Ministry of Higher Education

Higher Institute of Engineering and Technology at Manzala

Quality Assurance Unit

Architecture Engineering

Program Specification

2026-2025

1. Basic Information:

Program Title (according to what is stated in the bylaw):	Architecture Engineering Program Specification
Total number of credit hours/points of the program:	276
Number of academic years/levels (expected program duration):	10 semesters (5-years)
Department (s) Participating (if any) in teaching the program:	Basic Science Department Civil Engineering Department Architectural Engineering Department
Faculty/Institute:	Higher Institute of Engineering and Technology at Manzalla
University/Academy:	Manzalla Academy
Program majors/divisions/tracks/specialties in the final year (if any):	Architectural Engineering Program
Partnerships with other parties and the nature of each (if any):	N/A
Name of the program coordinator (attach the assignment decision):	Prof. Dr / Tarek AbouOuf
Program Specification Approval Date:	16 August 2025
Council responsible for Program Specification Approval (Attach the Decision / Minutes):	Institute Council No. (12) on 16 August 2025

2. Program Aims

1. Acquire a broad range of engineering knowledge and specific skills, as well as the ability to apply learned knowledge in real-world problems through theories and abstract thinking.
2. Utilize analytical, critical, and systemic thinking to effectively identify, diagnose, and resolve engineering problems that exhibit a diverse range of complexity and variability.
3. Demonstrate professional conduct and adhere to the ethical principles and standards set forth in the field of engineering.
4. Collaborate within a diverse team of professionals from various engineering disciplines,

effectively assuming both individual and collective responsibility for performance and leadership.

5. Acknowledge the importance of promoting the engineering field and actively contribute to its development, as well as making positive contributions to the community at large.
6. Recognize the significance of the environment, both physical and natural, and endeavor to promote sustainability principles
7. Use the essential techniques, skills, and current engineering tools to practice engineering.
8. Assume complete responsibility for own learning and growth, engage in lifelong learning, and demonstrate the ability to pursue postgraduate and research opportunities.
9. Demonstrate effective communication skills by utilizing diverse modes, tools, and languages to engage with different audiences. Approach academic and professional challenges in a critical and creative manner, utilizing effective communication strategies.
10. Demonstrate leadership capabilities, business administration, and entrepreneurship skills.

3. Program Structure (Curriculum)

3.1. Program Components

Requirement Category/Type		Number of Courses	Number of Credit Hours/Points	Percentage from the total number of hours/points
University Requirements		4	10	3.6 %
Faculty/College Requirements (if applicable)		18	79	28.7 %
Program's General Requirements		22	105	38 %
Program's Specialized Requirements		15	82	29.7 %
Requirements of the majors/ divisions/ tracks/ specializations in the final year (if any)		--	--	--
Other requirements	Field Training	--	--	--
	Graduation Project	1	14	5.1 %
	Mandatory training year	--	--	--
	Other (to be mentioned)	--	--	--

Requirement Category/Type	Number of Courses	Number of Credit Hours/Points	Percentage from the total number of hours/points
Total Compulsory Courses	55	260	94.2 %
Elective Courses	4	16	5.8 %
Total	59	276	100 %

