



Program Specifications
University: Ain Shams **Faculty: Engineering**

A- Basic Information

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| 1. Programme title: | B. SC. in Environmental Architecture and Urbanism Engineering |
| 2. Programme type: | Single <input checked="" type="checkbox"/> Double <input type="checkbox"/> Multiple <input type="checkbox"/> |
| 3. Faculty: | Faculty of Engineering – Ain Shams University |
| 4. Department(s) offering the Program: | Architectural Engineering & Urban Planning |
| 5. Coordinator: | Dr. Marwa Abo Elfotouh Elsaid Khalifa |
| 6. External evaluator(s): | Prof. Dr. Ayman Hassan Ahmed Mahmoud |
| 7. Internal Evaluator: | Prof Dr. Hanan Moustafa Kamal Sabry |
| 8. Date of program bylaw approval: | 2016 |
| 9. Date of program specifications approval: | September 2018 |

B- Professional Information

1. Program Mission:

The mission of the Environmental Architecture and Urbanism Engineering program is to prepare distinguished engineering graduates of Architects and Urbanists capable of keeping pace with global technological development and efficient use of resources from a sustainable environmental perspective. This should be realized through ingenuity and creative thinking which depends on good management and assessment of surrounding environment to function architectural and urbanism elements and taking into account the form and aesthetic dimensions. Program graduates are characterized by embracing modern learning methods and techniques, appropriate technology compliant and linking theory with practice. The program is therefore based on the following intentions:

- PM 1. To enhance the students' awareness of some non-related to their specialization sciences, especially which are related to human sciences to enhance their social involvement.
- PM 2. To equip students with the required basic knowledge of basic sciences, engineering sciences, architectural sciences and environmental sciences. In addition to, enhancing the student's interpersonal skills to understand, coordinate with, and lead other engineering disciplines in the architectural profession;
- PM 3. To Enhance the creativity and critical thinking abilities of students;
- PM 4. To augment the intellectual capacity to develop ecofriendly architectural and urban designs based on scientific research, technological innovation and sustainability; and
- PM 5. To prepare students to acquire the individual skills and ethics required for long-term learning and competent professional practice.

2. Program Aims

The main goal of the "Environmental Architecture and Urbanism" engineering program is to prepare architects and urban planners who are:



- PA 1. Overcoming and leading other graduates on the scale of national and regional profession markets in addition to competing in the international market.
- PA 2. Showing responsibility towards the local society and natural environment.
- PA 3. Self-motivated and excellency seeker.

3. Graduate attributes:

To achieve the program mission and aims, program graduates should be able to:

- GA 1- Apply knowledge of mathematics, science and engineering concepts to the solution of architectural engineering problems.
- GA 2- Design an environmental control system; component and process to meet the required needs within realistic constraints.
- GA 3- Design and conduct environmental assessment experiments as well as analyze and interpret data.
- GA 4- Identify, formulate and solve fundamental engineering problems.
- GA 5- Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management.
- GA 6- Work effectively within multi-disciplinary teams.
- GA 7- Communicate effectively.
- GA 8- Consider the impacts of engineering solutions on society & environment.
- GA 9- Demonstrate knowledge of contemporary engineering issues.
- GA 10- Display professional and ethical responsibilities; and contextual understanding
- GA 11- Engage in self- and life- long learning.
- GA 12- Apply different learned knowledge, and acquired skills, in urban planning and architecture design to design robust urban and architectural projects with creativity and technical mastery.
- GA 13- Demonstrate knowledge of cultural diversity, differences and the impact of a building on community character and identity.
- GA 14- Recognize the new role of architectural engineer as the leader of design projects— who has the ability to understand, assemble, and coordinate all of the disciplines— to create a sustainable environment.
- GA 15- Be aware of the different fields of urban development on scales of urban planning, and urban design, in addition to, highlighting the urban and architectural issues on different scales.
- GA 16- Embrace the values of responsible global citizenship and innovations.

4. Intended learning outcomes (ILOs)

a- Knowledge and understanding:

The graduates of the program should be able to demonstrate the knowledge and understanding of:

- A1- Concepts and theories of mathematics and sciences, appropriate to the architecture profession.
- A2- Basics of information and communication technology (ICT)
- A3- Characteristics of engineering materials related to building construction industry.
- A4- Principles of design including elements design, process and/or a system related to environmental control methods and techniques.
- A5- Methodologies of solving engineering problems, data collection and interpretation



- A6- Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
- A7- Business and management principles relevant to architecture engineering.
- A8- Current environmental control technologies.
- A9- Topics related to humanitarian interests and moral issues.
- A10- Site Jargon, Technical language and report writing
- A11- Professional ethics and impacts of engineering solutions on society and environment
- A12- Contemporary engineering topics.
- A13- Principles of architecture design, urban design, and urban planning, and how to manage the functional relationship between the project's different functions, zones, land-use activities *in case of urban projects*, and so on.
- A14- Principles of sustainable design, climatic considerations, and energy consumption and efficiency in the built environment and their impacts on the natural environment.
- A15- Principles of building technologies, structure & construction methods, technical installations, properties of materials, and the way they may influence design decisions.
- A16- Fundamentals of building acquisition, operational costs, and of preparing construction documents and specifications of materials, components, and systems appropriate to the building.
- A17- Theories, philosophies, and historical development of architecture, planning, urban design, and other related disciplines.
- A18- Different, manual and digital, methods and techniques *two and three dimensional* to present design projects in a variety of contexts, scales, types and degree of complexity.
- A19- The effect of different socio-cultural environmental variables on the built environment.
- A20- The general framework of the scientific methodology to deal with built environment problems.
- A21- The built environment as a multi-dimensional phenomenon.
- A22- Climate change, biodiversity, disaster risk reduction and sustainable consumption and production.

b- Intellectual skills:

The graduates of the program should be able to

- B1- Select and appraise appropriate ICT tools, mathematical, and computer-based methods for numerically modelling, and/or assessing, architectural engineering and environmental control problems.
- B2- Collect, assess the validity of, and analyse; data, statistics, results of numerical models, ICT tools outputs, and/or computer-based methods.
- B3- Evaluate the characteristics and performance of environmental control systems, components, and processes.
- B4- Investigate and define the failure, weaknesses, the shortage, and the problem of; environmental control systems, components, processes, buildings, and urban spaces.
- B5- Select appropriate solutions for architectural engineering and environmental control problems based on the student's robust problem definition.
- B6- Think in a critical and creative way to produce innovative engineering solutions and designs, often on the basis of limited and possibly contradicting information.
- B7- Review and criticize environmental control decisions, architectural projects, and urban designs according to a set of criteria considering, but not limited to, balanced costs, benefits, safety, quality, reliability, and environmental impact.



- B8- Incorporate socio-economic and environmental dimensions, reconcile conflicting objectives, and manage the broad constituency of interests to reach optimum solutions and designs.
- B9- Create systematic and methodic approaches when dealing with new and advancing technology.
- B10- Integrate different forms of knowledge, ideas from other disciplines, and manage information retrieval to create new solutions.
- B11- Integrate relationship of structure, building materials, construction elements, and environmental control needs into design process.
- B12- Integrate community design parameters into design projects.
- B13- Explain the mutual impact between the built environment and the environmental and socio-economic aspects.
- B14- Propose suitable ideas and solutions for the built environment problems.
- B15- Think three-dimensionally and engage images of places & times with innovation and creativity in the exploration of design.
- B16- Predict future scenarios of the natural environment based on the current visions and threats.
- B17- Participate in decision-making processes.
- B18- Collaborate in addressing current and future challenges across disciplinary boundaries.

c- Professional and practical skills:

The graduates of the program should be able to:

- C1- Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve architectural engineering and environmental control problems.
- C2- Professionally merge the engineering knowledge, understanding, and feedback to improve, re-design, and/or create: a design, a product, a system, and/or a service.
- C3- Practice the neatness and aesthetics in design and approach.
- C4- Apply numerical modeling methods and use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.
- C5- Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the architectural practice and environmental control methods and techniques.
- C6- Apply safe systems at work and observe the appropriate steps to manage risks.
- C7- Demonstrate basic organizational and project management skills.
- C8- Apply quality assurance procedures and follow codes and standards.
- C9- Exchange knowledge and skills with engineering community and industry.
- C10- Prepare and present technical reports.
- C11- Produce and present; architectural briefs, housing and services programs, architecture designs, urban designs, and planning projects, by the aid of appropriate range of media and design-based software.
- C12- Produce professional workshop and technical drawings using traditional drawing and computer-aided drawings' techniques.
- C13- Use appropriate construction techniques and materials to specify and implement different designs.
- C14- Demonstrate professional competence in developing innovative and appropriate solutions of architectural and urban problems.
- C15- Respect all alternative solutions; changes in original plan of the project, differences in style, culture, experience and treat others with respect.



