 | Discuss and explain the technical foundations of architectural drawing and the intention that contributes to highlighting the artistic values of the elements and components. |
| | | CLo6 | Use artistic and technical methods in the language of architectural drawing in paintings. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | **Training** (Practical/Clinical/ ....) | **Self-learning (Tasks/ Assignments/ Projects/ ...)** | Other (to be determined) |
| 1 | Introduction to architecture (introduction and groups' formulation). | **8** | **2** | **4** | **2** | |
| 2 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Project research studies and program analysis &Review examples of the previously mentioned project). | **8** | **2** | **4** | **2** | |
| 3-4 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Sketch design for the project's concept and layout) | **16** | **4** | **8** | **4** | |
| **5** | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Draft design for the project's plans). | **10** | **2** | **4** | **4** | |
| **6-7** | Training the student to study and solve simple design problems (Review the sketches of the students to determine if they understand the principles of architectural design). | **18** | **4** | **8** | **6** | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ ....) | **Training** (Practical/Clinical/ ....) | **Self-learning (Tasks/ Assignments/ Projects/ ...)** | Other (to be determined) |
| 8 | Mid Term Exam | | | | | |
| 9 | Design problems (Review the sketches of the students to determine if they understand the principles of architectural design). | 10 | 2 | 4 | 4 | |
| 10 | Training the student to study and solve simple design problems (Identify details for design project and presentation +Formulate own idea of the project). | 10 | 2 | 4 | 4 | |
| 11 | Sketch design for the project's sections and elevations+ Illustrate more detailed sketches for project. | 10 | 2 | 4 | 4 | |
| 12-13 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Review final project drawings and presentation of the project). | 20 | 4 | 8 | 8 | |
| 14 | Training the student to study and solve simple design problems (Discuss problems facing the students and implement the previous commands in the project). | 10 | 2 | 4 | 4 | |
| 15 | Developing skills and abilities to multiple types and techniques of | 10 | 2 | 4 | 4 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | presentation for architectural design projects. (Final submission of the project). | | | | | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 13.5 | 7.7 % |
| 2. | Mid-Term Examination | 8 | 27 | 15.4 % |
| 3. | Final Examination | (As Schedule) | 60 | 34.3% |
| 4. | Lab Exam | - | - | - |
| 5. | Activities and assignments | Every week | 49.5 | 28.3% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 25 | 14.3% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Ching, Francis D.K.** *A Visual Guide*. **1st edition, Wiley, 2017.** |
| | **Other References** | **1. Ching, Francis D.K.** *Form, Space, and Order*. **4th edition, Wiley, 2021.**<br>**2. Bergman, David.** *A Critical Guide*. **1st edition, Princeton Architectural Press, 2019.**<br>**3. Douglas, R. S.** *Design Drawing*. **3rd edition, Wiley, 2020.** |
| | **Electronic Sources** (Links must be added) | *Arch Daily* (https://www.archdaily.com)<br>*Coursera – Fundamentals of Architecture Design* (https://www.coursera.org |

| | | |
|---|---|---|
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | رافت، علي ثلاثية الإبداع المعماري: الإبداع المادي في العمارة - البيئة والفراغ ،الطبعة الأولى، الأهرام، بدون تاريخ نشر محدد. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1 | Introduction to architecture (introduction and groups' formulation). | 2 | 4 | x | | | | | | |
| 2 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Project research studies and program analysis &Review examples of the previously mentioned project). | 2 | 4 | | x | x | | | | |
| 3- 4 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Sketch design for the project's concept and layout) | 4 | 8 | | x | | X | | | |
| 5 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Draft design for the project's plans). | 2 | 4 | | x | | X | x | | |
| 6-7 | Training the students to study and solve simple design problems (Review the sketches of the students to determine if they understand the principles of architectural design). | 4 | 8 | x | | | | | | x |
| 8 | Mid-Term Exam | | | | | | | | | |
| 9 | Design problems (Review the sketches of the students to determine if they are understanding the principles of architectural design). | 2 | 4 | | | | | | | |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 10 | Training the student to study and solve simple design problems (Identify details for design project and presentation+ Formulate own idea of the project). | 2 | 4 | x | | x | | | | |
| 11 | Sketch design for the project's sections and elevations+ Illustrate more detailed sketches for project. | 2 | 4 | | x | | X | x | | |
| 12-13 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Review final project drawings and presentation of the project). | 4 | 8 | x | | | | | x | x |
| 14 | Training the student to study and solve simple design problems (Discuss problems facing the students and implement the previous commands in the project). | 2 | 4 | x | x | | | | | |
| 15 | Developing skills and abilities to multiple types and techniques of presentation for architectural design projects. (Final submission of the project). | 2 | 4 | | | | X | x | x | |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | x | x | x | x | x | x | |
| Tutorial / Exercise | x | | x | x | x | x | |
| Group discussion | x | | x | | | | |
| Site visit | | | | x | | | |
| self-learning | | | | | | | |
| • Presentation | | x | x | x | x | | |
| • Mini project | | x | | | x | x | |
| • Research and reporting | x | | x | | | | x |
| Brainstorming | x | | x | | | x | x |
| Case study | x | | x | | x | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | | x | x | | x | x | |
| Mid-term Exam | | | x | | x | x | |
| Quizzes | | x | | x | x | x | |
| Research assignments | x | | x | | | | x |
| In-class questions (formative assessment) | x | x | | x | | | |
| Oral Exam | x | | x | | | | x |
| Project assignments | | x | x | x | x | | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Building construction (1) | | |
| Course Code (according to the bylaw) | ARE 112 | | |
| Department/s participating in offering the course | Architecture Engineering Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 4 | 6 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | First Year | | |
| Academic Program | Architectural Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr. Huda El Baz | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Traditional construction - masonry - raw bricks & brick masonry - construction buildings - types & techniques: the wall bearing type - construction of roofs, Floors, and ceilings - building insulation against dampness, rain drainage - construction building types & techniques: the skeleton type and its construction components -mortars and finishing materials - applications and working drawings of simplified buildings - introduction to technical sanitary installations.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A4** | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO2 | Choose the materials properties and their appropriate. usage in the project's drawings. |
| | | CLO3 | Analyze the principles of construction and installation as related to construction materials. |
| | | CLO4 | Illustrate the architectural and working drawings; plans, sections, and elevations |
| **B3** | Generate Ecologically responsible environmental conservation and rehabilitation designs through understanding structural design, construction, Technology and engineering problems associated with building designs. | CLO1 | Identify construction types and installations and analyze architectural drawings' details. |
| | | CLO5 | Estimate a new perspective for building materials and structure systems. |
| **B4** | Transform design concepts into buildings and integrate plans into overall planning within the constraints of project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO6 | choose proper structural system. |
| | | CLO7 | Identify Construction System & Foundation types. Usage in the project's drawings. |
| | | CLO8 | Identify Building insulation against dampness, rain drainage. |
| | | CLO9 | Appraise Materials applications & Internal &external finishing and Identify Mortars and finishing materials. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Traditional construction & Course definition (Drawing tools & sketching.) (Introduction: Sequence of construction work & Symbols) | 8 | 2 | 4 | 2 | |
| 2 | Masonry - raw bricks & brick masonry (Foundations & plans) | 8 | 2 | 4 | 2 | |
| 3-4 | Construction buildings - types & techniques: the wall bearing type (Elevations) | 16 | 4 | 8 | 4 | |
| 5-6-7 | Construction of roofs, Floors, and ceilings (Structure Systems (Building Moisture insulation works) | 24 | 6 | 12 | 6 | |
| 8 | Mid Term Exam | | | | | |
| 9 | Building insulation against dampness, rain drainage. (Stairs & Section) | 10 | 2 | 4 | 4 | |
| 10 | Construction building types & techniques: the skeleton type and its construction components. (stone wall and break types) | 10 | 2 | 4 | 4 | |
| 11 | Mortars and finishing materials (Building Thermal insulation works) + Quiz2+ (project) | 10 | 2 | 4 | 4 | |
| 12-13 | Applications and working drawings of simplified buildings. (Finishing work part 1) | 20 | 4 | 8 | 8 | |
| 14 | Introduction to technical sanitary installations. . (Finishing work part 2) | 10 | 2 | 4 | 4 | |
| 15 | Final submission of the project and Revision | 10 | 2 | 4 | 4 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 11 | 6.3% |
| 2. | Mid-Term Examination | 8 | 23 | 13.1 % |
| 3. | Final Examination | (As Schedule) | 100 | 57.2% |
| 4. | Lab Exam | -- | -- | - |
| 5. | Activities and assignments | Every week | 41 | 23.4 % |
| 6. | Final Oral Exam (if exists) | - | -- | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Ching, Francis D.K.** ***Building Construction Illustrated.*** **5th edition, Wiley, 2014.** |
| | **Other References** | **Allen, Edward, and Iano, Joseph.** ***Materials and Methods of Construction.*** **6th edition, Wiley, 2019.** |
| | **Electronic Sources** (Links must be added) | ***The Constructor*** **–** *https://theconstructor.org* ***Coursera – Construction Project Management*** *(https://www.coursera.org)* |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | هندسة التشييد (الجزء الثاني تشطيبات المباني - الجزء الثالث مرافق المياه والصرف الصحي)، محمود حسين المصيلحي، 2018. |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 | CLO9 |
| 1 | Traditional construction & Course definition (Drawing tools & sketching.) **(Introduction: Sequence of construction work & Symbols)** | 2 | 4 | X | X | | | | | | | |
| 2 | Masonry - raw bricks & brick masonry (**Foundations & plans)** | 2 | 4 | X | | | | | X | X | | |
| 3<br>4 | Construction buildings - types & techniques: the wall bearing type **(Elevations)** + Quiz1 | 4 | 8 | | X | | X | X | | | | X |
| 5<br>6<br>7 | Construction of roofs, Floors, and ceilings **(Structure Systems (Building Moisture insulation works)** | 4 | 8 | | | X | X | | | | X | |
| 8 | **Mid-term exam** | | | | | | | | | | | |
| 9 | Building insulation against dampness, rain drainage. (Stairs **& Section)** | 2 | 4 | X | | X | X | | | | | X |
| 10 | Construction building types & techniques: the skeleton type and its construction components. (stone **wall and break types)** | 2 | 4 | | X | X | X | X | | | | X |
| 11 | Mortars and finishing materials **(Building Thermal insulation works)** + Quiz2+ **(project)** | 2 | 4 | X | X | | | X | | | | X |
| 12-13 | Applications and working drawings of simplified buildings. (Finishing **work part 1)** | 4 | 8 | | X | X | X | X | X | | | X |
| 14 | Introduction to technical sanitary installations. (Finishing **work part 2)** | 2 | 4 | | X | X | | | X | | X | |
| 15 | Final submission of the project and Revision | 2 | 4 | X | X | X | X | X | X | X | X | X |
| 16 | **Final Exam** | | | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 | CLO9 |
| Face to face lecture | X | X | X | X | X | X | X | X | |
| Online- education | | | | | | | | | |
| Tutorial / Exercise | | X | X | X | X | X | X | X | |
| Group discussion | X | | X | | | X | | | X |
| Site visit | X | | | | X | X | X | | |
| Self-Learning | | | | | | | | | |
| • Presentation | X | X | X | X | X | X | X | X | X |
| • Mini project | X | X | | | X | | | | X |
| • Research and reporting | | | | X | | | | | X |
| Brainstorming | | X | | X | X | | | X | X |
| Case study | | | | | X | X | X | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 | CLO9 |
| Final written exam | | X | X | X | X | X | X | X | X |
| Oral exam | | | | | | | | | |
| Mid-term Exam | X | X | X | X | | | | | |
| Quizzes | | | X | X | | | X | X | |
| Research assignments | | | | X | | | X | | |
| In-class questions (formative assessment) | X | X | X | | X | | X | X | X |
| Project assignments | | X | | | X | | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Huda El Baz | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | History & Theories of Architecture (1) | | |
| Course Code (according to the bylaw) | ARE 113 | | |
| Department's participating in offering the course | Architecture Engineering Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 3 | - | 3 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | First Year | | |
| Academic Program | Architectural Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr. Marwa El Adham | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

**A.** History of architecture; prehistoric architecture - Ancient Egyptian architecture -Ancient Egyptian cities - Castles and forts - Houses - Temples (for life & funeral ceremonies) - Tombs – Mesopotamian architecture - Greek architecture- Roman - architecture.

**B.** Theories of architecture: study of the concepts of architecture and its theory-Building types - Design constraints of private and public building elements -Human dimensions and used spaces and zones - vertical and horizontal circulation elements in buildings - criteria' and principles of planning and designing parking lots.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO4 | Apply new knowledge by selecting lessons and basis of architectural work from the different theories through different ancient ages and applying them in architectural work. |
| A8 | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLO6 | Identify lessons and the basis of architectural work from the different theories through different ancient ages and apply them in architectural work. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO1 | Identify from the development in architectural theories across ancient civilizations. |
| | | CLO5 | Use adequate knowledge of the ancient age's architecture according to success in respecting economic, societal, environmental dimensions and risk management in design. |
| B3 | Generate ecologically responsible environmental conservation and rehabilitation designs through understanding structural design, construction, technology and engineering problems associated with building designs. | CLO2 | Practice research on different architectural theories through different ancient ages. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | History of architecture; prehistoric architecture. | 4 | 3 | - | 1 | |
| 2 | Ancient Egyptian architecture - Ancient Egyptian cities. | 4 | 3 | - | 1 | |
| 3 | Castles and forts - Houses - Temples (for life & funeral ceremonies) - Tombs | 4 | 3 | - | 1 | |
| 4 | Mesopotamian architecture | 4 | 3 | - | 1 | |
| 5 | Greek architecture | 4 | 3 | - | 1 | |
| 6-7 | Roman architecture. | 8 | 6 | - | 2 | |
| 8 | Mid Term Exam | | | | | |
| 9 | Theories of architecture: study of the concepts of architecture and its theory. | 4 | 3 | - | 1 | |
| 10 | Building types. | 4 | 3 | - | 1 | |
| 11 | Design constraints of private and public building elements. | 4 | 3 | - | 1 | |
| 12 | Vertical and horizontal circulation elements in buildings | 4 | 3 | - | 1 | |
| 14 | Criteria and principles of planning and designing parking lots. | 4 | 3 | - | 1 | |
| 15 | General revision and discussion of student questions. | 4 | 3 | - | 1 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 6 | 6 % |
| 2. | Mid-Term Examination | 8 | 12 | 12% |
| 3. | Final Examination | (As Schedule) | 60 | 60 % |
| 4. | Lab Exam | -- | .. | - |
| 5. | Activities and assignments | Every week | 22 | 22 % |
| 6. | Final Oral Exam (if exists) | - | .. | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | Neufert, E. (1992). Architects' Data: Handbook of Building Types. |
| | Other References | 1. A History of Architecture on the Comparative Method by Sir Banister Fletcher (1996)<br>2. The Architecture of the City by Aldo Rossi (1982)<br>3. *The Evolution of Architecture* by Pierre du Biez (1988)<br>4. *Towards a New Architecture* by Le Corbusier (1923) |
| | Electronic Sources (Links must be added) | 5. *The Architecture Foundation* – https://www.architecturefoundation.org.uk<br>6. *Coursera – History of Architecture* (https://www.coursera.org) |
| | Learning Platforms (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | Other (to be mentioned) | عبد الجواد، توفيق - تاريخ العمارة والفنون في العصور الاولى - مكتبة الانجلو - 1971<br>*Theories and Manifestos of Contemporary Architecture* by Charles Jencks (2000) |
| **Supportive facilities & equipment for teaching and learning** | Devices/Instruments | Projectors, audio-visual systems, and Computers with internet access. |
| | Supplies | Whiteboards. |
| | Electronic Programs | Microsoft Office program, Acrobat Reader |
| | Skill Labs/ Simulators | -- |
| | Virtual Labs | -- |
| | Other (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | History of architecture; prehistoric architecture. | 3 | - | X | X | X | | | |
| 2 | Ancient Egyptian architecture -Ancient Egyptian cities. | 3 | - | | | | | X | |
| 3 | Castles and forts - Houses - Temples (for life & funeral ceremonies) – Tombs | 3 | - | | | | | X | |
| 4 | Mesopotamian architecture | 3 | | | X | | | | |
| 5 | Greek architecture | 3 | - | | | | X | X | X |
| 6 | Roman architecture. | 3 | - | | X | X | | | |
| 7 | Mid-term exam | | | | | | | | |
| 8 | Theories of architecture: study of the concepts of architecture and its theory. | 3 | | | X | | | | |
| 9 | Building types. | 3 | - | | | | X | X | X |
| 10 | Design constraints of private and public building elements. | 3 | - | | | | X | X | X |
| 11 | Human dimensions and used spaces and zones. | 3 | | | | | X | | |
| 12 | Vertical and horizontal circulation elements in buildings | 3 | - | | X | X | | | |
| 13 | Criteria and principles of planning and designing parking lots. | 3 | - | | X | | X | | |
| 14 | General revision and discussion of student questions. | 3 | - | | X | | X | | |
| 15 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Group discussion | | X | X | | | |
| Site visit | | | | | X | X |
| Self-Learning | | | | | | |
| • Presentation | | X | X | X | | |
| • Mini project | | X | X | X | | X |
| • Research and reporting | | X | X | X | | |
| Brainstorming | | X | | X | X | X |
| Case study | X | X | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | | | X | X | X |
| Mid-term Exam | | | | X | X | X |
| Quizzes | | | | X | X | X |
| Research assignments | X | X | X | X | | |
| In-class questions (formative assessment) | | | X | X | | |
| Project assignments | | | X | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa El Adham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | | Theory of structure | |
| Course Code (according to the bylaw) | | CIVA111 | |
| Department's participating in offering the course | | Civil Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | | First year | |
| Academic Program | | Architectural Engineering Program | |
| Faculty/Institute | | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | | Manzalla Academy | |
| Name of Course Coordinator | | Prof. Dr.Basem esami Rageh | |
| Course Specification Approval Date | | 16 August 2025 | |
| Course Specification Approval | | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Basic concepts and analysis of structure - equilibrium - stability and compatibility – external and internal equilibrium of statically determined plane structures, beams, frames, and trusses - normal sheer - torsion and combined stress - elasticlations - introduction to the analysis of statically indeterminate structures through Consistent deformations and moment distributions - buckling of columns -introduction structures

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3. | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | identify formulate, and solve general engineering problems |
| | | CLO3 | Calculate different types of structure and finding the support reactions. |
| A5. | Practice research techniques and methods of investigation as an inherent part of learning. | CLO2 | use the techniques, skills, and modern engineering tools necessary for engineering practice |
| | | CLO5 | teach the space structures and space frames |
| B1. | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences | CLO4 | solve different types of internal loadings in different types of structures including shear normal and moment values in terms of values and function |
| | | CLO6 | Discuss buckling of columns |

### 4. Teaching and Learning Methods

☒ Face to face lecture

☐ Online education

☒Tutorial / Exercise

☒Group discussion

☐ Laboratory

☒ Site visit

☒Self-learning

☒ Presentation

☐Mini project

☐ Research and reporting (self-learning)

☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Week ly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Basic concepts and analysis of structure | 6 | 2 | 2 | 2 | |
| 2-3 | equilibrium | 12 | 4 | 4 | 4 | |
| 4-5 | stability and compatibility | 12 | 4 | 4 | 4 | |
| 6-7 | external and internal equilibrium of statically determined plane structures, beams, and frames, | 12 | 4 | 4 | 4 | |
| 8 | **Mid – Term Exam** | | | | | |
| 9-10 | normal shear and torsion and combined stress | 12 | 4 | 4 | 4 | |
| 11-12 | introduction to the analysis of statically indeterminate structures through Consistent deformations and moment distributions | 12 | 4 | 4 | 4 | |
| 13 | Buckling of columns | 6 | 2 | 2 | 2 | |
| 14 | Introduction structures | 6 | 2 | 2 | 2 | |
| 15 | revision | 6 | 2 | 2 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | 16(As Schedule) | 70 | 70% |
| 4. | Lab Exam | - | - | - |
| 5. | Activities | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Timoshenko, S. (1983). History of strength of materials: with a brief account of the history of theory of elasticity and theory of structures. Courier Corporation |
| | **Other References** | Lecture Notes |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Khachaturyan, A. G. (2013). Theory of structural transformations in solids. Courier Corporation. |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader,Autocad |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Basic concepts and analysis of structure | 2 | 2 | X | | | | | |
| 2-3 | equilibrium | 4 | 4 | X | | x | | | |
| 4-5 | stability and compatibility | 4 | 4 | | x | | x | | |
| 6-7 | external and internal equilibrium of statically determined plane structures, beams, and frames. | 4 | 4 | | x | | x | x | |
| | | | | X | | | | | x |
| 8 | Mid Term Exam | | | | | | | | |
| 9-10 | normal shear and torsion and combined stress | 4 | 4 | | | x | x | | |
| 11-12 | introduction to the analysis of statically indeterminate structures through Consistent deformations and moment distributions | 4 | 2 | | x | | x | x | |
| 13 | Buckling of columns | 2 | 2 | X | | | | | x |
| 14 | Introduction structures | 2 | 2 | X | x | | | | |
| 15 | revision | 2 | 2 | | | | x | x | x |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | X | | | x | x |
| Tutorial / Exercise | x | | x | x | x | |
| Group discussion | x | X | | x | | |
| Site visit | | X | | | | |
| Self-Learning | | | | | | |
| • Presentation | x | | x | | x | |
| Brain storming | | | | x | | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | | x | x | x | |
| Mid-term Exam | | | x | | | |
| Quizzes | x | X | x | x | | x |
| Lab Exam | x | X | x | | | |
| In-class questions (formative assessment) | x | X | | | | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr.Basem osami | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | | Surveying | |
| Course Code (according to the bylaw) | | CIVA 112 | |
| Department/s participating in offering the course | | Civil Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 3 | 5 | |
| Course Type | | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | | first year | |
| Academic Program | | Architectural Engineering Department | |
| Faculty/Institute | | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | | Manzalla Academy | |
| Name of Course Coordinator | | Dr. Kareem Mohamed Fouad | |
| Course Specification Approval Date | | 16 August 2025 | |
| Course Specification Approval | | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

The course aims to introduce the basic elements of engineering surveying and its architectural applications:

**A.** Surveying and measuring operations: plotting scales, venires, linear and simple angular measurement devices,

**B.** Chain surveying: leveling and theodolites - map drawing – photogrammetry and its architectural applications.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1 | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Distinguish and understand different types of survey. |
| | | CLO2 | Discuss plane surveying instruments such as tapes, EDM, levels, theodolite, and compass. |
| | | CLO3 | Construct different types of map scale. |
| A2 | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO6 | Act professionally in design and supervision of civil engineering. |
| A6 | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | CLO5 | Discuss Leveling: definitions, differential leveling and field methods, leveling errors, Laser leveling. |
| A7 | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams | CLO4 | Practice experimentally in the Field and use different equipment in measuring plane surveying. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☐ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Introduction to Plane Surveying, Methods of measurements and setting-up. | 6 | 2 | 3 | 1 | |
| 2 | Shape of earth, surveying branches. | 6 | 2 | 3 | 1 | |
| 3 | Instruments and methods of linear measurements, Simple surveying techniques, Chain surveying. | 6 | 2 | 3 | 1 | |
| 4 | Surveying using compass, Common parts of surveying instruments. | 6 | 2 | 3 | 1 | |
| 5 | Plane table, Verniers, Maps and its arrangements. | 6 | 2 | 3 | 1 | |
| 6-7 | Leveling and contour lines | 12 | 4 | 6 | 2 | |
| 8 | **Midterm Exam** | | | | | |
| 8-9 | Areas and volumes, Land leveling. | 12 | 4 | 6 | 2 | |
| 10 | Surveying using theodolites. | 6 | 2 | 3 | 1 | |
| 11-12 | Introduction to the theory of errors. | 12 | 4 | 6 | 2 | |
| 13-15 | Map drawing photo grammar and its Architectural Application. | 18 | 6 | 9 | 3 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 3 | 3% |
| 2. | Mid-Term Examination | 8 | 9 | 9% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | 10 | 10% |
| 5. | Activities and assignments | Every week | 8 | 8% |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Krishna, R. A., & Ashok, S. (2020, June). Automated land area estimation for surveying applications. In 2020 International Conference for Emerging Technology (INCET) (pp. 1-5). IEEE. |
| | **Other References** | Lecture Note. |
| | **Electronic Sources** (Links must be added) | **https://dailycivil.com/plane-surveying-details/** |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Walker, J., & Witschel. (2020). Surveying for civil and mine engineers. Springer International Publishing. |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

**Lecture contents:**

| Week | Topics | Course Learning outcomes "CLOs" | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Lec | T/L | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Introduction to Plane Surveying, Methods of measurements and setting-up. | 2 | 3 | X | | | | | |
| 2 | Shape of earth, surveying branches. | 2 | 3 | X | X | | | | |
| 3 | Instruments and methods of linear measurements, Simple surveying techniques, Chain surveying. | 2 | 3 | | X | X | | | |
| 4 | Surveying using compass, Common parts of surveying instruments. | 2 | 3 | X | | X | X | | |
| 5 | Plane table, Verniers, Maps and its arrangements. | 2 | 3 | X | | | X | | |
| 6-7 | Leveling and contour lines | 4 | 6 | | | | X | | |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9 | Areas and volumes, Land leveling. | 4 | 6 | X | X | | X | X | |
| 10 | Surveying using theodolites. | 2 | 3 | X | X | X | | | |
| 11-12 | Introduction to the theory of errors. | 4 | 6 | | X | | | X | |
| 13-15 | Map drawing photo Grammer and its Architectural Application. | 6 | 9 | | X | | | X | X |
| 16 | **Final Exam** | | | | | | | | |

### 5.2 Practical Contents:

| Week | Topics | Lab Hrs. | CLOs |
|---|---|---|---|
| 1 | Introduction and definition of tools and devices in the laboratory and their uses. | 2 | CLO4 |
| 3 | Practical Exercise (1): Lines, Height and Column Projection Using a measuring tape to determine lengths | 2 | CLO4 |
| 5 | Practical Exercise (2):<br>A) Lifting using longitudinal measuring tools<br>B) Creating a cadastral map of an area based on the infill details of the survey polygon. | 2 | CLO4 |
| 9 | Practical Exercise (3):<br>A) Temporary Adjustment of the Level<br>B) Permanent Adjustment of the Level | 2 | CLO4 |
| 10 | Continue practical exercise (3):<br>C)Calculating Point Elevations (Leveling)<br>D)Longitudinal and Transverse Leveling<br>E) Conducting a leveling network and creating a contour map | 2 | CLO4 |
| 12 | Practical Exercise 4<br>A) Measuring traverse angles with a theodolite<br>B) Measuring traverse lengths with a theodolite or a level (tachymetry method) | 2 | CLO4 |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | X | X | X |
| Group discussion | | | | X | | X |
| Laboratory | | | X | X | X | |
| Site visit | | X | X | X | X | X |
| Self-Learning | | | | | | |
| • Presentation | | | X | | | |
| • Research and reporting | | | X | X | | X |

### 7.3. Student assessment matrix with CLOs:

**Student assessment methods: -**

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | X |
| Oral exam | | | | | | X |
| Mid-term Exam | X | X | X | | | |
| Quizzes | | | X | | X | |
| Lab Exam | | | X | X | X | |
| In-class questions (formative assessment) | | | X | | X | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Kareem Mohamed Fouad | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Architectural design (2) | |
| Course Code (according to the bylaw) | ARE 121 | |
| Department/s participating in offering the course | Architectural Engineering Program | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 4 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | First Year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Simplified projects dealing with aesthetic, cultural, environment, functional, and structural constraints of architectural form and space - principles of using and designing building interiors and external spaces, services, vertical/horizontal circulation, with reference to human needs and interactions with surrounding built and natural environments - applications with architectural models and studying types and techniques of presentation in architectural design and projects.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLo1 | Illustrate simplified examples of projects dealing with aesthetic, cultural, environmental, functional, and structural constraints of architectural form. |
| | | CLo2 | Analyze problems, formulate solutions and architectural articulation. |
| | | Clo3 | Evaluate different alternative solutions to design issues. |
| A7 | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | CLo4 | Apply sustainable concepts to solve design problems. |
| | | CLo5 | Describe the cultural, social, economic, environmental, ethical, and other aspects of sustainable design and development. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLo7 | Create an integrated proposal that keep social, cultural, economic, and identity |
| | | CLo8 | Apply the various types and techniques of presentation in architectural design and projects. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs through understanding of the structure of architectural design, construction, technology and engineering problems associated with building designs. | CLo6 | Design building interiors and external spaces, services, and Principles of using vertical horizontal circulation. |

