

# Architectural Engineering Program

Bylaws 2016 According to NARS 2018



2023/2024

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## Program Mission.

Preparing a generation of innovative architects, keeping pace with technological progress and development in the field of architecture and scientific research, possessing professional ethics, qualified to lead and meet the needs of the labor market, compete locally and regionally, and community participation within the framework of sustainable development, and committed to continuous lifelong learning.

Consistency and compatibility clauses	Analysis of Updated Mission of the Institute	Analysis of Updated Mission of the Architecture Department
<ul style="list-style-type: none"> <li>Commitment to preparing professionally and ethically distinguished graduates who are able to compete</li> </ul>	<ul style="list-style-type: none"> <li>Preparing graduates to be distinguished engineers.</li> <li>who are committed to professional ethics.</li> <li>Able to compete locally and regionally.</li> </ul>	<ul style="list-style-type: none"> <li>Preparing a generation of innovative architects.</li> <li>Keeping pace with technological progress and development in the field of architecture and scientific research.</li> <li>Possessing professional ethics.</li> <li>Compete locally and regionally.</li> </ul>
<ul style="list-style-type: none"> <li>Meet the needs of development in the field of Architecture engineering and the labor market to serve the community.</li> </ul>	<ul style="list-style-type: none"> <li>Qualified to meet the needs of the labor market and keep pace with engineering and technological developments.</li> </ul>	<ul style="list-style-type: none"> <li>Qualified to lead and meet the needs of the labor market.</li> <li>Keeping pace with technological progress.</li> </ul>
<ul style="list-style-type: none"> <li>Scientific research and long life learning</li> </ul>	<ul style="list-style-type: none"> <li>Able to continue learning and involved in scientific research.</li> </ul>	<ul style="list-style-type: none"> <li>Committed to continuous lifelong learning.</li> <li>Keeping pace with technological progress and development in the field of architecture and scientific research.</li> </ul>
<ul style="list-style-type: none"> <li>Achieving sustainable development</li> </ul>	<ul style="list-style-type: none"> <li>To participate in achieving sustainable development.</li> </ul>	<ul style="list-style-type: none"> <li>Community participation within the framework of sustainable development.</li> </ul>

**(Appendix (1):** Institute Mission VS Architecture Program Mission.

## Attributes of the Graduates of Architectural Engineering.

### The Architectural Engineering Graduate must:

1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations;
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation;
3. Behave professionally and adhere to engineering ethics and standards;
4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance;
5. Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community;
6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles;

7. Use techniques, skills and modern engineering tools necessary for engineering practice.
8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies;
9. Communicate effectively using different modes, tools and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner;
10. Demonstrate leadership qualities, business administration and entrepreneurial skills.

Consistency and compatibility clauses	Analysis of Updated Mission of the Institute	Analysis of Updated Mission of the Architecture Department	Graduate Attributes
<ul style="list-style-type: none"> <li>Commitment to preparing professionally and ethically distinguished graduates who are able to compete</li> </ul>	<ul style="list-style-type: none"> <li>Preparing graduates to be distinguished engineers.</li> <li>Who are committed to professional ethics.</li> <li>Able to compete locally and regionally.</li> </ul>	<ul style="list-style-type: none"> <li>Preparing a generation of innovative architects.</li> <li>Keeping pace with technological progress and development in the field of architecture and scientific research.</li> <li>Possessing professional ethics.</li> <li>Compete locally and regionally.</li> </ul>	1,2,3,5,6,7,8,9,10
<ul style="list-style-type: none"> <li>Meet the needs of development in the field of Architecture engineering and the labor market to serve the community.</li> </ul>	<ul style="list-style-type: none"> <li>Qualified to meet the needs of the labor market and keep pace with engineering and technological developments.</li> </ul>	<ul style="list-style-type: none"> <li>Qualified to lead and meet the needs of the labor market.</li> <li>Keeping pace with technological progress.</li> </ul>	4,5,10
<ul style="list-style-type: none"> <li>Scientific research and long life learning</li> </ul>	<ul style="list-style-type: none"> <li>Able to continue learning and involved in scientific research.</li> </ul>	<ul style="list-style-type: none"> <li>Committed to continuous lifelong learning.</li> <li>Keeping pace with technological progress and development in the field of architecture and scientific research.</li> </ul>	5,8
<ul style="list-style-type: none"> <li>Achieving sustainable development</li> </ul>	<ul style="list-style-type: none"> <li>To participate in achieving sustainable development.</li> </ul>	<ul style="list-style-type: none"> <li>Community participation within the framework of sustainable development.</li> </ul>	5,6,9

**Appendix (2):** Matrix of Architecture Program Mission VS graduate Attributes.

**A. BASIC INFORMATION.**

1-	<b>Program Name:</b>	Architectural Engineering Program
2-	<b>Program Type:</b>	Single .
3-	<b>Responsible Department :</b>	Architectural Engineering.
4-	<b>Department sharing in the program:</b>	a-Basic Science b- Civil Engineering
5-	<b>Coordinator:</b>	Dr.Walaa Hussein
6-	<b>Internal Reviewer:</b>	Assoc. prof. Dr. vitta Abdel Rehim <b>Last review date:5/9/2023</b>
7-	<b>External Reviewer:</b>	Prof. Dr. wael mohamed Youssef <b>Last review date:15/9/2023</b>
8-	<b>Program Approval according to bylaws :</b>	2016
9-	<b>Last Date of Program Specifications Approval:</b>	Department council : 2 /10/2023 Institute Academic council :16/10/2023