- C16- Provide leadership and education to the client particularly with reference to sustainable design principles.
- C17- Respond effectively to the broad constituency of interests with consideration of social and ethical concerns.
- C18- Contribute positively to the aesthetic, architecture and urban identity, and cultural life of the community.

d- General and transferable skills:

The graduates of the program should be able to:

- D1- Collaborate effectively within multidisciplinary team.
- D2- Work in stressful environment and within constraints.
- D3- Communicate effectively.
- D4- Demonstrate efficient IT capabilities.
- D5- Lead and motivate individuals.
- D6- Effectively manage tasks, time, and resources.
- D7- Search for information and engage in life-long self-learning discipline.
- D8- Acquire entrepreneurial skills.
- D9- Refer to relevant literatures.
- D10- Reflect on and change one's behaviour,
- D11- Value the implications of one's actions for others.
- D12- Implies mobilizing education and learning for sustainable development in sectors beyond education.

5. Academic standards

The “Environmental Architecture and Urbanism” program ADOPTS an Academic References Standards (ARS) which is officially approved by the Interdisciplinary Credit Hours Engineering Programs (ICHEP) Council in its meeting at June 2013. This ARS has been prepared considering the following standards and principles:

- I. The National Academic Reference Standards (NARS) for Engineering.
 - II. The National Academic Reference Standards (NARS) for Architecture.
 - III. The National Academic Reference Standards (NARS) for Urban Planning.
 - IV. UNESCO Education Strategy 2014-2021.
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- See Table [1] for a relationship matrix of "**Program ILOs Vs the Program's ARS's ILOs**".
 - See Table [2] for a relationship matrix of "**Institute's Mission Vs Program's Mission**".
 - See Table [3] for a relationship matrix of "**Program's Mission Vs Graduate's attributes**".
 - See Table [4] for a relationship matrix of "**Program Aims Vs Program Graduate's Attributes**".
 - See Table [5] for a relationship matrix of "**Graduate's Attributes Vs Program's ILOs**".
 - See Table [6] for a relationship matrix of "**Program's ILOs Vs Program's Courses**".



6. Curriculum structure and contents

a- Programme duration:

5 years / 10 semesters, - 179 credit hours

b- Programme structure

Lec.	88 cont. h	Tut.	185 cont. h	lab	19 cont. h	Total	292 cont. h
Compulsory	163 CH	Elective	16 CH	Optional/Selective			

	Subject Area	NARS%	Program%
A	Humanities and Social Sciences (Univ. Req.)	11 (9-12 %)	10.9%
B	Mathematics and Basic Sciences	21 (20-26 %)	13.1%
C	Basic Engineering Sciences (Faculty/Spec. Req.)	21 (20-23 %)	20.1%
D	Applied Engineering and Design	21 (20-22 %)	27.7%
E	Computer Applications and ICT*	10 (9-11 %)	9.2%
F	Projects and Practice	9 (8-10 %)	12.8%
G	Discretionary (Program character-identifying) subjects	7 (6-8 %)	6.1%
Total			100

See appendix - Table [7] for courses classification according to subject area.

c- Programme courses

i. University Requirements

Code	Course Title	Credit
HUM 011	English Language	0
HUM x41	Professional Ethics	2
HUM x42	Principles of Law & Human Rights	2
HUM x51	Nile River & Contemporary Issues	2
HUM x52	Communication & Presentation Skills	2
HUM x53	Research & Analysis Skills	2
HUM 015	Report Writing	2
HUM x91	Humanities Elective (1)	2
HUM x92	Humanities Elective (2)	2
Total Credit Hours		16

Humanities Elective (1), (2): Student chooses only two of the following courses:

Code	Course Title	Credit
HUM x54	Psychology	2
HUM x55	Arabic & Islamic Civilization	2
HUM x63	Technology of Ancient Egypt	2
HUM x64	First aid Skills	2
HUM x71	Music Appreciation	2
HUM x72	Trends in Contemporary Arts	2
HUM x81	Heritage of Egyptian Literature	2
HUM x82	Literary Appreciation	2
HUM x83	Recent Egypt's History	2
HUM x84	Geography of Egypt	2
HUM x85	Introduction to the History of Civilizations	2
HUM x86	Engineering History	2



ii. College Requirements

Code	Course Title	Credit
PHM 012	Calculus for Engineering (1)	3
PHM 013	Calculus for Engineering (2)	3
PHM 014	Linear Algebra and Analytical Geometry	3
PHM 022	Waves, Electricity, and Magnetic Fields	3
MDP 024	Production Engineering	3
PHM 032	Engineering Mechanics (1) - Statics	3
PHM 033	Engineering Mechanics (2) - Dynamics	3
PHM 042	General Chemistry	3
MDP 061	Engineering Design and Graphics	4
Total Credit Hours		28

iii. General Specialization Requirements

Code	Course Title	Credit
ARC 011	Visual Studies and Design Fundamentals	2
UPL 111	History and Theory of Urbanism	2
CEP 114	Land Surveying	2
ARC 115	Architectural Design Studio (1)	3
ARC 116	Shades, Shadows, and Perspective	2
CES 117	Structure Analysis	3
UPL 121	Urbanism and Climate	3
ARC 122	History and Theory of Architecture	2
ARC 132	Building Technology (1)	3
ARC 136	Digital Presentation of the Built Environment	2
ARC 143	Control of Thermal Environment	3
CES 143	Building Engineering Materials	3
ARC 152	Architectural Design Studio (2)	3
UPL 211	Introduction to Urban Design	3
UPL 212	People and Environment	3
UPL 224	Sustainable Urban Development	3
CES 225	Reinforced Concrete Structures	3
ARC 232	Building Technology (2)	3
CEP 241	Green Infrastructure	3
ARC 242	Acoustics in Architecture	2
ARC 243	Renewable Energy and Buildings	2
ARC 244	Lighting in Architecture	2
ARC 245	Principles of Sustainable Architecture	3
ARC 252	Environmental Architectural Design Studio (1)	3
ARC 253	Environmental Architectural Design Studio (2)	3
UPL 261	Ecological Landscape	3
UPL 313	Housing Studies and Design	3
UPL 315	Eco Urban Design (1)	3
ARC 316	Modeling of the Built Environment	2
CES 325	Steel Structures	3



Code	Course Title	Credit
ARC 334	Working Drawings (1)	3
ARC 335	Working Drawings (2)	3
UPL 343	Sustainable Urban Landscape	3
ARC 354	Sustainable Architectural Design Studio (1)	3
ARC 355	Sustainable Architectural Design Studio (2)	3
UPL 362	Eco Urban Design (2)	3
UPL 441	Eco Urban Design (3)	3
ARC 456	Sustainable Architectural Design Studio (3)	3
UPL 474	Environmental Impact Assessment	3
Total Credit Hours		107

iv. Specific Specialization Requirements

The student chooses either **Environmental Architecture** field or **Environmental Urbanism** field by studying the specific specialization courses corresponding to the chosen field. The student must be in the fourth level to be able to register for the Technical Electives courses, with the exception of **Technical Elective (1)** where the student should be at least in the third level to be able to register for this course.

• Specific Specialization Courses of Environmental Architecture Field

Code	Course Title	Credit
ARC 415	Building Performance Simulation	2
ARC 443	Renewable Energy Systems	3
ARC 448	Sustainable Building Rating Systems	2
ARC 476	Execution Documents	3
ARC 4xx	Technical Elective (1)	3
ARC xxx	Technical Elective (2)	3
ARC 4xx	Technical Elective (3)	3
ARC 4xx	Technical Elective (4)	3
ARC 492	Studies and Program of Graduation Project	2
ARC 493	Graduation Project	4
Total Credit Hours		28

The student studies only one course from each of the following groups.

