

University of Sana'a  
 Faculty of Engineering  
 Department: Architectural Engineering  
 Title of the Program:  
 Doctor of Philosophy in Architecture



## Program Specification

### 1. Program Introduction/Description

This program is designed to provide in-depth theoretical knowledge and research in architecture engineering field. Thesis and researches, which mainly on architectural design, urban planning and housing.

### 2. Program Identification and General Information

Program Title	Doctor of Philosophy in Architecture
Awarding Institution	Sana'a University
Department	Department of architectural Engineering
Other Departments with major Teaching Contributions	-
Language of study	English and Arabic Language.
Date of Specification Preparation/Revision	October 2021
Mode of Study	Full time
Study System	Thesis & 2 Researches
Main Location of Study	Faculty of Engineering/Sana'a University
Mode of Delivery	Full-time
Study Duration	Minimum: 2 Academic years (Two terms each, full-time) Maximum: 3 Academic years (two terms each - full time)
Award(s) or Final Award	Doctor of Philosophy in Architecture
Qualification required to join the program:	Master of Science in architectural Engineering or any other equivalent field
Minimum grade requirements to enroll in the program	Good 6
Other admission requirements	Detailed below
Name of the program coordinator	Dr. Fadhl Mohamed Alwaraqi
Approval date:	

### 3. Program Curriculum Committee

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Head of the Department Dr. Samir AL-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development  Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
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### 4. Vision, Mission & Aims of the University

#### Vision of the University

Sana'a University aspires to achieve a national leading role in teaching, learning, scientific research and community service; and to be among the best regional universities and the foremost house of expertise and think tank in Yemen.

#### Mission of the University

To contribute to the sustainable development efforts by providing an accredited higher education environment and excellent research services within a fruitful national partnership based on transparency, professionalism and creativity.

#### Aims of the University

The University seeks to achieve the following objectives:

1. To provide specialized and in-depth academic opportunities for students in different fields of knowledge to meet the country's needs of specialties, technicians and experts, with special focus on the following:
2. To boost the level and quality of preparation and qualification tasks.
3. To create a general culture aiming at developing the elements of sound Islamic personality and the proper cognitive and scientific training.
4. To stabilize the true Islamic vision emanating from the broad horizons of Islamic knowledge and its perception of the universe, man and life.
5. To develop innovative and critical scientific thinking skills.
6. To provide students with the required knowledge and scientific and applied skills for solving problems effectively and efficiently.

### 5. Vision, Mission & Aims of the Faculty

#### Vision of the Faculty

To excel in engineering education & scientific research with distinction at the local and regional levels.

#### Mission of the Faculty

To provide excellent and accredited engineering education to meet the development needs and match the labor market requirements locally and regionally.

#### Aims of the Faculty

1. To offer study programs in various fields of knowledge and equip students with required knowledge and scientific and know-how skills to utilize them in resolving problems effectively

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and efficiently.
2. To develop positive trends towards engineering science and its accelerating developments and enable students to use the techniques and methods of conducting scientific research in engineering fields.
3. To develop skills of scientific, innovative and critical thinking as well as the concept of continuous self-education.
4. To strengthen scientific ties with national and international colleges, scientific bodies, and research & development centers.
5. To provide technical and specialized studies and consultations to various state bodies and institutions, both public and semi-public, and utilize them in resolving the environment and society issues to promote sustainable development.
6. To develop a spirit of co-operation, group work, effective leadership, sense of responsibility, and ethical commitment.

### 6. Mission & Aims of the Department

<b>Mission of the Department</b>
To promote the architectural engineering education by adopting specialized and scientific curricula and rich Yemeni architectural heritage and scientific research.
<b>Aims of the Department</b>
1. To enable graduates to use their imagination, creative thinking, innovation and leadership in architectural work
2. To provide graduates with knowledge and advanced techniques in architectural design and urban planning
3. To enable graduates to collect data, identify problems, apply analyses, and draft work strategies
4. To provide graduates with practical efficiency related to communication skills and profession ethics
5. To graduate architects who are able to follow up the requirements of profession changes; using professional capacity, technological skills, and personal views; respecting profession ethics, including cooperation and communication; providing community with services; leading and directing the community

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### 7. Vision, Mission & Aims of the Program

#### Vision of the Program

To be a Ph.D. program in Architecture distinguished locally and regionally competitive .

