

To judge the compatibility of program attributes with program aims, see the matrix in **Appendix 1.4.**

3. Learning Outcomes (LO's)

3.1. Competencies of Engineering Graduate (Level A)

The Engineering Graduate must be able to:

A- General Engineering NARS Competencies in 2018		
Level A (NARS)	A.1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
	A.2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
	A.3	Apply 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 the discipline and within the principles and contexts of sustainable design and development.
	A.4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
	A.5	Practice research techniques and methods of investigation as an inherent part of learning.
	A.6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
	A.7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
	A.8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
	A.9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
	A.10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

3.2. Competencies of Architecture Engineering (Level B)

The Architecture Engineering Graduate must be able to:

B- Architecture NARS Competencies in 2018		
Level B (NARS)	B.1	Create architectural, urban and planning designs that satisfy both aesthetic and technical requirements, using adequate knowledge of: history and theory, related fine arts, local culture and heritage, technologies and human sciences.
	B.2	Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.
	B.3	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.
	B.4	Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and

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		methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved.
	B.5	Prepare design project briefs and documents, and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.

To judge the compatibility of program attributes with program competencies, see the matrix in **Appendix 1.5**.

In addition, to judge the compatibility of program aims with its competencies, see the matrix in **Appendix 1.6**.

4. Academic Standards of Program

The Architecture Engineering program adopted exactly as National Academic Reference Standards (**NARS**) of engineering program (August 2018) which were issued by the National Authority for Quality Assurance & Accreditation of Education NAQAAE.

5. Program Structure and Contents

a. Program duration 10 semesters (5-years)

b. Program Structure:

i.	No. of hours: 165	:	153 Compulsory		12 Elective
ii.	No. of contact hours: 252	:	94 Lectures		138 Tutorial 20 Practical
iii.	Contact hours of Lectures:	94 hours =	37.30 %		
iv.	Contact hours of Tutorials:	138 hours =	54.761 %		
v.	Contact hours of Lab:	20 hours =	7.936 %		

Practical/Field Training (Not Prerequisite): the students carry out weeks of field training after the freshman year and after the sophomore year.

c. Total teaching hours and graduation requirements:

Requirements	Credit hours	% of total Hours	Reference Frame 2020	
			Min %	Max %
University requirements Humanities	13	7.93	8	-
Institute requirements Basic Science	33	20	20	-
Major specialization requirements	73	44.2	35	-
Minor specialization requirements	46	27.87	-	30
Subtotal Hours	165	100%		

Appendix 1.7: Matching matrix of Courses and program Competencies

Level	Code	Program Courses	Program Competencies according to NARS 2018														
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
ZERO	BAS011	Mathematics1	√														
	BAS031	Physics 1	√	√													
	BAS021	Mechanics 1	√														
	BAS041	Fundamentals of Engineering Chemistry	√	√													
	PDE051	Principles of Manufacturing Engineering	√		√	√											
	HSS011	English Language1								√							
	BAS012	Mathematics2	√														
	BAS032	Physics 2	√	√													
	BAS022	Mechanics 2	√														
	CSE061	Introduction to Computer Systems										√					
	PDE052	Engineering Drawing & Projection	√							√							
	HSS012	English Language 2								√							
FIRST	ARC111	Architectural Drawing								√			√				
	ARC141	History & Theory of Architecture 1					√						√				
	ARC121	Building Construction 1					√									√	
	ARC151	Visual Studies 1											√				
	STE119	Theory of Structure	√														
	HSS121	History of the Engineering & Technology			√		√										
	ARC112	Architectural Design 1			√								√				
	ARC142	History & Theory of Architecture 2					√						√				
	ARC122	Building Construction 2					√									√	
	ARC152	Visual Studies 2											√				
	ARC131	Computer Aided Drawing								√		√					
	ENG113	Technical Reports Writing								√							