Code	Course Title	Credit
Technical Elective (1)		
ARC 426	Architectural Criticism and Project Evaluation	3
ARC 442	Human Aspects of Sustainable Architecture	3
ARC 457	Interior Design	3
ARC 474	Contemporary Vernacular Architecture	3
Technical Elective (2)		
ARC 357	Outdoor Lighting and Effects	3
ARC 362	Indoor Air Quality	3
ARC 446	Soundscape and Aural Architecture	3
ARC 447	Outdoor Noise Propagation in Built	3



Code	Course Title	Credit
Technical Elective (1)		
	Environment	
Technical Elective (3)		
ARC 441	Building Life Cycle Assessment	3
ARC 477	Professional Practice and Building Legislations	3
Technical Elective (4)		
ARC 436	Maintenance of Buildings	3
ARC 444	Building Commissioning	3
ARC 445	Economics of Green Building	3

• Specific Specialization Courses of Environmental Urbanism Field

Code	Course Title	Credit
UPL 445	Sustainable Urban Mobility	2
UPL 446	Introduction to Geographic Information System (GIS)	3
CES 447	Sustainable Waste Management	2
UPL 448	Environmental Planning	3
UPL 4xx	Technical Elective (1)	3
UPL 4xx	Technical Elective (2)	3
UPL 4xx	Technical Elective (3)	3
UPL 4xx	Technical Elective (4)	3
UPL 495	Studies and Program of Graduation Project	2
UPL 496	Graduation Project	4
Total Credit Hours		28

The student studies only one course from each of the following groups.

Code	Course Title	Credit
Technical Elective (1)		
UPL 415	Urban Renewal	3
UPL 475	Urban and Architectural Heritage	3
Technical Elective (2)		
UPL 424	Economics for Sustainability	3
UPL 425	Disasters and Environmental Risk Reduction	3
Technical Elective (3)		
UPL 423	Smart Cities	3
UPL 427	Cities and Climate Change	3
Technical Elective (4)		
UPL 422	Selected Topics in Urbanism	3
UPL 426	Management of Urban Environment	3



d- Suggested schedules:

General Level (Freshmen)

Course Code	Course Title	Credit Hours	Weekly Hours			Prerequisite
			Lec.	Tut.	Lab	
First Main Semester (Term 1)						
PHM 012	Calculus for Engineering (1)	3	3	1.5	0	
MDP 024	Production Engineering	3	3	0	1.5	
PHM 032	Engineering Mechanics (1) - Statics	3	3	1.5	0	
PHM 042	General Chemistry	3	2	2	1.5	
MDP 061	Engineering Design and Graphics	4	2	4	0	
HUM x11	English Language	2	1	2	0	
HUM x61	Computer Skills (Self Study)	0	0	0	0	
Total Hours		18	14	11	3	
Second Main Semester (Term 2)						
ARC 011	Visual Studies and Design Fundamentals	2	0	4	0	
PHM 013	Calculus for Engineering (2)	3	3	1.5	0	PHM 012
PHM 014	Linear Algebra and Analytical Geometry	3	3	1.5	0	
PHM 022	Waves, Electricity, and Magnetic Fields	3	2	2	1.5	
PHM 033	Engineering Mechanics (2) - Dynamics	3	3	1.5	0	PHM 032
HUM x41	Professional Ethics	2	1	2	0	
HUM x51	Nile River & Contemporary Issues	2	1	2	0	
Total Hours		18	15	12.5	1.5	



First Level (Sophomore)

Course Code	Course Title	Credit Hours	Weekly Hours			Prerequisite
			Lec.	Tut.	Lab	
First Main Semester (Term 3)						
UPL 111	History and Theory of Urbanism	2	1	2	0	
CEP 114	Land Surveying	2	2	0	2	
ARC 115	Architectural Design Studio (1)	3	0	6	0	ARC 011
CES 117	Structure Analysis	3	2	2	0	PHM 012, PHM 032
ARC 122	History and Theory of Architecture	2	1	2	0	
ARC 132	Building Technology (1)	3	1	4	0	
HUM x91	Humanities Elective (1)	2	2	1	0	
Total Hours		17	11	15	2	
Second Main Semester (Term 4)						
ARC 116	Shades, Shadows, and Perspective	2	1	3	0	
UPL 121	Urbanism and Climate	3	2	2	0	
ARC 136	Digital Presentation of the Built Environment	2	0	0	6	
ARC 143	Control of Thermal Environment	3	2	2	0	
CES 143	Building Engineering Materials	3	3	1.5	0	CES 117
ARC 152	Architectural Design Studio (2)	3	0	6	0	ARC 011
HUM x52	Communication & Presentation Skills	2	1	2	0	
Total Hours		18	9	16.5	6	



Second Level (Junior)

Course Code	Course Title	Credit Hours	Weekly Hours			Prerequisite
			Lec.	Tut.	Lab	
First Main Semester (Term 5)						
UPL 211	Introduction to Urban Design	3	1	4	0	UPL 111
UPL 212	People and Environment	3	2	2	0	
ARC 232	Building Technology (2)	3	1	4	0	ARC 132
ARC 242	Acoustics in Architecture	2	1	3	0	PHM 022
ARC 243	Renewable Energy and Buildings	2	2	1	0	ARC 143
ARC 244	Lighting in Architecture	2	1	3	0	PHM 022
ARC 252	Environmental Architectural Design Studio (1)	3	0	6	0	ARC 152
Total Hours		18	8	23	0	
Second Main Semester (Term 6)						
UPL 224	Sustainable Urban Development	3	2	2	0	
CES 225	Reinforced Concrete Structures	3	2	2	0	CES 117
CEP 241	Green Infrastructure	3	2	2	0	
ARC 245	Principles of Sustainable Architecture	3	2	2	0	ARC 143, ARC 242, ARC 244
ARC 253	Environmental Architectural Design Studio (2)	3	0	6	0	ARC 252
UPL 261	Ecological Landscape	3	1	4	0	
Total Hours		18	9	18	0	



Third Level (Senior 1)

Course Code	Course Title	Credit Hours	Weekly Hours			Prerequisite
			Lec.	Tut.	Lab	
First Main Semester (Term 7)						
UPL 313	Housing Studies and Design	3	1	4	0	
UPL 315	Eco Urban Design (1)	3	1	4	0	UPL 224, UPL 261
CES 325	Steel Structures	3	2	2	0	CES 117
ARC 334	Working Drawings (1)	3	1	4	0	
ARC 354	Sustainable Architectural Design Studio (1)	3	0	6	0	ARC 245
UPL 343	Sustainable Urban Landscape	3	1	4	0	UPL 261
Total Hours		18	6	24	0	
Second Main Semester (Term 8)						
ARC 316	Modeling of the Built Environment	2	0	0	6	
ARC 335	Working Drawings (2)	3	1	4	0	ARC 334
ARC 355	Sustainable Architectural Design Studio (2)	3	0	6	0	ARC 354
UPL 362	Eco Urban Design (2)	3	1	4	0	UPL 315
ARC 4xx/ UPL 4xx	Technical Elective (1)	3	2	2	0	
HUM x42	Principles of Law & Human Rights	2	2	1	0	
HUM x53	Research & Analysis Skills	2	1	2	0	
Total Hours		18	7	20	6	



Fourth Level: (Senior 2) Environmental Architecture Field

Course Code	Course Title	Credit Hours	Weekly Hours			Prerequisite
			Lec.	Tut.	Lab	
First Main Semester (Term 9)						
ARC 415	Building Performance Simulation	2	1	3	0	ARC 245
UPL 441	Eco Urban Design (3)	3	0	6	0	UPL 362
ARC 448	Sustainable Building Rating Systems	2	1	2	0	
ARC 456	Sustainable Architectural Design Studio (3)	3	0	6	0	ARC 355
ARC 476	Execution Documents	3	1	4	0	ARC 335
ARC xxx	Technical Elective (2)	3	x	x	0	
ARC 492	Studies and Program of Graduation Project	2	0	4	0	ARC 355
Total Hours		18	x	x	0	
Second Main Semester (Term 10)						
ARC 443	Renewable Energy Systems	3	2	2	0	
UPL 474	Environmental Impact Assessment	3	2	2	0	
ARC 4xx	Technical Elective (3)	3	2	2	0	
ARC 4xx	Technical Elective (4)	3	2	2	0	
ARC 493	Graduation Project	4	0	8	0	ARC 456, ARC 492
HUM x92	Humanities Elective (2)	2	2	1	0	
Total Hours		18	10	19	0	