#### Mission of the Program

To graduate highly-qualified Ph.D. holders in the field of Architecture through qualified academic program, staff, and infrastructure that meet the research and development requirements as well as local and regional labor market needs.

#### Aims of the Program

1. To provide Specialized studies and researches in different Architecture disciplines.
2. To bridge academic research education to reality and keeping pace with modern technologies in architecture.
3. To provide graduates with up-to-date advanced knowledge and skills needed to solve problems and challenges in architecture.
4. To graduate independently researchers in architecture who can pursue further studies and contribute to the scientific research community.
5. Develop new methods and concepts with using high-tech components for effective, reliable and sustainable systems.
6. Develop leadership, skills and ethics of the profession and engaging in lifelong learning.

### 8. Program Standards& Benchmarks

#### Program Standards

1. Post-graduate Studies Rules and Regulations of the Ministry of Higher Education and Scientific Research, Yemen.
- 2.

#### Program Benchmarks

1. Doctor of Philosophy in Architecture, Qatar University , Qatar
2. PhD Architecture, Norwegian University of Science and Technology, Norway
3. PhD in Architectural Engineering, United Arab Emirates University, UAE
4. (Ph.D.) in Architecture, Illinois Institute of Technology, Chicago USA
5. (Ph.D.) in Architecture, Landscape and Design University of Toronto , CANADA
6. The Doctor of Philosophy, University of Melbourne, Australia

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9. Summary of Similar Programs (Benchmarks) for ARCHITECTURE Program							
	The Similar Programs (Benchmarks)						Current program
	The 1 <sup>st</sup> Program	The 2 <sup>nd</sup> Program	The 3 <sup>rd</sup> Program	The 4 <sup>th</sup> Program	The 5 <sup>th</sup> Program	The 6 <sup>th</sup> Program	
<b>The Program Title</b>	Doctor of Philosophy in Architecture	Architecture PhD Program	Doctor of Philosophy in Architectural Engineering	Doctor of Philosophy in Architecture	Doctor of Philosophy (Ph.D.) in Architecture, Landscape, and Design	Doctor of Philosophy - Architecture, Building and Planning	Architecture PhD Program
<b>The Faculty</b>	College Of Engineering	Faculty of Architecture and Design	College of Engineering	College of Architecture	John H. Daniels Faculty of Architecture, Landscape, and Design	School of Design	Faculty of Engineering
<b>The University</b>	Qatar University	Norwegian University of Science and Technology	United Arab Emirates University	Illinois Institute of Technology	University of Toronto	University of Melbourne	Sana'a University
<b>The Country</b>	Qatar	Norway	UAE	Chicago USA	CANADA	Australia	Yemen
<b>Type of program</b>	Courses + PhD Thesis	Courses + PhD Thesis	Courses + PhD Thesis	Courses + PhD Thesis	Courses + PhD Thesis	PhD Thesis	PhD Thesis + 2Papers
<b>Study methods in the program:</b>	Full and part-time regular	Full time	-	Full time	Full time	Full and part-time regular	Full time
<b>Number of semesters</b>	4 Full time years Part-time 8 years	years 3	-	3.5-4 years	4 years	4 years full-time, or equivalent part-time	2-3 Years
<b>Total Credit Hours (without Thesis)</b>	27 credit hours	-	24 credit hours	34 credit hours	-	-	-
<b>Credit Hours for compulsory courses</b>	15 credit hours	7.5 credit hours	6 credit hours	18 credit hours	-	-	-