<b>B.</b>	<b>Specialized Professional Information:</b>	
	<b>1.</b>	<p><b>Program Aims.</b></p> <p>1-1 Identify and integrate mathematics, basic science and engineering Knowledge and skills using theories and abstract thinking in real life Architectural Engineering situations.</p> <p>1-2 Analyze And Suggest Creative Solutions And Solve Different Complex Architectural Engineering Problems and Adopt A Holistic Problem Solving Approach For Complex, Ambiguous, And Open-Ended Challenges And Scenarios.</p> <p>1-3 Behave And Practice Engineering Ethics, codes And Standards.</p> <p>1-4 Demonstrate Knowledge Of Cultural Diversity, Differences And Impact Of A Building On Community Character And Identity Address Urban Issues, Planning, and Community Needs Through Designing work as an Individual or as a leader of Multi-Disciplinary Team.</p> <p>1-5 Contribute In The Development Of The Profession and The Community By Architecture Engineering and Design Robust Architectural Projects With Creativity.</p> <p>1-6 Evaluate Different Environment Aspects, Physically And Naturally And Work To Promote engineering techniques and Sustainability Principles In Architecture.</p> <p>1-7 Practice Modern Architecture Engineering Tools and apply contemporary techniques.</p> <p>1-8 Achieve Full Responsibility For Own Learning, Self-Development, and Lifelong Learning And Demonstrate The Capacity To Engage In Post- Graduate And Architecture Research Studies.</p> <p>1-9 Communicate Effectively With Various Audiences Using Different Modes, Tools And Languages and Deal With Architecture Academic/Professional Challenges In A Critical And Creative Manner.</p> <p>1-10 Demonstrate The New Role Of Architectural Engineering As The Leader Of Design Projects- Who Has The Ability To Understand, Assemble, And Coordinate All Of The Disciplines – To Create A Sustainable Environment and Lead Qualities, Business Administration And Entrepreneurial Projects.</p> <p><b>Appendix (3): Matrix of Program Aims VS Graduate Attributes.</b></p>

2.	<b>Program Learning Outcomes (LO's).</b>
	<p><b>By the end of the program the graduate should be able to :</b></p> <p><b>Level A:</b></p> <p>2-1 Discuss and apply the acquired knowledge of engineering fundamentals, basic science and mathematics to analyze, formulate and suggest creative solutions for complex architectural engineering problems.</p> <p>2-2 Develop and conduct appropriate engineering experimentation and/or simulation using measuring instruments, lab equipment, computational facilities and techniques.</p> <p>2-3 Analyze and interpret data to achieve findings using software programs and a wide range of analytical techniques.</p> <p>2-4 Evaluate the findings effectively and use statistical analyses and objective engineering judgment to draw conclusions and decision in Design.</p> <p>2-5 Apply general knowledge engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to Architecture and within the principles and contexts of sustainable design and development.</p> <p>2-6 Identify contemporary technologies, utilizes codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.</p> <p>2-7 Identify research techniques and methods of investigation and use them in Architecture as an inherent part of learning.</p> <p>2-8 Plan, supervise and monitor implementation of Architecture Engineering projects, taking into consideration other trades requirements.</p> <p>2-9 Work efficiently as an individual and as a member of multi-disciplinary and multicultural teams.</p> <p>2-10 Communicate effectively using contemporary tools, whether graphically, orally or in writing, with a range of audiences from different academic and professional backgrounds.</p> <p>2-11 Employ creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.</p> <p>2-12 Apply new knowledge gained from self-learning, lifelong learning and other learning strategies.</p>

**Level B:**

2-13 Create and prepare an optimum architectural design that satisfy both aesthetic and technical requirements, and diagnose adequate knowledge of: history and theory, related fine arts, local culture and landscape.

2-14 Demonstrate and prepare optimal urban and planning projects that meet aesthetic and technical requirements, and diagnose sufficient knowledge of: heritage, technologies, and humanities.

2-15 Design, compare and evaluate models of policy and strategy formulation, programs and projects for housing through efficient resources management towards sustainable housing provision, informal upgrading and urban development.

2-16 Generate designs that relate buildings and the spaces between them to human needs and scale and meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment.

2-17 integrate the acquired knowledge and skills of structural design, construction technology, concrete and steel and engineering problems associated with building designs to Produce ecologically responsible environmental conservation and rehabilitation projects and designs.

2-18 Demonstrate comprehensive ability to design innovative architectural projects taking into consideration: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved.

2-19 Produce professional technical and workshop drawings to transform the concepts into buildings using tradition drawing tools and computer-aided drawings techniques, as well as building information modeling techniques and apply advanced lighting, acoustics and smart systems techniques.

2-20 Generate a full set of tender documents for complex project, including the architect's role in the processes of bidding, procurement of architectural services and building production taking into consideration the context of the architect in the construction industry.

**Appendix (4): Matrix of Program Aims VS program Learning outcomes.**

**Appendix (5): Matrix of NARS Competences VS program learning outcomes).**

**Appendix (6): Matrix of program learning outcomes VS Graduate Attributes).**