## 4. Teaching and Learning Methods

☒ Face to face lecture
☐ Online education
☒ Tutorial / Exercise
☒ Group discussion
☐ Laboratory
☒Case study
☒ Site visit
☒ Self-learning
☒ Presentation
☒ Mini project
☒ Research and reporting (self-learning)
☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-3 | Simplified projects dealing with aesthetic, cultural, environment, functional, and structural constraints of architectural form and space & (Project introduction and groups' formulation. Objectives of Project design). | 24 | 6 | 12 | 6 | |
| 4-5 | Principles of using and designing building interiors and external spaces, services (Defining Phases of architectural design process. | 16 | 4 | 8 | 4 | |
| 6-7 | principles of using and designing building interiors and external spaces, services (Site Analysis, Concept and Space syntax) | 16 | 4 | 8 | 4 | |
| 8 | **Mid Term Exam** | | | | | |
| 9 | Principles of using vertical/horizontal circulation, with reference to human needs and interactions with surrounding built and natural environments | 8 | 2 | 4 | 2 | |
| 10-11 | principles of using vertical/horizontal circulation, with reference to human needs and interactions | 16 | 4 | 8 | 4 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | with surrounding built and natural environments (Structure Systems for Residential buildings) | | | | | |
| 12 | applications with architectural models and studying types and techniques of presentation in architectural design and projects | 8 | 2 | 4 | 2 | |
| 13-14 | applications with architectural models and studying types and techniques of presentation in architectural design and projects. (Elevations and Architectural styles) | 16 | 4 | 8 | 4 | |
| 15 | Applications with architectural models and studying types and techniques of presentation in architectural design and projects. (Final Layout Submission, Perspective, Shots)<br>Final Booklets Submission | 8 | 2 | 4 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 11 | 7.3% |
| 2. | Mid-Term Examination | 8 | 23 | 15.4% |
| 3. | Final Examination | 16 | 60 | 40% |
| 4. | Lab Exam | -- | .. | ..% |
| 5. | ACTIVETES and assignments | Every week | 41 | 27.3% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 10% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **•Hall, D. J., & Giglio, N. M. (2016). Architectural Graphic Standards. John Wiley & Sons.** |
| | **Other References** | • **Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley& Sons.**<br>• **Barron, M. (2009). Auditorium acoustics and architectural design. Spon Press.** |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| 1-2 | Simplified projects dealing with aesthetic, cultural, environment, functional, and structural constraints of architectural form and space & (Project introduction and groups' formulation. Objectives of Project design). | 4 | 8 | x | x | | | | | | |
| 3 | Principles of using and designing building interiors and external spaces, services (Defining Phases of architectural design process. | 2 | 4 | | x | x | x | | | | |
| 4 - 5 | principles of using and designing building interiors and external spaces, services (Site Analysis, Concept and Space syntax) | 4 | 8 | | | | | | x | | |
| 8 | Mid Term Exam | | | | | | | | | | |
| 9 | Principles of using vertical/horizontal circulation, with reference to human needs and interactions with surrounding built and natural environments (Initial concept proposal). | 2 | 4 | | | | | | x | | |
| 10-11 | principles of using vertical/horizontal circulation, with reference to human needs and interactions with surrounding built and natural environments (Structure Systems for Residential buildings) | 4 | 8 | | | | | | | | x |
| 12 | applications with architectural models and studying types and techniques of presentation in architectural design and projects | 2 | 4 | | | | | | | x | |
| 13-14 | Applications with architectural models and studying types and techniques of presentation in architectural design and projects. (Elevations and Architectural styles) | 4 | 8 | | | | | | | x | |
| 15 | Applications with architectural models and studying types and techniques of presentation in architectural design and projects. (Final Layout Submission, Perspective, Shots) | 2 | 4 | | | | | | | x | |
| 16 | Final Exam | | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Face to face lecture | x | x | x | | x | | | |
| Tutorial / Exercise | | x | x | x | x | | x | |
| Group discussion | x | x | | x | x | | | |
| Site visit | x | x | x | | | | | |
| • Presentation | x | x | x | x | | | x | x |
| • Mini project | | | | | x | | | |
| • Self-learning | | | | | | | | |
| • Research and reporting | x | x | | x | x | | | |
| Brain storming | x | x | | x | x | | x | |
| Case study | | x | X | x | | | x | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Final written exam | | x | | x | x | | x | |
| Oral exam | | x | x | | | | | x |
| Mid-term Exam | | x | | x | x | | x | |
| Quizzes | | x | | x | x | | | |
| Lab Exam | | | | | | | | |
| Research assignments | x | x | | x | | | | |
| In-class questions (formative assessment) | | x | x | x | | | | |
| Project assignments | | x | x | x | x | | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Building construction (2) | |
| Course Code (according to the bylaw) | ARE 122 | |
| Department/s participating in offering the course | Architectural Engineering Program | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 4 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | First Year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Alaa Morgan | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Study of the different types and techniques of building construction - skeleton buildings - frames - sliding slabs - prestressed concrete - shell construction - steel constructions - trusses - thermal insulation of roofs and externals walls - construction details stairs.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| A6 | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | CLo1 | Illustrate simplified examples of projects dealing with aesthetic, cultural, environmental, functional, and structural constraints of architectural form. |
| | | CLo2 | Analyze problems, formulate solutions and architectural articulation. |
| A10 | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLo3 | Apply the theoretical background to the building processes of design and works in site. |
| | | CLo8 | Develop skills and ability of applying building economics to projects and designs. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLo4 | Recognize modern structure methods and technologies. |
| | | CLo5 | Apply different theories of technologies and technical installations in buildings and different building materials. |
| | | CLo6 | Produce designs by applying the principles of construction and installation as related to construction materials. |
| B5 | Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | CLo7 | Create ideas by incorporating principles of working drawings in different projects. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Case study
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Study of the different types and techniques of building construction +Program introduction and course orientation. | 8 | 2 | 4 | 2 | |
| 2-3 | Skeleton buildings. Frames. - sliding slabs | 16 | 4 | 8 | 4 | |
| 4-5 | Restressed concrete Shell construction. | 16 | 4 | 8 | 4 | |
| 6-7 | steel constructions trusses | 16 | 4 | 8 | 4 | |
| 8 | Mid Term Exam | | | | | |
| 9-11 | Study of the different types and techniques of building construction (Learning drawing fundamentals of multi stories building and practicing on drawing). | 24 | 6 | 12 | 6 | |
| 12-14 | Thermal insulation of roofs and externals walls. construction details stairs (Identify basic details of stairs drawing) | 24 | 6 | 12 | 6 | |
| 15 | Final submission of the project. | 8 | 2 | 4 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 9 | 6% |
| 2. | Mid-Term Examination | 8 | 18 | 12% |
| 3. | Final Examination | 16 | 90 | 60% |
| 4. | Lab Exam | -- | .. | ..% |
| 5. | ACTIVETES and assignments | Every week | 33 | 22% |
| 6. | Final Oral Exam (if exists) | - | --- | --% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | •Ching, F. D. (2023). Architecture: Form, space, and order. John Wiley & Sons. |
| | **Other References** | • Watson, D. (2004). Time-saver standards for architectural design.<br>• Batsford, H., & Ford, C. B. RECENT ARCHITECTURAL BOOKS. |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T.L | Course Learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| 1 | Study of the different types and techniques of building construction +Program introduction and course orientation. | 2 | 4 | x | | | | | | | |
| 2-3 | Skeleton buildings. Frames - sliding slabs | 4 | 8 | | | x | | | | | |
| 4-5 | Restressed concrete Shell construction. | 4 | 8 | | x | | x | | | | |
| 6-7 | steel constructions trusses | 4 | 8 | | | | | | | | |
| 8 | Mid Term Exam | | | | | | | | | | |
| 9-11 | Study of the different types and techniques of building construction (Learning drawing fundamentals of multi stories building and practicing on drawing). | 6 | 12 | | | | | | x | x | |
| 12-14 | Thermal insulation of roofs and externals walls. | 6 | 12 | | | | | | | x | |
| 15 | Final submission of the project. | 2 | 4 | | | | | | | x | |
| 16 | Final Exam | | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Face to face lecture | x | x | x | x | x | x | x | |
| Tutorial / Exercise | | x | x | x | x | x | x | x |
| Group discussion | | | | x | x | x | x | x |
| Site visit | | | | x | x | | | |
| Self-Learning | | | | | | | | |
| • Presentation | x | | x | | x | x | | |
| • Mini project | | | x | | x | x | x | x |
| • Research and reporting | x | x | x | x | x | | | |
| Brainstorming | | x | | | | x | x | x |
| Case study | | | x | x | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Final written exam | | X | X | X | X | X | X | X |
| Oral exam | | X | | | | | | |
| Mid-term Exam | X | X | X | X | | | | |
| Quizzes | | | X | X | | | X | X |
| Lab Exam | | | | | | | | |
| Research assignments | | | | X | | | X | |
| In-class questions (formative assessment) | X | X | X | | X | | X | X |
| Project assignments | | X | | | X | | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Alaa Morgan | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Visual Training | |
| Course Code (according to the bylaw) | ARE 123 | |
| Department's participating in offering the course | Architectural Engineering Program | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 3 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | First Year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

A. Introduction of various drawing principles and artistic techniques: pencil techniques, pen & ink -proportions perspective, scale and composition - foreground, middle and background sketching architectural elements - aand landscapes architectural presentation

B. Theory of colors: Study of color circles, hues, grades, and schemes - use of colors in drawing build-up and natural elements - colors and presentation media – drafting and rendering, manual and mental skills - application on interior design buildings.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| A6 | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | CLo1 | Define visual design fundamentals. |
| A7 | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | CLo2 | Identify the content areas of the factors related to three- dimensional drawings and architectural presentation. |
| | | CLo3 | Identify acquaintance with the range of graphic tools in the third dimension which are necessary for conveying architectural concepts diverse area of structural and architectural drawing. |
| | | CLo4 | Select the accurate scale for each drawing. |
| | | CLo6 | Practice different methods of presenting projects, drawings, and freehand sketches. |
| A10 | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLo7 | Produce designs by applying the principles of construction and installation as related to construction materials. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLo5 | Apply different theories of technologies and technical installations in buildings and different building materials. |

### 4. Teaching and Learning Methods

☒ Face to face lecture
☐ Online education
☒ Tutorial / Exercise
☒ Group discussion
☐ Laboratory
☒Case study
☐ Site visit
☒Self-learning
☒ Presentation
☒ Mini project ☒ Brainstorming
☒ Research and reporting (self-learning)

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Introduction of various drawing principles | 7 | 2 | 3 | 2 | |
| 2-3 | Artistic techniques: pencil techniques, pen & ink. | 14 | 4 | 6 | 4 | |
| 4-5 | Foreground, middle and background sketching architectural elements - and landscapes architectural presentation<br>+ Shade of lines & 2d shapes & shades of objects | 14 | 4 | 6 | 4 | |
| 6-7 | Proportions perspective, scale and composition Principles of perspective+ perspective and shades of building.<br>Buildings featuring multiple circulation. | 14 | 4 | 6 | 4 | |
| 8 | Mid Term Exam | | | | | |
| 9-11 | Theory of colors: Study of color circles, hues, grades, and schemes.<br>Use of colors in drawing build-up and natural elements. | 21 | 6 | 9 | 6 | |
| 12-14 | Colors and presentation media- drafting and rendering, manual and mental skills. | 21 | 6 | 9 | 6 | |
| 15 | Application for interior design buildings.<br>Final submission of the project. | 7 | 2 | 3 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 7 | 5.4% |
| 2. | Mid-Term Examination | 8 | 14 | 11.2% |
| 3. | Final Examination | 16 | 80 | 64% |
| 4. | Lab Exam | -- | .. | ..% |
| 5. | ACTIVETES and assignments | Every week | 24 | 20% |
| 6. | Final Oral Exam (if exists) | - | --- | ...% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **•Marco T.Brand,(2017), Perspective Drawing:Easyand Clear DrawingGuide.** |
| | **Other References** | **Lockard, W. K. (1979). Design drawing experiences. Pepper Pub.. . Ching, F. D. (2023). Architectural graphics. John .Wiley & Sons** |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1 | Introduction of various drawing principles | 2 | 3 | x | | | | | | |
| 2-3 | Artistic techniques: pencil techniques, pen & ink. | 4 | 6 | | | | | X | | x |
| 4-5 | Foreground, middle and background sketching architectural elements - and landscapes architectural presentation | 4 | 6 | | | | | X | | x |
| 6-7 | Proportions perspective, scale and composition Principles of perspective+ perspective and shades of building. | | | | | | | | | |
| 8 | Mid-term exam | | | | | | | | | |
| 9-11 | Theory of colors: Study of color circles, hues, grades, and schemes. | 6 | 9 | x | x | | x | | | |
| 12-14 | Colors and presentation media- drafting and rendering, manual and mental skills. | 6 | 9 | | | | | X | x | |
| 15 | Application for interior design buildings. | 2 | 3 | | x | | x | | | |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | x | x | x | | x | x | |
| Tutorial / Exercise | | | | | | x | x |
| Group discussion | x | | | x | x | | |
| Self-Learning | | | | | | | |
| • Presentation | | | | | | x | x |
| • Mini-project | | | | | | | x |
| • Research and reporting | x | x | | | x | | |
| Brain storming | | | | x | | x | x |
| Case study | | x | x | x | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | | x | x | x | | x | x |
| Oral exam | | | | | | | |
| Mid-term Exam | | x | x | x | | x | x |
| Quizzes | x | | x | x | | x | |
| Lab Exam | | | | | | | |
| Research assignments | x | | | | x | | |
| In-class questions (formative assessment) | x | x | | x | | | |
| Project assignments | x | x | x | x | | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Shade and Perspective | | |
| Course Code (according to the bylaw) | ARE 124 | | |
| Department/s participating in offering the course | Architectural Engineering Program | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 3 | 5 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | First Year | | |
| Academic Program | Architectural Engineering Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | ASSOC.Prof. Dr. Marwa Atef | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

A. Shade: Study of shade of a dot, straight lines, plan shapes, and objects, methods of shading projection - application on partial architectural drawing with recessed and protruded parts of buildings and regrouping.

B. Perspective: Study of rules and principles of drawing perspective - theories of one and two-vanishing-point perspectives - bird's and ant's eyes - shades in perspective - applications on different architectural designs Characterized with a variety of forms and levels.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| A2 | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLo3 | Apply skills in 3D objects by drawing perspective and using shading to display it. |
| | | CLo6 | Sketch Shade of 2D shapes and Shades of objects. |
| A10 | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLo2 | Define acquaintance with the range of graphic tools in the third dimension which is necessary for conveying architectural concepts in diverse areas of structural and architectural drawing. |
| | | CLo4 | Select the accurate scale for each drawing. |
| B2 | Produc designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLo1 | Identify the content areas of the factors related to three-dimensional drawings and architectural presentation. |
| | | CLo2 | Define acquaintance with the range of graphic tools in the third dimension which is necessary for conveying architectural concepts in diverse areas of structural and architectural drawing. |
| | | CLo5 | Identify Principles of shading and shade of a dot and Shade of lines and Study of rules and principles of drawing perspective. |

### 4. Teaching and Learning Methods

☒ Face to face lecture

☐ Online education

☒ Tutorial / Exercise

☒ Group discussion

☐ Laboratory

☒Case study

☐ Site visit

☒Self-learning

☒ Presentation

☒ Mini project

☒ Research and reporting (self-learning)

☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Shade: Study of shade of a dot, straight lines | 7 | 2 | 3 | 2 | |
| 2 | Study of plan shapes, and objects. | 7 | 2 | 3 | 2 | |
| 3-5 | methods of shading projection application on partial architectural drawing with recessed and protruded parts of buildings and regrouping | 21 | 6 | 9 | 6 | |
| 6-7 | application on partial architectural drawing with recessed and protruded parts of buildings and regrouping | 14 | 4 | 6 | 4 | |
| 8 | Mid Term Exam | | | | | |
| 9-10 | Perspective: Study of rules and principles of drawing perspective | 14 | 4 | 6 | 4 | |
| 11-12 | theories of one and two-vanishing-point perspectives bird's and ant's eyes | 14 | 4 | 6 | 4 | |
| 13-14 | shades in perspectives Applications on different architectural designs Characterized with a variety of forms and levels. | 14 | 4 | 6 | 4 | |
| 15 | Final submission of the project | 7 | 2 | 3 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 9 | 6% |
| 2. | Mid-Term Examination | 8 | 18 | 12% |
| 3. | Final Examination | 16 | 90 | 60% |
| 4. | Lab Exam | -- | -- | --% |
| 5. | activates and assignments | Every week | 33 | 22% |
| 6. | Final Oral Exam (if exists) | - | --- | --% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | Cherubino, P., Martinez-Levy, A. C., Caratu, M., Cartocci, G., Di Flumeri, G., Modica, E., ... & Trettel, A. (2019). Consumer behaviour through the eyes of neurophysiological measures: State-of-the-art and future trends. Computational intelligence and neuroscience, 2019. |
| | Other References | • Metzger, P. (2007). The art of perspective: The ultimate guide for artists in every medium. Penguin.<br>• Architectural Perspectives and Shadow, M. Elkalidy |
| | Electronic Sources (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | Learning Platforms (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | Other (to be mentioned) | |
| Supportive facilities & equipment for teaching and learning | Devices/Instruments | Projectors, audio-visual systems, and Computers with internet access. |
| | Supplies | Whiteboards. |
| | Electronic Programs | Microsoft Office program, Acrobat Reader |
| | Skill Labs/ Simulators | -- |
| | Virtual Labs | -- |
| | Other (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T.L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Shade: Study of shade of a dot, straight lines | 2 | 3 | X | X | | | X | |
| 2 | Study of plan shapes, and objects, | 2 | 3 | | | X | X | X | |
| 3-5 | methods of shading projection application on partial architectural drawing with recessed and protruded parts of buildings and regrouping | 4 | 6 | | | X | X | X | |
| 6-7 | application on partial architectural drawing with recessed and protruded parts of buildings and regrouping | 4 | 6 | | | X | X | | X |
| 8 | Mid-Term | | | | | | | | |
| 9-10 | Perspective: Study of rules and principles of drawing perspective | 4 | 6 | | | X | | | X |
| 11-12 | theories of one and two-vanishing-point perspectives | 4 | 6 | X | X | | | | |
| 13-14 | Shades in perspectives Applications on different architectural designs Characterized with a variety of forms and levels. | 4 | 6 | | | X | X | | |
| 15 | Final submission of the project | 2 | 3 | | | X | X | | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | | X | X | X | |
| Group discussion | X | X | | | | |
| Self-Learning | | | | | | |
| • Presentation | | | | X | | X |
| • Mini project | | | | X | | |
| • Research and reporting | | | | X | X | X |
| Brain storming | X | X | | X | | X |
| Case study | | | X | X | | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO 2 | CLO3 | CLO 4 | CLO 5 | CLO6 | CLO7 |
| Final written exam | | x | x | x | | x | x |
| Mid-term Exam | | x | x | x | | x | x |
| Quizzes | x | | x | x | | x | |
| Research assignments | x | | | | x | | |
| In-class questions (formative assessment) | x | x | | x | | | |
| Project assignments | x | x | x | x | | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Assoc.Prof. Dr. Marwa Atef | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Technical Reports in architecture | |
| Course Code (according to the bylaw) | ARE 125 | |
| Department/s participating in offering the course | Architectural Engineering Program | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | -- | 2 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | First Year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Assoc.Prof. Dr. Kareem Mahrous | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Issues and subjects in the architectural engineering of projects throughout phases -preparation of preliminary and final reports - written exercises - oral discussion -ways and techniques of data presentation. Theory of colors: Study of color circles, hues, grades, and schemes - use of colors in drawing build-up and natural elements - colors and presentation media – drafting and rendering, manual and mental skills - application on interior design buildings.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning. | CLo1 | Identify the importance and usage of different types of technical reports for engineers. |
| | | CLo2 | Recognize the differences between the different sections of technical reports. |
| | | CLo3 | Produce accurate, clear, efficient, and comprehensive engineering technical report. |
| | | CLo4 | Devise different ideas, views, and knowledge from a range of sources to organize collect, analyze, and evaluate information for writing a technical report. |
| A8 | Communicate effectively graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLo5 | Analyze various literature regarding writing styles and rules. |
| | | CLo6 | Practice writing the list of references in a different format. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Case study
- ☐ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | Issues and subjects in the architectural engineering of projects throughout phases (Introduction+ Formatting | 8 | 4 | — | 4 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | guidelines (templates, badges, and text). | | | | | |
| 3 | Preparation of preliminary and final reports (Components of a report (preliminary pages)). | 4 | 2 | ------ | 2 | |
| 4-6 | written exercises (Components of a report: text of a report: introduction, main section, conclusion, recommendations) | 12 | 6 | ------ | 6 | |
| 7 | Ways and techniques of data presentation. | 4 | 2 | ------ | 2 | |
| 8 | Mid Term Exam | | | | | |
| 9-11 | Practice and discuss how to prepare and write a technical report. oral discussion | 12 | 6 | ------ | 6 | |
| 12-14 | ways and techniques of data presentation (Referencing of sources and originality (author-date, and numerical referencing)) | 12 | 6 | ------ | 6 | |
| 15 | Final project. | 4 | 2 | ------ | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 2 | 4% |
| 2. | Mid-Term Examination | 8 | 7 | 14% |
| 3. | Final Examination | 16 | 35 | 70% |
| 4. | Lab Exam | -- | .. | ..% |
| 5. | ACTIVETES and assignments | Every week | 6 | 12% |
| 6. | Final Oral Exam (if exists) | - | --- | ---% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | • Khamis, N. Y., Rahim, A. A. A., Sinnadurai, S., Ali, Z. M., & Ali, Z. (2015). ESL educators' belief in teaching English for academic purposes (EAP) to low level learners. International Journal of Language Education and Applied Linguistics. |
| | **Other References** | • Winckel, A., & Hart, B. (1995). Report writing style guide for engineering students. University of South Australia, Faculty of Engineering.<br>• Pickett, N. A., & Laster, A. A. (1993). Technical English: Writing, reading, and speaking. (No Title). |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| Supportive facilities & equipment for teaching and learning | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-2 | Issues and subjects in the architectural engineering of projects throughout phases (Introduction+ Formatting guidelines (templates, badges, and text). | 4 | - | x | | | | | |
| 3 | Preparation of preliminary and final reports (Components of a report (preliminary pages)). | 2 | - | | | x | | | |
| 4-6 | written exercises (Components of a report: text of a report: introduction, main section, conclusion, recommendations) | 6 | - | | | | X | x | |
| 7 | Ways and techniques of data presentation. | 2 | - | x | | x | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-11 | Practice and discuss how to prepare and write a technical report.<br>Oral discussion. | 6 | - | | | | | x | |
| 12-14 | ways and techniques of data presentation (Referencing of sources and originality (author-date, and numerical referencing)) | 6 | - | | | | | x | |
| 15 | Final project. | 2 | - | | | | | | x |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | x | | X | X | x |
| Tutorial / Exercise | | | x | | | |
| Group discussion | | | | | X | |
| Self-Learning | | | | | | |
| • Presentation | x | x | x | X | | x |
| • Mini-project | | | x | | X | x |
| • Research and reporting | x | | | X | X | |
| Brain storming | | | | X | X | x |
| Case study | | | x | | x | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | | x | X | x | x |
| Oral exam | x | x | | | | |
| Mid-term Exam | | | x | X | x | x |
| Quizzes | | | x | X | x | x |
| Research assignments | x | x | | X | | |
| In-class questions (formative assessment) | x | x | x | | x | x |
| Project assignments | | x | | X | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Assoc.Prof. Dr. Kareem Mahrous | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Properties and test of material | |
| Course Code (according to the bylaw) | CIVA 121 | |
| Department/s participating in offering the course | Civil Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 3 | 2 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | first year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Mohamed Yousry Elshikh | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Materials used in engineering products - standards codes, and inspections - the development of innovative uses of building materials - concrete: components manufacture, and quality control - partitioning materials: gypsum, lime, timber, and bricks - the effects of water on building materials - the mechanics of engineering materials.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4 | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO1 | Distinguish the general engineering materials. |
| | | CLO2 | Develop the general materials properties and the methods of determination it |
| | | CLO4 | analysis the effect of mixing water on properties of materials |
| A6 | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | CLO3 | Practice the mechanical properties of metals and tests machines |
| | | CLO5 | analysis the properties of aggregate, cement, wood |
| | | CLO6 | teach the effect of mineral and chemical admixtures on concrete characteristics |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☐ Research and reporting (self-learning)
- ☒ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Materials Used In Engineering Products | 6 | 3 | 2 | 1 | |
| 2 | Standards Codes, And Inspections | 6 | 3 | 2 | 1 | |
| 3-4 | The Development Of Innovative | 12 | 6 | 4 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | Uses Of Building Materials | | | | | |
| 5 | Concrete: Components Manufacture, And Quality Control | 6 | 3 | 2 | 1 | |
| 6-7 | Partitioning Materials: Gypsum, Lime | 12 | 6 | 4 | 2 | |
| 8 | **Midterm Exam** | | | | | |
| 8-9 | Partitioning Materials Timber, And Bricks | 12 | 6 | 4 | 2 | |
| 10-12 | The Effects Of Water On Building Materials | 18 | 9 | 6 | 3 | |
| 13-14 | The Mechanics Of Engineering Materials | 12 | 6 | 4 | 2 | |
| 15 | Revision | 6 | 3 | 2 | 1 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 5 | 4% |
| 2. | Mid-Term Examination | 8 | 16 | 12.8% |
| 3. | Final Examination | (As Schedule) | 80 | 64% |
| 4. | Lab Exam | (As Schedule) | 10 | 8% |
| 5. | Activities and assignments | Every week | 14 | 11.2% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Walker, J., & Witschel. (2020). Surveying for civil and mine engineers. Springer International Publishing. |
| | **Other References** | Neville, A. M., & Brooks, J. J. (1987). Concrete technology (Vol. 438). England: Longman Scientific & Technical. |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

Lecture content:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Materials Used in Engineering Products | 3 | 2 | x | | | | | |
| 2 | Standards Codes, And Inspections | 3 | 2 | x | | x | | | |
| 3-4 | The Development of Innovative Uses of Building Materials | 6 | 4 | | x | | x | | x |
| 5 | Concrete: Components Manufacture, And Quality Control | 3 | 2 | | x | | x | x | x |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 6-7 | Partitioning Materials: Gypsum, Lime | 6 | 4 | x | | | | | |
| 8 | Midterm Exam | | | | | | | | |
| 9 | Partitioning Materials Timber, And Bricks | 3 | 2 | x | | x | | | |
| 10-12 | The Effects of Water on Building Materials | 9 | 6 | | x | | x | x | |
| 13-14 | Mechanics Engineering Materials | 6 | 4 | x | | | | | x |
| 15 | Revision | 3 | 2 | x | x | | x | x | x |
| 16 | Final Exam | | | | | | | | |

**Practical Contents:**

| Week | Topics | Lab Hrs | CLOs |
|---|---|---|---|
| 1 | Experiment 1 Sieve Analysis Test | 2 | CLO4 |
| 2 | Experiment 2 Los Angeles Test | 2 | CLO4 |
| 3 | Experiment 3 Cement softness test | 2 | CLO4 |
| 4-5 | Experiment 4 Cement volume stability test | 4 | CLO4 |
| 6-7 | Experiment 5 Standard consistency test for cement paste | 4 | CLO4 |
| 9 | Experiment 6 Initial setting time test for cement-Final setting time test for cement | 2 | CLO4 |
| 10 | Experiment 7 Slump Test -Compacting Factor Test | 2 | CLO4 |
| 11 | Experiment 8 Compressive Strength Test -Indirect Tensile Strength Test | 2 | CLO4 |
| 13 | Revision | 2 | CLO4 |
| 15 | Practical Exam | - | CLO4 |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | | X | X |
| Tutorial / Exercise | | | X | X | X | |
| Group discussion | | X | | X | | |
| Laboratory | | | X | X | X | |
| Site visit | | X | | | | |
| Self-Learning | | | | | | |
| • Presentation | X | | X | | X | |
| • Mini project | X | | X | | | X |
| Brainstorming | | | | X | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | X |
| Oral exam | | | | X | X | X |
| Mid-term Exam | X | X | X | X | | |
| Quizzes | | X | X | | | |
| Research assignments | X | | | X | | X |
| In-class questions (formative assessment) | | | | | | X |
| Project assignments | | | X | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Mohamed Yousry Elshikh | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | |
|---|---|
| Course Title (according to the bylaw) | **Practical Training-Architectural Eng. (2)** |
| Course Code (according to the bylaw) | **TRN 142** |
| Department/s participating in offering the course | **Architectural Engineering department** |

Course Marks

| Discussion | Report | Institution's Assessment | Total |
|---|---|---|---|
| 40% | 30% | 30% | Pass/Not Pass |

Hours/ Weeks

| **48 total hours/4 weeks** | | |
|---|---|---|
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | First Year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Institute's staff | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

This internship is completed after the first year of study during the summer semester in their respective academic department. The internship is conducted over a period of four weeks at the institute, four days a week. This internship includes developing skills in hand sketching and visual expression, as well as an introduction to architectural drawing using traditional tools. Students are trained to draw and analyze architectural shapes and facades, and to prepare hand-drawn architectural drawings of simple buildings. Students are also trained in the basics of digital drawing using AutoCAD Basic and Photoshop, converting hand drawings into digital images

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1. | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics | CLO4 | Propose creative and innovative solutions for simple design problems while adhering to functional and aesthetic requirements. |
| A2. | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO3 | Enhance and refine hand-drawn sketches using Photoshop, converting them into professional-quality digital images. |
| A3. | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO2 | Analyze and apply the principles of architectural forms, shapes, and facades, including proportions, symmetry, rhythm, and texture. |
| A10. | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLO1 | Create accurate and expressive hand sketches to convey architectural ideas, including freehand perspective drawings, shading techniques, and spatial relationships. |
| | | CLO5 | Communicate architectural concepts clearly and effectively through hand sketches, technical drawings, and digital presentations. |

**4. Teaching and Learning Methods**

☒ Face to face lecture ☐ Site visit

☐ Online education
☒ Exercise
☒ Group discussion
☐ Laboratory
☒ Self-learning
☒ Presentation
☐ Mini project
☒ Research and reporting (self-learning)
☐ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Hand Sketching and Visual Expression (e.g., geometry, proportions) to create accurate sketches. | 12 | - | - | 3 | |
| 2 | Architectural Shapes and Facades. | 12 | - | - | 2 | |
| 3 | Digital Enhancement of Hand-Drawn Sketches Using Photoshop | 12 | - | - | 3 | |
| 4 | Refine hand-drawn sketches | 12 | - | - | 4 | |
| Total | 48 total hours | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Weeks | Percentage of Total Course Marks |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1. | Report | -- | 30% |
| 2. | Mini-Project Assignment | -- | - |
| 3. | Discussion | -- | 40% |
| 4. | Institution's Assessment | -- | 30% |
| **Total** | | 100% | |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Ching, F. D. K., & Juroszek, S. P. (2022). Design drawing: A guide to visual expression, sketching, and concept communication for architects and designers (3rd ed.). Wiley. |
| | **Other References** | *Design Drawing: A Guide to Visual Expression, Sketching, and Concept Communication for Architects and Designers* |
| | **Electronic Sources** (Links must be added) | https://www.archdaily.com/904528/architectural-drawing-how-to-draw-building-facades |
| | **Learning Platforms** (Links must be added) | |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |

| | | |
|---|---|---|
| and learning * | Virtual Labs | -- |
| | **Other** (to be mentioned) | |

### 7. Course Matrixes:

#### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Hrs | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|---|---|
| | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1 | Hand Sketching and Visual Expression (e.g., geometry, proportions) to create accurate sketches. | 12 | X | | | | X |
| 2 | Architectural Shapes and Facades. | 12 | | X | | X | X |
| 3 | Digital Enhancement of Hand-Drawn Sketches Using Photoshop | 12 | | | X | | X |
| 4 | Refine hand-drawn sketches | 12 | X | X | | | X |
| Total | 48 total hours | | | | | | |

#### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Face to face lecture | X | X | X | X | X |
| Exercise | | X | X | | |
| Group discussion | | | X | X | |
| Self-Learning | | | | | |
| Presentation | X | | X | | |
| Research and reporting | X | | | X | X |

#### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Oral Discussion | X | X | X | X | X |
| Research assignments | | X | | X | X |

| Assessment Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| In-class Question | X | | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Institute's staff | Menna nasser Rehab Ibrahim | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Architectural design (3) | |
| Course Code (according to the bylaw) | ARE 211 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 4 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | second year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Study and analysis of building elements for average-scale project programs and compositions - principles of environmental impact assessment in the design phase -study of the importance of structural significance in forming architectural spaces.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning. | CLo1 | Demonstrate teamwork skills in research activities and effectively present findings in reports. Investigate architectural parameters related to the project and the appropriate software tools. |
| A10 | Acquire and apply new knowledge; and practice self, | CLo6 | Identify functional and structural requirements for each design project and |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| | lifelong and other learning strategies. | | apply appropriate drawing techniques using various drawing tools and equipment. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLo2 | Illustrate site analysis through sketches, including location, surrounding elements, and entrances, as well as environmental factors such as sun exposure and ventilation. |
| | | CLo3 | Analyze the internal forces influencing the project, including requirements, spatial organization, and functional relationships. |
| | | CLo4 | Develop preliminary design sketches for the project's plan, integrating design concepts, formation principles, and environmental considerations. |
| | | CLO5 | Examine architectural styles in the project's context and evaluate the interrelation of forms, spaces, and structural complexities in design. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☒ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming
- ☒ Case study