Fourth Level (Senior 2): Environmental Urbanism Field

Course Code	Course Title	Credit Hours	Weekly Hours			Prerequisite
			Lec.	Tut.	Lab	
First Main Semester (Term 9)						
UPL 441	Eco Urban Design (3)	3	0	6	0	UPL 362
UPL 445	Sustainable Urban Mobility	2	1	2	0	
UPL 446	Introduction to Geographic Information System (GIS)	3	2	0	3	
CES 447	Sustainable Waste Management	2	1	2	0	
ARC 456	Sustainable Architectural Design Studio (3)	3	0	6	0	ARC 355
UPL 4xx	Technical Elective (2)	3	2	2	0	
UPL 495	Studies and Program of Graduation Project	2	0	4	0	
Total Hours		18	6	23	3	
Second Main Semester (Term 10)						
UPL 448	Environmental Planning	3	1	4	0	
UPL 474	Environmental Impact Assessment	3	2	2	0	
UPL 4xx	Technical Elective (3)	3	2	2	0	
UPL 4xx	Technical Elective (4)	3	x	x	0	
UPL 496	Graduation Project	4	0	8	0	UPL 495
HUM x92	Humanities Elective (2)	2	2	0	0	
Total Hours		18	x	x	0	

7. Program admission requirements

According to the program bylaw (2013); the program regulations are as follow:

Article (22): Enrolment Requirements

- Students eligible to get enrolled in the Credit Hours Engineering Programs are those with the general certificate of secondary education (Thanaweya Amma), mathematics section, or equivalent, who have been deployed to the Faculty through the Coordination Office, or transferred from other Faculties, in accordance with the rules and conditions established annually by the Supreme Council of Universities.
- The Council of the Faculty of Engineering establishes general rules for admission to the programs considering the student preferences and the principle of equal opportunities as the basis for the admission of students to these programs.
- When the student applies to the credit hours programs, the Council of the Faculty of Engineering may assign him a maximum of two basic courses as an admission prerequisite. These courses will not be included in the student's GPA and are recommended by the Programs Administration Council and approved by the Council of the Faculty of Engineering.



8. Regulations for progression and program completion

According to the program bylaw (2013); the program regulations are as follow:

Article (23): Program System

- The Programs follow the credit hours system: One credit hour is equivalent to a one hour weekly lecture, two hours weekly tutorial, or three hours weekly Lab work.
- The actual hours is determined in accordance with the resolutions of the Supreme Council of Universities, such that one teaching hour equals 50 minutes teaching.
- The study is in English, and the Faculty of Engineering will ascertain the student's proficiency in English.

Article (24): Study Timings and Registration

- The academic year comprises three semesters:
 - **First main semester (Fall):** Begins early September and lasts for 15 weeks.
 - **Second main semester (Spring):** Begins early February and lasts for 15 weeks.
 - **Summer semester:** Begins late June and lasts for 7 weeks.
- New students' enrolment in the programs starts two weeks before the starting of the Fall semester, after fulfilling all the programs requirements and paying the enrolment fees, as recommend by the Programs Administration Council and set by the Council of the Faculty of Engineering.
- Registration for any semester takes place within two weeks before the starting day of the semester. Registration is not final until the full tuition fees of the semester are paid.
- Registration in the Summer semester is optional.

Article (25): Program Study Duration

- The minimum allowed study duration is nine main semesters.
- The maximum allowed study duration is ten years, which does not include frozen semesters for reasons acceptable by the faculty, after which the student is expelled from the programs.

Article (26): Tuition Fees

- Tuition fees, set per credit hour, are specified yearly by the University administration based on the recommendation of the Programs Administration Council and the approval of the Council of the Faculty of Engineering. The tuition fees may be increased annually for newly enrolled students, according to the rules set by the Council of the Faculty of Engineering and the University administration based on the associated general regulations.
- The student will sign a pledge to abide by the educational service charges proposed by the Faculty, and approved by the University, with the commitment of constant charges from admission until graduation.
- The tuition fees are paid every semester (the first and the second main semesters) based on the number of credit hours registered by the student, with a minimum of the correspondence of educational service fees of 12 credit hours each semester, unless the number of credit hours remaining for the fulfilment of the degree is less than that, in which case the student should pay the actual number of registered credit hours.
- The educational service fees for the Summer semester are determined based on the actual number of credit hours registered by the student.



Article (27): Registration Terms

- The student may register for a maximum of 18 credit hours or six courses, whichever is greater in the first or the second main semester, after consulting the academic advisor, at the time of registration and according to the yearly rules issued by the Faculty and published in the student's guide. Registration is not final until the student pays the educational service fees for the semester.
- The student may register in the Summer semester in a maximum of two courses with a maximum of 8 credit hours, unless it results in graduating the student conditional the approval of the academic advisor.
- The student with a GPA of 3.0 or higher can register in the main semesters in up to 21 credit hours or 7 courses, whichever is greater.
- The student with a GPA less than 2.0 (under probation) can register in the main semesters in only 12 credit hours or 4 courses, whichever is greater.
- Late registration is not final unless there is a vacancy in the courses, and the student should pay late registration fees besides the prescribed academic service fees, in accordance with the recommendations of the Programs Administration Council and approval of the Council of the Faculty of Engineering regarding this issue.
- The student may not register in any course without fulfilling all its prerequisites.
- If the student's graduation depends on only one additional course than what is permitted according to his condition in the last semester, he is allowed to register that course in terms of studying and examination; and if the course is not offered, he will be allowed to register it as self-study according to the following rules:
 1. The grade is based on a final exam, which is held during the final examination period for the semester.
 2. The student pays the final examination fees according to the recommendation of the Programs Administration Council in this issue and the approval of the Council of the Faculty of Engineering.
- The students may register as audit in some courses provided that there is a vacancy in these courses, and after paying the academic service fees based on the recommendation of the Programs Administration Council and the approval of the Council of the Faculty of Engineering in this regard. Audit students are not eligible to enter the course final exam.

Article (28): Minimum Limit for Course Opening

- The minimum number of students required to open a course in a main semester is 10 students.
- The minimum number of students required to open a course in the Summer semester is 5 students.
- The minimum number of students required to open a course in a technical elective course is 5 students or 25% of the number of students in this program level, whichever is less. The Programs Administration Council may provide exceptions to these limits if there is a necessity.

Article (29): Bachelor Degree Requirements

- To obtain the Bachelor of Science Degree in Engineering, the student must successfully complete 180 credit hours in one of the programs according to the requirements stipulated in Article (30), with a GPA at graduation of at least 2.0.
- A graduation project is an essential part of all the programs requirements for graduation. The graduation project may be completed over two successive semesters,



as per the program's curriculum, and the student does not graduate unless he fulfills the project's pass requirements.

- The student must perform summer training for 12 weeks during his study duration. Training must be performed in an industrial/service facility related to the student's program, and must be under the full supervision of the faculty according to the requirements stipulated in Article (37).
- An English language placement test is held for all students at their first enrolment in the credit hours programs. Not passing the English language placement test will necessitate that the student register in the English Language course (HUM 011), after paying the prescribed fees. The evaluation of the student in this course will be based on success/fail and is not included in the calculation of the GPA. Passing the English language course is a prerequisite for completing the graduation requirements.
- The student is allowed to register during the final semester in a number of credit hours according to his condition, even if the total number of credit hours during the student's study duration exceeds 180. The student who already accomplished his 180 credit hours is not allowed to register in a new semester, since he has already fulfilled the Bachelor Degree requirements.
- In the case of a cooperative agreement between the credit hours engineering programs of the Faculty of Engineering and a foreign university, the student can study a number of courses in the foreign university, pending prior approval of the Faculty of Engineering. The credit hours of these courses are included in the student's graduation requirements, on condition that the total credit hours of these courses do not exceed 36 credit hours.

Article (30): Study Requirements

The study requirements are divided into:

1. University Requirements

The student must pass the University requirements, which consist of humanities, social sciences, general culture courses. These courses represent 16 credit hours selected from a list of courses.

2. College Requirements

The student must pass the College requirements, which consist of basic sciences and engineering sciences courses. These courses must be studied by all students and they represent 28 credit hours.

3. Program Major and Specialization Requirements

The student must pass a total of 136 credit hours.

Article (31): Academic Advisor

- Every student is assigned an Academic Advisor who is one of the faculty members and may continue with the student for the whole study duration.
- The Academic Advisor should follow-up with the student, assist him in selecting courses each semester, and request to place the student under probation for one semester, hence, limiting the number of registered credit hours for this student to a minimum of 12 credit hours in this semester.
- The Academic Advisor may ask the student to repeat courses which he already passed or ask him to register in additional courses to raise his accumulative GPA to that required for graduation.