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No. of Courses for Electives courses	4 Courses	1-2 Courses	4 Courses	-	4	-	-
No. of Courses for compulsory courses	5	2	3 Courses	6	4	-	-
Credit Hours for Electives courses	4	-	12 credit hours	18	-	-	-
Complementary courses to join the program and their number	None	None	None	None	None	None	None
Credit Hours for Thesis	33	2.5years	30	16	-	-	-
Total Credit Hours for courses & Thesis	60 credit hours	30 credit hours	54 credit hours	52 credit hours	-	-	-
The period for thesis completion	N/A	N/A	N/A	N/A	N/A	-	-
The min. period to complete the program	4 years	3 years	----	3.5-4 years	4 years	4 years	2 Years
The max. period to complete the program	8 years	-	-----	6 years	6 years	-	3 years

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### 10 . Program Intended Learning Outcomes (PILOs)

#### A. Knowledge and Understanding

Upon successful completion of the Master of Science in Structural Engineering Program, graduates should be able to:

A1.	Identify gaps in the current state of knowledge and outline directions to produce new knowledge at the frontier of the architecture discipline.
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#### B. Intellectual Skills

Upon successful completion of the Master of Science in Structural Engineering Program, graduates should be able to:

B1.	Analyze open research problems in architectural engineering and develop innovative solutions.
B2.	Evaluate complex professional engineering activities and diverse ethical issues within the work context.
B3.	Comprehensively and critically review literature associated with their research topic.
B4.	Demonstrate a thorough and critical understanding of the history, theory, techniques, and practices of the design disciplines, in one or more areas.
B5.	Understand and appreciate the complexity of the design and analysis of the built environment.

#### C. Practical and Professional Skills

Upon successful completion of the Master of Science in Structural Engineering Program, graduates should be able to:

C1.	Apply advanced theories and research methodologies practically in reality.
C2.	Produce an original research work that advances the state of the art in the architecture discipline.
C3.	undertake pure and/or applied research at an advanced level.
C4.	contribute to the development of academic or professional skills, techniques, tools, practices, ideas, theories, approaches and/or materials.

#### D. Key Transferrable Skill

Upon successful completion of the Master of Science in Structural Engineering Program, graduates should be able to:

D1.	Able to systematically review, analyze, assimilate and interpret the body of scientific literature and innovations in their discipline area.
D2.	Apply and validate innovations and discoveries or real-world settings in more efficient and effective

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### 10 . Program Intended Learning Outcomes (PILOs)

	ways.
D3.	Produce high-quality research.
D4.	Disseminate effectively the research output in reputable international journals, conferences, patents, research proposals, and other scientific venues.
D5.	Communicate research findings, orally and in writing, at a high level of proficiency to faculty, peers, and the lay public.

### 11. Teaching Strategy to Achieve Program Learning Outcomes

ILOs	Teaching Strategy	Assessment Methods
A1	Seminars, Active learning, Self-Learning, Independent study, Computer hands-on sessions, Laboratory works	Oral discussion, Experimental and field work, Laboratory Report
B1	Analysis and Problem Solving, Seminars, Project supervision, Laboratory works, Self-Learning, Simulation exercises, independent study, Brain storming, Research Presentations	Oral discussion, Experimental and field work.
B2		
B3		
B4		
B5		
C1	Analysis and Problem Solving, Seminars, Project supervision, Laboratory works, Self-Learning, Simulation exercises, independent study, Brain storming, Research Presentations	Oral discussion, Experimental and field work.
C2		
C3		
C4		
D1	Dissertation supervision, independent study, presenting reports, Brainstorming, presenting researches, Publish research papers Survey	Written research proposal, thesis and publication, Written Exam, Assignments, Experimental and field work, laboratory report, survey, presentation, written report.
D2		
D3		
D4		
D5		

Teaching Strategy	Description of the Main Strategy Used
Independent study	Independent study is an individualized learning experience that allows students to select a topic focus, define problems or questions, gather and analyze information, apply skills, and create a product to show what has