3.2. Program courses according to the expected study plan

Academic Level	Semester (Fall / Spring)	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Other
Preparatory	First Semester	BS011	Engineering Mathematics (1)	Compulsory	Institute Requirements	4	2	2	
Preparatory	First Semester	BS012	Physics (1)	Compulsory	Institute Requirements	4	2	2	
Preparatory	First Semester	BS013	Mechanics (1)	Compulsory	Institute Requirements	4	2	2	
Preparatory	First Semester	MEC014	Engineering Drawing and Projection (1)	Compulsory	Institute Requirements	7	3	4	
Preparatory	First Semester	BS015	Introduction to Computer and Programming	Compulsory	University Requirements	4	2	2	
Preparatory	First Semester	BS016	English Language (1)	Compulsory	University Requirements	2	2	-	
Preparatory	second Semester	BS021	Engineering Mathematics (2)	Compulsory	Institute Requirements	4	2	2	
Preparatory	second Semester	BS022	Physics (2)	Compulsory	Institute Requirements	4	2	2	
Preparatory	second Semester	BS023	Mechanics (2)	Compulsory	Institute Requirements	4	2	2	
Preparatory	second Semester	MEC024	Engineering Drawing and Projection (2)	Compulsory	Institute Requirements	5	3	2	
Preparatory	second Semester	BS025	Chemistry	Compulsory	Institute Requirements	4	2	2	
Preparatory	second Semester	MEC026	Production Engineering	Compulsory	Institute Requirements	5	2	3	
Preparatory	second Semester	BS027	Engineering and Environment	Compulsory	University Requirements	2	2	-	
First level	First Semester	ARE111	Architectural Design (1)	Compulsory	Program's General	6	2	4	
First level	First Semester	ARE112	Building construction (1)	Compulsory	Program's General	6	2	4	

Academic Level	Semester (Fall / Spring)	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Other
First level	First Semester	BS 111	Mathematics, Statistics and Programming	Compulsory	Institute Requirements	4	2	2	
First level	First Semester	ARE113	History & Theory of Architecture (1)	Compulsory	Program's General	3	3	-	
First level	First Semester	CIVA 111	Theory of Structures	Compulsory	Institute Requirements	4	2	2	
First level	First Semester	CIVA 112	Surveying	Compulsory	Institute Requirements	5	2	3	
First level	Second Semester	ARE121	Architectural Design (2)	Compulsory	Program's General	6	2	4	
First level	Second Semester	ARE122	Building construction (2)	Compulsory	Program's General	6	2	4	
First level	Second Semester	ARE123	Visual Training	Compulsory	Program's General	5	2	3	
First level	Second Semester	ARE124	Shade & Perspective	Compulsory	Program's General	5	2	3	
First level	Second Semester	CIVA 121	Properties and test of material	Compulsory	Program's General	5	3	2	
First level	Second Semester	ARE 125	Technical Reporting	Compulsory	University Requirements	2	2	-	
Second level	First Semester	ARE 211	Architectural Design (3)	Compulsory	Program's General	6	2	4	
Second level	First Semester	ARE 212	Computer applications in architecture (1)	Compulsory	Program's General	4	2	2	
Second level	First Semester	ARE 213	Building construction (3)	Compulsory	Program's General	6	2	4	
Second level	First Semester	ARE 214	History & Theory of Architecture (2)	Compulsory	Program's General	3	-	3	
Second level	First Semester	ARE 215	History of city planning	Compulsory	Program's General	3	-	3	
Second level	First Semester	CIVA 211	Reinforced Concrete Structures	Compulsory	Institute Requirements	4	2	2	
Second level	Second Semester	ARE 221	Architectural Design (4)	Compulsory	Program's General	6	2	4	
Second level	Second Semester	ARE 222	Building construction (4)	Compulsory	Program's General	6	2	4	
Second level	Second Semester	ARE 223	Urban design	Compulsory	Program's Specialized	5	2	3	
Second level	Second Semester	ARE 224	Building physics and environmental control	Compulsory	Program's General	4	2	2	

