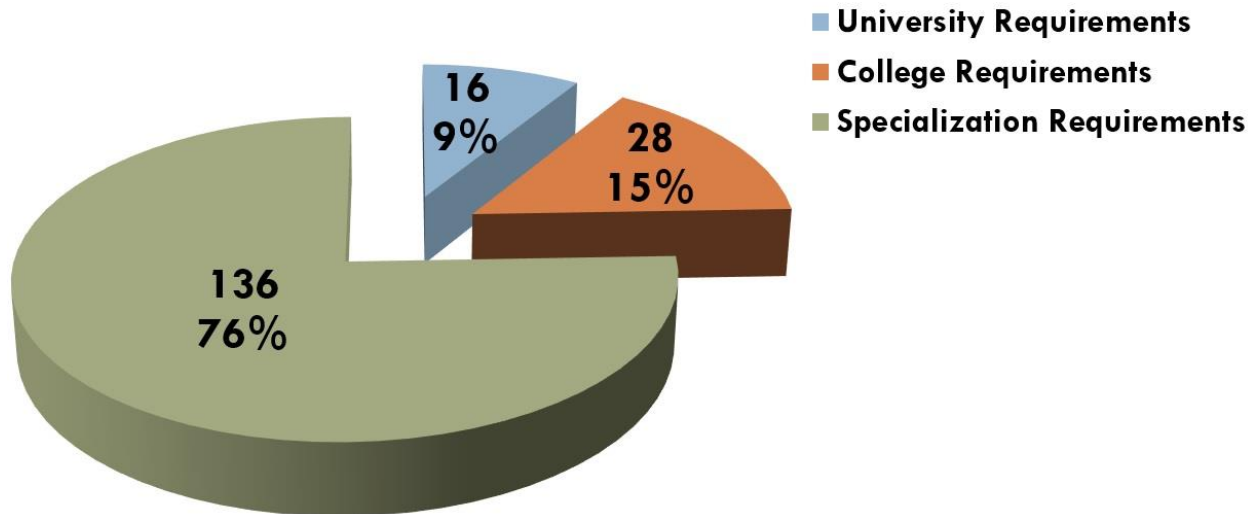# Environmental Architecture and Urbanism Program

Environmental Architecture and Urbanism Program Mission and Goals

Program Mission

Preparation of 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. This can be achieved by embracing modern learning methods and techniques, appropriate technology compliant, and linking theory with practice supported by an innovative educational environment.

Program Goals

Preparation of 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. This can be achieved by embracing modern learning methods and techniques, appropriate technology compliant, and linking theory with practice supported by an innovative educational environment.

University Requirements for Environmental Architecture and Urbanism Program

Course Code	Course Title	Credit Hours
HUM x11	English Language	2
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 x61	Computer Skills	0
HUM x91	Humanities Elective (1)	2
HUM x92	Humanities Elective (2)	2
	Total Credit Hours	16

HUM x91 and HUM x92 Humanities Elective (1), (2): Student chooses only two of the following courses:

Course Code	Course Title	Credit Hours
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

College Requirements for Environmental Architecture and Urbanism Program

Course Code	Course Title	Credit Hours
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

General Specialization Courses for Environmental Architecture and Urbanism Program

Course Code	Course Title	Credit Hours
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
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		**108**

Technical Electives for Environmental Architecture and Urbanism Program

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**

Course Code	Course Title	Credit Hours
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.**

Course Code	Course Title	Credit Hours
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 Environment	3
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**

Course Code	Course Title	Credit Hours
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.