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	been learned.
Self-Learning.	Students are encouraged to undertake independent study to both supplement and consolidate what are being learned.
Analysis and Problem Solving.	The study of architectural engineering involves applying knowledge and problem-based learning. This allows students to become more active in their learning as they work out what information, they need to find out how to solve a particular problem. They can work out a problem collaboratively, practice research as well as testing different components to come up with a valid solution.
Presentations/ Presenting researches	students present their work to the whole group, for discussion, criticism, and suggestions for improvement. Presentation sessions provide an opportunity to address questions, queries, and problems.
Project supervision	The teacher needs to set advance work for students, and then have the students present their work to the whole group, for discussion, criticism, and suggestions for improvement. Project sessions provide an opportunity to address questions, and problems.
Brain storming	Brainstorming is an effective technique for generating lists of ideas and creating interest and enthusiasm for new concepts or topics. Brainstorming provides teachers and students with an overview of what students know and/or think about a specific topic. Students can use brainstorming to organize their knowledge and ideas.
Dissertation supervision	Guiding, reviewing, and approving the MSc research work at all stages.
Publish research	Guiding and reviewing MSc student to writing research paper to be accepted for publication.
Seminar	The teacher needs to set advance work for a selected number of students, and then have the selected students present their work to the whole group, for discussion, criticism, and suggestions for improvement. Seminar sessions provide an opportunity to address questions, queries, and problems.

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Research activities	Research-led activities envisage activities in which students learn about current research in the discipline and are frequently an audience. The emphasis is put on the research content.
Survey	Searching and investigating previous scientific papers, studies, reports, thesis, case studies.

Assessment Strategy	Description of the main strategy used.
Oral Discussion	To know the knowledge of the students.
Presentations	For Final Results displaying, to enhance the level of students in different subjects.
Reports	To demonstrate the personal skills, practical expertise, communication skills, report writing skills, and team work expertise they are expected to be learned and gained through their education.
Experimental and field work	For evaluation, to demonstrate the personal skills, practical expertise, communication skills, report writing skills, and team work expertise they are expected to be learned and gained through their education.
Assignments	The entire assessment of coursework activities during the teaching period of each course (which includes group and individual work, tests and presentations, etc.)
Written research proposal	To assess the MSc student ability to commence and conduct his/her research.
Thesis and publications	To assess the entire acquired knowledge and skill through the MSc thesis and publications.

<b>12. Intended Learning Outcomes Mapping:</b>
<b>See Annex 3</b>

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13. Program Structure			
Program Requirement	No	Credit Hours	%
Complementary Researches	2	4	20
Thesis	1	16	80%
Total		20	100%

Complementary Researches							
No	Course Code	Course Title	Lec.	Tut.	Pr.	Total C.H.	Prerequisites
1		one research paper is accepted in a journal in the field of research inside.				2	
2		one research paper is accepted in a journal in the field of research outside.				2	
<b>Total</b>						<b>4</b>	

Ph.D. Thesis 16 CH)							
No	Course Code	Course Title	Lec.	Tut.	Pr.	Total C.H.	Prerequisites
	AE581	<b>Ph.D. Thesis</b>				16	
<b>Total</b>						<b>16</b>	

Thesis
The student must prepare and discuss a <b>Ph.D.</b> Thesis by (16) credit hours.
Thesis and Its Requirements (if any)