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Level	Code	Program Courses	Program Competences according to NARS 2018														
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
SECOND	ARC213	Architectural Design2			√								√				
	ARC243	History & theory of Architecture 3					√						√				
	ARC223	Building construction 3					√									√	
	PWE229	Surveying	√						√								
	STE216	Building Materials & Testing		√													
	HSS231	Presentation and Communication Skills								√							
	ARC214	Architectural Design 3			√								√				
	ARC244	History & Theory of Architecture 4					√						√				
	ARC224	Building Construction 4				√	√									√	
	STE226	Reinforced Concrete				√	√										
	ARC261	Building Contracts and Legislation					√									√	√
	HSS241	Human rights and law							√	√							
	ARC291	Field Training 1						√	√	√	√	√					
THIRD	ARC315	Architecture Design 4			√								√		√		
	ARC325	Executive Design1			√	√								√			
	ARC362	Technical Installations in Buildings 1				√									√		
	ARC371	Introduction to Urban Planning					√		√				√				
	STE319	Metallic Structures	√						√								
	ARC316	Architecture Design 5			√								√		√		
	ARC326	Executive Design 2			√	√								√			
	ARC363	Technical Installations in Buildings 2				√									√		
	ARC353	Interior Design			√	√							√				
	ARC392	Field Training 2						√	√	√	√	√					
	ARC332	Computer Applications in Architecture								√		√					
	ARC364	Specifications, Quantities & Cost Estimation						√									√
	ARC372	Introduction to Urban Design							√				√	√			
	ARC381	Architecture Criticism					√								√		

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Level	Code	Program Courses	Program Competences according to NARS 2018														
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
FOURTH	ARC493	Graduation Project 1		√				√				√		√			
	ARC417	Architecture Design 6			√								√		√		
	ARC427	Executive Design 3			√	√								√			
	ENG432	Projects Management						√	√	√	√						
	HSS442	Ethics of Professional Practice			√				√								
	ARC494	Graduation Project 2			√					√			√	√	√		
	ARC473	Landscape Architecture			√	√							√	√			
	ARC482	Heritage Conservation	√				√						√				
	HSS432	Marketing							√	√	√						
	ARC483	Local & Contemporary Architecture					√						√				
	ARC484	Environmental Design and Control				√									√		
	ARC433	Computer Graphics & Rendering Methods					√			√							
	ARC465	Feasibility Studies and Project Management						√								√	

مرفقات الدراسة الذاتية

مرفقات

قسم هندسة التشييد والبناء

- c- Behaving professionally and adhering to engineering ethics and standards.
- d- Working in and leading a heterogeneous team of professionals from various engineering disciplines and taking responsibility for the team's performance.
- e - Recognize his/her role in promoting the engineering field and contributing to the development of the profession and society.
- f - Appreciate the importance of the environment, both physical and natural, and work to promote the principles of sustainability.
- g- Using modern engineering techniques, skills and tools necessary to practice the profession.
- h - Take full responsibility for learning and self-development, participate in lifelong learning and show the ability to engage in postgraduate studies and scientific research.
- i- Communicate effectively using different media, tools and languages with different audiences to deal with academic/professional challenges in a critical and creative way.
- j - Demonstrate leadership qualities, business management and entrepreneurial skills.

To judge the compatibility of program attributes with program mission, see the matrix in **Appendix 1.3.**

To judge the compatibility of program attributes with program aims, see the matrix in **Appendix 1.4.**

3. Learning Outcomes (LO's)

3.1. Competencies of engineering graduate (Level A)

The Engineering Graduate must be able to:

A- General Engineering NARS Competencies in 2018		
	A.1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
	A.2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
	A.3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental,

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Level A (NARS)		ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
	A.4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
	A.5	Practice research techniques and methods of investigation as an inherent part of learning.
	A.6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
	A.7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
	A.8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
	A.9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
	A.10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

3.2. Competencies of CB engineering (Level B)

The CB engineering graduate must be able to:

B- Electrical NARS Competencies in 2018		
Level B (NARS)	B.1	Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics
	B.2	Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline
	B.3	Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.
	B.4	Deal with biddings, contracts and financial issues including project insurance and guarantees.