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Introduction to the course, syllabus overview, and fundamentals of building elements in architectural design.) | 10 | 2 | 4 | 4 | |
| 2 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Analysis of key building elements (walls, floors, roofs, openings) and their spatial role in average-scale project compositions.) | 10 | 2 | 4 | 4 | |
| 3 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Composition principles: How building elements interact in architectural design.) | 10 | 2 | 4 | 4 | |
| 4 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Functional and aesthetic considerations in designing with building elements.) | 10 | 2 | 4 | 4 | |
| 5 | **Study and Analysis of Building Elements for Average-Scale** | 10 | 2 | 4 | 4 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ ....) | Training (Practical/ Clinical/ ....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | **Project Programs and Compositions:** (Application of building elements to average-scale project programs case study analysis.) | | | | | |
| 6-7 | **Integration and Pre-Midterm Review:** Review of building elements and their role in average-scale project compositions. | **20** | **4** | **8** | **8** | |
| 8 | **Mid-term** | | | | | |
| 9 | **Principles of Environmental Impact Assessment in the Design Phase:** (Introduction to environmental impact assessment and its role in architectural design.) | **10** | **2** | **4** | **4** | |
| 10 | **Principles of Environmental Impact Assessment in the Design Phase:** (Key environmental considerations in the design phase materials, energy efficiency, and site impact.) | **10** | **2** | **4** | **4** | |
| 11 | **Principles of Environmental Impact Assessment in the Design Phase:** (Strategies for integrating environmental assessment principles into architectural compositions.) | **10** | **2** | **4** | **4** | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 12 | **Study of the Importance of Structural Significance in Forming Architectural Spaces:** (Introduction to structural significance in architecture role of structural systems in space formation.) | **10** | **2** | **4** | **4** | |
| 13 | **Study of the Importance of Structural Significance in Forming Architectural Spaces:** (Structural strategies in architectural design case studies of different approaches.) | **10** | **2** | **4** | **4** | |
| 14 | **Study of the Importance of Structural Significance in Forming Architectural Spaces:** (Structural integrity and spatial experience impact of materials and forms on architectural spaces.) | **10** | **2** | **4** | **4** | |
| 15 | **Final project Integration:** (Synthesis of building elements, environmental assessment, and structural significance in a cohesive architectural design.) | **10** | **2** | **4** | **4** | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 13.5 | 7.7% |
| 2. | Mid-Term Examination | 8 | 27 | 15.4 % |
| 3. | Final Examination | (As Schedule) | 70 | 40% |
| 4. | Lab Exam | - | -- | ..% |
| 5. | Activities and assignments | Every week | 49.5 | 28.3% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 8.6% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Ching, F. D. K. Architectural design: A critical guide. Wiley. (2020).** |
| | **Other References** | **Mitrovic, B. Design process in architecture: From concept to completion. Routledge. (2021).** |
| | **Electronic Sources** (Links must be added) | **Carpo, M. A short but believable history of the digital turn in architecture. e-flux Architecture. (2023).Retrieved from https://www.e-flux.com/architecture/chronograms/528659/** |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Autocad |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Introduction to the course, syllabus overview, and fundamentals of building elements in architectural design.) | 2 | 4 | X | | | | | x |
| 2 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Analysis of key building elements (walls, floors, roofs, openings) and their spatial role in average-scale project compositions.) | 2 | 4 | | | x | | | x |
| 3 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Composition principles: How building elements interact in architectural design.) | 2 | 4 | | | | X | x | |
| 4 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** (Functional and aesthetic considerations in designing with building elements.) | 2 | 4 | | | x | | x | |
| 5 | **Study and Analysis of Building Elements for Average-Scale Project Programs and Compositions:** | 2 | 4 | x | | | | | x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (Application of building elements to average-scale project programs case study analysis.) | | | | | | | | |
| 6-7 | **Integration and Pre-Midterm Review:** Review of building elements and their role in average-scale project compositions. | 4 | 8 | | | x | | | x |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9 | **Principles of Environmental Impact Assessment in the Design Phase:** (Introduction to environmental impact assessment and its role in architectural design.) | 2 | 4 | X | | | X | | |
| 10 | **Principles of Environmental Impact Assessment in the Design Phase:** (Key environmental considerations in the design phase materials, energy efficiency, and site impact.) | 2 | 4 | | x | | X | | |
| 11 | **Principles of Environmental Impact Assessment in the Design Phase:** (Strategies for integrating environmental assessment principles into architectural compositions.) | 2 | 4 | | | | X | x | |
| 12 | **Study of the Importance of Structural Significance in Forming Architectural Spaces:** (Introduction to structural significance in architecture role of structural systems in space formation.) | 2 | 4 | | | | X | | x |
| 13 | **Study of the Importance of Structural Significance in Forming Architectural Spaces:** | 2 | 4 | | | x | | | x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (Structural strategies in architectural design case studies of different approaches.) | | | | | | | | |
| 14 | **Study of the Importance of Structural Significance in Forming Architectural Spaces:** (Structural integrity and spatial experience impact of materials and forms on architectural spaces.) | 2 | 4 | | | | | x | x |
| 15 | **Final project Integration:** (Synthesis of building elements, environmental assessment, and structural significance in a cohesive architectural design.) | 2 | 4 | X | | x | X | | |
| 16 | **Final Exam** | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | x | x | x | X | x |
| Online education (Asynchronous) | | | x | | | |
| Tutorial / Exercise | | x | x | x | | x |
| Group discussion | X | x | | | X | |
| Site visit | | x | | | | |
| Self-Learning | | | | | | |
| • Presentation | X | x | | | X | x |
| • Mini project | | x | | x | | |
| • Research and reporting | X | | | | | |
| Brain storming | X | x | x | x | X | x |
| Case study | X | x | | | | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | | x | x | x | x |
| Oral exam | | x | | | x | |
| Mid-term Exam | | x | x | x | | x |
| Quizzes | | x | x | | | x |

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Research assignments | x | x | | | x | |
| In-class questions (formative assessment) | x | | x | | x | x |
| Project assignments | | x | x | x | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Computer applications in architecture (1) | |
| Course Code (according to the bylaw) | ARE 212 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Prevailing operating system - trainings - architectural drawing problems -applications on architectural-related cases.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLo2 | Identify challenges related to CAD applications and utilize appropriate 2D drawing commands to address them. |
| | | CLo5 | Utilize both 2D and 3D CAD commands to develop architectural projects within computer laboratories. |
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLo1 | Implement the commands and concepts introduced in lectures within computer laboratories |
| | | CLo3 | Recall and demonstrate proficiency in using block editors, dimensioning tools, and plotting commands in architectural drawings. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLo4 | Analyze and execute 3D CAD modeling commands, applying them effectively in project development. |
| | | CLo6 | Define the technical requirements for each design project and apply appropriate drawing techniques using 2D and 3D CAD commands. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☒ Site visit
- ☐ Online education
- ☒ Self-learning
- ☒ Tutorial / Exercise
- ☒ Presentation
- ☒ Group discussion
- ☒ Mini project

☒ Laboratory

☒ Research and reporting (self-learning)

☒ Brainstorming

☒ Case study

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ ....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Overview of the course and introduction to the prevailing operating system used in architectural design.) | 6 | 2 | 2 | 2 | |
| 2 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Fundamentals of file management, software installation, and system optimization for architectural applications.) | 6 | 2 | 2 | 2 | |
| 3 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Introduction to architectural design software interface navigation, basic tools, and workflow setup.) | 6 | 2 | 2 | 2 | |
| 4 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Hands-on training: Creating and managing digital drawing files.) | 6 | 2 | 2 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 5 | **Architectural Drawing Problems:** (Understanding digital drafting techniques precision tools, layers, and object properties.) | 6 | 2 | 2 | 2 | |
| 6-7 | **Architectural Drawing Problems:** (Common architectural drawing problems scaling, alignment, and accuracy issues.) | 12 | 4 | 4 | 4 | |
| 8 | **Mid – term** | | | | | |
| 9 | **Applications on Architectural-Related Cases:** (Advanced drafting techniques annotations, dimensions, and line weights in architectural drawings.) | 6 | 2 | 2 | 2 | |
| 10 | **Applications on Architectural-Related Cases:** (Application of digital tools in 2D architectural project development.) | 6 | 2 | 2 | 2 | |
| 11 | **Applications on Architectural-Related Cases:** (Introduction to 3D modeling software and its role in architectural design.) | 6 | 2 | 2 | 2 | |
| 12 | **Practical Applications & Project Development:** (Developing a digital architectural project site plan, floor plans, and elevations.) | 6 | 2 | 2 | 2 | |
| 13 | **Practical Applications & Project Development:** (Integration of 3D modeling with 2D drawings perspectives, sections, and renders.) | 6 | 2 | 2 | 2 | |
| 14 | **Practical Applications & Project Development:** | 6 | 2 | 2 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | (Final project preparation review, corrections, and optimization of digital outputs.) | | | | | |
| 15 | **Final Project Review & Submission:** (Final adjustments and submission of architectural projects using digital tools.) | 6 | 2 | 2 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 9 | 9% |
| 3. | Final Examination | (As Schedule) | 60 | 60% |
| 4. | Lab Exam | (As Schedule) | 10 | 10% |
| 5. | Activities | Every week | 16.5 | 16.5% |
| 6. | Final Oral Exam (if exists) | -- | -- | --% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Styles, K., & Richard, A. Working Drawings Handbook, 1st edition, Routledge, 2012.** |
| | **Other References** | **Lectures material and sheets.** |
| | **Electronic Sources** (Links must be added) | **Rahim, A., & Jamelle, H. Analyzing the Influence of Technology in Architecture: Computer Applications and Building Design, 1st edition, Research Gate, 2023. Retrieved from** (PDF) Analyzing the Influence of Technology |

| | | |
|---|---|---|
| | | in Architecture: Computer Applications and Building Design |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | **Coursera. *Building Information Modeling (BIM) in Practice*, 1st edition, Coursera, 2023. Retrieved from** https://www.coursera.org/learn/bim |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | AutoCAD, Photoshop |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO 6 |
| 1 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Overview of the course and introduction to the prevailing operating system used in architectural design.) | 2 | 2 | X | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Fundamentals of file management, software installation, and system optimization for architectural applications.) | 2 | 2 | x | | | | | |
| 3 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Introduction to architectural design software interface navigation, basic tools, and workflow setup.) | 2 | 2 | X | | | | | |
| 4 | **Introduction to the Prevailing Operating System & Basic Architectural Software Training:** (Hands-on training: Creating and managing digital drawing files.) | 2 | 2 | X | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 5 | **Architectural Drawing Problems:** (Understanding digital drafting techniques precision tools, layers, and object properties.) | 2 | 2 | | x | | | | |
| 6-7 | **Architectural Drawing Problems:** (Common architectural drawing problems scaling, alignment, and accuracy issues.) | 4 | 4 | | x | x | | | |
| 8 | **Mid Term Exam** | | | | | | | | |
| 9 | **Applications on Architectural-Related Cases:** (Advanced drafting techniques annotations, dimensions, and line weights in architectural drawings.) | 2 | 2 | | | x | | | |
| 10 | **Applications on Architectural-Related Cases:** (Application of digital tools in 2D architectural project development.) | 2 | 2 | | x | | | x | |
| 11 | **Applications on Architectural-Related Cases:** | 2 | 2 | | | | x | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (Introduction to 3D modeling software and its role in architectural design.) | | | | | | | | |
| 12 | **Practical Applications & Project Development:** (Developing a digital architectural project site plan, floor plans, and elevations.) | 2 | 2 | | | | | x | x |
| 13 | **Practical Applications & Project Development:** (Integration of 3D modeling with 2D drawings perspectives, sections, and renders.) | 2 | 2 | | | | x | x | x |
| 14 | **Practical Applications & Project Development:** (Final project preparation review, corrections, and optimization of digital outputs.) | 2 | 2 | | | | | x | x |
| 15 | **Final Project Review & Submission:** (Final adjustments and submission of | 2 | 2 | | | | | x | x |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | architectural projects using digital tools.) | | | | | | | | |
| 16 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | x | X | x | x | x |
| Tutorial / Exercise | | x | | | x | x |
| Group discussion | | x | | | x | x |
| Laboratory | x | x | x | x | x | x |
| Self-Learning | | | | | | |
| • Presentation | | x | | | | |
| • Mini-project | | | x | x | x | x |
| • Research and reporting | | x | | | | |
| Brainstorming | x | x | x | x | x | x |
| Case study | x | x | | | | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | x | x | x | x | x |
| Oral exam | x | x | x | x | x | x |
| Mid-term Exam | x | x | x | | | |
| Quizzes | x | x | x | | | |
| Lab Exam | x | | x | x | | |
| Research assignments | | x | | x | x | x |
| In-class questions (formative assessment) | x | x | x | x | x | x |
| Project assignments | x | x | x | x | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Building construction (3) | |
| Course Code (according to the bylaw) | ARE 213 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 4 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Marwa Aladham | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Working steps to implement different construction and finishing procedures in buildings: detailing of site works - excavation and foundation works - concrete and reinforced concrete works - masonry - raw bricks & brick masonry - wooden construction details - drawing details of doors, windows, and wardrobes -plaster and finishes of internal and external building surfaces - water and damp proofing -thermal insulation techniques - flooring works - sanitary and electrical works -applications.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| A3 | Develop and apply alternative design solutions in building construction projects while addressing and resolving related challenges. | CLo3 | Propose effective structural solutions while enhancing teamwork and coordination skills among project members. |
| | | CLo7 | Develop and apply alternative design solutions in building construction projects while addressing and resolving related challenges. |
| A6 | Develop and apply alternative design solutions in building construction projects while addressing and resolving related challenges. | CLo4 | Examine and interpret expansion and settlement joint details in architectural drawings. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLo1 | Understand the function of various structural systems for wide-span constructions and their relationship with spatial dimensions. |
| | | CLo6 | Assess advanced techniques for producing comprehensive construction drawings, including detailed elements. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs | CLo5 | Evaluate and analyze sanitary and rainwater drainage drawings within the project. |
| | | CLo2 | Identify the fundamental project drawings, assess material properties, and determine their appropriate application within the project. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | **Working steps to implement different construction and finishing procedures in buildings Site Works, Excavation & Foundation Works:** (Introduction to construction processes site preparation and preliminary works.) | 8 | 2 | 4 | 2 | |
| 2 | **Working steps to implement different construction and finishing procedures in buildings Site Works, Excavation & Foundation Works:** (Introduction to construction processes site preparation and preliminary works.) | 8 | 2 | 4 | 2 | |
| 3 | **Working steps to implement different construction and finishing procedures in buildings Site Works, Excavation & Foundation Works:** (Reinforced concrete foundations detailing and implementation.) | 8 | 2 | 4 | 2 | |
| 4 | **Working steps to implement different construction and finishing procedures in buildings Structural Construction –** | 8 | 2 | 4 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | **Concrete, Masonry, and Woodwork:** (Concrete and reinforced concrete construction slabs, beams, and columns.) | | | | | |
| 5 | **Working steps to implement different construction and finishing procedures in buildings Structural Construction – Concrete, Masonry, and Woodwork:** (Masonry techniques raw bricks, brick bonding, and wall systems.) | 8 | 2 | 4 | 2 | |
| 6-7 | **Working steps to implement different construction and finishing procedures in buildings Structural Construction – Concrete, Masonry, and Woodwork:** (Wooden construction details framing, structural joinery, and applications.) | 16 | 4 | 8 | 4 | |
| 8 | **Mid – Term Exam** | | | | | |
| 9 | **Working steps to implement different construction and finishing procedures in buildings Openings, Finishes & Insulation:** (Drawing and detailing of doors, windows, and wardrobes.) | 8 | 2 | 4 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 10 | **Working steps to implement different construction and finishing procedures in buildings Openings, Finishes & Insulation:** (Plastering and finishes internal and external surface treatments.) | 8 | 2 | 4 | 2 | |
| 11 | **Working steps to implement different construction and finishing procedures in buildings Openings, Finishes & Insulation:** (Water and damp proofing techniques materials and applications.) | 8 | 2 | 4 | 2 | |
| 12 | **Working steps to implement different construction and finishing procedures in buildings Flooring, Sanitary, Working steps to implement different construction and finishing procedures in buildings Electrical Works:** (Flooring systems tile, wood, and concrete finishes.) | 8 | 2 | 4 | 2 | |
| 13 | **Working steps to implement different construction and finishing procedures in buildings Flooring,** | 8 | 2 | 4 | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | **Sanitary, and Electrical Works:** (Thermal insulation techniques and energy-efficient construction.) | | | | | |
| 14 | **Working steps to implement different construction and finishing procedures in buildings Flooring, Sanitary, and Electrical Works:** (Sanitary and electrical works MEP coordination in construction.) | 8 | 2 | 4 | 2 | |
| 15 | **Final Project Review & Applications:** (Site and construction detailing applications student project evaluations.) | 8 | 2 | 4 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 9 | 6% |
| 2. | Mid-Term Examination | 8 | 18 | 12% |
| 3. | Final Examination | (As Schedule) | 90 | 60% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Activities and assignments | Every week | 33 | 22% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Wasson, C. S., System Engineering Analysis, Design, and Development: Concepts, Principles, and Practices, John Wiley & Sons, 2015.** |
| | **Other References** | **Ching, F. D. K., & Adams, C., Building Construction Illustrated, 6th ed., Wiley, 2020.**<br>**Schittich, C., Modern Construction Handbook, 6th ed., Birkhäuser, 2021** |
| | **Electronic Sources** (Links must be added) | **UCLA Library, Design Manuals, Standards, and Building Types, UCLA Architecture & Urban Design Library, 2023. Retrieved from:** https://guides.library.ucla.edu/architecture/manualsandstandards |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | **YouTube, *Advanced Construction Techniques*, 2023. Retrieved from** https://www.youtube.com/watch?v=video_id |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1 | **Working steps to implement different construction and finishing procedures in buildings Site Works, Excavation & Foundation Works:** (Introduction to construction processes site preparation and preliminary works.) | 2 | 4 | x | x | | | | | |
| 2 | **Working steps to implement different construction and finishing procedures in buildings Site Works, Excavation & Foundation Works:** (Excavation techniques and types of foundation systems.) | 2 | 4 | x | x | | | | | |
| 3 | **Working steps to implement different construction and finishing procedures in buildings Site Works, Excavation & Foundation Works:** (Reinforced concrete foundations detailing and implementation.) | 2 | 4 | x | x | | | | | |
| 4 | **Working steps to implement different construction and finishing procedures in buildings Structural Construction – Concrete, Masonry, and Woodwork:** (Concrete and reinforced concrete construction slabs, beams, and columns.) | 2 | 4 | x | x | x | | | | |

| Week | Topics | S-L | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 5 | **Working steps to implement different construction and finishing procedures in buildings Structural Construction – Concrete, Masonry, and Woodwork:** (Masonry techniques raw bricks, brick bonding, and wall systems.) | 2 | 4 | | x | x | | | | |
| 6-7 | **Working steps to implement different construction and finishing procedures in buildings Structural Construction – Concrete, Masonry, and Woodwork:** (Wooden construction details framing, structural joinery, and applications.) | 8 | 16 | | x | x | x | | | |
| 8 | Mid Term Exam | | | | | | | | | |
| 9 | **Working steps to implement different construction and finishing procedures in buildings Openings, Finishes & Insulation:** (Drawing and detailing of doors, windows, and wardrobes.) | 2 | 4 | | | | x | | x | |
| 10 | **Working steps to implement different construction and finishing procedures in buildings Openings, Finishes & Insulation:** (Plastering and finishes internal and external surface treatments.) | 2 | 4 | | | | | | x | |
| 11 | **Working steps to implement different construction and finishing procedures in buildings Openings, Finishes** | 2 | 4 | | | | | | x | |

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| | **& Insulation:** (Water and damp proofing techniques materials and applications.) | | | | | | | | | |
| 12 | **Working steps to implement different construction and finishing procedures in buildings Flooring, Sanitary, Working steps to implement different construction and finishing procedures in buildings Electrical Works:** (Flooring systems tile, wood, and concrete finishes.) | 2 | 4 | | | | | x | x | x |
| 13 | **Working steps to implement different construction and finishing procedures in buildings Flooring, Sanitary, and Electrical Works:** (Thermal insulation techniques and energy-efficient construction.) | 2 | 4 | | | | | | x | x |
| 14 | **Working steps to implement different construction and finishing procedures in buildings Flooring, Sanitary, and Electrical Works:** (Sanitary and electrical works MEP coordination in construction.) | 2 | 4 | | | | | x | | x |
| 15 | **Final Project Review & Applications:** (Site and construction detailing applications student project evaluations.) | 2 | 4 | | | | | | x | x |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | x | X | x | x | x | x | |
| Tutorial / Exercise | x | X | x | x | x | | |
| Group discussion | | | x | | | x | x |
| Site visit | x | | | x | x | | x |
| Self-Learning | | | | | | | |
| • Presentation | | | x | x | x | x | |
| • Mini-project | | | | | | x | |
| • Research and reporting | | X | | | | | x |
| Brain storming | x | X | x | x | x | x | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | x | X | x | x | x | x | x |
| Mid-term Exam | | X | x | x | x | | |
| Quizzes | x | X | | x | x | | x |
| Research assignments | x | X | x | x | x | x | x |
| In-class questions (formative assessment) | x | X | x | | | x | x |
| Project assignments | x | X | x | x | x | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa Aladham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | History &Theories of Architecture (2) | |
| Course Code (according to the bylaw) | ARE 214 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 3 | - | 3 |

| | | |
|---|---|---|
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | All Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Marwa Aladham | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

A. History of architecture: Medieval architecture in western and Islamic Worlds -Islamic architecture.

B. Theory of architecture: Analytical study of the factors affecting architectural design (economical, functional, social, human, psychological, and environmental) - Building technology and construction techniques - architectural theories and criteria of designing for building elements - vertical circulation in buildings - residential buildings -office buildings - commercial buildings.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A4** | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | **CLo1** | Develop an understanding of sustainability principles as they evolved through different civilizations and examine their interactions. |
| | | **CLo3** | Analyze architectural function effectively and enhance communication skills through teamwork in studying architectural form, space, and order to achieve spatial, aesthetic, and technical harmony. |
| **A5** | Practice research techniques and methods of investigation as an inherent part of learning. | **Clo2** | Organize research on various architectural theories across different periods of the Middle Ages. |
| | | **CLo5** | Summarize essential aspects of Middle Ages architecture while considering economic, societal, and environmental dimensions, as well as risk management in design. |
| **B1** | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | **CLo4** | Apply acquired knowledge by identifying key architectural lessons and principles from different Middle Age theories and integrating them into architectural design. |
| | | **CLo6** | Identify key architectural lessons and principles from various Middle Age theories and explore their application in architectural practice. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☐ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | **History of Architecture:** (Introduction to medieval architecture overview of Western and Islamic architectural developments.) | 4 | 3 | - | 1 | |
| 2 | **History of Architecture:** (Medieval architecture in the Western world Romanesque and Gothic styles, structural and aesthetic characteristics.) | 4 | 3 | - | 1 | |
| 3 | **History of Architecture:** (Medieval architecture in the Islamic world mosques, madrasas, and palaces; comparison with Western styles.) | 4 | 3 | - | 1 | |
| 4 | **History of Architecture:** (Islamic architecture principles, elements, and regional variations.) | 4 | 3 | - | 1 | |
| 5-6 | **History of Architecture:** (Case studies: Notable examples from both Western and Islamic medieval architecture.) | 8 | 6 | - | 2 | |
| 7 | Integration and Pre-Midterm Review | 3 | 3 | - | 1 | |
| 8 | **Mid – Term Exam** | | | | | |
| 9 | **Theory of Architecture – Factors Affecting Architectural Design:** (Analytical study of design factors economic, functional, and social influences.) | 3 | 3 | - | 1 | |
| 10 | **Theory of Architecture – Factors Affecting Architectural Design:** (Human, psychological, and environmental factors in architectural design.) | 3 | 3 | - | 1 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 11 | **Theory of Architecture – Factors Affecting Architectural Design:** (Impact of building technology and construction techniques on architectural form and function.) | 3 | 3 | - | 1 | |
| 12 | **Architectural Theories & Design Criteria:** (Architectural theories and design principles for building elements.) | 3 | 3 | - | 1 | |
| 13 | **Architectural Theories & Design Criteria:** (Vertical circulation in buildings stairs, ramps, and elevators.) | 3 | 3 | - | 1 | |
| 14 | **Architectural Theories & Design Criteria:** (Design principles for residential, office, and commercial buildings.) | 3 | 3 | - | 1 | |
| 15 | **Final Review and Application:** (Discussion and analysis of architectural theories in relation to historical and contemporary buildings.) | 3 | 3 | - | 1 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 6 | 6% |
| 2. | Mid-Term Examination | 8 | 18 | 18% |
| 3. | Final Examination | (As Schedule) | 60 | 60% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Reports and assignments | Every week | 16 | 16% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Stubbs, M., Heritage-Sustainability: Developing a Methodology for the Sustainable Appraisal of the Historic Environment, Planning Practice & Research, 19(3), Taylor & Francis, 2004.** |
| | **Other References** | **Ching, F. D. K., Jarzombek, M., & Prakash, V., A Global History of Architecture, 3rd ed., Wiley, 2021.** |
| | **Electronic Sources** (Links must be added) | **Architectural Digest, *17 Essential Architectural Styles Everyone Should Know*, Architectural Digest, 2023. Retrieved from:** https://www.architecturaldigest.com/gallery/essential-architectural-styles-everyone-should-know |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | **Podcasts, *Architecture History Now*, 2023. Retrieved from:** https://podcasts.apple.com/us/podcast/architecture-history-now/id1525647506 |
| | | |
| **Supportive facilities & equipment for teaching** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |

| | | |
|---|---|---|
| **and learning** | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 |
| 1 | **History of Architecture:** (Introduction to medieval architecture overview of Western and Islamic architectural developments.) | 3 | - | x | | | | | |
| 2 | **History of Architecture:** (Medieval architecture in the Western world Romanesque and Gothic styles, structural and aesthetic characteristics.) | 3 | - | | x | | | | |
| 3 | **History of Architecture:** (Medieval architecture in the Islamic world mosques, madrasas, and palaces; comparison with Western styles.) | 3 | - | x | x | | | | |
| 4 | **History of Architecture:** (Islamic architecture principles, elements, and regional variations.) | 3 | - | x | | | | | |
| 5-6 | **History of Architecture:** (Case studies: Notable examples from both Western and Islamic medieval architecture.) | 6 | - | x | x | | | | x |
| 7 | Integration and Pre-Midterm Review | 3 | - | | x | x | x | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | **Theory of Architecture – Factors Affecting Architectural Design:** (Analytical study of design factors economic, | 3 | - | | | x | | x | |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 |
| | functional, and social influences.) | | | | | | | | |
| 10 | **Theory of Architecture – Factors Affecting Architectural Design:** (Human, psychological, and environmental factors in architectural design.) | 3 | - | x | | x | | x | |
| 11 | **Theory of Architecture – Factors Affecting Architectural Design:** (Impact of building technology and construction techniques on architectural form and function.) | 3 | - | | | x | | | x |
| 12 | **Architectural Theories & Design Criteria:** (Architectural theories and design principles for building elements.) | 3 | - | | x | | x | | x |
| 13 | **Architectural Theories & Design Criteria:** (Vertical circulation in buildings stairs, ramps, and elevators.) | 3 | - | | | x | x | | |
| 14 | **Architectural Theories & Design Criteria:** (Design principles for residential, office, and commercial buildings.) | 3 | - | | | x | x | | |
| 15 | **Final Review and Application**: (Discussion and analysis of architectural theories in relation to historical and contemporary buildings.) | 3 | - | x | | | x | | x |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | X | x | x | x | x |
| Tutorial / Exercise | x | X | x | x | x | x |
| Group discussion | | X | x | x | | |
| Site visit | | X | | | x | |
| Self-Learning | | | | | | |
| • Presentation | | X | x | x | | x |
| • Mini-project | | | x | x | | x |
| • Research and reporting | x | X | x | x | | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | X | x | x | x | x |
| Mid-term Exam | x | x | x | x | | x |
| Quizzes | x | x | x | x | x | x |
| Research assignments | x | x | X | x | x | |
| In-class questions (formative assessment) | x | x | X | x | x | x |
| Project assignments | x | x | X | x | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa Aladham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | History of city planning | |
| Course Code (according to the bylaw) | ARE 215 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 3 | - | 3 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Alaa Morgan | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

History of earliest human settlements in different civilizations and study of the evolution and historical development of city planning in ancient Egypt, Mesopotamia, Greek and Roman civilizations and a comparison, Medieval periods in the Western and Islamic Worlds and a comparison, Renaissance, Industrial revolution age and its impact on city planning, modern theories and trends of city planning -research and trainings.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A4** | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | **CLo2** | Analyze challenges facing the built environment in Egypt and propose effective design-based solutions. |
| **A5** | Practice research techniques and methods of investigation as an inherent part of learning | **CLo4** | Construct scaled models (maquettes) to explore various methods of assembling residential buildings and urban spaces. |
| | | **CLo6** | Utilize digital tools like AutoCAD and Photoshop to effectively present architectural and urban design projects. |
| **A10** | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | **CLo3** | Illustrate urban-scale solutions through freehand sketches and demonstrate their application in real contexts. |
| | | **CLo5** | Evaluate software tools such as AutoCAD in reviewing different approaches to assembling residential units. |
| **B1** | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | **CLo1** | Classify architectural projects, urban design, and urban planning based on their scope, function, and impact on the built environment. |
| | | **CLo2** | Analyze challenges facing the built environment in Egypt and propose effective design-based solutions. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | **Earliest Human Settlements & Ancient Civilizations:** (Introduction to city planning definitions, significance, and early human settlements.) | 6 | 3 | - | 3 | |
| 2 | **Earliest Human Settlements & Ancient Civilizations:** (Urban planning in Ancient Egypt & Mesopotamia hierarchical city structures, religious and administrative centers.) | 6 | 3 | - | 3 | |
| 3 | **Greek & Roman City Planning:** (Greek city planning Hippodamian grid system, agora, acropolis, and public spaces.) | 6 | 3 | - | 3 | |
| 4 | **Greek & Roman City Planning:** (Roman city planning cardo and decumanus, forums, infrastructure, and urban expansion.) | 6 | 3 | - | 3 | |
| 5-6 | **Comparative Analysis of Ancient Civilizations:** (Comparison of city planning principles in Ancient Egypt, Mesopotamia, Greece, and Rome.) | 12 | 6 | - | 6 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 7 | **Medieval Periods – Western and Islamic Worlds:** (Medieval Western Cities: Organic growth, feudal influences, fortifications, and public spaces. Islamic Cities: Mosque-centered design, souks, courtyards, and water management.) | 6 | 3 | - | 3 | |
| 8 | **Mid – Term Exam** | | | | | |
| 9 | **Renaissance & Industrial Revolution:** (Renaissance urban planning ideal city concepts, symmetry, and order.) | 6 | 3 | - | 3 | |
| 10 | **Renaissance & Industrial Revolution:** (Industrial Revolution impact of industrialization on urban growth, transportation, and housing.) | 6 | 3 | - | 3 | |
| 11 | **Modern Theories & Trends in City Planning:** (Early 20th-century urban theories Garden City, Radiant City, and City Beautiful Movement.) | 6 | 3 | - | 3 | |
| 12 | **Modern Theories & Trends in City Planning:** (Contemporary city planning trends | 6 | 3 | - | 3 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | sustainability, smart cities, and new urbanism.) | | | | | |
| 13 | **Research and Training Applications:** (Case study analysis of historical and modern cities.) | 6 | 3 | - | 3 | |
| 14 | **Research and Training Applications:** (Urban planning exercises students apply theories to real-world examples.) | 6 | 3 | - | 3 | |
| 15 | Final Review & Comparative Discussion: (Reflection on the historical progression of city planning and its impact on today's cities.) | 6 | 3 | - | 3 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Activities | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Barron, M. Auditorium acoustics and architectural design. Spon Press, 2009.** |
| | **Other References** | **Kostov, S. The city shaped: Urban patterns and meanings through history (2nd ed.). Thames & Hudson, 2021.** |
| | **Electronic Sources** (Links must be added) | **Plane Tizen.** ***Top 20 urban planning books (of all time).*** **Plane Tizen, 2023. Retrieved from** https://www.planetizen.com/books/20 |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS,** https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | **MIT Open Course Ware.** ***History of urban form.*** **2023. Retrieved from** https://ocw.mit.edu/courses/architecture/4-241j-theory-of-city-form |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | **Earliest Human Settlements & Ancient Civilizations:** (Introduction to city planning definitions, significance, and early human settlements.) | 3 | - | x | | | | | |

| Week | Topics | Lec | T/L | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 2 | **Earliest Human Settlements & Ancient Civilizations:** (Urban planning in Ancient Egypt & Mesopotamia hierarchical city structures, religious and administrative centers.) | 3 | - | x | | | | | |
| 3 | **Greek & Roman City Planning:** (Greek city planning Hippodamian grid system, agora, acropolis, and public spaces.) | 3 | - | x | x | | | | |
| 4 | **Greek & Roman City Planning:** (Roman city planning cardo and decumanus, forums, infrastructure, and urban expansion.) | 3 | - | x | x | | | | |
| 5-6 | **Comparative Analysis of Ancient Civilizations:** (Comparison of city planning principles in Ancient Egypt, Mesopotamia, Greece, and Rome.) | 6 | - | | x | x | | | |
| 7 | **Medieval Periods – Western and Islamic Worlds:** (Medieval Western Cities: Organic growth, feudal influences, fortifications, and public spaces. Islamic Cities: Mosque-centered design, souks, courtyards, and water management.) | 3 | - | | x | x | x | | |
| 8 | Mid Term Exam | | | | | | | | |

