Civil Engineering
Program Specifications (2023-2024)

Regulation 2010

General

A. Basic Information

1- Program Title:	Civil Engineering
2- Program type:	Single
3- Department responsibility:	Civil Engineering
4- Coordinator:	Dr. Khaled Samy
5- External evaluator:	Prof. Dr.
6- Internal evaluator:	Dr. Ghada Taha -Dr. Ahmed Ad El-Khalek
7- Year of specification approval:	2023/2024
8- Dates of regulation approval:	9/2023

B. Professional Information

Institute Mission

Preparing of distinguished engineering cadres capable of keeping pace with global technological development and able to compete, work collectively, and innovate to meet the needs of the local and regional market through the provision of outstanding educational programs. This is done by adopting the latest methods of education, learning, and knowledge exchange in accordance with national academic standards, regulations, and professional ethics, contributing to the development of the cognitive abilities of individuals in the community.

Program Vision

Civil engineering program's vision is represented in leadership and academic excellence at the local and regional levels by provision of an educational academic programme that achieves technological integration, combines the study system between teaching and learning, and reconciles social sciences and engineering to meet the rapid development in civil engineering sciences and harmonize the academic level in universities on a global and local scale.

Program Mission

Preparing an engineer who can understand and solve the civil design problems of society[1], implement them, and manage their implementation in the light of economic, political, social and environmental changes[2], and meet the needs of society [3]by graduating qualified cadres of engineers capable of local, regional and international competition using the latest information technology systems and scientific research methodologies for the requirements of the twenty-first century[4].

To judge the compatibility between the program mission and institute mission, see the matrix in **Appendix 1.1**.

1. Program Aims

The civil engineering program prepares its graduates to become intellectual leaders in the industry. Graduates are grounded in scientific, mathematical, and technical knowledge and relevant technologies that give them the ability to analyze, synthesize, and design engineering systems. The program aims are:

AM1. Graduating engineering cadres capable of working efficiently and effectively in many areas of design and implementation civil engineering practice.

AM2. Training students to practice the methodology in thinking and describing design problems and requirements using scientific methods that ensure meeting the needs of current and future generations in terms of social, psychological, and cultural aspects as an entry point for achieving sustainable intellectual and scientific development.

AM3. Providing students with academic and technical skills to design and implement civil engineering projects by utilizing modern technologies through proper planning and participatory work.

AM4. Strengthening the links between the sectors participating in the process of establishing national civil projects and the graduates of the program in the field of practical training and entrepreneurship and qualifying the graduates to compete for leadership positions in their profession.

AM5. Enabling graduates to pursue continuing education and self-learning, and to qualify for advanced scientific degrees.

AM6. Use their understanding of professional, ethical, and social responsibilities and the importance of life-long learning in the conduct of their careers.

AM7. Work with contemporary field instrumentation, design and perform experiments, and analyze and interpret the results.

To judge the compatibility of the program mission with its aims, see the matrix in **Appendix 1.2.**

2. The attributes of civil engineer

According to the National Academic Reference Standard (NARS2018), the graduates of the civil engineering program must satisfy the following attributes:

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.

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

3. Program Learning Outcomes (PLO'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.

Competencies of basic electrical engineering (Level B)

The civil engineering graduate must be able to:

B- Civil 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 impact of projects.
	B.4	Transfer concepts of design to facilities and integrating plans into comprehensive planning within the restrictions of project financing – project management cost control – project delivery methods, with sufficient knowledge of the industries, organizations and procedures concerned.
	B.5	Deal with bidding, contract and financial issues including project insurance and guarantees.

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

3.2. Competencies and Program Learning Outcomes

Competencies	Program learning outcomes
A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**PLO1** Identify, formulates, and solves complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
A.2 Develop and conduct appropriate	**PLO2** 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.	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.	**PLO3** 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.	**PLO4** 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.	**PLO5** 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.	**PLO6** 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.	**PLO7** 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.	**PLO8** 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**.**	**PLO9** 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.	**PLO10** Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

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.	**PLO11** 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.	**PLO12** 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 impact of projects.	**PLO13** Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impact of projects.
B4 Transfer concepts of design to facilities and integrating plans into comprehensive planning within the restrictions of project financing – project management cost control – project delivery methods, with sufficient knowledge of the industries, organizations and procedures concerned**.**	**PLO14** Transfer concepts of design to facilities and integrating plans into comprehensive planning within the restrictions of project financing – project management cost control – project delivery methods, with sufficient knowledge of the industries, organizations and procedures concerned.
B5 Deal with bidding, contract and financial issues including project insurance and guarantees.	**PLO15** Deal with bidding, contract and financial issues including project insurance and guarantees.