To judge the compatibility of program attributes with program competencies, see the matrix in [Appendix 1.5](#).

Appendix 1.7: Matching matrix of Courses and program Competencies

توافق مقررات البرنامج مع الكفاءات المطلوبة

كفاءات الخريج طبقاً ل NARS 2018														اسم المقرر	كود المقرر	المستوى
B4	B3	B2	B1	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1			
													√	رياضيات 1	BAS011	000
												√	√	فيزياء 1	BAS031	
													√	ميكانيكا 1	BAS021	
												√	√	اساسيات الكيمياء الهندسيه	BAS041	
													√	رسم هندسى واسقاط	PDE052	
						√								لغة انجليزية 1	HSS011	
													√	رياضيات 2	BAS012	
												√	√	فيزياء 2	BAS032	
													√	ميكانيكا 2	BAS022	
										√	√		√	مبادئ هندسة التصنيع	PDE051	
									√				√	مقدمه لنظم الحاسب	BAS061	
						√								لغة انجليزية 2	HSS012	
													√	رياضيات 3	BAS113	100
			√											المساحة المستوية	PWE121	
		√	√								√		√	رسم إنشائي	STE115	
			√											تحليل انشائي 1	STE111	
			√									√		مقاومة واختبار المواد	STE114	
											√			تاريخ الهندسه والتكنولوجيا	HSS121	
													√	رياضيات 4	BAS114	
			√			√								تحليل الاجهادات ونظرية الانشاءات	STE113	
			√										√	الرسم بالحاسب الالى	STE116	
			√											تحليل انشائي 2	STE112	
						√								كتابة تقارير فنيه	ENG131	
		√												قوى والات كهربيه	ELE151	

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كفاءات الخريج طبقاً ل NARS 2018														اسم المقرر	كود المقرر	المستوى
B4	B3	B2	B1	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1			
		√	√		√				√					تطبيقات بالحاسب الالى	STE213	200
		√							√	√				تصميم المنشآت الخرسانية المسلحة 1	STE211	
			√											مواد إنشائية	STE214	
			√											الجيولوجيا الهندسية	STE215	
													√	رياضة 5	BAS215	
						√								مهارات العرض والاتصال	HSS231	
	√													إدارة تشييد	STE234	
		√							√	√				تصميم المنشآت الخرسانية المسلحة 2	STE212	
			√											مساحة طبوغرافية	PWE222	
						√							√	تحليل نظم للمهندس الإنشائي	STE217	
		√							√	√				إنشاء مباني	STE218	300
											√			القانون وحقوق الانسان	HSS281	
				√	√	√	√	√						تدريب ميداني(1)	STE219	
			√											ميكانيكا التربة	STE311	
		√				√								التركيبات الكهربائية فى المباني	ELE361	
		√												هندسة النقل و المرور	PWE321	
	√									√				ضبط الجودة فى المنشآت	STE314	
√														مواصفات وكميات وحساب التكاليف	STE331	
														مقرر إختياري 1	XXX3XX	
		√												تصميم وإنشاء المنشآت الترابية والأساسات	STE312	
		√							√	√				تصميم منشآت معدنية	STE315	
	√									√				التركيبات الميكانيكية فى المباني	MPE391	
√														قانون وعقود التشييد	STE332	
														مقرر إختياري 2	XXX3XX	
				√	√	√	√	√						تدريب ميداني(2)	STE319	

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كفاءات الخريج طبقاً ل NARS 2018														اسم المقرر	كود المقرر	المستوى
B4	B3	B2	B1	A10	A9	A8	A7	A6	A5	A4	A3	A2	A1			
√														الإدارة المالية والمحاسبة في التشييد	STE431	400
		√												طرق ومعدات الإنشاء 1	STE418	
	√													إدارة مشروعات	ENG432	
											√			آداب وأخلاقيات المهنة	HSS442	
														مقرر إختياري 3	XXX4XX	
				√	√	√	√	√						مشروع التخرج 1	STE411	
		√												طرق ومعدات الإنشاء 2	STE419	
		√												الهندسة الصحية	PWE424	
	√	√												التفتيش والصيانة والترميم في المنشآت	STE415	
√														التسويق	HSS432	
														مقرر إختياري 4	XXX4XX	
				√	√	√	√	√						مشروع التخرج 2	STE412	