Academic Level	Semester (Fall / Spring)	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Other
Second level	Second Semester	ARE 225	Computer applications in architecture (2)	Compulsory	Program's General	4	2	2	
Second level	Second Semester	CIVA221	Steel structures	Compulsory	Institute Requirements	4	2	2	
Third level	First Semester	ARE 311	Architectural design (5)	Compulsory	Program's General	6	2	4	
Third level	First Semester	ARE 312	Executive designs (1)	Compulsory	Program's Specialized	5	1	4	
Third level	First Semester	ARE 313	Urban planning and design	Compulsory	Program's Specialized	6	2	4	
Third level	First Semester	ARE314	History & Theories of Architecture (3)	Compulsory	Program's General	3	3	-	
Third level	First Semester	CIVA311	Foundations	Compulsory	Institute Requirements	4	2	2	
Third level	ARE 31XE Elective list (1)								
Third level	First Semester	ARE 311E	Environmental design	**Elective**	Program's Specialized	4	2	2	
Third level	First Semester	ARE 312E	Computer aided design	**Elective**	Program's Specialized	4	2	2	
Third level	First Semester	ARE 313E	Advanced building technologies	**Elective**	Program's Specialized	4	2	2	
Third level	Second Semester	ARE 321	Architectural design (6)	Compulsory	Program's Specialized	7	2	5	
Third level	Second Semester	ARE 322	Executive designs (2)	Compulsory	Program's Specialized	5	1	4	
Third level	Second Semester	ARE 323	Housing and urban design (1)	Compulsory	Program's Specialized	4	2	2	
Third level	Second Semester	ARE 324	Technical installations for buildings	Compulsory	Program's General	4	2	2	
Third level	Second Semester	CIVA 321	Sanitary engineering	Compulsory	Institute Requirements	4	2	2	
Third level	ARE 32XE Elective list (2)								
Third level	Second Semester	ARE 321E	Landscape design	**Elective**	Program's Specialized	4	2	2	
Third level	Second Semester	ARE 322E	Urban conservation and maintenance	**Elective**	Program's Specialized	4	2	2	
Third level	Second Semester	ARE 323E	Architectural Project's management	**Elective**	Program's Specialized	4	2	2	

Academic Level	Semester (Fall / Spring)	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of Credit Hours/ Points	Number of Weekly Hours		
							Theoretical teaching	Practical training	Other
Fourth level	First Semester	ARE412	Architectural design (7)	Compulsory	Program's General	6	1	5	
Fourth level	First Semester	ARE411	Executive designs (3)	Compulsory	Program's Specialized	5	1	4	
Fourth level	First Semester	ARE413	History & Theories of Architecture (4)	Compulsory	Program's General	3	3	-	
Fourth level	First Semester	ARE414	Interior design	Compulsory	Program's General	4	2	2	
Fourth level	First Semester	ARE 415	Urban Planning (2)	Compulsory	Program's Specialized	5	2	3	
Fourth level	ARE 41XE Elective list (3)								
Fourth level	First Semester	ARE 411E	Architectural criticism and competition	**Elective**	Program's Specialized	4	4	-	
Fourth level	First Semester	ARE 412E	Advanced architectural design	**Elective**	Program's Specialized	4	4	-	
Fourth level	Second Semester	ARE 421	Housing and urban design (2)	Compulsory	Program's Specialized	6	2	4	
Fourth level	Second Semester	ARE422	Specifications, quantities & quality control	Compulsory	Program's Specialized	4	2	2	
Fourth level	ARE 42XE Elective list (4)								
Fourth level	Second Semester	ARE 421E	Detailed planning	**Elective**	Program's Specialized	4	2	2	
Fourth level	Second Semester	ARE 422E	Urban renovation and upgrading	**Elective**	Program's Specialized	4	2	2	
Fourth level	Second Semester	ARE423	project	**Elective**	Program's Specialized	14	4	10	

4. Academic Standards

4.1. Adopted Academic Standards (NARS/ARS): NARS

The reference for standards considered in the development of this program is National Academic Reference Standards for Engineering (NARS 2018) which is adopted and approved by institute council in 10 December 2022 meeting No. (3).

4.2. Date of Adoption of Standards in the governing Council

Adopted and approved by department council on 10 November 2022 meeting No. 3 and faculty council on 2022/11/20 meeting No. 3

4.3. Program Competencies

A. General Competencies of Engineering Graduate

A1. Identify the concepts and theories of mathematics and sciences related to Architectural engineering to solve complex engineering problems.