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Thesis
<p><b>1.Registration of the thesis:</b>                      (Requirements/conditions and procedures for registration of the thesis as well as controls, responsibilities and procedures of scientific guidance)</p> <ul style="list-style-type: none"> <li>Completion of all required Complementary Researches.</li> <li>Completion of all university requirements.</li> <li>Field of Research and precise research topic with short Description and suggested time plan.</li> <li>First Department Seminar.</li> <li>Decision letter (Supervisors) of acceptance of the research topic.</li> <li>Thesis work should be done in at least 4-semesters.</li> <li>Thesis work should be done in at most 6-semesters.</li> <li>Any further requirements and controls based on post-graduate deanship regulations.</li> </ul>
<p><b>2.Scientific Supervision:</b>                      (The regulations of the selection of the scientific supervisor and his/her responsibilities, as well as the procedures/mechanisms of the scientific supervision and follow-up)</p> <ul style="list-style-type: none"> <li>- At most 2-supervisors are selected for the supervision of a thesis.</li> <li>- At least 1-Associate (or Full) Professor is appointed as supervisor either from the department or from another department outside the faculty.</li> <li>- Any Assistant Professor appointed as supervisor should have at least 4-year experience in the field of research and have published at least one paper.</li> </ul> <p>Candidates may apply for one-year extension (full-time) for completion of the thesis to the Postgraduate Program Administration at the Faculty of Engineering, which will be granted if the candidate provides a valid reason for extension.</p> <p>The supervisor responsibilities are - :</p> <ul style="list-style-type: none"> <li>- Help and assist the candidate/researcher in preparing the research plan.</li> <li>- Guide the candidate to adhere to certain standards of academic integrity and research ethics, including combating plagiarism.</li> <li>- Monthly, follow up and meeting with the researcher (at least one meeting per month),</li> <li>- Guide the researcher at every step to be done during thesis work,</li> <li>- Write follow-up (progress report) after each meeting</li> <li>- Write a follow-up (evaluation report) every semesters.</li> </ul> <p>-The supervisor shall submit copies of these reports to the Postgraduate-Program coordinator, the Head of the Department and the Head of the Faculty Post-graduate.</p>

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Thesis
<ul style="list-style-type: none"> <li>- Write the final thesis acceptance report in order to prepare the final department seminar and then initiating the preparation for thesis presentation, defense and approve.</li> </ul> <p>The candidate/student responsibilities are - :</p> <ul style="list-style-type: none"> <li>- Student present his/her accomplishment at the end of every semesters</li> <li>- plan and actively pursue the research;</li> <li>- identify and deal with any research-related problems;</li> <li>- comply with administrative requirement;</li> <li>- meet ethical guidelines;</li> <li>- take responsibility for the final form of the thesis</li> <li>- A thesis or research portfolio is the outcome of independent research, or creative activity conducted under supervision.</li> <li>- The length of a 6 credit hours thesis or research portfolio will be appropriate to the discipline and must not exceed 30,000 words, including bibliography, footnotes or endnotes and essential appendices, unless specific permission has been granted by the Department.</li> </ul>
<p><b>3.Thesis Defense/Examination:</b></p> <p>(The regulations for selection of the defense/examination committee and the requirements to proceed for thesis defense, the procedures for defense and approval of the thesis, and criteria for evaluation of the thesis)</p>
<ul style="list-style-type: none"> <li>- A thesis proceeds for defense following completion of:</li> <li>- At least two research paper is accepted in a journal in the field of research.</li> <li>- Final acceptance letters provided by the supervisor(s) and the department final seminar committee (at least 3- department members)‘</li> <li>- The examination committee should consist of - :</li> <li>- One -Associate (or Full) Professor specialized in the field of research from an external university ,</li> <li>- One -Associate (or Full) Professor from the department of architectural engineering addition to the supervisor of the thesis.</li> <li>- A session for presentation, defense and approval of the thesis should be done based on the following- :</li> <li>- At least two members of the examination committee accept their assignment and reply by acceptance letter and approve the thesis for defense within one month.</li> <li>- The session of defense should be declared within two weeks after receiving of examination committee members’ approval letters.</li> </ul>

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14. System of Study	
Type of program	Thesis
Study methods in the program:	Full time
The period to complete the program	Min. 2 Years (4 Terms) Max.3 Years (6 Terms)
Total Credit Hours for Complementary Researches + Research	20
15. Study Plan	
FR stands for Faculty Requirements. CE5XX stands for Architecture Department Requirements.	

16. Admission Requirements:
1. Master of Science in Architectural Engineering Certificate with not less than “Good” grade, or equivalent.
2. Interview
3. TOEFL / IBT:60
4.ICDL (Computer Skills):
5.Arabic Language:
6. Student number capacity of 10 students per year
7. Transfer Requirements, and Courses Equivalency
8. Annex -13: shows the Admission Requirements for the Program.

17. Graduation Requirements:
Student attendance should not be less than 75%.
Student will graduate after successfully passing the 4 credit hours Complementary Researches and 16 credit hours Research.