To judge the compatibility of program learning outcomes with its competencies, see the matrix in **Appendix 1.7.**

3.3. Program Learning outcomes and Courses Learning Outcomes

Program Learning Outcomes	Courses Learning Outcomes
PLO1 Identify, formulates, and solves complex engineering problems by applying engineering fundamentals, basic science, and mathematics	**CLO1** Identify and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
	CLO2 Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
PLO2 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.	**CLO3** Develop and conduct appropriate experimentation and/or simulation to draw conclusions.
	CLO4 Analyze and interpret data, assess by using statistical analyses to draw conclusions.
	CLO5 Evaluate findings and use statistical analyses and objective engineering judgment.
PLO3 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.	**CLO6** Apply engineering design processes to produce cost-effective solutions.
	CLO7 Meet specified needs with consideration for global, cultural, social, economic, environmental, and ethical aspects.
	CLO8 Achieve the principles of design within the principles and contexts of sustainable design and development.

PLO4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	**CLO9** Utilize contemporary technologies, codes of practice and standards.
	CLO10 Utilize the quality guidelines, health and safety requirements, environmental issues.
	CLO11 Utilize risk management principles.
PLO5 Practice research techniques and methods of investigation as an inherent part of learning.	**CLO12** Practice research techniques and methods of investigation as an inherent part of learning.
PLO6 Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**CLO13** Plan engineering projects
	CLO14 Supervise and monitor implementation of engineering projects,
PLO7 Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.	**CLO15** Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.
PLO8 Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**CLO16** Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
PLO9 Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**CLO17** Use creative, innovative, and flexible thinking to respond to new situations.
	CLO18 Acquire entrepreneurial and leadership skills to anticipate new situations.
PLO10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**CLO19** Acquire and apply new knowledge.
	CLO20 Practice self, lifelong and other learning strategies.

PLO11 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.	**CLO21** Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures.
	CLO22 Use either numerical techniques or physical measurements 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.
	CLO23 Use testing by applying a full range of civil engineering concepts and techniques.
PLO12 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.	**CLO24** Achieve an optimum design of Reinforced Concrete and Steel Structures. Foundations and Earth Retaining Structures.
PLO13 Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impact of projects.	**CLO25** Plan and manage construction processes; address construction defects, instability, and quality issues.
	CLO26 Maintain safety measures in construction and materials.
	CLO27 Assess environmental impact of projects.
PLO14 Transfer concepts of design to facilities and integrating plans into comprehensive planning within the restrictions of project financing – project management cost control – project delivery	**CLO28** Transfer concepts of design to facilities and integrating plans into comprehensive planning within the restrictions of project financing – project management cost control – project delivery

methods, with sufficient knowledge of the industries, organizations and procedures concerned.	methods.
	CLO29 Possesses sufficient knowledge of the industries, organizations and procedures concerned.
PLO15 Deal with bidding, contract and financial issues including project insurance and guarantees.	CLO30 Deal with bidding, contract and financial issues.
	CLO31 Deal with project insurance and guarantees.

To judge the compatibility of program learning outcomes with Courses Learning Outcomes, see the matrix in **Appendix 1.8.**

4. Academic Standards of Program

The civil 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)

Studying at the institute is based on the credit hours system, and the student chooses the courses he studies in each semester as follows:

1. The first major term (autumn): starts in early September
2. The second major term (spring): starts in early February.
3. Summer semester: It begins in late June, and the study period is not less than 7 weeks. A decision is issued by the Institute Council for some decisions and for some students as needed, with the help of the scientific advisor and the approval of the Dean of the Institute or his representative. (Attachment 1: regulation, role 43)

b. Program Structure:

i.	No. of hours: 180	:	168 Compulsory		12 Elective	
ii.	No. of contact hours: 304	:	180 Lectures		116 Tutorial	8 Lab
iii.	Contact hours of Lectures: 180 hours = 59.2%					
iv.	Contact hours of Tutorials: 80 hours = 38.2%					
v.	Contact hours of Lab: 40 hours = 2.6%					

Practical/Field Training (Not Prerequisite): the students carry out 3 weeks of field training after each year (Attachment 2).