| Week | Topics | Lec | T/L | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 9 | **Renaissance & Industrial Revolution:** (Renaissance urban planning ideal city concepts, symmetry, and order.) | 3 | - | x | | | x | x | |
| 10 | **Renaissance & Industrial Revolution:** (Industrial Revolution impact of industrialization on urban growth, transportation, and housing.) | 3 | - | | | x | x | | x |
| 11 | **Modern Theories & Trends in City Planning:** (Early 20th-century urban theories Garden City, Radiant City, and City Beautiful Movement.) | 3 | - | | | | x | | x |
| 12 | **Modern Theories & Trends in City Planning:** (Contemporary city planning trends sustainability, smart cities, and new urbanism.) | 3 | - | | | | x | | x |
| 13 | **Research and Training Applications:** (Case study analysis of historical and modern cities.) | 3 | - | | | | x | x | x |
| 14 | **Research and Training Applications:** (Urban planning exercises students apply theories to real-world examples.) | 3 | - | | | x | x | x | x |
| 15 | Final Review & Comparative Discussion: (Reflection on the historical progression of city planning and its impact on today's cities.) | 3 | - | x | x | x | x | x | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | X | x | x | x | x |
| Tutorial / Exercise | | | | x | x | x |
| Group discussion | x | X | x | | | |
| Site visit | | X | | x | | |
| Self-Learning | | | | | | |
| • Presentation | | | x | | x | x |
| • Mini-project | | | | x | x | x |
| • Research and reporting | | | x | | | |
| Brainstorming | x | X | x | x | x | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | X | x | | | x |
| Mid-term Exam | x | X | x | | | |
| Quizzes | x | | x | | x | x |
| Research assignments | x | X | x | x | | |
| In-class questions (formative assessment) | x | X | x | | | x |
| Project assignments | x | X | x | x | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Alaa Morgan | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Reinforced Concrete Structures | |
| Course Code (according to the bylaw) | CIVA 211 | |
| Department/s participating in offering the course | Architecture Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second Year | |
| Academic Program | Civil Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Assoc. Prof. Mahmoud Abd-Aziz | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Reinforced concrete (RC) - principles of designing RC constructions - analysis and design of sections that are subject to bending - load distribution - reinforcement details of beams, flat slabs, columns, and stairs.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1 | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO4 | Manage tasks and resources of concrete substance effectively. |
| | | CLO5 | Recognize how to work in a team. |
| A2 | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO3 | Use codes of practices in designing reinforced engineering concrete structures. |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | Design different types of concrete structures; slabs, beams and columns. |
| | | CLO2 | Design RC stairs and flat slabs. |
| A10 | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLO6 | Solve all problems related to concrete structures. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Introduction to RC | 6 | 2 | 2 | 2 | |
| 2-3-4-5 | Design of RC Beams | 24 | 8 | 8 | 8 | |
| 6-7-9 | Design of RC solid Slabs | 18 | 6 | 6 | 6 | |
| 10-11 | Design of Columns | 12 | 4 | 4 | 4 | |
| 12-13 | Design of Stairs | 12 | 4 | 4 | 4 | |
| 14-15 | Design of flat slabs | 12 | 4 | 4 | 4 | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 7 | 5.5% |
| 2. | Mid-Term Examination | 8 | 20 | 16% |
| 3. | Final Examination | (As Schedule) | 80 | 64% |
| 4. | Lab Exam | (As Schedule) | - | - |
| 5. | Reports and assignments | Every week | 18 | 14.5% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** | Wight, J. K. (2016). *Reinforced concrete: Mechanics and design* (7th Global ed.). Pearson Education. |
| | **Other References** | Ding, Y., & Ning, X. (2023). *Reinforced concrete: Basic theory and standards*. Springer. https://doi.org/10.1007/978-981-19-2920-5 |
| | **Electronic Sources** | Mahmoud, S. (2023). *Reinforced concrete design: Fundamentals and practical examples*. Cambridge Scholars Publishing |
| | **Learning Platforms** | **Manzala Academy LMS,** https://lms.manzalaacademy.edu.eg/ |

| | | |
|---|---|---|
| | **Other** | Lecture material and experimental sheets.. |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | - |
| | **Virtual Labs** | - |
| | **Other** (to be mentioned) | - |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "C-LOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Introduction to RC | 2 | 2 | | | X | X | X | X |
| 2 – 3- 4-5 | Design of RC Beams | 8 | 8 | X | | X | X | X | X |
| 6-7-9 | Design of RC solid Slabs | 6 | 6 | X | | X | X | X | X |
| 8 | Mid Term Exam | | | | | | | | |
| 10-11 | Design RC columns. | 6 | 6 | X | | X | | | X |
| 12-13 | Design of Stairs | 4 | 4 | | X | X | X | X | X |
| 14-15 | Design of flat slabs | 4 | 4 | | X | X | X | X | X |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "C-LOS" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| **Face to face lecture** | X | X | X | X | | X |
| **Tutorial / Exercise** | X | X | X | X | X | X |
| **Group discussion** | | | | | X | X |
| **Self-Learning** | | | | | | |
| • **Presentation** | | | | | X | X |
| • **Mini project** | X | X | X | X | | X |

| Teaching and Learning Methods | Course Learning outcomes "C-LOS" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| • Research and reporting | | | | X | | X |
| Brain storming | X | X | X | | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "C-LOS" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | | | X |
| Mid-term Exam | X | X | X | | | X |
| Quizzes | X | X | X | | | |
| Research assignments | X | X | X | X | X | X |
| In-class questions (formative assessment) | X | X | X | X | | X |
| Project assignments | X | X | X | X | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Assoc. Prof. Mahmoud Abd- El-Aziz | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Architectural design (4) | |
| Course Code (according to the bylaw) | ARE 221 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 4 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Assoc.prof. Kareem Mahrous | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Making researches and field visits and their application on architectural design projects - ways of identifying dealing with problems - design .approaches to average-scale projects - studies of environment impact assessment.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning | CLO1 | Identify research and their application on architectural design projects |
| | | CLO4 | Assess different ideas of architectural design projects. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences | CLO2 | Apply field visits and their application on architectural design projects |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale | CLO3 | Develop ways of dealing with problems |
| | | CLO5 | Discuss Scale projects |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs | CLO6 | Apply environment impact assessment. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Case study
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☐ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Making research | 11 | 2 | 4 | 5 | |
| 2 | Field visits | 10 | 2 | 4 | 4 | |
| 3-4 | Research and fields applications on architectural design projects | 22 | 4 | 8 | 10 | |
| 5 | Ways of identifying and dealing with problems | 10 | 2 | 4 | 4 | |
| 6-7 | Design. Approaches to average | 22 | 4 | 8 | 10 | |
| 8 | **Mid – term exam** | | | | | |
| 9 | Design. Approaches to average | 11 | 2 | 4 | 5 | |
| 10-12 | Scale projects | 33 | 6 | 12 | 15 | |
| 13-14 | Studies of environment impact assessment. | 20 | 4 | 8 | 8 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 13.5 | 7.74% |
| 2. | Mid-Term Examination | 8 | 27 | 15.42% |
| 3. | Final Examination | (As Schedule) | 70 | 40% |
| 4. | Lab Exam | .. | - | - |
| 5. | Activities and assignments | Every week | 49.5 | 28.27% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 8.57% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Hall, D. J., & Giglio, N. M. (2016). Architectural Graphic Standards. John Wiley & Sons. |
| | **Other References** | Lecture Notes |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Penz, F. (2017). Cinematic Aided Design: An everyday life approach to architecture. Routledge. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | Autodesk AutoCAD |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Making research | 2 | 4 | x | | | | | |
| 2 | field visits | 2 | 4 | x | | x | | | |
| 3-4 | Research and fields applications on architectural design projects | 4 | 8 | | x | | x | | |
| 5 | ways of identifying dealing with problems | 2 | 4 | | x | | x | x | |
| 6-7 | design. approaches to average | 2 | 4 | x | | | | | x |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | design. approaches to average | 4 | 8 | | | x | x | | |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 10 | scale projects | 2 | 4 | | x | | x | x | |
| 11-12 | scale projects | 4 | 8 | x | | | | | x |
| 13 | studies of environment impact assessment. | 2 | 4 | x | x | | | | |
| 14 | studies of environment impact assessment. | 2 | 4 | | | | x | x | x |
| 15 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | x | | | x | x |
| Tutorial / Exercise | x | | x | x | x | |
| Group discussion | x | x | | x | | |
| Site visit | | x | | | | |
| Self-Learning | | | | | | |
| • Presentation | x | | x | | x | |
| • Mini project | x | | x | | | x |
| Brainstorming | | | | x | | |
| Case study | | | | | x | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | | x | X | x | x |
| Oral exam | | | x | | | |
| Mid-term Exam | x | x | x | X | | x |
| Quizzes | x | x | x | | | |
| Research assignments | x | x | | | | |
| Project assignments | | | x | X | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Assoc.prof. Kareem Mahrous | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Building Construction (4) | |
| Course Code (according to the bylaw) | ARE 222 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 4 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Assoc.prof. Kareem Mahrous | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Steel works and details - ways and techniques of expansion joints and treatments of different building cracks and caulks - prefabricated buildings, prestressed, and precast concrete - concrete and reinforced concrete and their ratios of their components - ways and techniques of mixing and casting concrete – laboratory setups of quality assurance - thermal and damp proofing, noise reduction, antistatic, and anti-radiation materials - recent finishing materials and buildings and attributed physical and mechanical features.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | Identify Steel works and details |
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO3 | Describe concrete and reinforced concrete and their ratios of their components |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO2 | Discuss ways and techniques of expansion joints treatments of different building cracks and caulks |
| | | CLO5 | Explain thermal and damp proofing, noise reduction, antistatic, and anti-radiation materials |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO4 | Design ways and techniques of mixing and casting concrete |
| | | CLO6 | Describe finishing materials and buildings and attributed physical and mechanical features. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☐ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Steel works and details | 10 | 2 | 4 | 4 | |
| 2 | ways and techniques of expansion joints and treatments of different building cracks and caulks | 10 | 2 | 4 | 4 | |
| 3-4 | concrete and reinforced concrete and their ratios of their components | 16 | 4 | 8 | 4 | |
| 5-7 | ways and techniques of mixing and casting concrete | 22 | 6 | 12 | 4 | |
| 8 | **Mid – Term Exam** | | | | | |
| 9 | thermal and damp proofing, noise reduction | 10 | 2 | 4 | 4 | |
| 10 | antistatic, and anti-radiation materials | 10 | 2 | 4 | 4 | |
| 11-12 | recent finishing materials | 16 | 4 | 8 | 4 | |
| 13-14-15 | Attributed physical and mechanical features. | 32 | 8 | 16 | 8 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 9 | 6% |
| 2. | Mid-Term Examination | 8 | 18 | 12% |
| 3. | Final Examination | (As Schedule) | 90 | 60% |
| 4. | Lab Exam | .. | - | - |
| 5. | Activities and assignments | Every week | 33 | 22% |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Hall, D. J., & Giglio, N. M. (2016). Architectural Graphic Standards. John Wiley & Sons. |
| | **Other References** | Lecture Notes |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Penz, F. (2017). Cinematic Aided Design: An everyday life approach to architecture. Routledge. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Steel works and details | 2 | 4 | x | | | | | |
| 2 | ways and techniques of expansion joints and treatments of different building cracks and caulks | 2 | 4 | x | | x | | | |
| 3-4 | concrete and reinforced concrete and their ratios of their components | 4 | 8 | | x | | x | | x |
| 5 | ways and techniques of mixing and casting concrete | 2 | 4 | | x | | x | x | x |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 6 | ways and techniques of mixing and casting concrete | 2 | 4 | x | | | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | thermal and damp proofing, noise reduction | 4 | 8 | x | | x | | | |
| 10 | antistatic, and anti-radiation materials | 2 | 4 | | x | | x | x | |
| 11-12 | recent finishing materials | 4 | 8 | x | | | | | x |
| 13-14-15 | attributed physical and mechanical features. | 8 | 16 | x | x | | x | x | x |
| 16 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | x | x | | x | x |
| Tutorial / Exercise | | | x | x | x | |
| Group discussion | | x | | x | | |
| Site visit | | x | | | | |
| Self-Learning | | | | | | |
| • Presentation | x | | x | | x | |
| • Mini project | x | | x | | | x |
| Brain storming | | | | x | | x |
| Case study | | x | | | | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | x | x | x | x | x |
| Mid-term Exam | x | x | x | x | | |
| Quizzes | | x | x | | | |
| Research assignments | x | | | x | | x |
| In-class questions (formative assessment) | | | | | | x |
| Project assignments | | | x | x | x | x |

Course coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Assoc.prof. Kareem Mahrous | | 2025-2026 |

Program coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Urban Design | |
| Course Code (according to the bylaw) | ARE 223 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 3 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Lamiaa Gamal | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Definition of urban design: programs, and attributes - study of principles of urban design - ecological and environment effect on urban shaping.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program spees) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A10 | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLO1 | Assess different ideas of urban planning projects. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| | | CLO4 | Design urban plans that keep the urban identity and conserve the environment. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLO2 | Evaluate different alternative solutions of urban planning issues. |
| | | CLO7 | Identify the main social, cultural, economic, and urban issues and problems. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO3 | Apply knowledge of urban planning to solve the urban problems and utilize the potentials of cities. |
| | | CLO5 | Apply economic, social, cultural, environmental, and urban aspects into urban planning projects. |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO6 | Develop adequate knowledge to deal with site constraints and maximize site usage. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☐ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-4 | Definition of Urban Design: Programs, And Attribute | 32 | 8 | 12 | 12 | |
| 5-7 | Study of Principles of Urban Design | 24 | 6 | 9 | 9 | |
| 8 | **Mid Term Exam** | | | | | |
| 9-15 | Ecological And Environment Effect on Urban Shaping and Their Applications | 55 | 14 | 21 | 20 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 7 | 5.6% |
| 2. | Mid-Term Examination | 8 | 13 | 16.2% |
| 3. | Final Examination | (As Schedule) | 80 | 64% |
| 4. | Lab Exam | .. | - | - |
| 5. | Activities and assignments | Every week | 25 | 20% |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley & Sons. |
| | **Other References** | Lecture Notes |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |

| | | |
|---|---|---|
| | **Other** (to be mentioned) | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1-4 | Definition of urban design: programs, and attribute | 8 | 12 | x | x | x | x | | | |
| 5-6 | study of principles of urban design | 4 | 6 | x | x | | x | x | | x |
| 8 | Mid Term Exam | | | | | | | | | |
| 9-15 | ecological and environment effect on urban shaping and their applications | 1 | 42 | x | x | x | x | x | x | x |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO 6 | CLO 7 |
| Face to face lecture | x | x | | | x | x | x |
| Tutorial / Exercise | x | | x | x | x | | x |
| Group discussion | x | x | | x | | | |
| Site visit | | x | | | | | |

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO 6 | CLO 7 |
| **Self-Learning** | | | | | | | |
| • Presentation | x | | x | | x | | x |
| • Mini project | x | | x | | | x | x |
| Brain storming | | | | x | | | x |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | | | X | x | x | | x |
| Mid-term Exam | x | x | x | x | | x | x |
| Quizzes | x | x | x | | | | |
| Research assignments | x | x | | | x | x | x |
| Project assignments | | | x | x | x | x | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Lamiaa Gamal | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Building physics and environmental control | |
| Course Code (according to the bylaw) | ARE 224 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Marwa Eladham | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

A. Building physics: physical and mechanical properties of building materials - thermodynamics and heat transfer - thermal behavior of building elements(walls, roofs, and floors) - time lag - thermal storage - thermal isolation -acoustics - acoustical behavior of building elements - noise population and controls – dampness in buildings and controls - a number of applications on building envelopes to adapt with their surrounding environments.

B. Environment control: The natural environment and climatic factors – human thermal comfort in building interiors - buildings and streets orientation –natural ventilation in buildings - solar control in windows - design of buildings and Windows to adapt with their surrounding environments - landscaping and use of trees for shading, air purification, and control of ventilating patterns - protection from desertification.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO2 | Discuss Occupational and Human health safety related to the different types of pollution, and methods of prevention |
| A10 | Acquire and apply new knowledge, and practice self, lifelong and other learning strategies. | CLO1 | Recognize the regulation and standard codes for occupational safety related to Environmental issues |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. | CLO3 | Define the phenomenon of global warming, greenhouses, and predict future environmental hazards and their impact on the environment. |
| | | CLO5 | Apply appropriate steps to design safe systems at work and manage their risk in effective ways. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs. through understanding structural design, construction, technology and engineering problems associated with building designs. | CLO4 | Practice applying the quality assurance procedures in all environmental and occupational safety. |
| | | CLO6 | Apply techniques in a professional manner to manage the risks of the most types of pollutions such as: air pollution, water pollution, chemical pollution electromagnetic pollution. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☐ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Building physics: Physical and mechanical properties of building materials | 6 | 2 | 2 | 2 | |
| 2 | thermodynamics and heat transfer | 6 | 2 | 2 | 2 | |
| 3-4 | thermal behavior of building elements (walls, roofs, and floors) | 12 | 4 | 4 | 4 | |
| 5 | time lag | 6 | 2 | 2 | 2 | |
| 6-7 | thermal storage | 12 | 4 | 4 | 4 | |
| 8 | **Mid – Term Exam** | | | | | |
| 9 | thermal isolation - acoustics | 6 | 2 | 2 | 2 | |
| 10 | dampness in buildings and controls | 6 | 2 | 2 | 2 | |
| 11-12 | Environment control: The natural environment and climatic factors - human thermal comfort in building interiors | 12 | 4 | 4 | 4 | |
| 13-14-15 | design of buildings and Windows to adapt with their surrounding environments - | 24 | 8 | 8 | 8 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | landscaping and use of trees for shading, air purification, 13-and control of Ventilating patterns - 4protection from desertification. | | | | | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 6 | %6 |
| 2. | Mid-Term Examination | 8 | 18 | %18 |
| 3. | Final Examination | (As Schedule) | 60 | %60 |
| 4. | Lab Exam | .. | - | - |
| 5. | Activities and assignments | Every week | 16 | %16 |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley & Sons. |
| | **Other References** | Lecture Notes |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |

| | | |
|---|---|---|
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Building physics: physical and mechanical properties of building materials | 2 | 2 | x | | | | | |
| 2 | thermodynamics and heat transfer | 2 | 2 | x | | x | | | |
| 3-4 | thermal behavior of building elements (walls, roofs, and floors) | 4 | 4 | | x | | x | | |
| 5 | time lag | 2 | 2 | | x | | x | x | x |
| 6 | thermal storage | 2 | 2 | x | | x | | x | x |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | thermal isolation - acoustics | 4 | 4 | x | | x | x | | |
| 10 | dampness in buildings and controls | 2 | 2 | | x | | x | x | |
| 11-12 | Environment control: The natural environment and climatic factors - human thermal comfort in building interiors | 4 | 4 | x | | | x | x | x |
| 13-14-15 | design of buildings and Windows to adapt with their | 6 | 6 | x | x | | x | x | x |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| | surrounding environments - landscaping and use of trees for shading, air purification, and control of ventilating patterns - protection from desertification. | | | | | | | | |
| 16 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO 6 |
| Face to face lecture | x | x | x | x | x | |
| Tutorial / Exercise | | | x | x | x | |
| Group discussion | | x | | x | | x |
| Site visit | | x | | | | |
| Self-Learning | | | | | | |
| • Presentation | x | | x | | x | |
| • Mini project | x | x | x | | | x |
| Brain storming | | | | x | | x |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | X | x | x | x | |
| Mid-term Exam | x | X | x | x | | |
| Quizzes | | X | x | | | |
| Research assignments | x | | | x | | x |
| Project assignments | | X | x | x | x | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa Eladham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Computer applications in architecture (2) | |
| Course Code (according to the bylaw) | ARE 225 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Second year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Defining methods and techniques of computer applications in architectural and urban design fields - use of computer in programming, architectural design aiding, working drawing, quantities, and descriptions, drawing and presentation- preparation of two and three-dimensional drawings - use of computers in preparing researches and environmental studies.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO1 | Analyze engineering software, their disciplines, and their importance towards sustainable development. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A5 | Practice research techniques and methods of investigation as an inherent part of Learning. | CLO3 | Apply current architectural software worldwide and their advantages. |
| B2 | Produce designs that meet building users' requirements through understanding the Relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO2 | Apply engineering design processes by using 3d soft wares in sharing information through the architectural field and form a background on the cg programs development. |
| | | CLO5 | Apply the facilities of available software commands to attain flexibility and collaborative work through various situations. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO4 | Apply and improve the art of using max program for 2d & 3d drawings. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☐ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | Defining methods and techniques of computer applications in architectural and urban design fields | 12 | 4 | 4 | 4 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 3-7 | use of computer in programming, architectural design aiding, working drawing, quantities, and descriptions, drawing and presentation | 30 | 10 | 10 | 10 | |
| 8 | **Mid – Term Exam** | | | | | |
| 9-10 | preparation of two and three-dimensional drawings | 12 | 4 | 4 | 4 | |
| 11-15 | Use of computers in Preparing researches and environmental studies. | **30** | **10** | **10** | **10** | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 9 | 9% |
| 3. | Final Examination | (As Schedule) | 60 | 60% |
| 4. | Lab Exam | (As Schedule) | 10 | 10% |
| 5. | Reports and assignments | Every week | 16.5 | 16.5% |
| 6. | Final Oral Exam (if exists) | -- | -- | --% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley & Sons. |
| | **Other References** | Lecture Notes |

| | | |
|---|---|---|
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | Autodesk AutoCAD, Autodesk Revit and Autodesk 3D Max |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1-2 | Defining methods and techniques of computer applications in architectural and urban design fields | 4 | 4 | X | x | x | | |
| 3-6 | use of computer in programming, architectural design aiding, working drawing, quantities, and descriptions, drawing and presentation | 8 | 8 | X | x | x | x | x |
| 8 | Midterm Exam | | | | | | | |
| 9-10 | preparation of two and three-dimensional drawings | 4 | 4 | X | x | x | x | |
| 11-14-15 | use of computers in preparing researches and environmental studies. | 6 | 6 | X | x | x | x | x |
| 16 | Final Exam | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Face to face lecture | x | X | x | x | |
| Tutorial / Exercise | | | X | x | |
| Group discussion | | X | | x | X |
| Laboratory | | X | | x | |
| Site visit | | X | | | |
| Self-Learning | | | | | |
| • Presentation | x | | x | x | |
| • Mini project | x | X | x | | x |
| Brain storming | | X | | x | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Final written exam | X | X | x | x | |
| Oral exam | | X | | x | |
| Mid-term Exam | X | X | x | x | x |
| Quizzes | | X | x | | |
| Lab Exam | | X | | x | |
| Research assignments | X | | x | x | x |
| Project assignments | | X | x | x | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Steel structure | |
| Course Code (according to the bylaw) | CIVA221 | |
| Department/s participating in offering the course | Civil Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | second year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Khaled Eltaweel | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Structural systems and steel constructions - design loads - design of members which are subjected to control forces, moments, or shear forces - design of bolted and welded connections.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A1** | Identify, formulate, and solve complex engineering problems by | **CLO1** | Discuss the structure systems of steel structure |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| | applying engineering fundamentals, basic science, and mathematics. | **CLO3** | Discuss the tension and compression members |
| **A2** | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | **CLO5** | Design connection members |
| **A10** | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | **CLO4** | Discuss the moment and torsion |
| **B1** | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | **CLO2** | Discuss the design loads |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☐ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☐ Presentation
  - ☐ Mini project
  - ☒ Research and reporting (self-learning)
- ☐ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | Discuss the structure systems of steel structure | 12 | 4 | 4 | 4 | -- |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 3-4 | Discuss the structure systems of steel structure | 12 | 4 | 4 | 4 | -- |
| 5 | Discuss the structure systems of steel structure | 6 | 2 | 2 | 2 | -- |
| 6-7 | Discuss the design loads | 12 | 4 | 4 | 4 | -- |
| 8 | Mid Term Exam | | | | | |
| 9 | Discuss the design loads | 6 | 2 | 2 | 2 | -- |
| 10-11 | design the tension members | 12 | 4 | 4 | 4 | -- |
| 12 | design compression members | 6 | 2 | 2 | 2 | -- |
| 13 | Discuss the moment and torsion | 6 | 2 | 2 | 2 | -- |
| 14-15 | Discuss the tension and compression members | 12 | 4 | 4 | 4 | -- |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | .. | -- | -- |
| 5. | Reports and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | -- | -- |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books,** | **The main (essential) reference for the course** | S. A. Ashtul, S. N. patil " Review on Discuss of space frame structure system " International Research Journal of Engineering and Technology (IRJET), Volume: 07,2020. |

| | | |
|---|---|---|
| scientific references, etc.) | **Other References** | Yasser Eleithy notes. |
| | **Electronic Sources** (Links must be added) | www.EngYasserEleithy.com, |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/\ |
| | **Other** (to be mentioned) | ---------- |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | -- |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|---|
| | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1 - 2 | Discuss the structure systems of steel structure | X | | | | |
| 3 - 4 | Discuss the structure systems of steel structure | X | X | | | |
| 5 | Discuss the structure systems of steel structure | X | X | | | |
| 6-7 | Discuss the design loads | | X | | | |
| 8 | Mid Term Exam | | | | | |
| 9 | Discuss the design loads | | X | | | |
| 10-11 | design the tension members | | | X | X | |
| 12 | design compression members | | | X | X | |
| 13 | Discuss the moment and torsion | | X | X | | X |
| 14-15 | Discuss the tension and compression members | X | | | | X |
| 16 | Final Exam | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Face to face lecture | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | | X |
| Self-Learning | | | | | |
| • Research and reporting | | X | | X | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Final written exam | X | X | X | X | X |
| Quizzes | | X | | X | |
| Midterm exam | X | X | X | | |
| Research assignments | X | X | | X | |
| Reporting assignments | | X | | X | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Khaled EL-Taweel | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | |
|---|---|
| Course Title (according to the bylaw) | **Practical Training-Architectural Eng. (3)** |
| Course Code (according to the bylaw) | **TRN 243** |
| Department/s participating in offering the course | **Architectural Engineering department** |

Course Marks

| Discussion | Report | Institution's Assessment | Total |
|---|---|---|---|
| 40% | 30% | 30% | Pass/Not Pass |

Hours/ Weeks

| | |
|---|---|
| **48 total hours/4 weeks** | |
| Course Type | ☒ Compulsory ☐ Elective |
| Academic level at which the course is taught | Second Year |
| Academic Program | Architectural Engineering Program |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla |
| University/Academy | Manzalla Academy |
| Name of Course Coordinator | Institute's staff |
| Course Specification Approval Date | 16 August 2025 |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 |

## 2. Course Overview (Brief summary of scientific content)

The training includes the student's attendance at the institute during the summer field training period, where they will be trained on Autodesk Revit and 3ds Max programs, with the aim of developing their skills in 3D modeling and preparing professional architectural scenes.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A2. | Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions. | CLO4 | Use modern tools (graphical, verbal, and written means) to present designs to diverse audiences, including clients, stakeholders, and peers. |
| A3. | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO2 | Apply advanced rendering techniques, material mapping, and environmental effects to produce photorealistic visualizations.. |
| A4. | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO5 | Explain the purpose and application of various design principles, software tools, and rendering techniques. |
| A6. | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements | CLO3 | Incorporate sustainable design principles into 3D models and visualizations, reflecting environmental and cultural considerations. |
| B1. | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local | CLO1 | Create detailed 3D architectural models using Autodesk Revit, including floor plans, elevations, sections, and schedules. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| Code | Text | Code | Text |
| | culture and heritage, technologies and human sciences. | | |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☐ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | 3D Modeling Using Autodesk Revit | 12 | - | - | 4 | |
| 2 | Advanced Rendering Techniques in 3ds Max | 12 | - | - | 2 | |
| 3 | Sustainable Design Principles in 3D Models and Visualizations | 12 | - | - | 3 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 4 | Architectural Concepts Through Modern Tools | 12 | - | - | 2 | |
| Total | 48 total hours | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Weeks | Percentage of Total Course Marks |
|---|---|---|---|
| 1. | Report | -- | 30% |
| 2. | Mini-Project Assignment | -- | - |
| 3. | Discussion | -- | 40% |
| 4. | Institution's Assessment | -- | 30% |
| Total | | 100% | |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) * | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | Ching, F. D. K., & Wampler, S. (2023). *Architectural graphics and visualization: From conceptual sketching to BIM and advanced rendering* (6th ed.). Wiley. |
| | Other References | *Architectural Graphics and Visualization: From Conceptual Sketching to BIM and Advanced Rendering* |

| | | |
|---|---|---|
| | **Electronic Sources** (Links must be added) | https://knowledge.autodesk.com/support/revit/learn-explore/caas/simplecontent/content/revit-tutorials.html |
| | **Learning Platforms** (Links must be added) | |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Hrs | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|---|---|
| | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1 | 3D Modeling Using Autodesk Revit | 12 | X | | | | X |
| 2 | Advanced Rendering Techniques in 3ds Max | 12 | | X | | | X |
| 3 | Sustainable Design Principles in 3D Models and Visualizations | 12 | | | X | X | |
| 4 | Architectural Concepts Through Modern Tools | 12 | | | | X | X |
| Total | 48 total hours | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Face to face lecture | X | X | X | X | X |
| Exercise | X | | X | | |
| Group discussion | X | | X | X | |
| Self-Learning | | | | | |
| Presentation | | X | X | | |
| Research and reporting | | | | X | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Oral Discussion | | X | X | X | X |
| Research assignments | X | | X | | X |
| In-class Question | | X | X | | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Institute's staff | Hawyda Ali | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| **Course Title (according to the bylaw)** | Architectural design (5) | |
| **Course Code (according to the bylaw)** | ARE 311 | |
| **Department/s participating in offering the course** | Architectural Engineering Department | |
| **Number of credit hours/points of the course (according to the bylaw)** | | |
| **Lecture** | **Tutorial / Laboratory** | **Total contact** |
| 2 | 4 | 6 |
| **Course Type** | ☒ Compulsory | ☐ Elective |
| **Academic level at which the course is taught** | Third year | |
| **Academic Program** | Architectural Engineering Program | |
| **Faculty/Institute** | Higher Institute of Engineering and Technology at Manzalla | |
| **University/Academy** | Manzalla Academy | |
| **Name of Course Coordinator** | Dr. Shaima Naseer | |
| **Course Specification Approval Date** | 16 August 2025 | |
| **Course Specification Approval** | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Study of external environmental conditions and development of students' perception of urban forms- the kind of relationship between external volumes and building shapes-significance of structural concept in shaping and formulating architectural spaces- raising efficiency in the design process architectural projects characterized with complicated, diversified elements- introduction to the strategic environmental studies of projects.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning. | CLo1 | Explain how research about the architectural parameters of the project and the software used. |
| | | CLo2 | Analyze Site and urban studies for project |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLo5 | Analyze through drawings, models and diagrams, the interrelated complexities of forms, spaces, and structures of the design projects. |
| | | CLo6 | Analyze functional and structural requirements in each design project |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLo3 | Design for project's plans and project research studies and program analysis |
| | | CLo7 | Sketch techniques using different drawing tools and equipment and Model simulation workshop. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLo4 | Create the idea, the formation principles, and the environmental research. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Introduction to the strategic environmental studies | 10 | 2 | 4 | 4 | |
| 2-3 | Studies of projects( the Egyptian Code for Hospitals - Site and urban studies | 20 | 4 | 8 | 8 | |
| 4 | raising efficiency in the design process architectural projects characterized with complicated, diversified elements | 10 | 2 | 4 | 4 | |
| 5-7 | (Theories and foundations of hospital design-zoning analysis + project program-The master plan -other plans ) | 30 | 6 | 12 | 12 | |
| 8 | Mid Term Exam | | | | | |
| 9 | significance of structural concept in shaping and formulating architectural spaces(formation vocabulary and construction systems | 10 | 2 | 4 | 4 | |
| 10 | Sketch design for elevations and sections | 10 | 2 | 4 | 4 | |
| 11-12 | Study of external environmental conditions and development of students' perception of urban forms (Sustainability in architecture | 20 | 4 | 8 | 8 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| | andurbanism) | | | | | |
| 13-14 | the kind of relationship between external volumes and building shapes(Model simulation workshop ) | 20 | 4 | 8 | 8 | |
| 15 | Final submission of the project | 10 | 2 | 4 | 4 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6-11 | 13.5 | 7.71 % |
| 2. | Mid-Term Examination | 8 | 27 | 15.43% |
| 3. | Final Examination | 16 | 70 | 40% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Activities and assignments | Every week | 49.5 | 28.29% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 8.57 % |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) | The main (essential) reference for the course (must be written in full according to the scientific documentation method) | Ching, F. D. K. (2020). Architectural design: A critical guid Wiley. |
| | Other References | Tother, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | Electronic Sources (Links must be added) | https://pdf.usaid.gov/pdf_docs/Pnadc561.pdf |
| | Learning Platforms (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | Other (to be mentioned) | Mitrovic, B. (2021). Design process in architecture: From concept to completion. |