A2. Design and execute suitable experiments or simulations, analyze and interpret data, assess and appraise the results, and employ statistical analysis and unbiased engineering judgment to derive conclusions.

A3. Utilize engineering design methodologies to create economical solutions that fulfill defined requirements, taking into account global, cultural, social, economic, environmental, ethical, and relevant considerations within the framework of sustainable design and development principles.

A4. Employ modern technologies, adhere to industry codes of practice and standards, follow quality guidelines, prioritize health and safety requirements, address environmental concerns, and apply principles of risk management.

A5. Incorporate research techniques and investigative methods as an integral aspect of the learning process.

A6. Plan, conduct and write a technical report on a project considering related trade's needs.

A7. Collaborate effectively both independently and as a valuable member of multidisciplinary and culturally diverse teams.

A8. Effectively communicate with a variety of audiences using modern tools, whether through graphical, verbal, or written means.

A9. Develop innovative solutions and acquire entrepreneurial skills for the practical industrial problems and response to new situations.

A10. Sustain self-management and time management skills, remain adaptable in the face of change and conflicting conditions, and commit to lifelong self-improvement and learning.

B- Architecture learning outcomes (Level B)

B.1 Prepare and develop architectural, urban, and planning designs that meet aesthetic and technical criteria, drawing upon comprehensive knowledge of history, theory, related fine arts, local culture and heritage, technology, and human sciences.

B.2 Create designs that achieve the needs of building users by comprehending the interaction between people and structures, as well as the connection between buildings and their surroundings. Additionally, consider the importance of aligning buildings and the spaces between them with human requirements and scale.

B.3 Produce environmentally conscious, conservation-oriented, and rehabilitation-focused designs with a firm grasp of structural design, construction methods, technology, and engineering challenges that are inherent in building designs.

B.4 Transform design concepts into actual buildings and incorporate plans into comprehensive planning processes, considering limitations such as project financing, project management, cost control, and project delivery methods. This should be done with a solid understanding of the relevant industries, organizations, regulations, and procedures involved.

B.5 Compose design project briefs and documents while comprehending the architect's position within the construction industry. This includes understanding the architect's role in processes like bidding, the procurement of architectural services, and building production.