c. Program Levels:

level	Hours		
	Compulsory	Elective	Total
First	36	0	36
Second	38	0	38
Third	36	0	36
Fourth	36	0	36
Fifth	22	12	34
Subtotal Hours			180

d. Program Levels and Courses

First level

First Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
PHM 0101	Mathematics (1)	4	2		6	4	3	60		90	150		4		
PHM 0102	Physics (1)	4	1	1	6	4	3	30	30	90	150		4		
PHM 0103	Mechanics (1)	2	2		4	2	2	40		60	100		2		
MCE 0101	Engineering drawing & projection (1)	2	4		6	2	3	40		60	100		2		
CSE 0101	Computer skills	2	1		3	2	2	40		60	100		2		
HUM xx01	Technical language (1)	2			2	2	2	40		60	100	2			
Total		16	10	1	27	16					700	2	14		

Second Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
PHM 0201	Mathematics (2)	4	2		6	4	3	60		90	150		4		
PHM 0202	Physics (2)	4	1	1	6	4	3	30	30	90	150		4		
PHM 0203	Mechanics (2)	2	2		4	2	2	40		60	100		2		
MCE 0201	Engineering drawing & projection (2)	2	4		6	2	3	40		60	100		2		
MCE 0202	Production technology & History of Eng.	4	3		7	4	3	40		60	100		4		
PHM 0204	Chemistry	4	1	1	6	4	2	20		30	50		4		
Total		20	13	2	35	20					650		20		

Chemistry course is taught in the second term only (Attachment 3)

Second Level

Third Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
CVE 1101	Structural Analysis (1)	4	2		6	4	3	40		60	100			4	
CVE 1102	Properties And Testing of Materials (1)	3	2		5	3	3	40		60	100			3	
CVE 1103	Plane Surveying (1)	4	1	1	6	4	3	30	10	60	100			4	
HUM xx02	Technical Reports Writing	2	1		3	2	2	40		60	100	2			
CVE 1104	Civil Engineering Drawing	1	4		5	2	3	40		60	100			2	
PHM 1141	Mathematics (3)	4	2		6	4	3	75		75	150		4		

Total	18	12	1	31	19					650	2	4	13	

Fourth Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
PHM 1221	Mathematics (4)	4	2		6	4	3	75		75	150		4		
CVE 1204	Fluid Mechanics	4	1	1	6	4	3	30	10	60	100			4	
CVE 1201	Structural Analysis (2)	4	2		6	4	3	40		60	100			4	
CVE 1202	Properties and Testing of Materials (2)	3	2		5	4	3	40		60	100			3	
CVE 1203	Plane Surveying (2)	2	2		4	2	3	40		60	100			2	
EPE 1221	Mechanical and Electrical Engineering	2	2		4	2	2	50		50	100			2	
Total		19	11	1	31	19					650		4	15	

Third Level

Fifth Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
CVE 2101	Structural Analysis (3)	4	2		6	4	3	40		60	100			4	
CVE 2102	Properties and Testing of Materials (3)	4	1	1	6	4	3	35	5	60	100			4	
CVE 2104	Geotechnical and Geological Engineering	4	2		6	4	3	40		60	100			4	

CVE 2103	Design of Reinforced Concrete (1)	2	2		4	2	3	40		60	100			2	
CVE 2105	Topographic Surveying (1)	2	1	1	4	2	3	30	10	60	100			2	
CVE 2106	Hydraulics	2	1	1	4	2	3	30	10	60	100			2	
Total		18	9	3	30	18					600			18	

Sixth Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
CVE 2201	Structural Analysis (4)	4	2		6	4	3	40		60	100			4	
CVE 2202	Properties and Testing of Materials (4)	4	1	1	6	4	3	35	5	60	100			4	
CVE 2203	Topographic Surveying (2)	2	2		4	2	3	40		60	100			2	
CVE 2204	Design of Reinforced Concrete (2)	2	2		4	2	3	40		60	100			2	
CVE 2205	Irrigation and Drainage Engineering	4	2		6	4	3	40		60	100			4	
ARE 2221	Architectural Engineering	2	2		4	2	2	50		50	100			2	
Total		18	11	1	30	18					600			18	

Fourth Level

Seventh Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
CVE 3101	Structural Analysis (5)	4	2		4	4	3	40		60	100			4	
CVE 3102	Design of Reinforced Concrete (3)	2	2		3	2	3	40		60	100			2	
CVE 3103	Steel Structures Design	2	2		4	2	3	40		60	100			2	

	(1)														
CVE 3104	Geotechnical Engineering	3	2		4	3	3	40		60	100			3	
CVE 3105	Engineering Surveying	3	2		4	3	3	40		60	100			3	
CVE 3106	Highway & airport Engineering	4	2		3	4	3	40		60	100			4	
Total		18	12		30	18					600			18	