| | | |
|---|---|---|
| | | Routledge. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | Revit – 3D |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1 | Introduction to the strategic environmental studies | 2 | 4 | x | x | | | | | |
| 2-3 | Studies of projects( the Egyptian Code for Hospitals - Site and urban studies | 4 | 8 | x | x | | | | | |
| 4 | raising efficiency in the design process architectural projects characterized with complicated, diversified elements | 2 | 4 | | x | x | | | | |
| 5-7 | (Theories and foundations of hospital design-zoning analysis + project program-The master plan -other plans ) | 4 | 8 | | | x | x | | | |
| 8 | Mid Term Exam | | | | | | | | | |
| 9 | significance of structural concept in shaping and formulating architectural | 4 | 8 | x | | x | | x | X | |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| | spaces(formation vocabulary and construction systems | | | | | | | | | |
| 10 | Sketch design for elevations and sections | 2 | 4 | | | | | x | X | X |
| 11-12 | Study of external environmental conditions and development of students' perception of urban forms (Sustainability in architecture andurbanism) | 4 | 8 | | | | x | | | |
| 13-14 | the kind of relationship between external volumes and building shapes(Model simulation workshop ) | 4 | 8 | | | | | | X | X |
| 15 | Final submission of the project | 2 | 4 | | | | | | | x |
| 16 | Final Exam | | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | x | x | x | x | x | x | x |
| Tutorial / Exercise | | x | x | x | x | x | |
| Group discussion | x | x | | | | | x |
| Site visit | x | | | x | | | |
| Self-Learning | | | | | | | |
| • Presentation | x | x | | | | | x |
| • Mini-project | | | | | x | x | x |
| • Research and reporting | x | x | | x | | | |
| Brain storming | | | x | x | x | x | |
| Case study | | x | x | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | | | X | X | X | X | |
| Oral exam | X | X | | | | | X |
| Mid-term Exam | | X | X | X | X | | |
| Quizzes | | | X | X | X | X | |
| Research assignments | X | X | | | | | |
| In-class questions (formative assessment) | | | X | X | X | X | |
| Project assignments | | | | X | | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Shaima Naseer | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Executive designs (1) | |
| Course Code (according to the bylaw) | ARE 312 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 1 | 4 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Lamia Gamal | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Detailed study and preparation of the various and recent structural systems covering wide spans in buildings- preparation of the complete working drawings and details of major projects with wide-span facilities-field visits to similar projects.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | Design projects that the student has make and solve all modifications needed for the design to be suitable to make the working drawings |
| | | CLO3 | Create of working drawings of project (Elevation, Sections, Stairs and Door + Window details.) |
| A7 | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | CLO5 | Create of layouts details and field visits to similar projects |
| | | CLO6 | Produce shop drawings for the project and employ requirements, codes, and procedures. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO6 | Produce shop drawings for the project and employ requirements, codes, and procedures. |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO2 | Define the function of different building and finishing materials, structural systems, technology, and engineering problems associated with building construction and create workings drawings based on all these foundations. |
| | | CLO4 | Create of working details of project (Elevations ,sections ,Stairs and Door +window details) |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | **Training** (Practical/Clinical/ .....) | **Self-learning (Tasks/ Assignments/ Projects/ ...)** | Other (to be determined) |
| **1-2** | Detailed study and preparation of the various and recent structural systems covering wide spans in buildings (Redesign of the Mall design project - X-ref plans) | 18 | 2 | 8 | 8 | |
| **3-7** | Preparation of the complete working drawings of project with wide-span facilities ( Plans floor – sections) | 45 | 5 | 20 | 20 | |
| 8 | Mid Term Exam | | | | | |
| **9-12** | Preparation of the complete working details of project<br>- Elevations<br>- Stairs (plans +section)<br>- Detailed sections<br>- Door +window details | 36 | 4 | 16 | 16 | |
| **13-14** | field visits to similar projects( Layout +sitting out) | 18 | 2 | 8 | 8 | |
| 15 | Final submission of the project | 9 | 1 | 4 | 4 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6,11 | 11 | 7.5% |
| 2. | Mid-Term Examination | 8 | 22.5 | 15% |
| 3. | Final Examination | 16 | 60 | 40% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Activities and assignments | Every week | 41.5 | 27.5% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 10% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | "Architectural Detailing: Function, Constructibility, Aesthetics" |
| | **Other References** | د. هشام حسن علي ,التصميمات التنفيذية ، الطبعة الثانية 2017<br>Styles, K. (2014). Working drawings handbook. Elsevier. |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | هندسة التشييد (الجزء الثاني تشطيبات المباني - الجزء الثالث مرافق المياه والصرف الصحي)، محمود حسين المصيلحي، |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-2 | Detailed study and preparation of the various and recent structural systems covering wide spans in buildings (Redesign of the Mall design project - X-ref plans) | 2 | 8 | X | | X | | | |
| 3-7 | Preparation of the complete working drawings of project with wide-span facilities ( Plans floor – sections) | 5 | 20 | | | X | X | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-12 | Preparation of the complete working details of project<br>- Elevations<br>- Stairs (plans +section)<br>- Detailed sections<br>- Door +window details | 4 | 16 | | X | X | X | | |
| 13-14 | field visits to similar projects( Layout +sitting out) | 2 | 8 | | | | X | X | |
| 15 | project discussion & Revision | 1 | 4 | | X | | | | X |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | | |
| Tutorial / Exercise | | X | X | X | | |
| Group discussion | | X | | | | |
| Self-Learning | | | | | | |
| • Presentation | X | X | X | X | | X |
| • Mini project | | | | X | | X |
| • Research and reporting | | X | | X | | |
| Brain storming | X | | X | X | X | |
| Case study | | | X | | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | X | X | X | X | |
| Oral exam | | | | | | X |
| Mid-term Exam | | X | X | X | X | |
| Quizzes | | X | | X | | |
| Research assignments | | X | | | | |
| In-class questions (formative assessment) | X | X | X | X | X | |
| Project assignments | | | | | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Lamia Al-Adl | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Urban Planning and Design | |
| Course Code (according to the bylaw) | ARE 313 | |
| Department/s participating in offering the course | Architectural Engineering | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 4 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | ASSO. Prof. Dr. Marwa Atef | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Study of the carious levels of planning (national-regional-local)-development studies-structural planning-environmental, social, economical, and demographic studies-legislations and laws-the city master plan-elements and factors of city planning-development of planning goals and programs-population density- activities and economical bases-social and population possibilities- analysis and design of urban spaces- characteristics of visual conception in the urban environment- visual shaping and forming of the city.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A9 | Use creative, innovative, and flexible thinking and acquire entrepreneurial | **CLO2** | Identify economic, social, and environmental aspects in urban design projects. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| | and leadership skills to anticipate and respond to new situations. | **CLO6** | Develop designs with accordance to laws and regulations governing urban design And planning. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | **CLO3** | Identify the main social, cultural, economic, and urban factors that affect planning the built environment in general and designing urban spaces. |
| | | **CLO4** | Analyze the image of the city and characteristics of visual conception in the urban environment |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | **CLO1** | Identify knowledge of urban design and levels of planning to solve built environment problems. |
| | | **CLO5** | Develop three dimensional models of students' projects using computer-aided Drawing programs. |
| | | **CLO7** | Design alternative solutions to urban planning and design projects and Environmental problems. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1 | Introduction of urban design | 10 | 2 | 4 | 4 | |
| 2 | Study of the carious levels of planning (national-regional-local) environmental, social, economical, and demographic studies | 10 | 2 | 4 | 4 | |
| 3-4 | • Objectives of Urban design.<br>• Characteristics of Urban design and its policies. | 20 | 4 | 8 | 8 | |
| 5 | The city master plan (definition- components-types) | 10 | 2 | 4 | 4 | |
| 6 | Elements and factors of city planning (buildings and spaces). | 10 | 2 | 4 | 4 | |
| 7 | Visual shaping and forming of the city. (Defining the image of the city) | 10 | 2 | 4 | 4 | |
| 8 | Mid Term Exam | | | | | |
| 9 | characteristics of visual conception in the urban environment (Proportions - enclosure – scale). | 10 | 2 | 4 | 4 | |
| 10-15 | Analysis and design of urban spaces (Use computer application in case studies ) | 60 | 12 | 24 | 24 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6-11 | 7.5 | 5 % |
| 2. | Mid-Term Examination | 8 | 15 | 10% |
| 3. | Final Examination | 16 | 100 | 66.67% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Activities and assignments | Every week | 27.5 | 18.33% |
| 6. | Final Oral Exam (if exists) | .. | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, etc.) | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Hall, P., & Tewdwr-Jones, M. (2019). Urban and regional planning. Routledge. |
| | **Other References** | Chadwick, G. (2016). Models of urban & regional systems in developing countries: Some theories and their application in physical planning (Vol. 36). Elsevier. |
| | **Electronic Sources** (Links must be added) | https://unhabitat.org/sites/default/files/2020/07/indicator_11.7.1_training_module_public_space.pdf |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS: https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Hall, P. (2020). Urban planning: History. Routledge. |
| **Supportive** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |

| | | |
|---|---|---|
| facilities & equipment for teaching and learning | Supplies | Whiteboards. |
| | Electronic Programs | Microsoft Office program |
| | Skill Labs/ Simulators | -- |
| | Virtual Labs | -- |
| | Other (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1 | Introduction of urban design | 2 | 4 | x | | | | | | |
| 2 | Study of the carious levels of planning (national-regional-local) environmental, social, economical, and demographic studies | 2 | 4 | x | x | | | | | |
| 3-4 | • Objectives of Urban design.<br>• Characteristics of Urban design and its policies. | 4 | 8 | | | x | x | | | |
| 5 | The city master plan (definition-components- types) | 2 | 4 | | | | x | | | |
| 6 | Elements and factors of city planning (buildings and spaces). | 2 | 4 | | | | x | | | |
| 7 | Visual shaping and forming of the city. (Defining the image of the city) | 2 | 4 | | | | x | X | | |
| 8 | Mid Term Exam | | | | | | | | | |
| 9 | characteristics of | 2 | 4 | | | | x | | | x |

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| | visual conception in the urban environment (Proportions - enclosure – scale). | | | | | | | | | |
| 10-15 | Analysis and design of urban spaces (Use computer application in case studies ) | 10 | 20 | | | | | | X | x |
| 16 | Final Exam | | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | x | x | x | x | X | X | |
| Tutorial / Exercise | x | x | | | | X | x |
| Group discussion | x | x | | x | X | | |
| Site visit | | | | x | X | | |
| Self-Learning | | | | | | | |
| • Presentation | x | | | | | X | x |
| • Mini project | | | x | | X | X | x |
| • Research and reporting | x | | x | x | X | | |
| Brain storming | | | x | | X | X | x |
| Case study | | | | x | X | | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | x | x | x | x | X | x | |
| Mid-term Exam | x | x | x | | | | |
| Quizzes | | x | x | x | | | |
| Research assignments | x | | x | x | X | | |
| In-class questions (formative assessment) | | | x | x | | | |
| Project assignments | | | | x | X | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| ASSOC. Prof. Dr. Marwa atef | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| **Course Title (according to the bylaw)** | History &Theories of Architecture (3) | | |
| **Course Code (according to the bylaw)** | ARE 314 | | |
| **Department/s participating in offering the course** | Architectural Engineering | | |
| **Number of credit hours/points of the course (according to the bylaw)** | | | |
| **Lecture** | Tutorial / Laboratory | Total contact | |
| 3 | - | **3** | |
| **Course Type** | ☒ Compulsory | ☐ Elective | |
| **Academic level at which the course is taught** | Third year architecture | | |
| **Academic Program** | Architectural Engineering Program | | |
| **Faculty/Institute** | Higher Institute of Engineering and Technology at Manzalla | | |
| **University/Academy** | Manzalla Academy | | |
| **Name of Course Coordinator** | Dr. Marwa Aladham | | |
| **Course Specification Approval Date** | 16 August 2025 | | |
| **Course Specification Approval** | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

A- History of architecture: Medieval architecture in western and Islamic Worlds -Islamic architecture

B- Theory of architecture: Analytical study of the factors affecting architectural design (economical, functional, social, human, psychological, and environmental) - Building technology and construction techniques - architectural theories and criteria of designing for building elements - vertical circulation in buildings - residential buildings -office buildings - commercial buildings.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A4** | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | **CLo3** | Analyze architectural function effectively and enhance communication skills through teamwork in studying architectural form, space, and order to achieve spatial, aesthetic, and technical harmony. |
| | | **CLo5** | Summarize essential aspects of Middle Ages architecture while considering economic, societal, and environmental dimensions, as well as risk management in design. |
| **A5** | Practice research techniques and methods of investigation as an inherent part of learning. | **CLo2** | Organize research on various architectural theories across different periods of the Middle Ages. |
| | | **CLo4** | Apply acquired knowledge by identifying key architectural lessons and principles from different Middle Age theories and integrating them into architectural design. |
| **B1** | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | **CLo1** | Develop an understanding of sustainability principles as they evolved through different civilizations and examine their interactions. |
| | | **CLo6** | Identify key architectural lessons and principles from various Middle Age theories and explore their application in architectural practice. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | **History of Architecture:** (Introduction to medieval architecture overview of Western and Islamic architectural developments.) | 5 | 3 | – | 2 | |
| 2 | **History of Architecture:** (Medieval architecture in the Western world Romanesque and Gothic styles, structural and aesthetic characteristics.) | 5 | 3 | – | 2 | |
| 3 | **History of Architecture:** (Medieval architecture in the Islamic world mosques, madrasas, and palaces; comparison with Western styles.) | 5 | 3 | – | 2 | |
| 4 | **History of Architecture:** (Islamic architecture principles, elements, and regional variations.) | 5 | 3 | – | 2 | |
| 5-6 | **History of Architecture:** (Case studies: Notable examples from both Western and Islamic medieval architecture.) | 10 | 6 | – | 4 | |
| 7 | Integration and Pre-Midterm Review | 5 | 3 | – | | |
| 8 | Mid Term Exam | | | | | |
| 9 | **Theory of Architecture – Factors Affecting Architectural Design:** (Human, psychological, and environmental factors in architectural design.) | 5 | 3 | – | 2 | |
| 10 | **Theory of Architecture – Factors Affecting Architectural Design:** (Impact of building technology and construction techniques on | 5 | 3 | – | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | architectural form and function.) | | | | | |
| 11 | **Architectural Theories & Design Criteria:** (Architectural theories and design principles for building elements.) | 5 | 3 | – | 2 | |
| 12 | **Architectural Theories & Design Criteria:** (Vertical circulation in buildings stairs, ramps, and elevators.) | 5 | 3 | – | 2 | |
| 13-14 | **Architectural Theories & Design Criteria:** (Design principles for residential, office, and commercial buildings.) | 10 | 6 | – | 4 | |
| 15 | **Final Review and Application:** (Discussion and analysis of architectural theories in relation to historical and contemporary buildings.) | 5 | 3 | – | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 2 | 3% |
| 2. | Mid-Term Examination | 8 | 7 | 9% |
| 3. | Final Examination | 16 | 60 | 80% |
| 4. | Lab Exam | – | – | –% |
| 5. | Activities and assignments | Every week | 6 | 8% |
| 6. | Final Oral Exam (if exists) | - | – | – |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Stubbs, M. (2004). Heritage-sustainability: developing a methodology for the sustainable appraisal of the historic environment. Planning Practice & Research, 19(3), 285-305. |
| | **Other References** | Ching, F. D. K., Jarzombek, M., & Prakash, V. (2021). A global history of architecture (3rd ed.). Wiley. |
| | **Electronic Sources** (Links must be added) | Nesbitt, K. (2020). Theories and manifestos of contemporary architecture (2nd ed.). Wiley. |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Podcasts. (2023). Architecture history now. Retrieved from https://podcasts.apple.com/us/podcast/architecture-history-now/id1525647506 |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 |
| 1 | History of Architecture: (Introduction to medieval architecture overview of Western and Islamic architectural | 3 | - | x | | | | | |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 |
| | developments.) | | | | | | | | |
| 2 | History of Architecture: (Medieval architecture in the Western world Romanesque and Gothic styles, structural and aesthetic characteristics.) | 3 | - | | X | | | | |
| 3 | History of Architecture: (Medieval architecture in the Islamic world mosques, madrasas, and palaces; comparison with Western styles.) | 3 | - | x | X | | | | |
| 4 | History of Architecture: (Islamic architecture principles, elements, and regional variations.) | 3 | - | x | | | | | |
| 5-6 | History of Architecture: (Case studies: Notable examples from both Western and Islamic medieval architecture.) | 6 | - | x | X | | | | x |
| 7 | Integration and Pre-Midterm Review | 3 | - | | X | x | X | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | Theory of Architecture – | 3 | - | | | x | | X | |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 |
| | Factors Affecting Architectural Design: (Human, psychological, and environmental factors in architectural design.) | | | | | | | | |
| 10 | Theory of Architecture – Factors Affecting Architectural Design: (Human, psychological, and environmental factors in architectural design.) | 3 | - | x | | x | | X | |
| 11 | Architectural Theories & Design Criteria: (Architectural theories and design principles for building elements.) | 3 | - | | | x | | | x |
| 12 | Architectural Theories & Design Criteria: (Vertical circulation in buildings stairs, ramps, and elevators.) | 3 | - | | X | | X | | x |
| 13-14 | Architectural Theories & Design Criteria: (Design principles for residential, office, and commercial buildings.) | 6 | - | | | x | X | | |
| 15 | Final Review and | 3 | - | x | | | x | | x |

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 |
| | Application: (Discussion and analysis of architectural theories in relation to historical and contemporary buildings.) | | | | | | | | |
| 16 | Final Exam | | | | | | | | |

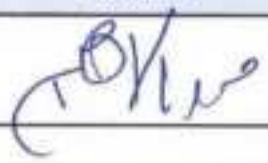
7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | X | x | x | X | x |
| Tutorial / Exercise | x | X | x | x | X | x |
| Group discussion | | X | x | x | | |
| Site visit | | X | | | X | |
| Self-Learning | | | | | | |
| • Presentation | | X | x | x | | x |
| • Mini-project | | | x | x | | x |
| • Research and reporting | x | X | x | x | | x |
| Brain storming | x | X | x | x | X | x |

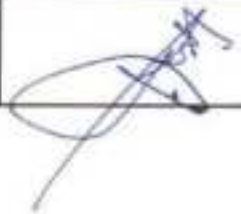
7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | X | x | x | X | |
| Mid-term Exam | x | X | x | | | x |
| Quizzes | x | X | x | x | X | |
| Research assignments | x | X | | | X | x |
| In-class questions (formative assessment) | x | X | x | x | X | |
| Project assignments | x | X | x | x | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa Aladham |  | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf |  | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Foundations | | |
| Course Code (according to the bylaw) | CIVA311 | | |
| Department/s participating in offering the course | Civil Engineering Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Third Year | | |
| Academic Program | Architecture Engineering Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr. Mahmoud El-Gendi | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Study of calculating soil properties and stresses- characteristics and mechanics, and the selection and design of foundations- soil classification- soil compaction - soil compressibility- theory of consolidation- lateral earth pressure-design of shallow and deep foundations- retaining walls- selection of suitable foundations - design of foundations subjected to centralized and decentralized loads.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1 | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO3 | Know types of surface and deep foundations. |
| A8 | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLO1 | Manage how to calculate the soil stress. |
| | | CLO2 | Recognize the distribution of stresses within the soil under the influence of different loads. |
| A9 | Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations. | CLO4 | Design different types of foundations subjected to central loads. |
| | | CLO5 | Design different types of foundations subjected to non-central loads. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO6 | Solve all problems related to foundations. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☐ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☐ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Calculate the soil stress | 6 | 2 | 2 | 2 | |
| 2 – 3-4 | Distributing of stresses within the soil | 18 | 6 | 6 | 6 | |
| 5 - 6 | The influence of different loads. | 12 | 4 | 4 | 4 | |
| 7 | Types of surface and deep foundations | 6 | 2 | 2 | 2 | |
| 8 | Mid Term Exam | | | | | |
| 9 | Types of surface and deep foundations | 6 | 2 | 2 | 2 | |
| 10 - 11 | Designing types of foundations subjected to central loads | 12 | 4 | 4 | 4 | |
| 12-13-14-15 | Designing types of foundations subjected to non-central loads | 24 | 8 | 8 | 8 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | .. | - | - |
| 5. | Activities and assignments | Every week | 12 | 12% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| Learning resources (books, scientific references, | The main (essential) reference for the course | Yasser Eleithy notes. |
| | Other References | Text book. |
| | Electronic Sources | Lecture material and experimental sheets. |

| | | |
|---|---|---|
| etc.) | | Mashour Ghoneim notes. |
| | **Learning Platforms** | https://lms.manzalaacademy.edu.eg/ |
| | **Other** | - |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | - |
| | **Virtual Labs** | - |
| | **Other** (to be mentioned) | - |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLOS" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Calculate the soil stress | 2 | 2 | X | | | | | X |
| 2 – 3- 4 | Distributing of stresses within the soil | 6 | 6 | X | X | | | | X |
| 5 - 6 | The influence of different loads. | 4 | 4 | | | X | X | X | X |
| 8 | Mid Term Exam | | | | | | | | |
| 7-9 | Types of surface and deep foundations | 4 | 4 | | | X | X | X | X |
| 10 - 11 | Designing types of foundations subjected to central loads | 4 | 4 | | | | X | X | X |
| 12-15 | Designing types of foundations subjected to non-central loads | 8 | 8 | | | | X | X | X |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | X | X | X | X | X | X |
| Self-Learning | | | | | | |
| • Mini project | | | X | X | | X |
| • Research and reporting | | | X | X | | X |
| Brain storming | | X | X | | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | X |
| Mid-term Exam | X | X | X | | | X |
| Quizzes | | X | | X | | X |
| Research assignments | | X | X | X | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Mahmoud El-Gendi | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Architectural design (6) | |
| Course Code (according to the bylaw) | ARE 321 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 5 | 7 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | ASSOC. Prof. Dr. Kareem Mahrous | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

The course concentrates on enhancing the students skills in developing architectural solutions and alleviating the environmental-design, problems-studying a variety of structural solutions to help construct wide-span structures and study their potential associated complications- study of natural ands mechanical ventilation-study of artificial and daylighting- use of computer applications and programs in designing, developing, and presenting architectural projects- applications with help of simplified architectural models.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning. | CLO1 | Develop students' abilities to create environmentally friendly designs that alleviate. |
| | | CLO2 | Create structured research in accordance with the standard scientific guidelines. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLO3 | Develop the students abilities to create architectural solutions , functioning and architectural drawings. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO4 | Produce an integrated design that considers the concept of the project in relation to the standards required in the project program. |
| | | CLO6 | Solve problems-studying a variety of structural solutions to help construct wide-span structures |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO5 | Apply the main techniques of integrated design through architectural drawings with natural and mechanical ventilation-study of artificial and day lighting. |
| | | CLO7 | Apply finished drawings and the final presentation arrangement for the project. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-3 | The course concentrates on enhancing the students skills in developing alleviating the environmental-design (SiteAnalysis) | 30 | 6 | 15 | 9 | |
| 4-7 | Enhance thestudents skills in developingarchitectural solutions (DesignConcept, Formationprinciples) | 40 | 8 | 20 | 12 | |
| 8 | Mid Term Exam | | | | | |
| 9-11 | problems-studyinga variety of structural solutionsto help constructwide-span structures (Functional and structural requirements -Project considerations) | 37 | 8 | 20 | 9 | |
| 12 | study of natural ands mechanical ventilation-study of artificial and daylighting (Sustainable architecture) | 10 | 2 | 5 | 3 | |
| 13-14 | Use of computer applications and programs indesigning, developing, and presenting architectural projects-applications with help of simplified architectural models(.Define and solve the problems of the design | 20 | 4 | 10 | 6 | |
| 15 | Final submission of the project | 10 | 2 | 5 | 3 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 13.5 | 6.75% |
| 2. | Mid-Term Examination | 8 | 27 | 13.5% |
| 3. | Final Examination | 16 | 90 | 45% |
| 4. | Lab Exam | .. | .. | .. |
| 5. | Activities and assignments | Every week | 49.5 | 24.75% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 20 | 10% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley & Sons.** |
| | **Other References** | **Barron, M. (2009). Auditorium acoustics and architectural design. Spon Press.** |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | Baxter, M. (2018). Product design. CRC press. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1-3 | The course concentrates on enhancing the students skills in developing alleviating the environmental-design (Site Analysis) | 6 | 15 | x | x | | | | | |
| 4-7 | Enhance the students skills in developing architectural solutions (Design Concept, Formation principles) | 8 | 20 | | | x | x | | | |
| 8 | Mid Term Exam | | | | | | | | | |
| 8-11 | problems-studying a variety of structural solutions to help construct wide-span structures (Functional and structural requirements -Project considerations) | 8 | 20 | | | | | | x | |
| 12 | study of natural ands mechanical ventilation-study of artificial and daylighting (Sustainable architecture) | 2 | 5 | | | | | x | | |
| 13-14 | Use of computer applications and programs in designing, developing, and presenting architectural projects-applications with help of simplified architectural models(.Define and solve the problems of the design | 4 | 10 | | | | | | | x |
| 15 | Final submission of the project | 2 | 5 | | | | x | | | x |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | X | | x | x | x | x | |
| Tutorial / Exercise | | x | x | x | x | x | |
| Group discussion | X | x | | | | | |
| Site visit | X | | | | | | |
| **Self-Learning** | | | | | | | |
| • Presentation | X | x | | | | | |
| • Mini-project | | | | | | | x |
| • Research and reporting | X | x | | | | | x |
| Brain storming | | | x | x | x | x | |
| Case study | | x | | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | X | | x | x | x | x | |
| Oral exam | | | | | | | x |
| Mid-term Exam | X | | x | x | x | x | |
| Quizzes | X | | x | x | x | x | |
| Research assignments | X | x | | | | | |
| In-class questions (formative assessment) | | x | x | x | x | x | |
| Project assignments | | | | | | | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| ASSOC. Prof. Dr. Kareem Mahrous | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Executive design 2 | |
| Course Code (according to the bylaw) | ARE 322 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 1 | 4 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Lamiaa Gamal | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Preparation detailed working drawings of buildings both architectural and structural connections and elements-preparation of sanitary, electrical, and mechanical drawings of architecturally design projects.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO3 | Create detailed working drawings of structural connections |
| | | CLO6 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO4 | Create sanitary drawings of architecturally design projects. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO1 | Create of working details of project Landscape Layout+ Services |
| | | CLO2 | Create ecologically responsible, environmental conservation and rehabilitation designs; through understanding of structural design, construction, technology, and engineering problems associated with building designs |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO5 | Create electrical drawings of architecturally design projects |
| | | CLO7 | Produce realistic executive drawings for building implementation, and employ the requirements, codes, and procedures. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | Concrete ceiling electrical panel Suspended ceiling electrical panel | 14 | 2 | 8 | 4 | |
| 3-7 | Air conditioning systems in buildings Fire systems in buildings | 35 | 5 | 20 | 10 | |
| 8 | Mid Term Exam | | | | | |
| 9 | Drainage systems (rain sanitary) | 7 | 1 | 4 | 2 | |
| 10 | Drainage systems (feeding) | 7 | 1 | 4 | 2 | |
| 11-12 | Raised floors and their types | 14 | 2 | 8 | 4 | |
| 13 | Project final review | 7 | 1 | 4 | 2 | |
| 14-15 | Insulation details for different parts of buildings | 14 | 2 | 8 | 4 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 11 | 7.5% |
| 2. | Mid-Term Examination | 8 | 22.5 | 15% |
| 3. | Final Examination | 16 | 60 | 40% |
| 4. | Lab Exam | - | - | -% |
| 5. | Activities and assignments | Every week | 41.5 | 27.5% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 10% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Styles, K., & Bichard, A. (2012). Working drawings handbook. Routledge. |
| | **Other References** | Allen, E., & Iano, J. (2019). Fundamentals of building construction: materials and methods. |

| | | |
|---|---|---|
| | | John Wiley & Sons. |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | هندسة التشييد (الجزء الثاني تشطيبات المباني - الجزء الثالث مرافق المياه والصرف الصحي)، محمود حسين المصيلحي، 2018 |

| | | |
|---|---|---|
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | lecture | T/L | Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1-2 | Concreteceeiling electrical panel Suspendedceiling electrical panel | 2 | 8 | x | | | | | | |
| 3-7 | Air conditioning systems in buildings Fire systems in buildings | 5 | 20 | | x | x | | | | |
| 8 | Mid Term Exam | | | | | | | | | |
| 9 | Drainage systems (rain - sanitary) | 2 | 8 | | | | x | | | |
| 10 | Drainage systems (feeding) | 1 | 4 | | | | | x | | |
| 11-12 | Raised floors and their types | 2 | 8 | | | | | | x | |
| 13 | Project final review | 1 | 4 | | x | | | | | x |
| 14-15 | Insulation details for different parts of buildings | 2 | 8 | | | | | | | x |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | x | x | x | x | x | x | |
| Tutorial / Exercise | | | x | x | x | x | |
| Group discussion | | | x | | x | | |
| Site visit | | x | | | | | |
| Self-Learning | | | | | | | |
| • Presentation | | | x | | x | | |
| • Mini project | | | | | | x | x |
| • Research and reporting | | | x | | x | | |
| Brain storming | x | x | x | x | x | x | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | x | x | x | x | x | | |
| Oral exam | | | | | | x | x |
| Mid-term Exam | x | x | x | x | x | | |
| Quizzes | x | x | x | x | x | | |
| Research assignments | | | x | | x | | |
| In-class questions (formative assessment) | x | x | x | x | x | | |
| Project assignments | | | | | | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Lamiaa Gamal | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Housing and urban design (1) | |
| Course Code (according to the bylaw) | ARE 323 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Alaa Morgan | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Problems of city planning and housing in Egypt from their economical, social, and cultural dimensions-approaches and concepts of urban planning and housing-analytical study of different housing types: economic, average, above-average, and luxurious-planning and design of housing areas and districts- social, economical, and environmental factors affecting housing and urban design.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A10 | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLO6 | Create plans with accordance to laws and regulations governing urban planning. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLO1 | Explain of Problems of city planning and housing in Egypt from their economical, social, and cultural dimensions. |
| | | CLO2 | Discuss concepts of urban planning and housing |
| | | CLO5 | Create sanitary drawings of architecturally design projects. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO3 | Analyze of different housing types: economic, average, above-average, and luxurious |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO4 | Discuss problems facing the built environment in Egypt |

## 4. Teaching and Learning Methods

☒ Face to face lecture
☐ Online education
☒ Tutorial / Exercise
☒ Group discussion
☐ Laboratory
☒ Site visit
☒ Self-learning
☒ Presentation
☒ Mini project
☒ Research and reporting (self-learning)
☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-3 | Problems of city planning and housing in Egypt from their economical, social, and cultural dimensions-approaches and concepts of urban planning and housing | 18 | 6 | 6 | 6 | |
| 4-7 | analytical study of different housing types: economic, average, above-average, and luxurious ( study of the different types of housing- Characteristics of residential areas and neighborhoods) | 24 | 8 | 8 | 8 | |
| 8 | Mid Term Exam | | | | | |
| 9-12 | planning and design of housing areas (Define problems-Suggest and evaluate alternative solutions) | 24 | 8 | 8 | 8 | |
| 13-14 | Review analysis of problems, constraints, and potentials of the project area. | 12 | 4 | 4 | 4 | |
| 15 | Final submission of the exercise | 6 | 2 | 2 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 9 | 9% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | -- | -- | 0% |
| 5. | Activities and assignments | Every week | 16.5 | 16.5% |
| 6. | Final Oral Exam (if exists) | - | -- | 0% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Hall, P., & Tewdwr-Jones, M. Urban and regional planning. Routledge. (2019). |
| | **Other References** | Chadwick, G. Models of urban & regional systems in developing countries: Some theories and their application in physical planning (Vol. 36). Elsevier. (2016). |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | Smets, P. G. S. MHousing finance and the urban poor. Rawat. . (2004). |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-3 | Problems of city planning and housing in Egypt from their economical, social, and cultural dimensions-approaches and concepts of urban planning and housing | 6 | 6 | x | x | | | | |
| 4-7 | analytical study of different housing types: economic, average, above-average, and luxurious ( study of the different types of housing-Characteristics of residential areas and neighborhoods) | 8 | 8 | | | x | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-12 | planning and design of housing areas (Define problems-Suggest and evaluate alternative solutions) | 8 | 8 | | | | | x | x |
| 13-14 | Review analysis of problems, constraints, and potentials of the project area. | 4 | 4 | | | | x | | x |
| 15 | Final submission of the exercise | 2 | 2 | | | | | | x |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | x | X | x | | |
| Tutorial / Exercise | | | X | x | x | |
| Group discussion | | | X | x | | |
| Site visit | x | | X | | | |
| Self-Learning | | | | | | |
| • Presentation | | | X | x | | |
| • Mini-project | | | | | | x |
| • Research and reporting | | | X | x | | |
| Brain storming | x | x | | | x | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | x | X | x | | |
| Mid-term Exam | x | x | X | x | | |
| Quizzes | x | x | X | x | | |
| Research assignments | | | X | x | | |
| In-class questions (formative assessment) | | | X | x | x | |
| Project assignments | | | | | | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Alaa Morgan | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | | Technical installations for buildings | |
| Course Code (according to the bylaw) | | ARE 324 | |
| Department's participating in offering the course | | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | | Third year | |
| Academic Program | | Architectural Engineering Program | |
| Faculty/Institute | | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | | Manzalla Academy | |
| Name of Course Coordinator | | ASSOC.Prof. Dr. Marwa Atef | |
| Course Specification Approval Date | | 16 August 2025 | |
| Course Specification Approval | | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Mechanical installations (elevators- escalators-boilers-solar energy - ventilation and r conditioning )

Artificial lighting ( units for measuring light- principals for lighting- electric is for buildings ).