18. Learning Resources, Facilities, and Equipment for Running the Program
<b>Learning Resources.</b> Policies and Procedure for providing and quality assurance of learning resources textbooks, references and other resource materials, including electronic and web-based resources, Journal Database, etc. - textbooks, reference Library upgrading necessary, List of required new publications to be provided by Master Program teaching staff

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<b>18. Learning Resources, Facilities, and Equipment for Running the Program</b>
Electronic Library (Existing, allows access to international research papers and publications).
<b>Facilities and Equipment</b> Policies and Procedure for providing and quality assurance of Facilities and Equipment (Library, laboratories (Structure, material Labs), medical facilities, classrooms, etc.).
<b>List of laboratories</b> Material Engineering Laboratory (Upgrading necessary) Computer Laboratory

19. Teaching staff:				
	Professor	Associate Professor	Assistant Professor	Technicians Assistants
Required Number				
Available Number	4	5	4	6
Note:				

20. Program Management and Regulations
<b>1. Program Management</b>
<b>1.1 Program Structure</b> (Including boards, councils, units, committees, etc.)
Architectural Engineering Department Board Postgraduate Studies Administration Vice Dean for Postgraduate Studies College of Engineering Board Vice Presidency of the University for Postgraduate Studies
<b>1.2 Stakeholders' Involvement</b> Describe the representation and involvement of stakeholders in the program planning and development. (Students, professional bodies, scientific societies, alumni, employers, etc.)
The stakeholders were involved in designing the program, including universities, research centers, the public and private sectors, through their participation in a workshop as well as in responding to and submitting a questionnaire.

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20. Program Management and Regulations
<p><b>2. Program Regulations</b>                      Provide a list of related program regulations, including their link to online version: admission, study and exams, recruitment, appeals and complaint regulations, etc.)</p> <p>Decision of the Presidency of the Council of Ministers No. 40 of 2008                      Decision of the Presidency of the Council of Ministers No. 141 of 2008                      Graduate Studies Guide to Sana'a University</p>

21. Evaluation of Program Quality Matrix:			
Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
<p><b>Note:</b>  <b>Evaluation Areas/Aspects</b> (e.g., leadership, effectiveness of teaching &amp; assessment, learning resources, partnerships, etc.)  <b>Evaluation Sources</b> (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others (specify)  <b>Evaluation Methods</b> (e.g., Surveys, interviews, visits, etc.)  <b>Evaluation Time</b> (e.g., beginning of semesters, end of academic year, etc.)</p>			

## 22. List of Annexes

<b>Annex (1)</b>	Academic Standards Curriculum Criteria of Accreditation Board for Architectural Engineering program.
<b>Annex (2)</b>	Survey of names of Similar Accredited Programs at International Universities (Benchmarks) for Structural Engineering Programs.
<b>Annex (3)</b>	Survey of Intended Learning Outcomes for similar Accredited Architectural Engineering Programs at International Universities.
<b>Annex (4)</b>	Summary of Similar Programs (Benchmarks) for DOCTOR OF PHILOSOPHY IN ARCHITECTURE
<b>Annex (5)</b>	Survey of Course Names of Similar DOCTOR OF PHILOSOPHY IN ARCHITECTURE

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<b>Annex (6)</b>	Survey/ Mapping of Vision, Mission and Objectives of Similar Accredited Programs at International Universities(Benchmarks) for DOCTOR OF PHILOSOPHY IN ARCHITECTURE
<b>Annex (7)</b>	Mapping of mission and objective of the program with vision, mission and objectives of faculty, and university
<b>Annex (8)</b>	Main Themes/Sub-Themes with Relative weight for Program (if need)
<b>Annex (9)</b>	PILOs Distribution to General Themes for Program (if need)
<b>Annex (10)</b>	Mapping the benchmarks with PILO's (if need)
<b>Annex (11)</b>	Mapping Program's Goals with Intended Learning Outcomes (if need)

Head of the Department Dr. Samir AL-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development  Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad
Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas			