



# CIVIL ENGINEERING DEPARTMENT

## Program Competencies

### Competencies for Engineering Graduates (A):

The Engineering Graduate must be able to gain the following:

- A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
- A2. 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.
- A3. 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.
- A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
- A5. Practice research techniques and methods of investigation as an inherent part of learning.
- A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.
- A7. Function efficiently as an individual and as a member of multi disciplinary and multicultural teams.
- A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.



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A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.

### Competencies for Engineering Specializations (B)

In addition to the Competencies for All Engineering Programs the BASIC Civil Engineering graduate and similar programs must be able to:

B1. 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.

B2. 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.

B3. 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.

# PROGRAM YEARS

The program duration is five years, 15 semesters. The following are the subjects taught during this program. Preparatory stage (36 units) (first year-3 Semesters) Diploma stage (72 units) (second and third years-6 Semesters) Bachelor stage (72 units) (fourth and fifth years-6 Semesters)

	Code		Course Title	General engineering Program competences										General civil					
				A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4		
1	ENG	105	Solid Mechanics	1	1											1			
2	CTV	101	Principles of Construction and Building Engineering	1			1					1	1						
3	CTV	111	Engineering Geology	1	1											1			
4	CTV	112	Surveying 1	1	1				1							1			
5	CTV	113	Civil Engineering Drawing 1					1		1	1		1			1			
6	CTV	114	Properties and Testing of Materials I		1		1						1	1					
7	CTV	121	Fluid Mechanics	1	1			1								1			
8	CTV	122	Civil Engineering Drawing 2		1							1				1	1		
9	CTV	123	Properties and Testing of Materials 2		1		1						1	1					
10	CTV	124	Theory of Structures 1	1	1											1			
11	CTV	141	Surveying 2	1	1				1							1			
12	CTV	142	Hydraulics 1	1	1	1							1	1	1				
13	CTV	143	Theory of Structures 2	1	1								1			1			
14	CTV	144	Properties and Testing of Materials 3	1	1		1						1	1					
15	CTV	151	Hydraulics 2	1												1	1		
16	CTV	152	Diploma Project			1		1					1			1			
17	CTV	153	Reinforced Concrete 1	1	1	1	1							1	1	1			
18	CTV	154	Steel Structures 1		1	1	1							1	1	1			
19	CTV	155	Irrigation and Drainage			1	1									1			
20	FTR	131	Industrial training 1		1								1			1			
21	FTR	161	Industrial training 2		1								1			1			



	Code		Course Title	General engineering Program competences										General CIV2				
				A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	
22	CIV	211	Transportation Planning and Traffic Engineering		1	1		1								1		
23	CIV	212	Specifications, Bids and Contracts		1	1	1	1	1		1						1	1
24	CIV	213	Reinforced Concrete 2		1	1	1						1	1	1			
25	CIV	214	Theory of Structures 3		1	1						1		1				
26	CIV	221	Surveying 1	1									1	1				
27	CIV	222	Sanitary Engineering 1		1	1	1							1	1			
28	CIV	223	Inland Navigation and Harbour Engineering			1			1		1				1			
29	CIV	224	Irrigation Works Design 1			1	1		1					1	1			
30	CIV	225	Theory of Structures 4		1								1		1			
31	CIV	226	Steel Structures 2		1	1	1						1	1	1			
32	CIV	227	Principals of Construction Management		1	1	1	1	1				1				1	1
33	CIV	241	construction project management		1									1	1	1		
34	CIV	242	Railway Engineering			1	1								1			
35	CIV	243	Foundation Engineering 1		1		1							1	1			
36	CIV	244	Reinforced Concrete 3		1	1	1						1	1	1			
37	CIV	245	Theory of Structures 5		1						1			1				
38	CIV	246	Civil Engineering Project			1	1	1	1	1	1	1	1	1	1	1	1	1
39	CIV	251	Sanitary Engineering 2		1	1	1							1	1			
40	CIV	252	Irrigation Works Design 2			1								1	1			
41	CIV	253	Foundation Engineering 2			1	1							1	1	1		
42	CIV	254	Reinforced Concrete 4		1	1	1						1	1	1			
43	CIV	255	Steel Structures 3		1	1	1						1	1	1			
44	CIV	256	Highway and Airport Engineering		1	1	1		1					1	1			
45	FTR	231	Field Training 3		1								1		1			
46	FTR	261	Field Training 4		1								1		1			

	Code	Course Title	General engineering Program competences										General civil				
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	
47	CIV	301	Hydraulic Structures					1						1	1		
48	CIV	303	Coastal and Harbour Engineering	1										1	1	1	
49	CIV	305	Surface and Ground-Water Hydrology	1								1	1				
50	CIV	307	Irrigation and Drainage Engineering		1			1						1	1		
51	CIV	309	Selected Topics in Water Resources		1	1		1						1	1		
52	CIV	311	Water Pollution Control Processes		1	1								1		1	
53	CIV	313	Environmental Engineering		1	1		1						1	1	1	
54	CIV	315	Wastewater Reclamation and Reuse		1	1		1						1	1	1	
55	CIV	317	Industrial Wastes	1	1	1								1	1		
56	CIV	319	Selected Topics in Environmental Eng.		1	1		1						1	1	1	
57	CIV	321	Airport Engineering		1	1										1	
58	CIV	323	Traffic Engineering			1		1								1	
59	CIV	325	Pavement Design			1								1	1		
60	CIV	327	Transportation Planning			1		1								1	
61	CIV	329	Selected Topics in Transportation Engineering	1	1	1		1						1	1		
62	CIV	331	Introduction to GPS	1				1						1			
63	CIV	333	Adjustment computation in surveying and monitoring of structure deformation	1				1						1			
64	CIV	341	Advanced Strength of Materials	1		1					1			1		1	
65	CIV	345	Computer Applications in Structural Eng.		1	1		1						1	1		
66	CIV	347	Plastic Structural Analysis	1						1				1			
67	CIV	349	Selected Topics in Structural Analysis	1							1			1			
68	CIV	351	Prestressed Concrete		1	1								1	1		
69	CIV	353	Advanced Reinforced Concrete		1	1								1	1		
70	CIV	355	Bridge Engineering		1	1						1	1	1	1	1	
71	CIV	357	Quality Control of Construction Materials	1		1						1		1		1	

	Code		Course Title	General engineering Program competences										General civil				
				A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	
72	CIV	359	<u>Design of Building Systems</u>		1		1						1		1		1	
73	CIV	361	<u>Earthquake Resistant Design</u>		1								1		1	1		
74	CIV	363	<u>Structural Maintenance and Retrofitting</u>		1	1	1						1		1	1		
75	CIV	364	<u>Selected Topics in Concrete Design and Technology</u>			1	1								1	1		
76	CIV	371	<u>Earth Dams</u>		1	1							1		1	1		
77	CIV	373	<u>Geology and Site Investigation</u>		1			1	1						1			
78	CIV	375	<u>Rock Mechanics</u>		1	1									1		1	
79	CIV	379	<u>Selected Topics in Geotechnical Engineering</u>			1	1	1							1	1		
80	CIV	381	<u>Advanced Technologies for Construction</u>		1	1	1								1	1		
81	CIV	383	<u>Construction Management</u>		1	1	1							1	1	1		1
82	CIV	385	<u>Selected Topics In Construction Engineering,</u>		1	1	1	1		1							1	1
83	csc	101	<u>computer programming</u>		1									1	1			



FRESH MAN YEAR COMPETENCES

Code	Course Title	General engineering Program competences									
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
CSC 001	Computer Skills		1		1						1
LNG 001	English Language	1	1						1		1
LNG 002	English 2	1	1						1		1
LNG 003	Arabic Lang.					1		1			1
PHE 001	Physical Education ana activities(1)	1	1			1		1			1
PHY 001	Physics (1)	1	1					1			1
PHY 002	(2) Physics	1	1			1				1	
ENG 001	(1) Engineering Mechanics	1									
ENG 002	Engineering Mechanics (2)	1									
CHM 001	Engineering Chemistry	1	1								
ENG 003	(1) Engineering Drawing			1	1				1		
ENG 004	Engineering Drawing (2)	1		1							1
ENG 005	Production Technology & Workshops	1		1							1
ENG 006	History of Engineering & Technology			1	1	1	1				1
MTH 001	(1) Engineering Mathematics	1	1		1	1	1	1	1		1
MTH 002	(2) Engineering Mathematics	1	1		1	1		1			1
FTR 031	Introduction to field training	1	1		1					1	1

SOPHOMORE YEAR COMPETENCES FOR COMMON

Code	Course Title	General engineering Program competences									
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
EEC 101	Principles of Electrical Engineering	1	1	1							
MTH 101	(3) MATHEMTICS	1	1	1				1			1
MTH 105	Statistics & probability theory	1	1		1	1		1	1		1
MTH 102	(4) MATHEMTICS	1	1	1							

JUNIOR YEAR COMPETENCES FOR COMMON

Code	Course Title	General engineering Program competences									
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
HUM 101	Introduction to History of Civilizations			1	1	1	1				1
HUM 102	Recent Egypt's History			1	1	1	1				1
HUM 103	Arabic & Islamic civilization			1	1	1	1				1
HUM 104	Literary Appreciation							1			1
HUM 105	Music Appreciation										1
HUM 106	Heritage of Egyptian literature					1			1		1
HUM 107	Trends contemporary in Arts			1	1	1	1				1
LNG 101	French Language	1	1						1		1
LNG 102	German Language	1	1						1		1
MNG 101	Monitoring & Quality				1				1	1	
MNG 102	Engineering Economics	1	1								
MNG 103	Technical report Writing					1			1		1
HUM 108	Communication & presentation skills	1						1	1	1	1
HUM 109	Analysis & Research skills	1			1	1	1	1	1	1	1
MTH 103	Numerical Method	1			1			1	1		1

SENIOR YEAR(1) COMPETENCES FOR COMMON

Code	Course Title	General engineering Program competences									
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
HUM 201	Introduction to accounting			1	1	1	1				1
HUM 202	english literature	1	1						1		1
HUM 203	Trade law	1						1	1	1	1
HUM 206	entrepreneurship						1		1	1	1
HUM 207	scientific thinking	1				1		1			1
HUM 208	business administration	1			1	1	1	1	1	1	1
MNG 201	Project Management							1		1	1
MNG 202	Invriromental impact of project			1	1		1				
MNG 203	Professional Ethics									1	1
PHE 201	Physical Education & Activates (3)			1	1	1	1				1

SENIOR YEAR(2) COMPETENCES

Code	Course Title	General engineering Program competences									
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
HUM 204	Principles of Negotiation	1						1	1	1	1
HUM 205	Human Rights			1	1	1	1				1



CIVIL ENGINEERING DEPARTMENT



*THE WAY TO GET  
STARTED IS TO QUIT  
TALKING AND BEGIN  
DOING.*

Walt Disney