Course Code	Course Title	Credit Hours
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

Course Tree for Environmental Architecture and Urbanism Program

Semester 1	PHM 012: Calculus for Engineering (1)	PHM 032: Engineering Mechanics (1) - Statics	MDP 024 Production Engineering	HUM x11: English Language	PHM 042: General Chemistry	MDP 061: Engineering Design and Graphics	HUM x61: Computer Skills (Self Study)
Semester 2	PHM 013: Calculus for Engineering (2)	PHM 033: Engineering Mechanics (2) - Dynamics	PHM 014: Linear Algebra and Analytical Geometry	ARC 011: Visual Studies and Design Fundamentals	PHM 022: Waves, Electricity & Magnetic Fields	HUM x41: Professional Ethics	HUM x51: Nile River & Contemporary Issues
Semester 3	UPL 111: History and Theory of Urbanism	CES 117: Structure Analysis	ARC 122: History and Theory of Architecture	ARC 115: Architectural Design Studio (1)	CEP 114: Land Surveying	ARC 132: Building Technology (1)	HUM x91: Humanities Elective (1)
Semester 4	ARC 116: Shades, Shadows, and Perspective	CES 143: Building Engineering Materials	ARC 143 Control of Thermal Environment	ARC 152: Architectural Design Studio (2)	ARC 136: Digital Presentation of the Built Environment	UPL 121: Urbanism and Climate	HUM x52: Communication & Presentation Skills
Semester 5	UPL 211: Introduction to Urban Design	ARC 243: Renewable Energy and Buildings	ARC 252: Environmental Architectural Design Studio (1)	ARC 244: Lighting in Architecture	ARC 242: Acoustics in Architecture	ARC 232: Building Technology (2)	UPL 212: People and Environment
Semester 6	CES 225: Reinforced Concrete Structures	ARC 253: Environmental Architectural Design Studio (2)	CEP 241: Green Infrastructure	ARC 245: Principles of Sustainable Architecture	UPL 224: Sustainable Urban Development	UPL 261: Ecological Landscape	
Semester 7	UPL 313: Housing Studies and Design	CES 325: Steel Structures	ARC 334: Working Drawings (1)	ARC 354: Sustainable Architectural Design Studio (1)	UPL 315: Eco Urban Design (1)	UPL 343: Sustainable Urban Landscape	
Semester 8	ARC 316: Modeling of the Built Environment	ARC 4xx/ UPL 4xx: Technical Elective (1)	ARC 335 Working Drawings (2)	ARC 355 Sustainable Architectural Design Studio (2)	UPL 362 Eco Urban Design (2)	HUM x42 Principles of Law & Human Rights	HUM x53: Research & Analysis Skills

Environmental Architecture Field

Semester 9	ARC xxx: Technical Elective (2)	ARC 476: Execution Documents	ARC 415: Building Performance Simulation	ARC 456: Sustainable Architectural Design Studio (3)	ARC 492: Studies and Program of Graduation Project	UPL 441: Eco Urban Design (3)	ARC 448: Sustainable Building Rating Systems
Semester 10	ARC 4xx: Technical Elective (3)	ARC 4xx: Technical Elective (4)	ARC 443: Renewable Energy Systems	UPL 474: Environmental Impact Assessment	ARC 493: Graduation Project	HUM x92: Humanities Elective (2)	

Environmental Urbanism Field

Semester 9	UPL 4xx: Technical Elective (2)	UPL 445: Sustainable Urban Mobility	UPL 446: Introduction to Geographic Information System (GIS)	ARC 456: Sustainable Architectural Design Studio (3)	UPL 495: Studies and Program of Graduation Project	UPL 441: Eco Urban Design (3)	CES 447: Sustainable Waste Management
Semester 10	UPL 4xx: Technical Elective (3)	UPL 4xx: Technical Elective (4)	UPL 448: Environmental Planning	UPL 474: Environmental Impact Assessment	UPL 496 Graduation Project	HUM x92: Humanities Elective (2)	

Legend:
- ☐ University Requirements
- ☐ College Requirements (Basic Science)
- ☐ College Requirements (Basic Engineering)
- ☐ Specialization Requirements
- ☐ Specialization Requirements that require fifth-level standing
- ☐ Specialization Requirements of Technical Electives (Prerequisites are determined according to the selected course)