Article (32): Drop/Add and Withdraw

- The student may add, drop, or exchange courses with other courses in the first two weeks from the beginning of the main semesters, with refundable fees (in case of drop). Add/Drop course(s) should not violate the minimum and maximum number of credit hours registered per semester as defined in Article (27). Add/Drop course(s) can be done during the first week of the Summer semester.
- The student may withdraw from any course within the first 8 weeks of the main semesters or the first four weeks for the Summer semester. Tuition fees will not be refunded in all cases.
- The student does not fail the withdrawn course, provided that the withdrawal application and approval are finalized within the time limit mentioned in the previous point.
- The student gets a (W) grade for the withdrawn course and is allowed to register that course (full attendance and performing all activities including examinations) in a following semester, provided that the full course fees are paid.
- The student, who withdraws from a whole semester and gets a grade (W) because of an illness condition or with an excuse acceptable by the faculty, should submit a request to and get an approval from the Programs Administration Council. The student should then repeat all the courses from which he withdrew in a following semester after re-paying the academic service fees.
- The student withdrawing from a whole semester should pay the minimum tuition fees which is equivalent to 12 credit hours.

Article (33): Passing Courses

- The student must get a minimum D Grade in order to pass a course.

Article (34): Incomplete Courses

- If a student does not attend the final exam of the course in a semester with an excuse that is accepted by the Programs Administration Council and approved by the Council of the Faculty of Engineering, another final exam is held after the semester final exams. The marks of the latter final exam should be added to the semester-work marks to calculate the overall grade of this course, after paying a re-examination fees equivalent to one credit hour.

Article (35): Courses Improvement and Repetition

- The student can repeat a course for improvement if his grade satisfies the minimum passing requirement, according to the following rules:
 - The student gets the grade of the course after improvement, and this grade is the one that will be accounted for in the accumulative GPA, on condition that the improvement should be shown in the student's transcript.
 - The student can improve up to five courses during his study duration, except for improving courses with the purpose of getting out of the academic warning or satisfying the graduation requirements.
 - The student should pay the credit hours fees for the course.
- If the student fails a course (gets F grade), he should repeat the course (full attendance and performing all activities including examinations), according to the following rules:
 - The maximum grade of the repeated course is B+.



- The student gets the grade of the course after repetition, and this grade is the one that will be accounted for in the accumulative GPA, on condition that the repetition should be shown in the student's transcript.
- The student should pay the credit hours fees for the course.

Article (36): Appeals

- A student can submit an appeal to review his course marks within a week from the grades announcement, and after paying the required fees in accordance with the faculty regulations.
- In case of general complaints, a committee that includes the course instructor should review the students' marks.

Article (37): Field Training

The student must perform field training for 12 weeks in industrial or service facilities related to the student's program and under the faculty supervision as follows:

- The programs' academic advisor should follow-up the training.
- Identifying a company official contact person.
- The student must submit an evaluation and future planning form to his academic advisor at the end of the training period.
- The student must submit a technical report to his academic advisor at the end of the training period.
- The company should submit a student's training evaluation form to the academic advisor at the end of the training period.
- The training is divided into 4 weeks each summer at the end of the first, second, and third levels.
- Training for 6 weeks is allowed in only one summer during the study duration.
- The training after passing the third level should be in the area of specialization.
- Individual training is allowed, provided that it follows the above-mentioned programs training regulations.
- The programs are committed to train students, who have not got a training through the programs or individually, in the faculty laboratories.
- The field training is evaluated on pass/fail basis and does not count in the accumulative GPA calculation.

Article (38): Calculation of the Grade Point Average (GPA)

- Course points achieved by the student are calculated as equal to the number of credit hours of this course multiplied by the course grade points according to Article (40).
- In any semester, the total points achieved by the student are calculated as equal to the sum of the courses points the student achieved in this semester.
- The Semester GPA is calculated as equal to the total points achieved by the student in his courses of this semester divided by the total number of credit hours of these courses.
- The accumulative GPA at the end of any semester are calculated as equal to the total points achieved by the student in all courses studied by the student divided by the total number of credit hours of these courses.
- The graduation accumulative GPA is calculated (after passing all the graduation requirements) by dividing the sum of all points of studied courses by the sum of credit hours for these courses. The student cannot get the degree unless he achieves at least GPA of 2.0.



- The student's transcript should include all registered courses during the study duration, including these he failed in, withdrew from, or improved.

Article (39): Study Dismissal and Academic Warning

- A student gets an academic warning if his accumulative GPA at any main semester is less than 2.0. In such a case, he will not be allowed to register in more than 12 credit hours in the following semester until he revokes the academic warning.
- The student will be dismissed from the study if he gets accumulative GPA less than 2.0 in six consecutive semesters excluding Summer semesters.
- The student will be dismissed from the study if he failed to achieve the graduation requirements during the maximum study duration, which is ten years.
- The Council of the Faculty of Engineering may allow the student who is exposed to study dismissal because he failed to achieve an accumulative GPA of at least 2.0, to have one and last chance to register in 2 consecutive main semesters to raise his accumulative GPA to 2.0 and achieve the graduation requirements, provided that he has successfully completed at least 80% of the total number of credit hours required for graduation.

Article (40): Grades of the Credit Hours Programs Courses

The points of each credit hour are computed as follows:

Percentage	Grade	Points
97% and higher	A+	4.0
93% to less than 97%	A	4.0
89% to less than 93%	A-	3.7
84% to less than 89%	B+	3.3
80% to less than 84%	B	3.0
76% to less than 80%	B-	2.7
73% to less than 76%	C+	2.3
70% to less than 73%	C	2.0
67% to less than 70%	C-	1.7
64% to less than 67%	D+	1.3
60% to less than 64%	D	1.0
Less than 60%	F	0.0

9. Article (41): Grades of Non-Credit Courses

- Grades of the audit courses or any additional courses that a student may register, and in which he is only required to pass or are not completed for an excuse accepted by the faculty or withdrawn from and are not included in the calculation of the average course points, will be as follows:

Grade	Meaning
AU	Audit
P	Pass
F	Fail
W	Withdraw

Article (42): Dean's List, Honor Degree, and Award of Excellence

- The student who achieves an accumulative GPA of 3.6 or higher after any semester and did not fail any course throughout his course of study is included in the Dean's



List and receives partial exemption from charges on the next semester. This exemption is dependent on the student's GPA as recommended by the Programs Administration Council in this regard and after approval of the Council of the Faculty of Engineering.

- Student who keeps an accumulative GPA of 3.3 or higher in every semester all through his course of study and does not fail any course, graduates with an Honour Degree, which is documented in his graduation certificate.
- The top 30 students in Thanaweya Amma, mathematics section, who enrolled in the credit hours programs, are fully exempted from paying any tuition fees in their first semester. To maintain this exemption in the following semesters, the student should maintain an accumulative GPA of 3.6 or higher in every semester. This exemption is declined once the student fails to achieve this accumulative GPA in any semester.
- The faculty sets a system for encouraging distinguished students through reducing their tuition fees in accordance with their accumulative GPAs. At the beginning of each semester, the distinguished students' list is announced together with the associated tuition fees reductions.

Article (43): Student Transfer to/from the Credit Hours System

- A student can transfer from the traditional system to the credit hours system if he is in year 1 at most. Course equivalency will be applied on the courses studied in the traditional system to determine the equivalent courses in the credit hours system.
- Students who are expelled from the traditional system for reaching the maximum number of failing years are not allowed to transfer to the credit hours programs.
- Students may transfer from the credit hours system to the traditional system after obtaining the approval of the department to which he wants to transfer provided that he did not complete more than 108 credit hours. A maximum of 50% of his courses will be transferred to the traditional system after performing course equivalency on these courses with the corresponding courses in the traditional system.
- The student should satisfy the traditional system acceptance conditions at the year of first enrolment into the faculty, in order to be allowed to transfer from the credit hours programs to the traditional system.
- The transfer from the credit hours system to the traditional system follows the rules of the traditional system, which are listed in its regulations.
- 10% administrative fees will be deducted if the student would like to refund the tuition fees to transfer from the credit hours programs.
- The following table is adopted in transferring credits from the traditional system into the credit hours system:



Traditional System	Credit Hours System	
Percentage	Points	Grade
95% and up to 100%	4.0	A+
90% to less than 95%	4.0	A
85% to less than 90%	3.7	A-
80% to less than 85%	3.3	B+
75% to less than 80%	3.0	B
71% to less than 75%	2.7	B-
68% to less than 71%	2.3	C+
65% to less than 68%	2.0	C
60% to less than 65%	1.7	C-
55% to less than 60%	1.3	D+
50% to less than 55%	1.0	D
less than 50%	0.0	F

Taking into consideration items of Article (38).