5. Matrix of Academic Standards (Program Outcomes POs) with Courses:

	Code	Course Name	Program Learning outcomes (PLO's) A- Level 1	2	3	4	5	6	7	8	9	10	B- Level 1	2	3	4	5	Code	Course Name	
Prepatory	BS011	Engineering Mathematics (1)	X															BS011	Engineering Mathematics (1)	Prepatory
	BS012	Physics (1)	X	X														BS012	Physics (1)	
	BS013	Mechanics (1)	X															BS013	Mechanics (1)	
	MEC014	Engineering Drawing and Projection (1)			X					X								MEC014	Engineering Drawing and Projection (1)	
	BS015	Introduction to Computer ans Programming	X				X											BS015	Introduction to Computer ans Programming	
	BS016	English Language (1)								X								BS016	English Language (1)	
	BS021	Engineering Mathematics (2)	X															BS021	Engineering Mathematics (2)	
	BS022	Physics (2)	X	X														BS022	Physics (2)	
	BS023	Mechanics (2)	X															BS023	Mechanics (2)	
	MEC024	Engineering Drawing and Projection (2)			X					X								MEC024	Engineering Drawing and Projection (2)	
	BS025	Chemistry	X	X					X									BS025	Chemistry	
	MEC026	Production Engineering		X	X													MEC026	Production Engineering	
	BS027	Engineering and Environment				X			X									BS027	Engineering and Environment	
First Year	ARE111	Architectural Design (1)					X							X	X			ARE111	Architectural Design (1)	First Year
	ARE112	Building construction (1)				X									X	X		ARE112	Building construction (1)	
	BS 111	Mathematics, Statistics and Programming	X		X			X										BS 111	Mathematics, Statistics and Programming	
	ARE113	History & Theory of Architecture (1)			X					X				X	X			ARE113	History & Theory of Architecture (1)	
	CIVA 111	Theory of Structures			X		X						X					CIV111	Theory of Structures	
	CIVA 112	Surveying	X	X				X	X									CIV112	Surveying	
	ARE121	Architectural Design (2)			X				X					X	X			ARE121	Architectural Design (2)	
	ARE122	Building construction (2)						X				X		X			X	ARE122	Building construction (2)	
	ARE123	Visual Training						X	X			X	X					ARE123	Visual Training	
	ARE124	Shade & Perspective		X								X		X				ARE124	Shade & Perspective	
	CIVA 121	Properties and test of material				X		X										CIV121	Properties and test of material	
	ARE 125	Technical Reporting					X			X								ARE 125	Technical Reporting	
Second Year	ARE 211	Architectural Design (3)					X					X		X				ARE 211	Architectural Design (3)	Second Year
	ARE 212	Computer applications in architecture (1)			X	X									X			ARE 212	Computer applications in architecture (1)	
	ARE 213	Building construction (3)			X			X						X	X			ARE 213	Building construction (3)	
	ARE 214	History & Theory of Architecture (2)				X	X						X					ARE 214	History & Theory of Architecture (2)	
	ARE 215	History of city planning				X	X					X	X					ARE 215	History of city planning	
	CIVA 211	Reinforced Concrete Structures	X	X	X							X						CIVA 211	Reinforced Concrete Structures	
	ARE 221	Architectural Design (4)					X						X	X	X			ARE 221	Architectural Design (4)	
	ARE 222	Building construction (4)			X	X								X	X			ARE 222	Building construction (4)	
	ARE 223	Urban design										X	X		X	X		ARE 223	Urban design	
	ARE 224	Building physics and environmental control			X							X		X	X			ARE 224	Building physics and environmental control	
	ARE 225	Computer applications in architecture (2)				X	X							X	X			ARE 225	Computer applications in architecture (2)	
	CIVA221	Steel structures	X	X								X	X					CIVA221	Steel structures	
Third Year	ARE 311	Architectural design (5)					X						X	X	X			ARE 311	Architectural design (5)	Third Year
	ARE 312	Executive designs (1)			X				X						X	X		ARE 312	Executive designs (1)	
	ARE 313	Urban planning and design								X			X	X				ARE 313	Urban planning and design	
	ARE314	History &Theories of architecture (3)				X	X						X					ARE314	History &Theories of architecture (3)	
	CIVA311	Foundations	X							X	X			X				CIVA311	Foundations	
	ARE 31XE	Elective list (1)																ARE 31XE	Elective list (1)	
	ARE 311E	Environmental design				X									X			ARE 311E	Environmental design	
	ARE 312E	Computer aided design				X									X			ARE 312E	Computer aided design	
	ARE 313E	Advanced building technologies				X									X			ARE 313E	Advanced building technologies	
	ARE 321	Architectural design (6)					X						X	X	X			ARE 321	Architectural design (6)	
	ARE 322	Executive designs (2)			X									X	X	X		ARE 322	Executive designs (2)	
	ARE 323	Housing and urban design (1)										X	X		X		X	ARE 323	Housing and urban design (1)	
	ARE 324	Technical installations for buildings				X		X									X	ARE 324	Technical installations for buildings	
	CIVA 321	Sanitary engineering				X						X			X			CIVA 321	Sanitary engineering	
	ARE 32XE	Elective list (2)																ARE 32XE	Elective list (2)	
	ARE 321E	Landscape design			X					X				X				ARE 321E	Landscape design	
	ARE 322E	Urban conservation and maintenance			X											X	X	ARE 322E	Urban conservation and maintenance	
	ARE 323E	Architectural Project's management					X	X	X									ARE 323E	Architectural Project's management	
Fourth Year	ARE412	Architectural design (7)					X						X	X	X		X	ARE412	Architectural design (7)	Fourth Year
	ARE411	Executive designs (3)			X						X			X	X			ARE411	Executive designs (3)	
	ARE413	History &Theories of architecture (4)				X	X						X					ARE413	History &Theories of architecture (4)	
	ARE414	Interior design								X				X		X	X	ARE414	Interior design	
	ARE 415	Urban Planning (2)			X								X			X		ARE 415	Urban Planning (2)	
	ARE 41XE	Elective list (3)																ARE 41XE	Elective list (3)	
	ARE 411E	Architectural criticism and competition			X			X						X		X		ARE 411E	Architectural criticism and competition	
	ARE 412E	Advanced architectural design			X			X						X		X		ARE 412E	Advanced architectural design	
	ARE 421	Housing and urban design (2)			X				X					X		X		UPL 412	Housing and urban design (2)	
	ARE422	Specifications, quantities & quality control	X									X				X	X	ARE422	Specifications, quantities & quality control	
	ARE 42XE	Elective list (4)																ARE 42XE	Elective list (4)	
	ARE 421E	Detailed planning			X				X					X		X		ARE 421E	Detailed planning	
	ARE 422E	Urban renovation and upgrading			X				X					X		X		ARE 422E	Urban renovation and upgrading	
	ARE423	project									X			X	X	X	X	ARE423	project	