Acoustics ( the nature of sounds-modified pressure levels-sound analysis -noise-standards affecting comfort zones-acoustic design of building and space ) .

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO2 | Create working details for Artificial lighting |
| | | CLO3 | Discuss Acoustics ( the nature of sounds acoustic design of building and space ) |
| A6 | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | CLO4 | Discuss types of finishing materials ,characteristics and techniques of installation of the same material for different functions |
| | | CLO6 | Analyze and present ideas in the form of electronic presentation and verbal explanation to audiences and Prepare technical reports writing |
| B5 | Prepare design project briefs and documents, and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | CLO1 | Create drawings for Mechanical installations |
| | | CLO5 | Create drawings for installation of finishing materials |

## 4. Teaching and Learning Methods

☒ Face to face lecture

☐ Online education

☒ Tutorial / Exercise

☒ Group discussion

☐ Laboratory

☒ Site visit

☒ Self-learning

☒ Presentation

☒ Mini project

☒ Research and reporting (self-learning)

☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-3 | Mechanical installations (elevators- escalators-boilers-solar energy - ventilation and conditioning ) | 15 | 6 | 6 | 3 | |
| 4-5 | Artificial lighting ( units for measuring light- principals for lighting- electric is for buildings ). | 10 | 4 | 4 | 2 | |
| 6-7 | Acoustics ( the nature of sounds-modified pressure levels-sound analysis -noise-standards affecting comfort zones-acoustic design of building and space ) | 10 | 4 | 4 | 2 | |
| 8 | Mid Term Exam | | | | | |
| 9-12 | Discuss types of finishing materials ,characteristics and techniques of installation of the same material for different functions<br>Discuss maintenance of walls, roofs, facades, floors. | 20 | 8 | 8 | 4 | |
| 13-14 | Present case Studies | 10 | 4 | 4 | 2 | |
| 15 | Discussions | 5 | 2 | 2 | 1 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 9 | 9% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | .. | .. | .. |
| 5. | Activities and assignments | Every week | 16.5 | 16.5% |
| 6. | Final Oral Exam (if exists) | - | .. | 0% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Charles S. Wasson, System Engineering Analysis, Design, and Development: Concepts, Principles, and practices, 2015. |
| | **Other References** | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |

| | | |
|---|---|---|
| **teaching and learning** | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-3 | Mechanical installations (elevators- escalators- boilers-solar energy - ventilation and conditioning ) | 4 | 4 | x | | | | | |
| 4-5 | Artificial lighting ( units for measuring light- principals for lighting- electric is for buildings ). | 4 | 4 | | x | | | | |
| 6-7 | Acoustics ( the nature of sounds-modified pressure levels-sound analysis -noise-standards affecting comfort zones-acoustic design of building and space ) | 4 | 4 | | | x | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-12 | Discuss types of finishing materials ,characteristics and techniques of installation of the same material for different functions<br>Discuss maintenance of walls, roofs, facades, floors. | 8 | 8 | | | | x | x | |
| 13-14 | Present case Studies | 4 | 4 | | | | | | x |
| 15 | Discussions | 2 | 2 | | | | | | x |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | x | x | x | | |
| Tutorial / Exercise | | | x | x | x | |
| Group discussion | | | x | x | | |
| Site visit | x | | x | | | |
| Self-Learning | | | | | | |
| • Presentation | | | x | x | | |
| • Mini-project | | | | | | x |
| • Research and reporting | | | x | x | | |
| Brain storming | x | x | | | x | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | x | x | x | | |
| Mid-term Exam | x | x | x | x | | |
| Quizzes | x | x | x | x | | |
| Research assignments | | | x | x | | |
| In-class questions (formative assessment) | | | x | x | x | |
| Project assignments | | | | | | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| ASSOC.Prof. Dr. Marwa Atef | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Sanitary Engineering | |
| Course Code (according to the bylaw) | CIVA 321 | |
| Department/s participating in offering the course | Civil Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Samira Mohammed | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Hydraulic services and plumbing fixtures in buildings- hot and cold water supply and distribution, sewage systems and waste disposal- ovens and kitchen appliance- fire distinguishers in buildings.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4. | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.. | CLO1 | Discuss the system of water supply. |
| A10. | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLO3 | Develop the costs of waste management systems. |
| | | CLO5 | Discuss the concept of the Hydraulic services in buildings and Develop the Appliances used at home. |
| B3. | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO2 | Design waste handling or disposing mechanisms, such as incinerators, garbage plants and sanitary fills. |
| | | CLO4 | Develop the concept of the fire distinguishers in buildings. |

### 4. Teaching and Learning Methods

☒ Face to face lecture

☐ Online education

☒Tutorial / Exercise

☐ Group discussion

☐ Laboratory

☐ Site visit

☒Self-learning

☐ Presentation

☐Mini project

☒ Research and reporting (self-learning)

☒ Brainstorming

### Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ ....) | Training (Practical/ Clinical/ ....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 – 2 | Introduction - Hydraulic services. | 12 | 4 | 4 | 4 | |
| 3 – 4 | Plumbing fixtures in buildings. | 12 | 4 | 4 | 4 | |
| 5 – 6 | The water supply and distribution | 12 | 4 | 4 | 4 | |
| 7 | Sewage systems and waste disposal. | 6 | 2 | 2 | 2 | |
| 8 | Mid-Term | | | | | |
| 9-10 | ovens and kitchen appliance | 12 | 4 | 4 | 4 | |
| 11-12 | Fire distinguishers in buildings | 12 | 4 | 4 | 4 | |
| 13-14 | Costs of waste management systems. | 4 | 4 | 4 | 4 | |
| 15 | Design waste handling or disposing mechanisms. | 6 | 2 | 2 | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | **4.5%** |
| 2. | Mid-Term Examination | 8 | 13.5 | **13.5%** |
| 3. | Final Examination | 16(As Schedule) | 70 | **70%** |
| 4. | Lab Exam | - | .. | .. |
| 5. | Activities | Every week | 12 | **12%** |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Greene County Sanitary Engineering Department.Tony Waltham, 2022 |
| | **Other References** | Lecture note |

| | | |
|---|---|---|
| | **Electronic Sources** (Links must be added) | What is Sanitary Engineering? | How Things Work (bringmeinfo.com) |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader,Autocad |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1 – 2 | Introduction - Hydraulic services. | 4 | 4 | | | X | | X |
| 3 – 4 | Plumbing fixtures in buildings. | 4 | 4 | X | | X | | |
| 5 -6 | The water supply and distribution. | 4 | 4 | X | | | | |
| 7 | Sewage systems and waste disposal. | 2 | 2 | | X | X | X | |
| 8 | Mid Term Exam | | | | | | | |
| 9-10 | ovens and kitchen appliance | 4 | 4 | | | | | X |
| 11-12 | Fire distinguishers in buildings. | 4 | 4 | | X | | X | |
| 13-14 | Costs of waste management systems. | 4 | 4 | | | X | | |
| 15 | Design waste handling or disposing mechanisms. | 2 | 2 | | X | | | |
| 16 | Final Exam | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Face to face lecture | X | X | X | X | X |
| Online education | | | | | |
| Tutorial / Exercise | X | X | X | X | X |
| Self-Learning | | | | | |
| • Research and reporting | | X | X | X | |
| Brain storming | | X | | X | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Learning outcomes "CLOs" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| written exam | X | X | X | X | X |
| Quizzes | | X | | X | |
| Midterm Exam | | | X | X | |
| Research assignments | | X | | X | |
| In-class questions (formative assessment) | X | | | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Samira Mohammed | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | |
|---|---|
| Course Title (according to the bylaw) | **Practical Training-Architectural Eng. (4)** |
| Course Code (according to the bylaw) | **TRN 344** |
| Department/s participating in offering the course | **Architectural Engineering department** |

Course Marks

| Discussion | Report | Institution's Assessment | Total |
|---|---|---|---|
| 40% | 30% | 30% | Pass/Not Pass |

Hours/ Weeks

| **48 total hours/4 weeks** | | |
|---|---|---|
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Third Year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Institute's staff | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

The training includes the student's attendance at the institute during the summer field training period, where they will be trained on Autodesk Revit, Rhinoceros, Grasshopper, or Lumion. The aim is to enhance their skills in digital design, parametric modeling, and visual simulation, which will help them produce advanced architectural designs and analyze the environmental and spatial performance of projects

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A6. | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | CLO4 | Communicate architectural ideas clearly and professionally through 3D models, rendered images, animations, and real-time simulations |
| A9. | Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations. | CLO5 | Work collaboratively in multidisciplinary teams to create integrated parametric designs and visualizations using Revit, Rhino, Grasshopper, and Lumion. |
| B1. | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLO1 | Create detailed 3D architectural models using Autodesk Revit, including floor plans, elevations, sections, and schedules. |
| | | CLO3 | Apply advanced rendering techniques, material mapping, and environmental effects to produce professional-quality architectural presentations. |
| B5. | Prepare design project briefs and documents, and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | CLO2 | Use Grasshopper to create complex geometric forms, generative designs, and algorithm-driven solutions for architectural challenges. |

**4. Teaching and Learning Methods**

- ☒ Face to face lecture
- ☐ Online education
- ☒ Exercise
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation

☒ Group discussion
☐ Laboratory
☐ Mini project
☒ Research and reporting (self-learning)
☐ Brainstorming

**Course Schedule**

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Digital design using Autodesk Revit | 12 | - | - | 3 | |
| 2 | Parametric modeling using Rhinoceros and Grasshopper | 12 | - | - | 4 | |
| 3 | Visual simulation using Lumion | 12 | - | - | 3 | |
| 4 | Integration of BIM, Parametric Design, and Visualization Workflows | 12 | - | - | 2 | |
| Total | 48 total hours | | | | | |

**5. Methods of students' assessment**

| No. | Assessment Methods | Weeks | Percentage of Total Course Marks |
|---|---|---|---|
| 1. | Report | .. | 30% |
| 2. | Mini-Project Assignment | .. | - |
| 3. | Discussion | .. | 40% |

| | | | |
|---|---|---|---|
| 4. | Institution's Assessment | - | 30% |
| Total | | 100% | |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Yakhou, L., & Dorst, K. (2023). *Digital architectural design: Integrating BIM, parametric modeling, and real-time visualization* (2nd ed.). Routledge. |
| | **Other References** | *Digital Architectural Design: Integrating BIM, Parametric Modeling, and Real-Time Visualization* |
| | **Electronic Sources** (Links must be added) | https://www.autodesk.com/solutions/bim/resources/interoperability-between-bim-and-visualization-tools<br>https://www.grasshopper3d.com |
| | **Learning Platforms** (Links must be added) | |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards and smart boards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Hrs | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|---|---|
| | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| 1 | Digital design using Autodesk Revit | 12 | X | | | | X |
| 2 | Parametric modeling using Rhinoceros and Grasshopper | 12 | | X | | | X |
| 3 | Visual simulation using Lumion | 12 | | | X | X | |
| 4 | Integration of BIM, Parametric Design, and Visualization Workflows | 12 | | | | X | X |
| Total | 48 total hours | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Face to face lecture | X | X | X | X | X |
| Exercise | | X | | X | |
| Group discussion | X | | X | | X |
| Self-Learning | | | | | |
| Presentation | X | | | X | |
| Research and reporting | | X | | X | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | |
|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 |
| Oral Discussion | X | X | X | X | X |
| Research assignments | | | X | | |
| In-class Question | | X | | X | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Institute's staff | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Executive designs (3) | |
| Course Code (according to the bylaw) | ARE 411 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 1 | 4 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Fourth year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Lamiaa Gamal | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Preparation of a complete group of executive architectural design drawing for a project with specific function, characterized with wide span- making studies and detailed architectural drawings of cladding (internal and external ), suspended ceilings, acoustical treatments, damp and water proofing, thermal insulation, lighting, furniture, technical facilities and supplements- legislations and building codes- use of computer programs in calculating and preparing the quantitative preconditions

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with | CLO1 | Create an integrated set of executive designs and executive drawings for a specialized project that contains a long span. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| | consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO2 | Apply detailed drawings for cladding, binding and ceiling works |
| **A9** | Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations. | CLO4 | Draw Build standards and conventions to produce clear, concise drawings. |
| **B2** | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO3 | Apply building codes and regulations to their designs. |
| | | CLO6 | Devise their drawings with other disciplines, such as structural engineering and mechanical, electrical, and plumbing (MEP) engineering. |
| **B3** | Generate ecologically responsible environmental conservation and rehabilitation designs through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO5 | Design building components and systems in detail, taking into account factors such as structural integrity, performance, and constructability. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☐ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | **Training** (Practical/ Clinical/ .....) | **Self-learning (Tasks/ Assignments / Projects/ ...)** | Other (to be determined) |
| **1-3** | Introduction on how to prepare a complete group of executive architectural design drawings for a project with a specific function characterized with wide span | 21 | 3 | 12 | 6 | |
| **4-7** | making studies and detailed architectural drawings of cladding (internal and external) suspended ceilings. | 28 | 4 | 16 | 8 | |
| **8** | Mid Term Exam | | | | | |
| **9-11** | Studying acoustic treatments, damp and water proofing, thermal insulation, lighting, furniture, technical facilities and supplements | 24 | 3 | 12 | 9 | |
| **12** | Applying legislation and building codes | 8 | 1 | 4 | 3 | |
| **13-14** | Use of computer programs in calculating and preparing the quantitative preconditions. | 16 | 2 | 8 | 6 | |
| **15** | Final submission of the project | 8 | 1 | 4 | 3 | |
| **16** | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 11 | 7.5% |
| 2. | Mid-Term Examination | 8 | 22.5 | 15% |
| 3. | Final Examination | 16 (As Schedule) | 60 | 40% |
| 4. | Lab Exam | .. | .. | ..% |

| | | | | |
|---|---|---|---|---|
| 5. | Activities and assignments | Every week | 41.5 | 27.5% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 10% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Ching, F. D. (2020). Building construction illustrated. John Wiley & Sons. |
| | **Other References** | Lecture material and sheets. |
| | **Electronic Sources** (Links must be added) | AutoCAD - Revit. https://www.autodesk.com/ |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Imani, S. (2020). Low Power Analog Techniques for Wearable Biosensors. University of California, San Diego. |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Render |
| | **Skill Labs/ Simulators** | AutoCAD- Revit – Photoshop. |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-3 | Introduction on how to prepare a complete group of executive architectural design drawings for a project with a specific function characterized with wide span | 3 | 12 | X | | | | | |
| 4-7 | making studies and detailed architectural drawings of cladding | 4 | 16 | | X | X | | | |

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| | (internal and external) suspended ceilings. | | | | | | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-11 | Studying acoustic treatments, damp and water proofing, thermal insulation, lighting, furniture, technical facilities and supplements | 3 | 12 | | | | X | | |
| 12 | Applying legislation and building codes | 1 | 4 | | X | | | X | |
| 13-14 | Use of computer programs in calculating and preparing the quantitative preconditions. | 2 | 8 | | | | | X | X |
| 15 | Final submission of the project | 1 | 4 | | | | | | X |
| 16 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | | | X | X | X | X |
| Tutorial / Exercise | | X | X | X | X | X |
| Group discussion | X | X | | | | |
| Laboratory | X | | | X | | |
| Self-Learning | | | | | | |
| • Presentation | X | X | | | | X |
| • Research and reporting | X | X | | X | | |
| Brainstorming | | | X | X | X | X |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | | X | X | X | X |
| Oral exam | X | | X | | | |

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Mid-term Exam | X | X | X | | | |
| Quizzes | | X | X | X | X | |
| Research assignments | X | X | | | | |
| In-class questions (formative assessment) | | | X | X | X | |
| Project assignments | | | | | | X |

Course coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Dr. Lamiaa Gamal | | 2025-2026 |

Program coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Architectural designs (7) | |
| Course Code (according to the bylaw) | ARE 412 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 1 | 5 | 6 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Fourth year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Alaa Morgan | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Application of knowledge and skills of the professional, technical, architectural, structural, and technological sciences in the architectural and urban design processes for applicable projects - using architectural modeling as a design aid- discussion of design alternatives and solutions of the same problem- study, analysis, and criticism of the alternatives- studies of the environmental strategy applied to the architectural and urban projects.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning. | CLO7 | Design students for professional practice by requiring them to complete a project that meets the highest standards of excellence. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLO1 | Develop students' ability to design complex and innovative architectural solutions. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO3 | Restate students' ability to think critically and reflectively about their design work. |
| | | CLO5 | Apply communicates original and innovative architectural design solutions that respond to complex social, environmental, and technological challenges. |
| B3 | Generate ecologically responsible environmental conservation and rehabilitation designs through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO6 | Critique the social, environmental, and aesthetic impacts of their designs. |
| B5 | Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | CLO2 | Establish students' technical skills in architectural drawing, modeling, and construction. |
| | | CLO4 | Identify the problem of environment and how to overcome it. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☐ Mini project

☐ Laboratory

☒ Research and reporting (self-learning)

☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-3 | Discussing issues and subjects of advanced architectural design trends | **24** | 3 | 15 | 6 | |
| 4-7 | studying design principles and constraints of the advanced trends | **32** | 4 | 20 | 8 | |
| 8 | Mid Term Exam | | | | | |
| 9-11 | Case studies covering the advanced trends. | **27** | 3 | 15 | **9** | |
| 12 | Applying legislation and building codes in the project | **9** | 1 | 5 | **3** | |
| 13 | Use of computer programs for preparing the | **9** | 1 | 5 | **3** | |
| 14-15 | Final submission of the project | **18** | 2 | 10 | **6** | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 14 | 7.71 % |
| 2. | Mid-Term Examination | 8 | 27 | 15.43% |
| 3. | Final Examination | 16 (As Schedule) | 70 | 40% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Activities and assignments | Every week | 49 | 28.29% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 15 | 8.57% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | • Neufert, E., & Neufert, P. (2012). Architects' data. John Wiley & Sons.<br>• د. أحمد صلاح الدين عوف، مقدمة في التصميم العمراني ، مطبعة الزهراء، القاهرة، مصر، ٢٠٠٢م.<br>د. فاروق عباس حيدر – م. عمر فاروق حيدر، التصميم المعماري، منشأة المعارف، الاسكندرية، مصر، ٢٠١٤م |
| | **Other References** | Lecture material and sheets.<br>د. طارق فاروق أبو عوف، تحليل الموقع، مؤسسة سكاي للكتاب والنشر والتوزيع، القاهرة، مصر، ٢٠١٤م |
| | **Electronic Sources** (Links must be added) | https://www.autodesk.com/<br>AutoCAD- Revit |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | موقع الهيئة العامة للتنمية السياحية على شبكة الإنترنت<br>مجلة عالم البناء - مجلة تصميم |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program - Acrobat Reader |
| | **Skill Labs/ Simulators** | AutoCAD- Revit – Photoshop |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1-3 | Discussing issues and subjects of advanced architectural design trends | 3 | 15 | X | | | | | | |
| 4-7 | studying design principles and constraints of the advanced trends | 4 | 20 | | | X | | | | |
| 8 | Mid Term Exam | | | | | | | | | |
| 8-11 | Case studies covering the advanced trends. | 3 | 15 | | | | | X | X | |
| 12 | Applying legislation and building codes in the project | 1 | 5 | | | | X | X | | |
| 13 | Use of computer programs for preparing the project | 1 | 5 | | X | | | | | |
| 14-15 | Final submission of the project | 2 | 10 | | | | | | | X |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | X | X | | | X | X | |
| Tutorial / Exercise | | X | X | X | X | X | X |
| Group discussion | X | X | | | | | |
| Site visit | X | | | | | | |
| Self-Learning | | | | | | | |
| • Presentation | X | X | | | | | X |
| • Research and reporting | X | X | | X | | | |
| Brainstorming | | | X | X | X | X | |
| Case study | X | | X | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | | | x | x | x | x | |
| Oral exam | | | x | | | x | |
| Mid-term Exam | x | x | x | | | | |
| Quizzes | | x | x | x | x | | |
| Research assignments | x | x | | | | | |
| In-class questions (formative assessment) | | | x | x | X | | |
| Project assignments | | | | | | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Alaa Morgan | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | History & Theories of Architecture (4) | |
| Course Code (according to the bylaw) | ARE 413 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 3 | - | 3 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Fourth year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Marwa El-Adham | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Study of architectural theories and constraints of public buildings: institutional, governmental, educational, cultural (museums- exhibitions-theaters-cinemas), healthcare, and touristic- study of the design philosophy of intelligent buildings and recent projects with advanced techniques.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO3 | Apply critical thinking and analytical skills to the evaluation of architectural theories and practices. |
| | | CLO4 | Develop their own perspectives on the built environment. |
| A5 | Practice research techniques and methods of investigation as an inherent part of learning. | CLO2 | Analyze architectural works in terms of their historical, theoretical, and cultural contexts. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLO1 | Reorganize the history of architecture from the 20th century to the present day. |
| | | CLO5 | Apply their ideas about architecture effectively in writing and speech. |
| | | CLO6 | Develop their own architectural thinking and prepare for a career in architecture. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-3 | Medieval architecture in the West and the Islamic world | 12 | 9 | - | 3 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 4-7 | An analytical study of the factors affecting architectural design (ecoonomic, functional, social, humanitarian, psychological and environmental) | **16** | 12 | - | **4** | |
| 8 | Mid Term Exam | | | | | |
| 9-11 | Building materials technology and construction methods | **12** | 9 | - | **3** | |
| 12-15 | Studying architectural theories and design determinants for elements of private and public use – vertical distribution units – residential – administrative – commercial buildings. | **12** | 9 | - | **3** | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 2 | 3% |
| 2. | Mid-Term Examination | 8 | 7 | 9% |
| 3. | Final Examination | (As Schedule) | 60 | 80% |
| c | Lab Exam | - | .. | ..% |
| 5. | Reports and assignments | Every week | 6 | 8% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | **Jencks, C. (1990). The new moderns from late to neo-modernism. (No Title).** |
| | **Other References** | **Lecture material and sheets.** |

| | | |
|---|---|---|
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | **Jencks, C., & Nakamura, T. (1986). Charles Jencks. A+ U Publishing Company.** |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-3 | Medieval architecture in the West and the Islamic world | 9 | – | X | | | | | |
| 4-7 | An analytical study of the factors affecting architectural design (economic, functional, social, humanitarian, psychological and environmental) | 12 | – | | X | X | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 8-11 | Building materials technology and construction methods | 9 | – | | | X | X | | |
| 12-15 | Studying architectural theories and design determinants for elements of private and public use – vertical distribution units – residential – administrative – commercial buildings. | 9 | – | | | | | X | X |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | | X | X | X | X |
| Tutorial / Exercise | | | X | X | X | X |
| Group discussion | X | X | | | | |
| Site visit | | | X | | | |
| Self-Learning | | | | | | |
| • Presentation | X | X | | | | X |
| • Research and reporting | X | X | | X | | |
| Brainstorming | | X | X | X | X | X |
| Case study | | X | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | | X | X | X | X |
| Mid-term Exam | X | X | X | | | |
| Quizzes | | X | X | X | X | |
| Research assignments | X | X | | | | X |
| In-class questions (formative assessment) | | | X | X | X | |
| Project assignments | | | | | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa El-Adham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Interior design | |
| Course Code (according to the bylaw) | ARE 414 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Fourth year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Ass.Prof.Dr. Marwa Atef | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Principal of design and shaping the interior design of public and private buildings-building interior components and technical systems: lighting- acoustics- industrial design and furniture- materials and tools- textures-finishing- aesthetics of architectural spaces- visual perception of spaces- reach erchers and applicable research- study of colors and their psychological effects- application of the color theory on the interior design of buildings

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A8 | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLO1 | Discuss the principles of architectural design and how they apply to interior spaces. |
| | | CLO2 | Select materials, finishes, and furniture for interior spaces. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO3 | Use CAD and other computer-aided design software to create and present interior design drawings. |
| | | CLO4 | Identify and comply with building codes and regulations. |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO5 | Discuss with other professionals, such as architects, contractors, and engineers, to complete interior design projects. |
| | | CLO6 | Create functional and aesthetic interior spaces that meet the needs of users. |
| B5 | Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | CLO7 | Identify furniture and accessories that complement the overall design of an interior space. |
| | | CLO8 | Present their design ideas effectively. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☐ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | Introduction about principal of design and shaping the interior design | **12** | 4 | 4 | **4** | |
| 3 | Building interior components and technical systems | **6** | 2 | 2 | **2** | |
| 4 | Industrial design and furniture- materials | **6** | 2 | 2 | **2** | |
| 5-7 | Aesthetics of architectural spaces- visual perception of spaces | **18** | 6 | 6 | **6** | |
| 8 | **Mid Term Exam** | | | | | |
| 9 | Research and applicable research of lighting | **6** | 2 | 2 | **2** | |
| 10 | Study of colors and their psychological effects | **6** | 2 | 2 | **2** | |
| 11-12 | Application of the color theory on the interior design of buildings. | **12** | 4 | 4 | **4** | |
| 13-14 | Use of computer programs in calculating and preparing the quantitative preconditions | **12** | 4 | 4 | **4** | |
| 15 | Final submission of the project | **6** | 2 | 2 | **2** | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 9 | 9% |
| 3. | Final Examination | (As Schedule) | 60 | 60% |
| 4. | Lab Exam | .. | .. | ..% |
| 5. | Activities and assignments | Every week | 16.5 | 16.5% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 10 | 10% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Jencks, Charles. The New Moderns: From Late to Neo-modernism. 1st edition: Rizzoli, 1990. |
| | **Other References** | Lecture material and sheets. |
| | **Electronic Sources** (Links must be added) | **https://www.autodesk.com/** |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | Jencks, Charles. *Current Architecture*. 1st edition: Academy Editions Ltd, 1982. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLOs" | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | LO6 | LO7 | CLO8 |
| 1-2 | Introduction about principal of design and shaping the interior design | 4 | 4 | X | X | | | | | | |
| 3 | Building interior components and technical systems | 2 | 2 | | X | X | X | | | | |
| 4 | Industrial design and furniture-materials | 2 | 2 | | | X | X | | | | |
| 5-7 | Aesthetics of architectural spaces- visual perception of spaces | 6 | 6 | X | X | X | | | | | |
| 8 | Mid Term Exam | | | | | | | | | | |
| 9 | Research and applicable research of lighting | 2 | 2 | | | X | X | | | | |
| 10 | Study of colors and their psychological effects | 2 | 2 | | X | | | | | X | |
| 11-12 | Application of the color theory on the interior design of buildings. | 4 | 4 | X | | | | X | X | | |
| 13-14 | Use of computer programs in calculating and preparing the quantitative preconditions. | 4 | 4 | | | X | | | X | X | X |
| 15 | Final submission of the project | 2 | 2 | | | | | X | | X | X |
| 16 | Final Exam | | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Face to face lecture | X | X | X | X | X | X | X | X |
| Tutorial / Exercise | | X | X | X | X | X | | |
| Group discussion | X | X | | | | | | |
| Site visit | X | | | | | | | |
| Self-Learning | | | | | | | | |
| • Presentation | X | X | | | | X | | |
| • Research and reporting | X | X | | X | | | | |
| Brainstorming | | | X | X | X | X | X | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO 6 | CLO 7 | CLO 8 |
| Final written exam | | | X | X | X | X | X | X |
| Oral exam | X | | | | X | X | X | |
| Mid-term Exam | X | X | X | | | | | |
| Quizzes | | X | X | X | X | | | X |
| Research assignments | X | X | | | | X | | |
| In-class questions (formative assessment) | | | X | X | X | | X | |
| Project assignments | | X | | | | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Ass.Prof.Dr. Marwa Atef | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Urban Planning (2) | |
| Course Code (according to the bylaw) | ARE 415 | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 3 | 5 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Fourth year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Alaa Morgan | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Landscaping and site/arrangements- analytical study of site characteristics and its r urban' Database-social, economical, and cultural database- detailed study of the city's transportation network-numerical analysis of functional relationships within the site-applicable project in one of the old or new cities.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO3 | Develop students' skills in urban planning analysis and design. |
| | | CLO5 | Presenting students how to collect and analyze data, develop and evaluate planning alternatives, and communicate their planning ideas effectively. |
| B1 | Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences. | CLO1 | Evaluate students' knowledge and understanding of urban planning theories and practices. |
| | | CLO7 | Create detailed models of students' projects using computer programs to demonstrate urban factors that affect planning the built environment. |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO2 | Use urban land planning, transportation planning, environmental planning, and economic development planning. |
| | | CLO4 | Identify the problem of environment and how to overcome it. |
| | | CLO6 | Apply their knowledge and skills to real-world urban planning problems and challenges. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical /Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | Analytical study of site characteristics | **14** | 4 | 6 | **4** | |
| 3-4 | detailed study of the city's transportation network | **14** | 4 | 6 | **4** | |
| 5-7 | analytical study of site urban Database-social, economic, and cultural database | **21** | 6 | 9 | **6** | |
| 8 | Mid Term Exam | | | | | |
| 9 | Numerical analysis of functional relationships within the site | 7 | 2 | 3 | **2** | |
| 10-13 | Applicable project in one of the old or new cities. | **28** | 8 | 12 | **8** | |
| 14-15 | Use computer applications in case studies and applications for the project | **14** | 4 | 6 | **4** | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| **1.** | Quizzes | 6, 11 | 6 | 4% |
| **2.** | Mid-Term Examination | 8 | 12 | 8% |

| | | | | |
|---|---|---|---|---|
| 3. | Final Examination | (As Schedule) | 100 | 66.67% |
| 4. | Lab Exam | .. | ..... | ..% |
| 5. | Reports and assignments | Every week | 22 | 14.66% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 10 | 6.67% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | د. أحمد خالد علام، تخطيط المدن، مكتبة الانجلو المصرية، القاهرة، مصر، ١٩٩٨م.<br>د. حازم محمد إبراهيم، محاضرات قسم التخطيط، كلية الهندسة، جامعة الأزهر، القاهرة، مصر، ١٩٨١م.<br>د. عاطف حمزة حسن، تخطيط التجمعات العمرانية الصغيرة، القاهرة، مصر، ٢٠١٤م |
| | **Other References** | **Lecture material and sheets.**<br>**John Glasson & Tim MArshall., (2007), Regional Planning, W. W. Norton & Company, New York, London**<br>**Lynch, K., (1981), A Theory of Good City Form , The MIT Press** |
| | **Electronic Sources** (Links must be added) | AutoCAD- 3dsMax – Photoshop.<br>**https://www.autodesk.com/** |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | موقع الهيئة العامة للتخطيط العمراني على شبكة الإنترنت<br>موقع وزارة الإسكان والمرافق والمجتمعات العمرانية الجديدة على شبكة الإنترنت<br>موقع هيئة المجتمعات العمرانية الجديدة على شبكة الإنترنت |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | AutoCAD- 3dsMax – Photoshop. |
| | **Virtual Labs** | – |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Learning outcomes "LOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1-2 | Analytical study of site characteristics | 4 | 6 | X | | X | | | | |
| 3-4 | detailed study of the city's transportation network | 4 | 6 | | X | | | | | |
| 5-7 | analytical study of site urban Database-social, economical, and cultural database | 6 | 9 | | | X | X | | | |
| 8 | Mid Term Exam | | | | | | | | | |
| 9 | Numerical analysis of functional relationships within the site | 2 | 3 | | | | X | | | |
| 10-13 | Applicable project in one of the old or new cities. | 8 | 12 | | | | | X | X | |
| 14-15 | Use computer applications in case studies and applications for the project | 4 | 6 | | | | | | | X |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | X | X | X | X | X | | |
| Tutorial / Exercise | X | | | X | X | X | X |
| Group discussion | X | X | | X | X | X | |
| Site visit | X | X | X | | | | |
| Self-Learning | | | | | | | |
| • Presentation | X | X | | | | | X |
| • Mini-project | | | | | X | X | X |
| • Research and reporting | X | X | X | | | X | |
| Brain storming | | | X | X | X | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | LO1 | LO2 | LO3 | LO4 | LO5 | LO6 | LO7 |
| Final written exam | x | x | x | x | x | x | X |
| Oral exam | x | | | | x | x | |
| Mid-term Exam | x | x | x | x | | | |
| Quizzes | x | x | | x | | x | |
| Research assignments | x | | | x | x | x | X |
| In-class questions (formative assessment) | x | x | x | | | | |
| Project assignments | | | x | | x | x | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Alaa Morgan | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | | Housing and urban design (2) | |
| Course Code (according to the bylaw) | | ARE 421 | |
| Department/s participating in offering the course | | Architecture Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 4 | 6 | |
| Course Type | | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | | Fourth year | |
| Academic Program | | Architecture Engineering Department | |
| Faculty/Institute | | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | | Manzalla Academy | |
| Name of Course Coordinator | | Dr. Alaa Morgan | |
| Course Specification Approval Date | | 16 August 2025 | |
| Course Specification Approval | | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Principals and theories of land use- residential, commercial, and industrial areas-open areas- green areas in city centers- transportation network and paths-services and feasibilities-Defining the housing problem in developing countries-the variety of approaches and trends dealing with the housing problem- social, cultural, and economical factors- user participation and role in the study phase and problem solving- composite planning and housing project with surveying and assessment of planning and housing problems of an existent area- redesign and planning of the existent area and making use of the results in planning for a new area.