- The following table is adopted in transferring from the credit hours system into the traditional system:

Credit Hours System		Traditional System
Points	Grade	Percentage
4.0	A+	98%
4.0	A	93%
3.7	A-	88%
3.3	B+	83%
3.0	B	78%
2.7	B-	73%
2.3	C+	70%
2.0	C	67%
1.7	C-	63%
1.3	D+	58%
1.0	D	53%
0.0	F	-

Article (44): Transfer from Outside the Faculty

- Transfer from similar faculties to the credit hours programs is allowed according to the rules and regulations established by the Council of the Faculty of Engineering.

Article (45): Student Status

- The following table shows the student status and the study levels depending on the number of credit hours that the student completed.

Study Level	Student Status	Percentage of Completed Credit Hours
General (0)	Freshman	Less than 20%
First (1)	Sophomore	20% to less than 40%
Second (2)	Junior	40% to less than 60%
Third (3)	Senior-1	60% to less than 80%
Fourth (4)	Senior-2	80% to less than 100%



- Whenever the student has completed 20% of the graduation requirements, he will be transferred from one level to a higher level (0-4).

Article (46): Student Evaluation

- The marks of each course are distributed as percentages of the total mark according to the following rules:
 1. A final written exam will be held for each course at the end of the semester that weighs 40% of the total course marks, with the exception of the graduation project.
 2. Semester-work represents 60% of the total course marks, which includes the mid-term exam in the sixth or seventh week of the semester that weighs 25% of the total course marks. The remaining 35% of the total course marks are distributed among research, reports, quizzes ... etc., practical/oral exams, participations ... etc.
- The student must attend at least 75% of the course to be allowed to attend the final examination.
- The minimum mark that must be earned in the final exam is 30% of the total exam marks, otherwise the student will fail the course irrespective of the total marks he earned in the course and he will get an F grade in this course.
- The student fails the course if he obtains an F grade, or was prevented from attending the final examination because of exceeding the absence percentage or cheating ... etc, or did not attend the final examination without submitting an excuse that is accepted by the Programs Administration Council and approved by the Council of the Faculty of Engineering.
- If the student improves or repeats a course, he will repeat the semester-work and final exam and will be completely re-evaluated and the course grade will be calculated according to Article (35) of this regulation.
- Registering for the graduation project or for the senior seminar course requires fourth level standing.

Article (47): General Topics

- Any other topic that did not appear in the articles of this regulation is presented to the Programs Administration Council to take the appropriate recommendation and submission to the Council of the Faculty of Engineering for approval before submission to the University.

Article (48): General Provisions

- These regulations apply to the students enrolled in the credit hours engineering programs at the start of the Fall 2013 Semester and should not apply to the graduates of this system before the previous date.
- The provisions of the University Regulations Act apply to all issues that have not been mentioned in these regulations and their amendments.



10. Program ILOs Assessment Methods

The following table illustrates the assessment methods and what they assess in most cases. For further details refer to the courses' specifications.

	Program ILOs			
	K&U	Intellectual	Professional	General
Written Exams	■	■	■	
Practical Exams	■		■	■
Oral Exams	■	■		■
Projects	■	■	■	■
Researches	■		■	■

11. Evaluation of program intended learning outcomes

Evaluator	Tool	Sample
1-Senior students	Evaluation sheet	50%
2-Alumni	Evaluation sheet & interview	10%
3-Stakeholders (Employers)	Evaluation sheet & interview	25%
4-External and internal Evaluators	Evaluation report	1 for each
5- Other: Faculty Members	Evaluation sheet	50%



Appendix

Table [1] Program ILOs Vs Benchmarks ILOs Matrix (Part one – Knowledge & Understanding)

		I. NARS for Engineering											II. NARS for Architecture						III. NARS for Urban Planning					IV. UNESCO Education Strategy 2014-2021								
		K&U											K&U						K&U													
		a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	a)	b)	c)	g)	h)	k)	2.1	2.5	2.6	2.7	2.8	i	ii	iii	iv	v	vi	vii	viii
Academic Reference Standards (ARS) for Environmental Architecture and Urbanism Engineering Program	A1-																															
	A2-																															
	A3-																															
	A4-																															
	A5-																															
	A6-																															
	A7-																															
	A8-																															
	A9-																															
	A10-																															
	A11-																															
	A12-																															
	A13-																															
	A14-																															
	A15-																															
	A16-																															
	A17-																															
	A18-																															
	A19-																															
	A20-																															
	A21-																															
	A22-																															



Table [1] Program ILOs Vs Benchmarks ILOs Matrix (Part two – Intellectual Skills)

		I. NARS for Engineering												II. NARS for Architecture					III. NARS for Urban Planning					IV. UNESCO Education Strategy 2014-2021							
		I.S.												I.S.					I.S.												
		a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	a)	b)	d)	e)	f)	4.1	4.2	4.3	4.4	4.6	i	ii	iii	iv	v	vi	vii	viii
Academic Reference Standards (ARS) for Environmental Architecture and Urbanism Engineering Program	B1-																														
	B2-																														
	B3-																														
	B4-																														
	B5-																														
	B6-																														
	B7-																														
	B8-																														
	B9-																														
	B10-																														
	B11-																														
	B12-																														
	B13-																														
	B14-																														
	B15-																														
	B16-																														
	B17-																														
	B18-																														



Table [1] Program ILOs Vs Benchmarks ILOs Matrix (Part three – Professional & Practical Skills)

Academic Reference Standards (ARS) for Environmental Architecture and Urbanism Engineering Program		I. NARS for Engineering												II. NARS for Architecture							III. NARS for Urban Planning	
		P&P												P&P							P&P	
		a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	a)	b)	c)	g)	h)	i)	j)	3.1	3.5
	C1-	■																				
	C2-		■	■																		
	C3-				■																	
	C4-					■		■														
	C5-						■															
	C6-								■													
	C7-									■												
	C8-										■											
	C9-											■										
	C10-												■									
	C11-													■							■	
	C12-														■							
	C13-															■						
	C14-																					
	C15-																■					
	C16-																	■				
	C17-																		■			
	C18-																			■		



Table [1] Program ILOs Vs Benchmarks ILOs Matrix (Part four – General and Transferable Skills)

		I. The National Academic Reference Standards (NARS) for Engineering									IV. UNESCO Education Strategy 2014-2021							
		G&T									i	ii	iii	iv	v	vi	vii	viii
		a)	b)	c)	d)	e)	f)	g)	h)	i)								
Academic Reference Standards (ARS) for Environmental Architecture and Urbanism Engineering Program	D1-																	
	D2-																	
	D3-																	
	D4-																	
	D5-																	
	D6-																	
	D7-																	
	D8-																	
	D9-																	
	D10-																	
	D11-																	
	D12-																	



Table [2] The relationship matrix of "Institute's Mission Vs Program's Mission".

		Program's Mission (PM)				
		PM 1	PM 2	PM 3	PM 4	PM 5
Institute's Mission (IM)	IM 1	متميز قادر على مواكبة التطور التكنولوجي العالمي في مختلف التخصصات التي تلبي احتياجات السوق المحلي والإقليمي				
	IM 2	ويمكنه إجراء أبحاث علمية وتطبيقية				
	IM 3	وذلك عن طريق تهيئة الظروف المناسبة لأعضاء هيئة التدريس ومعاونيهم والطلاب،				
	IM 4	وتوفير برامج تعليمية متقدمة في مرحلتي البكالوريوس والدراسات العليا وفي التعليم المستمر				
	IM 5	وإنشاء مراكز استشارية ومعامل بحثية متطورة بما تساهم في خدمة المجتمع وتلبية احتياجاته.				

Table [3] The relationship matrix of "Program's Mission Vs Program Aims".

		Program's Mission (PM)				
		PM 1	PM 2	PM 3	PM 4	PM 5
Program Aims (PA)	PA 1					
	PA 2					
	PA 3					

Table [4] The relationship matrix of "Program Aims Vs Program Graduate's Attributes".

		Program Graduate's Attributes (GA)															
		GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10	GA11	GA12	GA13	GA14	GA15	GA16
Program Aims (PA)	PA 1																
	PA 2																
	PA 3																



Table [5] The relationship matrix of "Graduate's Attributes Vs Program's ILOs".

		Graduate's Attributes (GA)															
		GA 1	GA 2	GA 3	GA 4	GA 5	GA 6	GA 7	GA 8	GA 9	GA 10	GA 11	GA 12	GA 13	GA 14	GA 15	GA 16
K&U	A1-																
	A2-																
	A3-																
	A4-																
	A5-																
	A6-																
	A7-																
	A8-																
	A9-																
	A10-																
	A11-																
	A12-																
	A13-																
	A14-																
	A15-																
	A16-																
	A17-																
	A18-																
	A19-																
	A20-																
	A21-																
	A22-																
I.S.	B1-																
	B2-																
	B3-																
	B4-																
	B5-																
	B6-																
	B7-																
	B8-																
	B9-																
	B10-																
	B11-																
	B12-																
	B13-																
	B14-																
	B15-																
	B16-																
	B17-																
	B18-																



Table [5] The relationship matrix of " Graduate's Attributes Vs Program's ILOs ". (Cont.)

		Graduate's Attributes (GA)															
		GA 1	GA 2	GA 3	GA 4	GA 5	GA 6	GA 7	GA 8	GA 9	GA 10	GA 11	GA 12	GA 13	GA 14	GA 15	GA 16
P&P	C1-																
	C2-																
	C3-																
	C4-																
	C5-																
	C6-																
	C7-																
	C8-																
	C9-																
	C10-																
	C11-																
	C12-																
	C13-																
	C14-																
	C15-																
	C16-																
	C17-																
	C18-																
G&T	D1-																
	D2-																
	D3-																
	D4-																
	D5-																
	D6-																
	D7-																
	D8-																
	D9-																
	D10-																
	D11-																
	D12-																



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	a- Knowledge and understanding																					
Code	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22
ARC 011																						
ARC 115																						
ARC 116																						
ARC 122																						
ARC 132																						
ARC 136																						
ARC 143																						
ARC 152																						
ARC 232																						
ARC 242																						
ARC 243																						
ARC 244																						
ARC 245																						
ARC 252																						
ARC 253																						
ARC 316																						
ARC 334																						
ARC 335																						
ARC 354																						
ARC 355																						
ARC 357																						
ARC 362																						
ARC 415																						
ARC 426																						
ARC 436																						
ARC 441																						
ARC 442																						



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	a- Knowledge and understanding																					
Code	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22
ARC 443																						
ARC 444																						
ARC 445																						
ARC 446																						
ARC 447																						
ARC 448																						
ARC 456																						
ARC 457																						
ARC 474																						
ARC 476																						
ARC 477																						
ARC 492																						
ARC 493																						
CEP 114																						
CEP 241																						
CES 117																						
CES 143																						
CES 225																						
CES 325																						
CES 447																						
HUM 011																						
HUM 015																						
HUM x41																						
HUM x42																						
HUM x51																						
HUM x52																						
HUM x53																						



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	a- Knowledge and understanding																					
Code	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22
HUM x54																						
HUM x55																						
HUM x63																						
HUM x64																						
HUM x71																						
HUM x72																						
HUM x81																						
HUM x82																						
HUM x83																						
HUM x84																						
HUM x85																						
HUM x86																						
MDP 024																						
MDP 061																						
PHM 012																						
PHM 013																						
PHM 014																						
PHM 022																						
PHM 032																						
PHM 033																						
PHM 042																						
UPL 111																						
UPL 121																						
UPL 211																						
UPL 212																						
UPL 224																						
UPL 261																						



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	a- Knowledge and understanding																					
Code	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22
UPL 313																						
UPL 315																						
UPL 343																						
UPL 362																						
UPL 415																						
UPL 422																						
UPL 423																						
UPL 424																						
UPL 425																						
UPL 426																						
UPL 427																						
UPL 441																						
UPL 445																						
UPL 446																						
UPL 448																						
UPL 474																						
UPL 475																						
UPL 495																						
UPL 496																						
Field Training																						



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	b- Intellectual skills																	
Code	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14	B15	B16	B17	B18
ARC 011																		
ARC 115																		
ARC 116																		
ARC 122																		
ARC 132																		
ARC 136																		
ARC 143																		
ARC 152																		
ARC 232																		
ARC 242																		
ARC 243																		
ARC 244																		
ARC 245																		
ARC 252																		
ARC 253																		
ARC 316																		
ARC 334																		
ARC 335																		
ARC 354																		
ARC 355																		
ARC 357																		
ARC 362																		
ARC 415																		
ARC 426																		
ARC 436																		
ARC 441																		
ARC 442																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	b- Intellectual skills																	
Code	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14	B15	B16	B17	B18
ARC 443																		
ARC 444																		
ARC 445																		
ARC 446																		
ARC 447																		
ARC 448																		
ARC 456																		
ARC 457																		
ARC 474																		
ARC 476																		
ARC 477																		
ARC 492																		
ARC 493																		
CEP 114																		
CEP 241																		
CES 117																		
CES 143																		
CES 225																		
CES 325																		
CES 447																		
HUM 011																		
HUM 015																		
HUM x41																		
HUM x42																		
HUM x51																		
HUM x52																		
HUM x53																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	b- Intellectual skills																	
Code	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14	B15	B16	B17	B18
HUM x54																		
HUM x55																		
HUM x63																		
HUM x64																		
HUM x71																		
HUM x72																		
HUM x81																		
HUM x82																		
HUM x83																		
HUM x84																		
HUM x85																		
HUM x86																		
MDP 024																		
MDP 061																		
PHM 012																		
PHM 013																		
PHM 014																		
PHM 022																		
PHM 032																		
PHM 033																		
PHM 042																		
UPL 111																		
UPL 121																		
UPL 211																		
UPL 212																		
UPL 224																		
UPL 261																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	b- Intellectual skills																	
Code	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14	B15	B16	B17	B18
UPL 313																		
UPL 315																		
UPL 343																		
UPL 362																		
UPL 415																		
UPL 422																		
UPL 423																		
UPL 424																		
UPL 425																		
UPL 426																		
UPL 427																		
UPL 441																		
UPL 445																		
UPL 446																		
UPL 448																		
UPL 474																		
UPL 475																		
UPL 495																		
UPL 496																		
Field Training																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	c- Professional and practical skills																	
Code	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16	C17	C18
ARC 011																		
ARC 115																		
ARC 116																		
ARC 122																		
ARC 132																		
ARC 136																		
ARC 143																		
ARC 152																		
ARC 232																		
ARC 242																		
ARC 243																		
ARC 244																		
ARC 245																		
ARC 252																		
ARC 253																		
ARC 316																		
ARC 334																		
ARC 335																		
ARC 354																		
ARC 355																		
ARC 357																		
ARC 362																		
ARC 415																		
ARC 426																		
ARC 436																		
ARC 441																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	c- Professional and practical skills																	
Code	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16	C17	C18
ARC 442																		
ARC 443																		
ARC 444																		
ARC 445																		
ARC 446																		
ARC 447																		
ARC 448																		
ARC 456																		
ARC 457																		
ARC 474																		
ARC 476																		
ARC 477																		
ARC 492																		
ARC 493																		
CEP 114																		
CEP 241																		
CES 117																		
CES 143																		
CES 225																		
CES 325																		
CES 447																		
HUM 011																		
HUM 015																		
HUM x41																		
HUM x42																		
HUM x51																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	c- Professional and practical skills																	
Code	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16	C17	C18
HUM x52																		
HUM x53																		
HUM x54																		
HUM x55																		
HUM x63																		
HUM x64																		
HUM x71																		
HUM x72																		
HUM x81																		
HUM x82																		
HUM x83																		
HUM x84																		
HUM x85																		
HUM x86																		
MDP 024																		
MDP 061																		
PHM 012																		
PHM 013																		
PHM 014																		
PHM 022																		
PHM 032																		
PHM 033																		
PHM 042																		
UPL 111																		
UPL 121																		
UPL 211																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	c- Professional and practical skills																	
Code	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10	C11	C12	C13	C14	C15	C16	C17	C18
UPL 212																		
UPL 224																		
UPL 261																		
UPL 313																		
UPL 315																		
UPL 343																		
UPL 362																		
UPL 415																		
UPL 422																		
UPL 423																		
UPL 424																		
UPL 425																		
UPL 426																		
UPL 427																		
UPL 441																		
UPL 445																		
UPL 446																		
UPL 448																		
UPL 474																		
UPL 475																		
UPL 495																		
UPL 496																		
Field Training																		