6. Teaching and Learning strategies/methods to achieve Program Outcomes:

- ✓ Face to face lecture
- ✓ Online education
- ✓ Tutorial / Exercise
- ✓ Group Discussions
- ✓ Laboratory
- ✓ Site Visit
- ✓ Presentation
- ✓ Mini Project
- ✓ Research and Reporting (Self Learning)
- ✓ Brainstorming

Program competencies		Teaching and learning methods									
		Face to face lecture	Online education	Tutorial / Exercise	Group Discussions	Laboratory	Site Visit	Presentation	Mini Project	Research and Reporting (Self Learning)	Brainstorming
Level A	A1	x	x	x							
	A2				x	x			x	x	
	A3	x	x	x		x					x
	A4	x	x	x		x	x				
	A5						x			x	x
	A6				x	x			x		x
	A7				x			x		x	X
	A8				x			X			
	A9				x					x	X
	A10									x	X
Level B	B1	x		x			x		x		
	B2							x	x	x	x
	B3	x			x				x	x	x
	B4	x					x	x		x	x
	B5			x			x	x			x

7. Student Assessment strategies/methods to verify and ensure students' acquisition of Program Outcomes:

- ✓ Written exam
- ✓ Online exam
- ✓ Oral Exam
- ✓ Quizzes
- ✓ Lab Exam
- ✓ Research Assignments
- ✓ Reporting Assignments
- ✓ Project Assignments
- ✓ In-class Questions

Program competencies		Assessment methods								
		Written exam	Online exam	Oral Exam	Quizzes	Lab Exam	Research Assignments	Reporting Assignments	Project Assignments	In-class Questions
Level A	A1	X			x		x	X		X
	A2			x		x	x	X		
	A3	x			x				X	
	A4	x			x	x	X			
	A5						x			X
	A6					x	x	x	x	X
	A7						x	x	X	
	A8			X			x	x	X	
	A9			x						X
	A10						x		x	x
Level B	B1						x	x	x	X
	B2						x		x	
	B3	X					x	x	x	x
	B4						x	x	x	
	B5	x					x	x	x	

8. Program Key Performance Indicators (if any)

No.	Performance Indicator	Target Level	Method	Measurement
1.	N/A	N/A	N/A	N/A

Name & Signature Program Coordinator

Prof. Dr / Tarek AbouOuf

Name & Signature Vice Dean for Education and Student Affairs

Prof. Dr. Ali Samir Awad

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