### 3. Course Learning Outcomes CCLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | Evaluate different ideas of planning and designing housing projects. |
| | | CLO5 | Measure adequate knowledge to deal with site constraints and maximize site usage. |
| | | CLO6 | Demonstrate the main social, cultural, economic, and urban issues and problems that affect planning and designing housing projects. |
| A7 | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | CLO2 | Evaluate different alternative solutions of housing issues |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO7 | Reproduce plans and designs with accordance to laws and regulations governing housing projects. |
| | | CLO8 | Apply knowledge acquired in planning and designing housing projects to plan and design different economic levels housing projects (low-income housing, high-income housing... etc.). |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO3 | Build up housing designs and plans that keep the urban identity and conserve the environment. |
| | | CLO4 | Integrate economic, social, cultural, environmental, and urban aspects into housing projects. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | Principals and theories of land use- residential, commercial, and industrial areas | 16 | 4 | 8 | 4 | |
| 3-4 | open areas- green areas in city centers transportation network and paths | 16 | 4 | 8 | 4 | |
| 5-6-7 | services and feasibilities-Defining the housing problem in developing countries-the variety of approaches and trends dealing with the housing problem- social, cultural, and economical factors | 24 | 6 | 12 | 6 | |
| 8 | Mid Term Exam | | | | | |
| 9-8 | user participation and role in the study phase and problem solving | 16 | 4 | 8 | 4 | |
| 10-11- | composite planning and housing project with | 24 | 6 | 12 | 6 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 12 | surveying and assessment of planning and housing problems of an existent area | | | | | |
| 13-14-15 | Redesign and planning of the existent area and making use of the results in planning for a new area. | 24 | 6 | 12 | 6 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 9 | 6 % |
| 2. | Mid-Term Examination | 8 | 18 | 12 % |
| 3. | Final Examination | (As Schedule) | 90 | 60 % |
| 4. | Lab Exam | - | - | - |
| 5. | Activities and assignments | Every week | 33 | 22 % |
| 6. | Final Oral Exam (if exists) | - | - | - |

## 6. Learning Resources and Supportive Facilities

| Learning resources (books, scientific | The main (essential) reference for the course (must be written in full according to the scientific documentation | **Levitt, David.** *The Housing Design Handbook: A Guide to Good Practice*. 2nd edition, Routledge, 2012. |
|---|---|---|

| | | |
|---|---|---|
| **references, etc.)** | method) | |
| | **Other References** | **Mira, R. G., Uzzell, D. L., Real, J. E., and Romay, J. (eds.). *Housing, Space and Quality of Life*. 1st edition, Routledge, 2017.**<br>**Bahamam, Ali bin Salem. *Housing*. 1st edition, Dar Dekka, Kingdom of Saudi Arabia, 2018.** |
| | **Electronic Sources**<br>(Links must be added) | *The Architecture Foundation* – https://www.architecturefoundation.org.uk<br>*Coursera – History of Architecture* (https://www.coursera.org) |
| | **Learning Platforms**<br>(Links must be added) | **https://lms.manzaluaacademy.edu.eg/** |
| | **Other**<br>(to be mentioned) | **Altaie, A. A. H., and Udah, Z. R. K.** *The Spatial Analysis of Residential Density in Babil Governorate Using Geographic Information Systems (GIS)*. 1st edition, *International Development Planning Review*, Vol. 23, No. 1, 2024, pp. 572–587. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LO1 | LO2 | LO3 | LO4 | LO5 | LO6 | LO7 | LO8 |
| 1-2 | Principals and theories of land use- residential, commercial, and industrial areas | 4 | 8 | X | | | x | | x | | |
| 3-4 | open areas- green areas in city centers transportation network and paths | 4 | 8 | | | | x | | x | | x |
| 5-7 | services and feasibilities- Defining the housing problem in developing countries-the variety of approaches and trends dealing with the housing problem- social, cultural, and economical factors | 6 | 12 | X | | x | x | x | | x | |
| 8 | Mid Term Exam | | | | | | | | | | |
| 8-9 | user participation and role in the study phase and problem solving | 4 | 8 | x | | | x | | x | | |
| 10-12 | composite planning and housing project with surveying and assessing of planning and housing problems of an existent area | 4 | 8 | x | X | | x | | x | | x |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13-15 | Redesign and planning of the existent area and making use of the results in planning for a new area. | 6 | 12 | | x | x | x | x | | x | |
| 16 | Final Exam | | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Face to face lecture | x | x | x | | | | | |
| Online education | | | | | | | | |
| Tutorial / Exercise | x | x | x | | x | | | x |
| Group discussion | | x | | | x | x | | x |
| Laboratory | | | | | | | | x |
| Site visit | | | x | | | x | | |
| Self-Learning | | | | | | | | |
| • Presentation | | | | x | x | | x | x |
| • Mini project | | x | x | | | | | |
| • Research and reporting | x | | | | x | | | x |
| Brain storming | | | | | | x | | |
| Case study | | x | x | x | x | | x | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Final written exam | | x | x | x | x | | x | x |
| Oral exam | | | | | | | | |
| Mid-term Exam | | x | x | x | x | | x | x |
| Quizzes | | | x | | | | | |
| Lab Exam | | | | | | | | |
| Research assignments | x | | x | | | | | |
| In-class questions (formative assessment) | x | | | | | x | | |
| Project assignments | x | x | x | x | | | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Alaa Morgan | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | Specifications, quantities, and quality control | | |
| Course Code (according to the bylaw) | ARE 422 | | |
| Department/s participating in offering the course | Architecture Engineering Department | | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | ☒ Compulsory | ☐ Elective | |
| Academic level at which the course is taught | Fourth year | | |
| Academic Program | Architecture Engineering Program | | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | | |
| University/Academy | Manzalla Academy | | |
| Name of Course Coordinator | Dr.Khaled Eltawel | | |
| Course Specification Approval Date | 16 August 2025 | | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | | |

## 2. Course Overview (Brief summary of scientific content)

Detailed specifications for building items- General and special conditions for a project-quantity and surveying methods- cost and bidding- contactor, client and consultant responsibilities- contract types - bid analysis-project management (planning-scheduling-cash flow)-quality and quality control.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A1 | Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. | CLO1 | Define knowledge of the Quantities Estimating &Specifications to solve building problems. |
| A10 | Acquire and apply new knowledge; and practice self, lifelong and other learning strategies. | CLO3 | Illustrate the professional codes of practice and standards of Quantities Estimating & Specifications. |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO2 | Use appropriate construction techniques and materials to specify and implement different designs. |
| | | CLO4 | Review the labor powerful economic sectors. |
| B5 | Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | CLO5 | Sketch the pre-feasibility study of projects and identify economic and static's tools for projects. |
| | | CLO6 | Present technical reports about Quantities Estimating & Specifications. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1-4 | Detailed specifications for building items | 24 | 8 | 8 | 8 | |
| 5 - 7 | General and special conditions for a project | 18 | 6 | 6 | 6 | |
| 8 | Mid Term Exam | | | | | |
| 9-10 | Quantity and surveying methods-cost and bidding - contactor, client and consultant responsibilities | 12 | 4 | 4 | 4 | |
| -11 15 | Contract types -bid analysis - project management (planning-scheduling-cash flow)-quality and quality control. | 30 | 10 | 10 | 10 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5 % |
| 2. | Mid-Term Examination | 8 | 13.5 | 9 % |
| 3. | Final Examination | (As Schedule) | 70 | 70 % |
| 4. | Lab Exam | .. | .. | - |
| 5. | Activities and assignments | Every week | 12 | 16.5 % |
| 6. | Final Oral Exam (if exists) | - | .. | - |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Cartlidge, Duncan. *Quantity Surveyor's Pocket Book*. 3rd edition, Routledge, 2017. |
| | **Other References** | 1. Schwalbe, Kathy. *Introduction to Project Management*. 3rd edition, Course Technology Cengage Learning. |

| | | |
|---|---|---|
| | | Boston, 2009.<br>2. Elkasaby, Elsayed Abdelfattah. *Quantity Surveying*. 1st edition, House of Scientific Books, 1993. |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Al-Hallaq, S., and Al-Ajlouni, M. *Economic Feasibility Study and Project Evaluation*. 1st edition, Dar Al-Yazuri Scientific, Amman, 2010. |
| | | |
| **Supportive facilities & equipment for teaching and learning** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | – |
| | **Virtual Labs** | – |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | CLOs | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-4 | Detailed specifications for building items | 8 | 8 | x | x | | | x | |
| 5 - 7 | General and special conditions for a project | 4 | 4 | | | x | | x | x |
| 8 | Mid Term Exam | | | | | | | | |
| 9-10 | Quantity and surveying methods- cost and bidding - contactor, client and consultant responsibilities | 6 | 6 | | x | x | x | | x |
| 11 - 15 | Contract types -bid analysis - project management (planning-scheduling-cash flow)-quality and quality control. | 10 | 10 | x | x | x | x | | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | X | x | | | |
| Online education | | | | | | X |
| Tutorial / Exercise | x | X | x | x | x | |
| Group discussion | | | | | x | |
| Laboratory | | | | | | X |
| Self-Learning | | | | | | |
| • Mini project | x | | | x | x | X |
| • Research and reporting | | X | x | | | |
| Brainstorming | | | | | | X |
| Case study | | | | | x | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | x | x | x | x | |
| Mid-term Exam | x | x | x | | | |
| Quizzes | x | x | | x | x | x |
| Research assignments | | | | x | | x |
| In-class questions (formative assessment) | x | | | | x | x |
| Project assignments | x | x | x | x | x | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr.Khaled Eltawel | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Graduation project | |
| Course Code (according to the bylaw) | ARE 423 | |
| Department/s participating in offering the course | Architecture Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 4 | 10 | 14 |
| Course Type | ☒ Compulsory | ☐ Elective |
| Academic level at which the course is taught | Fourth year | |
| Academic Program | Architecture Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 3. Course Learning Outcomes CCLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A9** | Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations. | **CLO1** | State and solve the problems of designing the project elements according to projects program. |
| | | **CLO3** | Apply sustainable design strategies to improve the project concept to respond to the users' needs, design problems and program requirements. |
| **B2** | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | **CLO2** | Analyze similar projects according to (circulation, entrances, form, etc.) |
| | | **CLO6** | Identify current trends in architectural design methods and examples locally and worldwide. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **B3** | Generate ecologically responsible environmental conservation and rehabilitation designs through understanding structural design, construction, technology and engineering problems associated with building designs. | **CLO5** | Analyze the site requirements and the functional and structural requirements for a specified design project. |
| | | **CLO7** | Design individually as a member in a team in the research of a certain project. |
| **B4** | Transform design concepts into buildings and integrate plans into overall planning within the constraints of project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | **CLO4** | Utilize sustainable building rating systems like LEED and Green Pyramid Rating System in developing the project design. |
| | | **CLO6** | Utilize sustainable building rating systems like LEED and Green Pyramid Rating System in developing the project design. |
| **B5** | Prepare design project briefs and documents and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | **CLO6** | Utilize sustainable building rating systems like LEED and Green Pyramid Rating System in developing the project design. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-2 | - Project definition (How architecture can solve problems?)<br>- Project research and groups formulation<br>- Selecting the project topic and suitable site. | 28 | 4 | 20 | 4 | |
| 3 | - Site analysis<br>- Users & social Studies Preliminary studies | 14 | 2 | 10 | 2 | |
| 4-5 | - Design requirements for project elements.<br>- Analyze similar projects. | 28 | 4 | 20 | 4 | |
| 6-7 | - Semi-final Research presentation | 30 | 4 | 20 | 6 | |
| 8 | Mid Term Exam | | | | | |
| 9 | - Final submission of the research | 15 | 2 | 10 | 3 | |
| 10-11 | - Final project Program<br>- Mood board<br>- Concept + Design scenarios<br>- Ground floor plan.<br>- Primary studies. | 32 | 4 | 20 | 8 | |
| 12 | - Final ground floor plan.<br>- Floors plans.<br>- Form ideas | 16 | 2 | 10 | 4 | |
| 13 | - Final plans.<br>- Sections | 16 | 2 | 10 | 4 | |
| 14 | - Elevations<br>- Advances studies<br>- Semi- final project presentation | 18 | 2 | 10 | 6 | |
| 15 | - final project | 18 | 2 | 10 | 6 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 23 | 5.75% |
| 2. | Mid-Term Examination | 8 | 44 | 115% |
| 3. | Final Examination | (As Schedule) | 200 | 50% |
| 4. | Lab Exam | (As Schedule) | -- | -- |
| 5. | Activities and assignments | Every week | 83 | 20.75% |
| 6. | Final Oral Exam (if exists) | (As Schedule) | 50 | 12.5% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Iyengar, K. *Sustainable Architectural Design: An Overview*. 1st edition, Routledge, 2015. |
| | **Other References** | Anderson, J. Basics Architecture 03: Architectural Design. 1st edition, Bloomsbury Publishing, 2017 |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Aksamija, A. Integrating Innovation in Architecture: Design, Methods and Technology for Progressive Practice and Research. 1st edition, John Wiley & Sons, 2017. |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| 1 - 2 | - Project definition (How architecture can solve problems?)<br>- Project research and groups formulation<br>- Selecting the project topic and suitable site. | 8 | 20 | X | | x | | | | |
| 3 | - Site analysis<br>- Users & social Studies<br>Preliminary studies | 4 | 10 | | x | | | x | x | |
| 4 - 5 | - Design requirements for project elements.<br>- Analyze similar projects. | 8 | 20 | X | | x | | | | |
| 6-7 | - Semi-final Research presentation | 8 | 20 | | | | x | | x | |
| 8 | Mid Term Exam | | | | | | | | | |
| 9 | - Final submission of the research | 4 | 10 | | x | | | x | | |
| 10-11 | - Final project Program<br>- Mood board<br>- Concept + Design scenarios<br>- Ground floor plan.<br>- Primary studies. | 4 | 10 | X | | | | | x | |
| 12 | - Final ground floor plan.<br>- Floors plans.<br>- Form ideas | 4 | 10 | | | | | | | x |
| 13 | - Final plans.<br>- Sections | 4 | 10 | X | | x | x | | x | |
| 14 | - Elevations<br>- Advances studies<br>- Semi- final project presentation | 8 | 20 | | x | | | x | | |
| 15 | - final project | 4 | 10 | X | | x | | | | |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | x | | x | x | x | | |
| Online education | | | | | | | |
| Tutorial / Exercise | | | x | | x | | x |
| Group discussion | x | x | x | x | x | | x |
| Laboratory | | | x | x | x | | |
| Self-Learning | | | | | | | |
| • Presentation | | | | | x | | |
| • Mini project | | | x | x | | x | |
| • Research and reporting | x | x | | | | | |
| Brainstorming | x | x | x | x | x | | |
| Case study | x | x | x | | | | |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | x | | X | x | x | | |
| Oral exam | | | X | | x | | X |
| Mid-term Exam | x | x | X | x | x | | X |
| Quizzes | | | X | x | x | | |
| Research assignments | | | | | x | | |
| In-class questions (formative assessment) | | | X | x | | x | |
| Project assignments | X | x | | | | | |

Course coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

# Third Year

# Elective Courses

## List (1)

ARE 311 E: Environmental design

ARE 312E: Computer aided design

ARE 313E: Advanced building technologies

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Environmental Design | |
| Course Code (according to the bylaw) | ARE 311E | |
| Department's participating in offering the course | Architectural Engineering | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☐Compulsory | ☒ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Marwa El-adham | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

The variety of exiting environments- climate and climatic regions- human thermal comfort- environments impact on architectural designs- case studies and applicable researches.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLo2 | Apply the sustainable building materials and technologies to reduce the environmental impact of buildings. |
| | | CLo6 | inspect the environmental design projects by using design software and other tool proficiency |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLo1 | Differentiate building energy systems that meet or exceed energy efficiency standards. |
| | | CLo5 | Sketch the principles of environmental design to the design of sustainable buildings and communities. |
| | | CLo7 | Apply all communicate environmental design ideas effectively to both technical and non-technical audiences. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLo3 | Identify the renewable energy systems into building design to meet or exceed energy needs. |
| | | CLo4 | Explain the principles of passive design and ability to use them to reduce energy consumption and improve indoor comfort. |

### 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 3 | The variety of exiting environments | 16 | 6 | 6 | 4 | |
| 4 - 7 | climate and climatic regions | 24 | 8 | 8 | 6 | |
| 8 | Mid Term Exam | | | | | |
| 9 - 10 | human thermal comfort | 16 | 6 | 6 | 4 | |
| 11 - 12 | Environments impact on architectural designs | 11 | 4 | 4 | 3 | |
| 13 - 15 | Case studies and applicable researches. | 16 | 6 | 6 | 4 | |
| 16 | Final exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | 16 | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | .. | ..% |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley & Sons. |
| | **Other References** | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | **Electronic Sources** (Links must be added) | |

| | | |
|---|---|---|
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Baxter, M. (2018). Product design. CRC press. |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "LOs" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LO1 | LO2 | LO3 | LO4 | LO5 | LO6 | LO7 |
| 1 - 3 | The variety of exiting environments | 6 | 6 | | x | | | x | x | x |
| 4 - 7 | climate and climatic regions | 8 | 8 | | x | | | x | | x |
| 8 | Mid Term Exam | | | | | | | | | |
| 9 - 10 | human thermal comfort | 4 | 4 | x | | x | x | | | |
| 11 - 12 | Environments impact on architectural designs | 4 | 4 | | | | | x | x | x |
| 13 - 15 | Case studies and applicable researches. | 6 | 6 | x | x | | | x | | x |
| 16 | Final Exam | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Face to face lecture | | | x | x | x | x | |
| Tutorial / Exercise | | x | x | x | x | x | |
| Group discussion | x | x | | | | | X |
| Site visit | x | | | x | | | |
| Self-Learning | | | | | | | |
| • Presentation | x | x | | | | | X |
| • Mini-project | | | | | | | X |
| • Research and reporting | x | x | | x | | | |
| Brain storming | | | x | x | x | x | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | |
|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 |
| Final written exam | | | x | x | x | x | |
| Oral exam | | | | | | | X |
| Mid-term Exam | | | x | x | x | x | |
| Quizzes | | | x | x | x | x | |
| Research assignments | x | x | | | | | |
| In-class questions (formative assessment) | | | x | x | x | x | |
| Project assignments | | | | | | | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa El-adham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Computer Aided Design | |
| Course Code (according to the bylaw) | ARE 312 E | |
| Department/s participating in offering the course | Architectural Engineering | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☐ Compulsory | ☒ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Defining the tools, programs, and techniques needed- setting -up and analyzing programs- design presentation and evaluation- preparation and presentation of two and three - dimensional architectural designs- computer aided examples and case study applications.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | Course Learning Outcomes Upon completion of the course, the student will be able to: |
|---|---|

| Code | Text | Code | Text |
|---|---|---|---|
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | CLO1 | Synthesise using CAD software to create and edit 2D and 3D models, drawings, and assemblies. |
| | | CLO5 | Describe the architectural and engineering standards for CAD drawings. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | CLO2 | Operate the CAD principles to solve real-world design and engineering problems. |
| | | CLO4 | Apply the communicate design ideas effectively using CAD drawings and models. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | CLO3 | Identify the advanced CAD features such as parametric modeling and rendering. |
| | | CLO6 | Develop using CAD to collaborate with other professionals on design projects. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ ....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 4 | Defining the tools, programs, and techniques needed- setting - | 24 | 8 | 8 | 8 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | up and analyzing programs | | | | | |
| 5 - 7 | Design presentation and evaluation | 18 | 6 | 6 | 6 | |
| 8 | Mid Term Exam | | | | | |
| 9 - 12 | Preparation and presentation of two and three Dimensional architectural designs | 24 | 8 | 8 | 8 | |
| 13 - 15 | Computer aided examples and Case study applications. | 18 | 6 | 6 | 6 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | 16 | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | -- | ..% |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | -- | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley & Sons. |
| | **Other References** | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | **Electronic Sources** (Links must be added) | |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |

| | | |
|---|---|---|
| | **Other** (to be mentioned) | Baxter, M. (2018). Product design. CRC press. |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 - 4 | Defining the tools, programs, and techniques needed- setting -up and analyzing programs | 8 | 8 | x | x | x | | | |
| 5 - 7 | Design presentation and evaluation | 6 | 6 | | | x | x | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 - 12 | Preparation and presentation of two and three Dimensional architectural designs | 8 | 8 | | x | | x | x | |
| 13 - 15 | Computer aided examples and Case study applications. | 6 | 6 | | | | x | x | x |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| **Face to face lecture** | | X | x | x | | |
| **Tutorial / Exercise** | x | X | x | x | | |
| **Group discussion** | | X | | | | |
| **Self-Learning** | | | | | | |
| • **Presentation** | | X | | | | |
| • **Mini project** | | | | | | x |
| • **Research and reporting** | | X | | | | |

| Teaching and Learning Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Brain storming | x | | x | x | x | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | X | x | x | x | |
| Oral exam | | | | | | x |
| Mid-term Exam | | X | x | x | x | |
| Quizzes | x | X | x | x | x | |
| Research assignments | | X | | | | |
| In-class questions (formative assessment) | | X | x | x | x | |
| Project assignments | | | | | | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Advanced building technologies | |
| Course Code (according to the bylaw) | ARE 313E | |
| Department/s participating in offering the course | Architectural Engineering | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☐ Compulsory | ☒ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

An approach to the study of advanced construction systems improved with the development of sophisticated technologies- loads and construction meyhods- structural materials- examples and case studies.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A4 | Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles. | **CLO1** | Employ advanced building technologies to the design and construction of sustainable, high-performance buildings. |
| | | **CLO5** | Develop communication and collaboration effectively with other professionals involved in the building design and construction process. |
| B2 | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | **CLO2** | Use the building information modeling (BIM) to improve the efficiency and accuracy of building design and construction. |
| | | **CLO4** | Solve the complex building design and construction problems using advanced building technologies. |
| B3 | Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs. | **CLO3** | Create the latest trends and developments in building technology. |
| | | **CLO6** | Apply the ethical principles to the practice of architecture and engineering. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☒ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 - 4 | An approach to the study of advanced construction systems improved with the development of sophisticated technologies | **20** | **8** | **8** | **4** | |
| 5 - 7 | Loads and construction methods | **15** | **6** | **6** | **3** | |
| 8 | Mid Term Exam | | | | | |
| 10 - 11 | Structural materials | **10** | **4** | **4** | **2** | |
| 12 - 15 | Examples and case studies | **20** | **8** | **8** | **4** | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | 15 | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | .. | ..% |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | .. | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Hall, P., & Tewdwr-Jones, M. (2019). Urban and regional planning. Routledge. |
| | **Other References** | Chadwick, G. (2016). Models of urban & regional systems in developing countries: Some theories and their application in physical planning (Vol. 36). Elsevier. |

| | | |
|---|---|---|
| | **Electronic Sources** (Links must be added) | https://unhabitat.org/sites/default/files/2020/07/indicator_11.7.1_training_module_public_space.pdf |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 |
| 1 - 4 | An approuch to the study of advanced construction systems improved with the development of sophisticated technologies | 8 | 8 | x | x | x | | | x |
| 5 - 7 | Loads and construction methods | 6 | 6 | x | x | | x | | |
| 8 | Mid Term Exam | | | | | | | | |
| 10 - 11 | Structural materials | 4 | 4 | | | | x | x | |
| 12 - 15 | Examples and case studies | 8 | 8 | x | x | x | | x | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | | X | x | x | | |
| Tutorial / Exercise | x | X | x | x | | |
| Group discussion | | X | | | | |
| Self-Learning | | | | | | |

| Teaching and Learning Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| • Presentation | | X | | | | |
| • Mini project | | | | | | x |
| • Research and reporting | | X | | | | |
| Brain storming | X | | x | x | x | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | x | x | x | | |
| Oral exam | | | | | x | x |
| Mid-term Exam | X | x | x | x | | |
| Quizzes | X | x | x | x | | |
| Research assignments | X | | | | | |
| In-class questions (formative assessment) | | | x | x | | |
| Project assignments | | | | | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

# Third Year

## Elective Courses

List (2)

ARE 321E: Landscape design

ARE 322E: Urban conservation and maintenance

ARE 323E: Architectural Project's management

1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Landscape design | |
| Course Code (according to the bylaw) | ARE 321 E | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☐Compulsory | ☒ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Dr. Marwa eladham | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

**2. Course Overview (Brief summary of scientific content)**

Analytical studies of kite characteristics and its surrounding environment- urban database- social, economical, and cultural database- detailed study of transportation within the site- numerical analysis of functional relationships of the site study of design and shaping the space and the visual form- project of urban design and infrastructure planning.

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO3 | Define hardscape materials and construction. |
| | | CLO4 | Identify grading and drainage. |
| | | CLO7 | Apply the sustainable design principles. |
| A8 | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | CLO2 | Discuss the plant selection and placement. |
| | | CLO5 | Develop the various lighting and irrigation systems |
| | | CLO8 | Explain the professional practice. |
| B2 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO1 | Schedule the principles of landscape design to create functional and aesthetically pleasing outdoor spaces. |
| | | CLO6 | Analyze the site analysis and planning. |

## 4. Teaching and Learning Methods

☒ Face to face lecture

☐ Online education

☒ Tutorial / Exercise

☒ Group discussion

☐ Laboratory

☒ Site visit

☐ Self-learning

☒ Presentation

☒ Mini project

☒ Research and reporting (self-learning)

☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-4 | Analytical studies of kite characteristics and its surrounding environment | 20 | 8 | 8 | 4 | |
| 5-7 | Urban database | 15 | 6 | 6 | 3 | |
| 8 | Mid Term Exam | | | | | |
| 9-10 | Social, economic, and cultural database | 10 | 4 | 4 | 2 | |
| 11 | Detailed study of transportation within the site | 5 | 2 | 2 | 1 | |
| 12-13 | Numerical analysis of functional relationships of the site study of design and shaping the space and the visual form | 10 | 4 | 4 | 2 | |
| 14-15 | Project of urban design and infrastructure planning. | 10 | 4 | 4 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | -- | 0% |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | -- | 0% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Fletcher, B. (1919). A history of architecture on the comparative method for the student, craftsman, and amateur. Batsford. |
| | **Other References** | Thurley, S. (2013). The building of England: How the history of England has shaped our buildings. HarperCollins UK.. |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | Hind, C. (2015). The Collections of The Royal Institute of British Architects. The Classicist, (12), 50. |

| | | |
|---|---|---|
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLOs" | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 | CLO 7 | CL O8 |
| 1-4 | Analytical studies of kite characteristics and its surrounding environment | 8 | 8 | x | x | | | | | | |
| 4 - 7 | Urban database | 6 | 6 | | x | | | | x | | |
| 8 | Mid Term Exam | | | | | | | | | | |
| 9-10 | Social, economic, and cultural database | 6 | 6 | x | | | | | | | x |
| 11 | Detailed study of transportation within the site | 2 | 2 | | | x | | | x | x | |
| 12-13 | Numerical analysis of functional relationships of the site study of design and shaping the space and the visual form | 4 | 4 | | | | x | x | | x | |
| 14-15 | Project of urban design and infrastructure planning. | 4 | 4 | | | | x | x | | x | x |
| 16 | Final Exam | | | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLOs" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 | CLO7 | CLO8 |
| Face to face lecture | x | | x | x | | | x | x |
| Tutorial / Exercise | | x | | x | x | x | x | x |
| Group discussion | x | x | | x | x | | | x |
| Site visit | | | | | | x | x | x |
| Self-Learning | | | | | | | | |
| • Presentation | x | x | | | x | x | | |
| • Mini project | | | | | | x | | |
| • Research and reporting | x | x | | | x | x | x | x |
| Brain storming | | x | x | x | | | x | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLOs" | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO 6 | CLO7 | CLO8 |
| Final written exam | x | x | x | x | x | x | x | x |
| Mid-term Exam | x | x | x | x | x | | x | x |
| Quizzes | x | x | x | x | x | x | | x |
| Research assignments | | x | | x | | x | | |
| In-class questions (formative assessment) | | x | | x | x | x | x | x |
| Project assignments | x | x | | x | x | x | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa AL adham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Urban conservation and maintenance | |
| Course Code (according to the bylaw) | ARE 322E | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☐Compulsory | ☒ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Preparation detailed working drawings of buildings both architectural and structural connections and elements-preparation of sanitary, electrical, and mechanical drawings of architecturally design projects.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | CLO1 | Apply the principles and practices of urban conservation and maintenance. |
| | | CLO3 | Operate the principles of sustainable urban development to the conservation and maintenance of urban environments. |
| | | CLO6 | Develop working effectively with other professionals involved in the urban conservation and maintenance process. |
| B4 | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | CLO2 | Identify the history of urban development and the different types of buildings and structures that make up urban environments. |
| | | CLO5 | Support the research and prepare reports on urban conservation and maintenance issues. |
| B5 | Prepare design project briefs and documents, and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production. | CLO4 | Define the different techniques that can be used to conserve and maintain buildings and structures. |

### 4. Teaching and Learning Methods

☒ Face to face lecture

☐ Online education

☒ Site visit

☒ Self-learning

☒ Tutorial / Exercise
☒ Group discussion
☐ Laboratory
☒ Presentation
☒ Mini project
☒ Research and reporting (self-learning)
☒ Brainstorming

**Course Schedule**

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments/ Projects/ ...) | Other (to be determined) |
| 1-4 | Concepts of urban conservation and maintenance. | 20 | 8 | 8 | 4 | |
| 5-7 | historical and invaluable buildings | 15 | 6 | 6 | 3 | |
| 8 | Mid Term Exam | | | | | |
| 9-10 | Methodologies of dealing with urban heritage: reclamation-character preservation. | 10 | 4 | 4 | 2 | |
| 11 | Methodologies of dealing with urban heritage: elimination. | 5 | 2 | 2 | 1 | |
| 12 | Methodologies of dealing with urban heritage: renewal – upgrading. | 5 | 2 | 2 | 1 | |
| 13-14 | Present case Studies | 10 | 4 | 4 | 2 | |
| 15 | Methodologies of dealing with urban heritage: rehabilitation. | 5 | 2 | 2 | 1 | |
| 16 | Final Exam | | | | | |