مرفقات الدراسة الذاتية

مرفقات

قسم هندسة الحاسبات

To judge the compatibility of program attributes with program aims, see the matrix in **Appendix 1.4.**

3. Learning Outcomes (LO's)

3.1. Competencies of Engineering Graduate (Level A)

The Engineering Graduate must be able to:

A- General Engineering NARS Competencies in 2018		
Level A (NARS)	A.1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
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3.2. Competencies of Architecture Engineering (Level B)

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	B.3	Generate ecologically responsible, environmental conservation and rehabilitation designs; through understanding of: structural design, construction, technology and engineering problems associated with building designs.
	B.4	Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and

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		methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved.
	B.5	Prepare design project briefs and documents, and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.

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4. Academic Standards of Program

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5. Program Structure and Contents

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b. **Program Structure:**

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	BAS031	Physics 1	√	√													
	BAS021	Mechanics 1	√														
	BAS041	Fundamentals of Engineering Chemistry	√	√													
	PDE051	Principles of Manufacturing Engineering	√		√	√											
	HSS011	English Language1								√							
	BAS012	Mathematics2	√														
	BAS032	Physics 2	√	√													
	BAS022	Mechanics 2	√														
	CSE061	Introduction to Computer Systems										√					
	PDE052	Engineering Drawing & Projection	√							√							
	HSS012	English Language 2								√							
FIRST	ARC111	Architectural Drawing								√			√				
	ARC141	History & Theory of Architecture 1					√						√				
	ARC121	Building Construction 1					√									√	
	ARC151	Visual Studies 1											√				
	STE119	Theory of Structure	√														
	HSS121	History of the Engineering & Technology			√		√										
	ARC112	Architectural Design 1			√								√				
	ARC142	History & Theory of Architecture 2					√						√				
	ARC122	Building Construction 2					√									√	
	ARC152	Visual Studies 2											√				
	ARC131	Computer Aided Drawing								√		√					
	ENG113	Technical Reports Writing								√							

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Level	Code	Program Courses	Program Competences according to NARS 2018														
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
SECOND	ARC213	Architectural Design2			√								√				
	ARC243	History & theory of Architecture 3					√						√				
	ARC223	Building construction 3					√									√	
	PWE229	Surveying	√						√								
	STE216	Building Materials & Testing		√													
	HSS231	Presentation and Communication Skills								√							
	ARC214	Architectural Design 3			√								√				
	ARC244	History & Theory of Architecture 4					√						√				
	ARC224	Building Construction 4				√	√									√	
	STE226	Reinforced Concrete				√	√										
	ARC261	Building Contracts and Legislation					√									√	√
	HSS241	Human rights and law							√	√							
	ARC291	Field Training 1						√	√	√	√	√					
THIRD	ARC315	Architecture Design 4			√								√		√		
	ARC325	Executive Design1			√	√								√			
	ARC362	Technical Installations in Buildings 1				√									√		
	ARC371	Introduction to Urban Planning					√		√				√				
	STE319	Metallic Structures	√						√								
	ARC316	Architecture Design 5			√								√		√		
	ARC326	Executive Design 2			√	√								√			
	ARC363	Technical Installations in Buildings 2				√									√		
	ARC353	Interior Design			√	√							√				
	ARC392	Field Training 2						√	√	√	√	√					
	ARC332	Computer Applications in Architecture								√		√					
	ARC364	Specifications, Quantities & Cost Estimation						√									√
	ARC372	Introduction to Urban Design							√				√	√			
	ARC381	Architecture Criticism					√								√		