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	d- General and Transferable											
Code	D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12
ARC 011												
ARC 115												
ARC 116												
ARC 122												
ARC 132												
ARC 136												
ARC 143												
ARC 152												
ARC 232												
ARC 242												
ARC 243												
ARC 244												
ARC 245												
ARC 252												
ARC 253												
ARC 316												
ARC 334												
ARC 335												
ARC 354												
ARC 355												
ARC 357												
ARC 362												
ARC 415												
ARC 426												
ARC 436												
ARC 441												



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	d- General and Transferable											
Code	D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12
ARC 442												
ARC 443												
ARC 444												
ARC 445												
ARC 446												
ARC 447												
ARC 448												
ARC 456												
ARC 457												
ARC 474												
ARC 476												
ARC 477												
ARC 492												
ARC 493												
CEP 114												
CEP 241												
CES 117												
CES 143												
CES 225												
CES 325												
CES 447												
HUM 011												
HUM 015												
HUM x41												
HUM x42												
HUM x51												



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	d- General and Transferable											
Code	D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12
HUM x52												
HUM x53												
HUM x54												
HUM x55												
HUM x63												
HUM x64												
HUM x71												
HUM x72												
HUM x81												
HUM x82												
HUM x83												
HUM x84												
HUM x85												
HUM x86												
MDP 024												
MDP 061												
PHM 012												
PHM 013												
PHM 014												
PHM 022												
PHM 032												
PHM 033												
PHM 042												
UPL 111												
UPL 121												
UPL 211												



Table [6] The relationship matrix of “Program’s ILOs Vs Program’s Courses”

	d- General and Transferable											
Code	D01	D02	D03	D04	D05	D06	D07	D08	D09	D10	D11	D12
UPL 212												
UPL 224												
UPL 261												
UPL 313												
UPL 315												
UPL 343												
UPL 362												
UPL 415												
UPL 422												
UPL 423												
UPL 424												
UPL 425												
UPL 426												
UPL 427												
UPL 441												
UPL 445												
UPL 446												
UPL 448												
UPL 474												
UPL 475												
UPL 495												
UPL 496												
Field Training												



Table [7] Program courses classification according to subject areas

Course Code	Course Title	Humanities and Social Sciences (Univ. Req.)	Mathematics and Basic Sciences	Basic Engineering Sciences (Faculty/Spec. Req.)	Applied Engineering and Design	Computer Applications and ICT*	Projects* and Practice	Discretionary (Institution character-identifying) subjects
NARS Limits		9-12 %	20-26 %	20-23 %	20-22 %	9-11 %	8-10 %	6-8 %
Program Hours		19.5	23.5	36	49.5	16.5	23	11
Program Percentage		10.9%	13.1%	20.1%	27.7%	9.2%	12.8%	6.1%
ARC 011	Visual Studies and Design Fundamentals			2				
ARC 115	Architectural Design Studio (1)			1			2	
ARC 116	Shades, Shadows, and Perspective			2				
ARC 122	History and Theory of Architecture			2				
ARC 132	Building Technology (1)				3			
ARC 136	Digital Presentation of the Built Environment					2		
ARC 143	Control of Thermal Environment		0.5		1.5	1		
ARC 152	Architectural Design Studio (2)						3	
ARC 232	Building Technology (2)				3			
ARC 242	Acoustics in Architecture		0.5		1	0.5		
ARC 243	Renewable Energy and Buildings			1	1			
ARC 244	Lighting in Architecture				1	1		
ARC 245	Principles of Sustainable Architecture				3			
ARC 252	Environmental Architectural Design Studio (1)				0.5	0.5	1	1
ARC 253	Environmental Architectural Design Studio (2)				0.5	0.5	1	1
ARC 316	Modeling of the Built Environment					2		
ARC 334	Working Drawings (1)				2	1		
ARC 335	Working Drawings (2)				2	1		



Course Code	Course Title	Humanities and Social Sciences (Univ. Req.)	Mathematics and Basic Sciences	Basic Engineering Sciences (Faculty/Spec. Req.)	Applied Engineering and Design	Computer Applications and ICT*	Projects* and Practice	Discretionary (Institution character-identifying) subjects
NARS Limits		9-12 %	20-26 %	20-23 %	20-22 %	9-11 %	8-10 %	6-8 %
Program Hours		19.5	23.5	36	49.5	16.5	23	11
Program Percentage		10.9%	13.1%	20.1%	27.7%	9.2%	12.8%	6.1%
ARC 354	Sustainable Architectural Design Studio (1)				0.5	0.5	1	1
ARC 355	Sustainable Architectural Design Studio (2)				0.5	0.5	1	1
ARC 415	Building Performance Simulation				1	1		
ARC 443	Renewable Energy Systems				3			
ARC 448	Sustainable Building Rating Systems				2			
ARC 456	Sustainable Architectural Design Studio (3)				0.5	0.5	1	1
ARC 476	Execution Documents				1.5	1.5		
ARC 492	Studies and Program of Graduation Project				2			
ARC 493	Graduation Project					1	2	1
ARC 4xx	Technical Elective (3)				1		2	
ARC 4xx	Technical Elective (4)	1			2			
ARC 4xx/ UPL 4xx	Technical Elective (1)	1			2			
ARC xxx	Technical Elective (2)				2	1		
CEP 114	Land Surveying			2				
CEP 241	Green Infrastructure			3				
CES 117	Structure Analysis		0.5	2.5				
CES 143	Building Engineering Materials			3				
CES 225	Reinforced Concrete Structures		0.5	2.5				
CES 325	Steel Structures			3				
HUM x11	English Language	2						
HUM x41	Professional Ethics	2						
HUM x42	Principles of Law & Human Rights	2						
HUM x51	Nile River & Contemporary	2						



Course Code	Course Title	Humanities and Social Sciences (Univ. Req.)	Mathematics and Basic Sciences	Basic Engineering Sciences (Faculty/Spec. Req.)	Applied Engineering and Design	Computer Applications and ICT*	Projects* and Practice	Discretionary (Institution character-identifying) subjects
NARS Limits		9-12 %	20-26 %	20-23 %	20-22 %	9-11 %	8-10 %	6-8 %
Program Hours		19.5	23.5	36	49.5	16.5	23	11
Program Percentage		10.9%	13.1%	20.1%	27.7%	9.2%	12.8%	6.1%
	Issues							
HUM x52	Communication & Presentation Skills	1				1		
HUM x53	Research & Analysis Skills	1.5	0.5					
HUM x61	Computer Skills (Self Study)	0						
HUM x91	Humanities Elective (1)	2						
HUM x92	Humanities Elective (2)	2						
MDP 024	Production Engineering			3				
MDP 061	Engineering Design and Graphics			4				
PHM 012	Calculus for Engineering (1)		3					
PHM 013	Calculus for Engineering (2)		3					
PHM 014	Linear Algebra and Analytical Geometry		3					
PHM 022	Waves, Electricity, and Magnetic Fields		3					
PHM 032	Engineering Mechanics (1) - Statics		3					
PHM 033	Engineering Mechanics (2) - Dynamics		3					
PHM 042	General Chemistry		3					
UPL 111	History and Theory of Urbanism			2				
UPL 121	Urbanism and Climate			3				
UPL 211	Introduction to Urban Design				3			
UPL 212	People and Environment	3						
UPL 224	Sustainable Urban Development				1		2	
UPL 261	Ecological Landscape				1		1	1
UPL 313	Housing Studies and Design				3			
UPL 315	Eco Urban Design (1)				0.5		1.5	1
UPL 343	Sustainable Urban				0.5		1.5	1



Course Code	Course Title	Humanities and Social Sciences (Univ. Req.)	Mathematics and Basic Sciences	Basic Engineering Sciences (Faculty/Spec. Req.)	Applied Engineering and Design	Computer Applications and ICT*	Projects* and Practice	Discretionary (Institution character-identifying) subjects
NARS Limits		9-12 %	20-26 %	20-23 %	20-22 %	9-11 %	8-10 %	6-8 %
Program Hours		19.5	23.5	36	49.5	16.5	23	11
Program Percentage		10.9%	13.1%	20.1%	27.7%	9.2%	12.8%	6.1%
	Landscape							
UPL 362	Eco Urban Design (2)				0.5		1.5	1
UPL 441	Eco Urban Design (3)				0.5		1.5	1
UPL 474	Environmental Impact Assessment				3			