**5. Methods of students' assessment**

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | - | -- |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | - | -- |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System engineering analysis, design, and development: Concepts, principles, and practices. John Wiley & Sons. |
| | **Other References** | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lecture | T/L | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-4 | Concepts of urban conservation and maintenance. | 8 | 8 | x | | x | x | x | |
| 5-7 | historical and invaluable buildings | 6 | 6 | | x | | | x | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-10 | Methodologies of dealing with urban heritage: reclamation-character preservation. | 4 | 4 | x | | | x | | x |
| 11 | Methodologies of dealing with urban heritage: elimination. | 2 | 2 | | | | x | x | x |
| 12 | Methodologies of dealing with urban heritage: reformation. | 2 | 2 | | x | x | | x | x |
| 13-14 | Methodologies of dealing with urban heritage: renewal – upgrading. | 4 | 4 | x | | x | x | x | |
| 15 | Methodologies of dealing with urban heritage: rehabilitation. | 2 | 2 | | x | x | x | | |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| **Face to face lecture** | x | | x | x | x | x |
| **Tutorial / Exercise** | | X | x | x | x | x |
| **Group discussion** | x | X | | | | |
| **Site visit** | x | | | | | |
| Self-Learning | | | | | | |
| • **Presentation** | x | X | | x | | |
| • **Research and reporting** | x | X | | x | x | |
| • **Brain storming** | | | x | x | x | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | | x | x | x | x |
| Mid-term Exam | x | | x | x | x | x |
| Quizzes | x | | x | x | x | x |
| Research assignments | x | X | | | | |
| In-class questions (formative assessment) | | X | x | x | x | x |
| Project assignments | x | X | x | | x | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Architectural Project's Management | |
| Course Code (according to the bylaw) | ARE 323E | |
| Department/s participating in offering the course | Architectural Project's Management | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☐Compulsory | ☒ Elective |
| Academic level at which the course is taught | Third year | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Study of making executive programs for site management (time, labor, equipment) - project management methods - management principals - implementation policies, programs, and schedules - economical management of projects.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A6** | Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements. | **CLO1** | Apply the various architectural project plans. |
| | | **CLO3** | Identify and manage risks to architectural projects. |
| **A7** | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | **CLO2** | Develop the work of different stakeholders involved in architectural projects. |
| | | **CLO4** | Develop the communication with all stakeholders involved in architectural projects effectively. |
| **A8** | Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools. | **CLO5** | Apply the project management tools and techniques to effectively manage architectural projects. |
| | | **CLO6** | Apply sustainable design and construction principles to architectural projects. |

### 4. Teaching and Learning Methods

☒ Face to face lecture

☐ Online education

☒ Tutorial / Exercise

☒ Group discussion

☐ Laboratory

☐Site visit

☒Self-learning

☒ Presentation

☒ Mini project

☒ Research and reporting (self-learning)

☒ Brainstorming

### Course Schedule

| **No. of the Week** | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ ....) | **Training** (Practical/ Clinical/ .....) | **Self-learning (Tasks/ Assignments / Projects/** ...) | Other (to be determined) |
| 1-4 | Study of making executive programs for site management (time, labor, equipment). | 20 | 8 | 8 | 4 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | **Training** (Practical/ Clinical/ .....) | **Self-learning (Tasks/ Assignments / Projects/ ...)** | Other (to be determined) |
| 5-7 | Project management methods. | 15 | 6 | 6 | 3 | |
| 8 | Mid Term Exam | | | | | |
| 9-12 | Management principals. | 20 | 8 | 8 | 4 | |
| 12-13 | Implementation policies, programs, and schedules. | 10 | 4 | 4 | 2 | |
| 14-15 | Economical management of projects. | 10 | 4 | 4 | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | .. | 0% |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | .. | 0% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Styles, K., & Bichard, A. (2012). Working drawings handbook. Routledge. |
| | **Other References** | Allen, E., & Iano, J. (2019). Fundamentals of building construction: materials and methods. John Wiley & Sons. |
| | **Electronic Sources** (Links must be added) | https://www.firstinarchitecture.co.uk/how-to-develop-architectural-concepts/ |
| | **Learning Platforms** (Links must be added) | **Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/** |
| | **Other** | هندسة التشييد (الجزء الثاني تشطيبات المباني - الجزء الثالث |

| | | |
|---|---|---|
| | (to be mentioned) | مرافق المياه والصرف الصحي، محمود حسين المصباحي، 2018 |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | lecture | T/L | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1-4 | Study of making executive programs for site management (time, labor, equipment). | 8 | 8 | x | | | | x | |
| 5-7 | Project management methods. | 6 | 6 | | x | x | | x | |
| 8 | Mid Term Exam | | | | | | | | |
| 9-12 | Management principals. | 8 | 8 | | | x | | x | x |
| 12-13 | Implementation policies, programs, and schedules. | 4 | 4 | | | | x | | x |
| 14-15 | Economical management of projects. | 4 | 4 | | x | | x | | x |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | x | x | x | x | x |
| Tutorial / Exercise | | | x | x | x | x |
| Group discussion | | | x | | x | |
| Self-Learning | | | | | | |
| • Presentation | | | x | | x | |
| • Mini project | | | | | | x |
| • Research and reporting | | | x | | x | |
| Brain storming | X | x | x | x | x | x |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Learning outcomes "CLOs" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | x | x | x | x | x | |
| Oral exam | | | | | | x |
| Mid-term Exam | x | x | x | x | x | |
| Quizzes | x | x | x | x | x | |
| Research assignments | | | x | | x | |
| In-class questions (formative assessment) | x | x | x | x | x | |
| Project assignments | | | | | | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

# Fourth Year

## (Elective Courses)

List (3)

ARE 411E : Architectural criticism and competition .

ARE 412E : Advanced architectural design.

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Architectural Criticism and Competition | |
| Course Code (according to the bylaw) | ARE 411E | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 4 | - | 4 |
| Course Type | ☐ Compulsory | ☒ Elective |
| Academic level at which the course is taught | 4th Level | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | Prof. Dr. Tarek Abu Auf | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO6 | Prepare students for professional architectural practice, equipping them with the ability to critically assess and refine their own designs as well as those of others. |
| A6 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO1 | Understand the historical evolution and key theories of architectural criticism, exploring its impact on contemporary architectural discourse. |
| | | CLO2 | Analyze and apply various tools and parameters of architectural criticism, using them to assess architectural works effectively. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| B2 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO4 | Enhance students' ability to engage in architectural competitions, focusing on conceptual development, design presentation, and technical report writing. |
| B4 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO3 | Evaluate architectural projects based on diverse criteria, including aesthetic, functional, social, and environmental factors. |
| | | CLO5 | Develop critical and creative thinking skills, enabling students to challenge conventional architectural norms and propose innovative design solutions. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation
- ☐ Mini project
- ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Introduction to architectural criticism, its definition, scope, and historical development. | 6 | 4 | - | 2 | |
| 2 | Key theories and approaches in architectural criticism, analyzing different schools of thought. | 6 | 4 | - | 2 | |
| 3 | Tools and parameters of architectural criticism, methods for evaluating architectural works. | 6 | 4 | - | 2 | |
| 4 | Trends and concepts in architectural criticism, contemporary perspectives, and evolving methodologies. | 6 | 4 | - | 2 | |
| 5 | Criteria and principles for architectural evaluation, including aesthetic, functional, environmental, and social aspects. | 6 | 4 | - | 2 | |
| 6-7 | Architectural competitions, their history, evolution, types, and objectives. | 12 | 8 | - | 4 | |
| 8 | Mid-Term Exam | | | | | |
| 9 | Design process in competitions, including concept development and ideation. | 6 | 4 | - | 2 | |
| 10 | Presentation techniques for competitions, including drawings, | 6 | 4 | - | 2 | |

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| | reports, and effective visual communication. | | | | | |
| 11 | Case studies in architectural criticism and competitions, analyzing past competition-winning projects. | 6 | 4 | - | 2 | |
| 12 | Application of architectural criticism in real-world projects, evaluating existing buildings and urban spaces. | 6 | 4 | - | 2 | |
| 13 | Preparation of drawings and technical reports for architectural competitions. | 6 | 4 | - | 2 | |
| 14 | Final project submission and review, applying criticism tools and competition methodologies. | 6 | 4 | - | 2 | |
| 15 | General discussion and course wrap-up, reflecting on learning outcomes and future applications. | 6 | 4 | - | 2 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | .. | ..% |
| 5. | Activities | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | .. | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Jencks, Charles, and Kropf, Karl. Theories and Manifestoes of Contemporary Architecture. Wiley, 2010. |
| | **Other References** | Chupin, Jean-Pierre, Cucuzzella, Carmela, and Helal, Bechara. Architecture Competitions and the Production of Culture, Quality and Knowledge: An International Inquiry. Editions Ashgate, 2015. |
| | **Electronic Sources** (Links must be added) | Word - PowerPoint - Photoshop. |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | Alraouf, Ali A. Architectural Criticism and Its Role in Developing Contemporary Urbanism. Available online at academia.edu. |
| | | |
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Introduction to architectural criticism, its definition, scope, and historical development. | 4 | - | x | | | | | |
| 2 | Key theories and approaches in architectural criticism, analyzing different schools of thought. | 4 | - | | x | | | | |

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 3 | Tools and parameters of architectural criticism, methods for evaluating architectural works. | 4 | - | | x | | | | |
| 4 | Trends and concepts in architectural criticism, contemporary perspectives, and evolving methodologies. | 4 | - | | | x | | | |
| 5 | Criteria and principles for architectural evaluation, including aesthetic, functional, environmental, and social aspects. | 4 | - | | | x | | | |
| 6-7 | Architectural competitions, their history, evolution, types, and objectives. | 4 | - | | | x | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | Design process in competitions, including concept development and ideation. | 4 | - | x | | | x | | |
| 10 | Presentation techniques for competitions, including drawings, reports, and effective visual communication. | 4 | - | x | | | x | | |
| 11 | Case studies in architectural criticism and competitions, analyzing past competition-winning projects. | 4 | - | x | | | x | | |
| 12 | Application of architectural criticism in real-world projects, evaluating existing buildings and urban spaces. | 4 | - | x | | | x | | |
| 13 | Preparation of drawings and technical reports for architectural competitions. | 4 | - | | | | | x | x |
| 14 | Final project submission and review, applying criticism tools and competition methodologies. | 4 | - | | | | | x | x |

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 15 | General discussion and course wrap-up, reflecting on learning outcomes and future applications. | 4 | - | | | | | x | x |
| 16 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | | X | X | X | X | X |
| Group discussion | X | X | | | | X |
| Site visit | | | | | X | |
| | | | | | | |
| • Presentation | X | X | | | X | X |
| • Research and reporting | X | X | | X | | X |
| Brain storming | | | X | X | X | X |

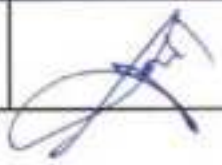
7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | | x | X | x | x |
| Mid-term Exam | x | x | x | | | |
| Quizzes | | x | x | X | x | |
| Research assignments | x | x | | | | x |
| In-class questions (formative assessment) | | | x | X | x | |
| Project assignments | | | | | | x |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf |  | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf |  | 2025-2026 |

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Advanced Architectural Design | |
| Course Code (according to the bylaw) | ARE 412E | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 4 | - | 4 |
| Course Type | ☐ Compulsory | ☒ Elective |
| Academic level at which the course is taught | 4th Level | |
| Academic Program | Architectural Engineering Program | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Issues and subjects of advanced architectural design trends- study of design principles and constraints of the advanced trends- case studies covering the advanced trends.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| A3 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO6 | Develop leadership skills in architectural design by engaging with professional challenges and future trends. |
| A6 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO2 | Apply advanced design methodologies and cross-disciplinary tools to enhance architectural creativity and problem-solving. |
| | | CLO4 | Integrate case study analysis into the design process to explore and implement cutting-edge architectural concepts. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| B2 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO1 | Analyze contemporary architectural design trends, principles, and constraints to develop innovative solutions. |
| B4 | Defining the concepts and history of architectural criticism - tools and parameters of architectural criticism- outlines of architectural criticism trends and concepts- criteria and principals of architectural criticism, evaluation and assessment- defining the concept of architectural competitions, their importance, and their aims- concepts and trends of design- preparation of drawings and technical reports- application studies of architectural criticism processes. | CLO3 | Evaluate the impact of emerging technologies on architectural theory, digital fabrication, and construction processes. |
| | | CLO5 | Demonstrate proficiency in advanced digital modeling techniques to support material production and sustainable architectural practices. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Site visit
- ☒ Self-learning
- ☒ Presentation

☒ Group discussion
☐ Laboratory
☒ Mini project
☒ Research and reporting (self-learning)
☐ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Introduction to Advanced Architectural Design Trends | 6 | 4 | - | 2 | |
| 2 | Exploring Contemporary Architectural Issues and Innovations | 6 | 4 | - | 2 | |
| 3 | Principles of Advanced Architectural Design | 6 | 4 | - | 2 | |
| 4 | Sustainable and Smart Design Strategies | 6 | 4 | - | 2 | |
| 5-6 | Digital Fabrication and Parametric Design Applications | 12 | 8 | - | 4 | |
| 7 | Constraints and Challenges in Advanced Architectural Trends | 6 | 4 | - | 2 | |
| 8 | **Mid-Term Exam** | | | | | |
| 9 | Integration of Technology in Architectural Design | 6 | 4 | - | 2 | |
| 10 | Urban and Environmental Considerations in Advanced Design | 6 | 4 | - | 2 | |
| 11 | Human-Centered and Responsive Design Approaches | 6 | 4 | - | 2 | |
| 12 | Case Studies of Cutting-Edge Architectural Projects | 6 | 4 | - | 2 | |
| 13 | Experimental and Future-Oriented Architectural Concepts | 6 | 4 | - | 2 | |
| 14 | Presentation Techniques and Design Critique Sessions | 6 | 4 | - | 2 | |
| 15 | Final Project Submission and Review | 6 | 4 | - | 2 | |
| 16 | **Final Exam** | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5% |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | (As Schedule) | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | -- | --% |
| 5. | Activities | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | - | -- | --% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Schittich, Christian. In Detail: Building Skins. Birkhäuser, 2019. |
| | **Other References** | Mostafavi, Mohsen, and David Leatherbarrow. On Weathering: The Life of Buildings in Time. MIT Press, 2021. |
| | **Electronic Sources** (Links must be added) | Microsoft Word, PowerPoint, and Adobe Photoshop (software tools used for documentation and presentation). |
| | **Learning Platforms** (Links must be added) | Manzala Academy LMS, https://lms.manzalaacademy.edu.eg/ |
| | **Other** (to be mentioned) | -- |
| | | |
| **Supportive facilities & equipment for teaching and learning *** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec. | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Introduction to Advanced Architectural Design Trends | 4 | - | x | | | | | |
| 2 | Exploring Contemporary Architectural Issues and Innovations | 4 | - | x | | | | | |
| 3 | Principles of Advanced Architectural Design | 4 | - | x | | | | | |
| 4 | Sustainable and Smart Design Strategies | 4 | - | | x | | | | |
| 5-6 | Digital Fabrication and Parametric Design Applications | 8 | - | | x | | | | |
| 7 | Constraints and Challenges in Advanced Architectural Trends | 4 | - | | x | | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | Integration of Technology in Architectural Design | 4 | - | x | | | x | | |
| 10 | Urban and Environmental Considerations in Advanced Design | 4 | - | x | | | x | | |
| 11 | Human-Centered and Responsive Design Approaches | 4 | - | x | | | x | | |
| 12 | Case Studies of Cutting-Edge Architectural Projects | 4 | - | x | | | x | | |
| 13 | Experimental and Future-Oriented Architectural Concepts | 4 | - | | | | | x | x |
| 14 | Presentation Techniques and Design Critique Sessions | 4 | - | | | | | x | x |
| 15 | Final Project Submission and Review | 4 | - | | | | | x | x |
| 16 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | | X | X | X | X | X |
| Group discussion | X | X | | | | X |
| Laboratory | | | X | | | X |
| Site visit | | | | | X | |
| • Presentation | X | X | | | X | X |
| • Mini-project | | | | | | |
| • Research and reporting | X | X | | X | | X |
| Brain storming | | | X | X | X | X |

7.3. Student assessment matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | X | X | X | X |
| Tutorial / Exercise | | X | X | X | X | X |
| Group discussion | X | X | | | | X |
| Laboratory | | | X | | | X |
| Site visit | | | | | X | |
| • Presentation | X | X | | | X | X |
| • Research and reporting | X | X | | X | | X |
| Brain storming | | | X | X | X | X |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

# Fourth Year

## (Elective Courses)

List (**4**)

ARE 421E : Detailed planning

ARE 422E : Urban renovation and upgrading

## 1. Basic Information:

| | | |
|---|---|---|
| Course Title (according to the bylaw) | Detailed planning | |
| Course Code (according to the bylaw) | ARE 421E | |
| Department/s participating in offering the course | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | |
| Lecture | Tutorial / Laboratory | Total contact |
| 2 | 2 | 4 |
| Course Type | ☐ Compulsory | ☒ Elective |
| Academic level at which the course is taught | Fourth year | |
| Academic Program | Architectural Engineering Department | |
| Faculty/Institute | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | Manzalla Academy | |
| Name of Course Coordinator | | |
| Course Specification Approval Date | 16 August 2025 | |
| Course Specification Approval | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

The role of planning in achieving a strong relationship between the built-up areas and spaces-forming of spaces, their sequential arrangement dimensions, detailing, and relationships- visual forming with its variable parameters-circulation paths-landscaping and its corresponding parameters and details

## 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A3.** | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | **CLO1** | Define the role of planning in integrating built-up areas with open spaces to achieve spatial harmony. |
| | | **CLO6** | Design urban layouts that balance built-up areas, open spaces, and circulation networks effectively . |
| **A7.** | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | **CLO2** | Describe the principles of space formation, sequencing, and detailing in urban environments. |
| | | **CLO4** | Apply knowledge of landscaping to enhance site functionality and aesthetics. |
| **B2.** | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | **CLO5** | Evaluate different planning approaches in optimizing space utilization and connectivity. |
| **B4** | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; | **CLO3** | Analyze the impact of visual parameters and circulation paths on urban spatial organization. |

| Program Outcomes (NARS/ARS) (according to the matrix in the program specs) | | Course Learning Outcomes Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| | while having adequate knowledge of industries, organizations, regulations and procedures involved. | | |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☒ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☒ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Introduction to Urban Space Planning | 6 | 2 | 2 | 2 | |
| 2 | The Role of Planning in Connecting Built-Up Areas and Open Spaces | 6 | 2 | 2 | 2 | |
| 3 | Principles of Space Formation: Sequencing, Dimensions, and Relationships | 6 | 2 | 2 | 2 | |
| 4 | Detailing and Spatial Organization in Urban Design | 6 | 2 | 2 | 2 | |
| 5 | Visual Forming and Its Variable Parameters in Urban Spaces | 6 | 2 | 2 | 2 | |
| 6 | Circulation Paths: Movement Strategies and Connectivity | 6 | 2 | 2 | 2 | |
| 7 | Landscaping Elements and Their Impact on Urban Spaces | 6 | 2 | 2 | 2 | |
| 8 | Mid Term Exam | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | Integrating Built and Open Spaces through Effective Design Strategies | 6 | 2 | 2 | 2 | |
| 10 | Evaluating Spatial Relationships and Functional Zoning | 6 | 2 | 2 | 2 | |
| 11 | Suggesting and Evaluating Alternative Urban Design Solutions | 6 | 2 | 2 | 2 | |
| 12 | Review of Problems, Constraints, and Potentials in Urban Planning | 6 | 2 | 2 | 2 | |
| 13 | Final project submission and review, applying criticism tools and competition methodologies. | 6 | 2 | 2 | 2 | |
| 14-15 | Final Review and Discussion of Project Outcomes | 12 | 4 | 4 | 4 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods * | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5 % |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | 16 | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | -- | ..% |
| 5. | Activities and assignments | Every week | 12 | 12--% |
| 6. | Final Oral Exam (if exists) | -- | -- | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.) *** | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System Engineering Analysis, Design, and Development: Concepts, Principles, and Practices (2nd Edition). John Wiley & Sons. ISBN-13: 978-1118442265. |
| | **Other References** | Barron, M. (2024). Auditorium Acoustics and Architectural Design (2nd Edition). Spon Press. ISBN-13: 978-1032836690. |
| | **Electronic Sources** (Links must be added) | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |

| | | |
|---|---|---|
| | **Other** (to be mentioned) | Clark, K. (2021). Power of place-heritage policy at the start of the new millennium. In Engaging with Heritage and Historic Environment Policy (pp. 11-37). Routledge. |

| | | |
|---|---|---|
| **Supportive facilities & equipment for teaching and learning** * | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards. |
| | **Electronic Programs** | Microsoft Office program, Acrobat Reader |
| | **Skill Labs/ Simulators** | -- |
| | **Virtual Labs** | -- |
| | **Other** (to be mentioned) | |

## 7. Course Matrixes:

### 7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Introduction to Urban Space Planning | 2 | 2 | x | | | | x | |
| 2 | The Role of Planning in Connecting Built-Up Areas and Open Spaces | 2 | 2 | | x | | | | |
| 3 | Principles of Space Formation: Sequencing, Dimensions, and Relationships | 2 | 2 | | x | | | | |
| 4 | Detailing and Spatial Organization in Urban Design | 2 | 2 | | | x | x | | |
| 5 | Visual Forming and Its Variable Parameters in Urban Spaces | 2 | 2 | | | x | x | | |
| 6 | Circulation Paths: Movement Strategies and Connectivity | 2 | 2 | | | x | | | x |
| 7 | Landscaping Elements and Their Impact on Urban Spaces | 2 | 2 | x | | | | x | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | Integrating Built and Open Spaces through Effective Design Strategies | 2 | 2 | x | | | | | x |
| 10 | Evaluating Spatial Relationships and Functional Zoning | 2 | 2 | x | | | | | x |
| 11 | Suggesting and Evaluating | 2 | 2 | | | x | x | | |

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| | Alternative Urban Design Solutions | | | | | | | | |
| 12 | Review of Problems, Constraints, and Potentials in Urban Planning | 2 | 2 | | | X | X | X | X |
| 13 | Final Submission and Presentation of the Urban Space Design Exercise | 2 | 2 | | | X | X | X | X |
| 14-15 | Final Review and Discussion of Project Outcomes | 4 | 4 | X | X | X | X | X | X |
| 16 | Final Exam | | | | | | | | |

7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | X | X | | X | | |
| Tutorial / Exercise | | | | | X | X |
| Group discussion | | | X | | | |
| Self-learning | | | | | | |
| • Presentation | | | | X | X | |
| • Mini project | | | | | | X |
| • Research and reporting | X | | | | | |
| Brainstorming | | | X | X | X | |
| Case study | X | X | | X | X | |

7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | X | X | X | X | X | |
| Mid-term Exam | X | X | X | X | X | |
| Quizzes | | X | X | X | | X |
| In-class questions (formative assessment) | X | | | X | | X |
| Project assignments | X | X | X | | X | X |

Course coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. | | 2025-2026 |

Program coordinator:

| Name | Signature | Academic Year |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

## 1. Basic Information:

| | | | |
|---|---|---|---|
| Course Title (according to the bylaw) | | Urban Renovation and Upgrading | |
| Course Code (according to the bylaw) | | ARE 422E | |
| Department/s participating in offering the course | | Architectural Engineering Department | |
| Number of credit hours/points of the course (according to the bylaw) | | | |
| Lecture | Tutorial / Laboratory | Total contact | |
| 2 | 2 | 4 | |
| Course Type | | ☐ Compulsory | ☒ Elective |
| Academic level at which the course is taught | | Fourth year | |
| Academic Program | | Architectural Engineering Department | |
| Faculty/Institute | | Higher Institute of Engineering and Technology at Manzalla | |
| University/Academy | | Manzalla Academy | |
| Name of Course Coordinator | | Dr. Marwa Al-Adham | |
| Course Specification Approval Date | | 16 August 2025 | |
| Course Specification Approval | | Institute Council No. (12) on 16 August 2025 | |

## 2. Course Overview (Brief summary of scientific content)

Maximum use of available environmental possibilities and human and urban resources-study of local and global experiments in development and upgrading-standing problems of urban decay, its causes and factors- tools and techniques of rectification used in renovation and upgrading- conservation and maintenance- case studies and applications.

### 3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with Competencies (NARS/ARS)

| **Program Outcomes (NARS/ARS)** (according to the matrix in the program specs) | | **Course Learning Outcomes** Upon completion of the course, the student will be able to: | |
|---|---|---|---|
| **Code** | **Text** | **Code** | **Text** |
| **A3.** | Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and Contexts of sustainable design and development. | **CLO4** | Design urban spaces that integrate economic, social, cultural, environmental, and urban aspects. |
| | | **CLO6** | Develop small-scale models (maquettes) to demonstrate methods of assembling urban spaces and buildings. |
| **A7.** | Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams. | **CLO1** | Apply effective solutions for urban renovation and upgrading at different urban scales. |
| | | **CLO2** | Explain the causes of urban decay and the challenges facing the built environment in Egypt. |
| **B2.** | Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale. | **CLO5** | Utilize appropriate tools and techniques for urban rectification, conservation, and maintenance. |
| **B4** | Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved. | **CLO3** | Analyze global and local case studies to extract best practices for urban development and upgrading. |

## 4. Teaching and Learning Methods

- ☒ Face to face lecture
- ☐ Online education
- ☐ Tutorial / Exercise
- ☒ Group discussion
- ☐ Laboratory
- ☐ Site visit
- ☒ Self-learning
  - ☒ Presentation
  - ☐ Mini project
  - ☒ Research and reporting (self-learning)
- ☒ Brainstorming

## Course Schedule

| No. of the Week | Scientific content of the course (Course Topics) | Total Weekly Hours | Expected number of the Learning Hours | | | |
|---|---|---|---|---|---|---|
| | | | Theoretical teaching (lectures/discussion groups/ .....) | Training (Practical/ Clinical/ .....) | Self-learning (Tasks/ Assignments / Projects/ ...) | Other (to be determined) |
| 1 | Introduction to Urban Renovation and Upgrading | 6 | 2 | 2 | 2 | |
| 2 | Optimizing Environmental, Human, and Urban Resources in Development | 6 | 2 | 2 | 2 | |
| 3 | Analysis of Global and Local Urban Upgrading Strategies | 6 | 2 | 2 | 2 | |
| 4 | Challenges of Urban Decay: Causes, Impacts, and Contributing Factors | 6 | 2 | 2 | 2 | |
| 5 | Innovative Tools and Techniques for Urban Rectification and Renewal | 6 | 2 | 2 | 2 | |
| 6 | Conservation, Maintenance, and Sustainable Urban Regeneration | 6 | 2 | 2 | 2 | |
| 7 | Case Studies on Successful Urban Upgrading Projects | 6 | 2 | 2 | 2 | |
| 8 | Mid Term Exam | | | | | |
| 9 | Identifying Problems, Constraints, and Opportunities in Urban Areas | 6 | 2 | 2 | 2 | |
| 10 | Strategic Analysis of Urban Issues and Development Potentials | 6 | 2 | 2 | 2 | |
| 11 | Integrated Approaches to Urban Rehabilitation and Upgrading | 6 | 2 | 2 | 2 | |
| 12 | Final Review and Student | 6 | 2 | 2 | 2 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Discussions | | | | | |
| 13 | General revision and students' questions | 6 | 2 | 2 | 2 | |
| 14-15 | Final Project Submission and Presentation | 12 | 4 | 4 | 4 | |
| 16 | Final Exam | | | | | |

## 5. Methods of students' assessment

| No. | Assessment Methods | Assessment Timing (Week Number) | Marks/ Scores | Percentage of Total Course Marks |
|---|---|---|---|---|
| 1. | Quizzes | 6, 11 | 4.5 | 4.5 % |
| 2. | Mid-Term Examination | 8 | 13.5 | 13.5% |
| 3. | Final Examination | 16 | 70 | 70% |
| 4. | Lab Exam | (As Schedule) | -- | ..% |
| 5. | Activities and assignments | Every week | 12 | 12% |
| 6. | Final Oral Exam (if exists) | -- | -- | ..% |

## 6. Learning Resources and Supportive Facilities

| | | |
|---|---|---|
| **Learning resources (books, scientific references, etc.)** * | **The main (essential) reference for the course** (must be written in full according to the scientific documentation method) | Wasson, C. S. (2015). System Engineering Analysis, Design, and Development: Concepts, Principles, and Practices (2nd Edition). John Wiley & Sons. ISBN-13: 978-1118442265. |
| | **Other References** | Barron, M. (2024). Auditorium Acoustics and Architectural Design (2nd Edition). Spon Press. ISBN-13: 978-1032836690. |
| | **Electronic Sources** (Links must be added) | Totten, C. W. (2019). Architectural Approach to Level Design. CRC Press. |
| | **Learning Platforms** (Links must be added) | **https://lms.manzalaacademy.edu.eg/** |
| | **Other** (to be mentioned) | Clark, K. (2021). Power of place-heritage policy at the start of the new millennium. In Engaging with Heritage and Historic Environment Policy (pp. 11-37). Routledge. |
| **Supportive facilities & equipment** | **Devices/Instruments** | Projectors, audio-visual systems, and Computers with internet access. |
| | **Supplies** | Whiteboards |

| | | |
|---|---|---|
| for teaching and learning * | Electronic Programs | Microsoft Office program, Acrobat Reader |
| | Skill Labs/ Simulators | -- |
| | Virtual Labs | -- |
| | Other (to be mentioned) | |

7. Course Matrixes:

7.1. Course contents Matrix with CLOs:

| Week | Topics | Lec | T/L | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| 1 | Introduction to Urban Renovation and Upgrading | 2 | 2 | x | | | | | |
| 2 | Optimizing Environmental, Human, and Urban Resources in Development | 2 | 2 | x | | | | | |
| 3 | Analysis of Global and Local Urban Upgrading Strategies | 2 | 2 | | | | x | | X |
| 4 | Challenges of Urban Decay: Causes, Impacts, and Contributing Factors | 2 | 2 | | | | x | | X |
| 5 | Innovative Tools and Techniques for Urban Rectification and Renewal | 2 | 2 | x | | x | x | | |
| 6 | Conservation, Maintenance, and Sustainable Urban Regeneration | 2 | 2 | | x | | | | |
| 7 | Case Studies on Successful Urban Upgrading Projects | 2 | 2 | | x | | | | |
| 8 | Mid Term Exam | | | | | | | | |
| 9 | Identifying Problems, Constraints, and Opportunities in Urban Areas | 2 | 2 | | | | x | x | |
| 10 | Strategic Analysis of Urban Issues and Development Potentials | 2 | 2 | | | | x | x | |
| 11 | Integrated Approaches to Urban Rehabilitation and Upgrading | 2 | 2 | | | x | | | X |
| 12 | Final Review and Student Discussions | 2 | 2 | | | x | | | X |
| 13 | General revision and students' questions | 2 | 2 | | | | x | x | X |
| 14-15 | Final Project Submission and Presentation | 4 | 4 | x | x | | x | | X |
| 16 | Final Exam | | | | | | | | |

### 7.2. Teaching and learning matrix with CLOs:

| Teaching and Learning Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Face to face lecture | x | x | x | | x | X |
| Group discussion | x | | | | | |
| | | | | | | |
| • Presentation | | | | | | X |
| • Research and reporting | x | x | | | x | |
| Brain storming | | | | x | | X |
| Case study | | x | x | | | X |

### 7.3. Student assessment matrix with CLOs:

| Assessment Methods | Course Learning outcomes "CLO's" | | | | | |
|---|---|---|---|---|---|---|
| | CLO1 | CLO2 | CLO3 | CLO4 | CLO5 | CLO6 |
| Final written exam | | x | x | | | X |
| Oral exam | | | x | x | | X |
| Mid-term Exam | | | x | x | | X |
| Lab Exam | x | | | | x | |
| Research assignments | x | | | | | X |
| In-class questions (formative assessment) | x | x | x | x | | |

Course coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Dr. Marwa Al-Adham | | 2025-2026 |

Program coordinator:

| *Name* | *Signature* | *Academic Year* |
|---|---|---|
| Prof. Dr. Tarek Abu Auf | | 2025-2026 |

# Ministry of Higher Education


# Higher Institute of Engineering and Technology at Manzala

https://hie.manzalaacademy.edu.eg

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