Eighth Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
CVE 3201	Design of Reinforced Concrete (4)	2	2		4	2	3	40		60	100			2	
CVE 3202	Steel Structures Design (2)	2	2		4	2	3	40		60	100			2	
CVE 3203	Design of Irrigation Works (1)	4	2		6	4	3	40		60	100			4	
CVE 3204	Sanitary Engineering	4	2		6	4	3	40		60	100			4	
CVE 3205	Transport planning and traffic engineering	4	2		6	4	3	40		60	100			4	
CVE 4103	Foundation Engineering	4	4		8	4	3	40		60	100			4	
Total		20	14		34	20					600			20	

Fifth Level

Ninth Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
CVE 4101	Design of Reinforced Concrete (5)	2	2		4	2	3	40		60	100			2	
CVE 4102	Steel Structures Design (3)	2	2		4	2	3	40		60	100			2	

CVE 416x	specialized elective course (1)	3	1		4	3	3	40		60	100				3
CVE 417x	specialized elective course (2)	3	1		4	3	3	40		60	100				3
CVE 4199	Graduation Project (1)	1	2		3	1	-	50		-	50				1
CVE 426x	Specialized elective course (3)	3	1		4	3	3	40		60	100				3
HUM xx06	Legislation and contracts	2	1		3	2	3	40		60	100	2			
Total		16	10		26	16					650	2		4	10

Tenth Semester

Code	Course Name	Teaching Hours						Marking				Subject Area			
		Lectures	Exercises	Practical	Total hours	Eqiv. Credit hours	Wr. Exam Dur.	Year work	Practical Exam	Written Exam	Total	Univ. Req.	Faculty Req.	General Req.	Special Req.
CVE 4201	Design of Reinforced Concrete (6)	2	2		4	2	3	40		60	100			2	
CVE 4202	Steel Structures Design (4)	2	2		4	2	3	40		60	100			2	
CVE 4203	Structural Analysis (6)	3	2		5	3	3	40		60	100			3	
HUM xx04	Feasibility study and project management	2	2		4	2	2	40		60	100	2			
CVE 427x	Specialized elective course (4)	3	1		4	3	3	40		60	100				3
CVE 4299	Graduation Project (2)	2	5		7	2		50		100	150				2
HUM xx07	Environmental impacts of the projects	2	1		3	2	2	40		60	100	2			
Total		16	15		31	16					750	4		7	5

Foundation Engineering course is taught in third year (second term instead of fourth year (first term), Specialized elective course (3) is taught in fourth year (first term instead of fourth year (second term), and feasibility study and project management is taught in fourth year (second term instead of fourth year (first term). (Attachment 4)

Total teaching hours and subject's distribution over the subject areas electrical power and machines engineering

Level	Semester	Course teaching hours	Univ. Req.	Institute Req.	General. Req.	Special Req.
First	1st	18	2	14		
	2nd	18	4	16		
Second	3rd	19	2	4	13	
	4th	19		4	15	
Third	5th	18			18	
	6th	18			18	
Fourth	7th	18			18	
	8th	18			20	
Fifth	9th	17	2		4	10
	10th	17	4		7	5
Total of Five Years		180	16	42	107	15
% of Five Years		100%	8.9	23.33	59.44	8.33
Reference Frame 2018			8% Min.	20% Min.	35% Min.	30% Max.

The above table shows the agreement with Reference Frame 2018 requirements.

Specialized Elective Courses

Course Code	Course Title	Weekly Hrs.				Total Marks Score			Examination Duration (Hrs.)	Total Marks
		Lectures	Tutorial	Practical	Total Hours	Final	Semester works	Practical /		
CVE 416x - Specialized Elective Course (1)										
CVE 4161	Special types of concrete	3	1		4	60	40		3	100
CVE 4162	Steel structures consisting of iron plates (2)	3	1		4	60	40		3	100
CVE 4163	Structures with load-bearing walls	3	1		4	60	40		3	100
CVE 4164	Project resources management	3	1		4	60	40		3	100
CVE 4165	Sanitary Engineering (2)	3	1		4	60	40		3	100
CVE 4166	Water quality measurement	3	1		4	60	40		3	100
CVE 4167	Industrial water purification	3	1		4	60	40		3	100
CVE 417x- Specialized Elective Course (2)										
CVE 4171	Modern construction materials	3	1		4	60	40		3	100
CVE 4172	Using models and structural analysis methodology	3	1		4	60	40		3	100
CVE 4173	Advanced analysis of reinforced concrete bridges	3	1		4	60	40		3	100
CVE 4174	Soil and rocks in arid regions	3	1		4	60	40		3	100
CVE 4175	Restoration and consolidation of facilities	3	1		4	60	40		3	100
CVE 4176	Remote sensing	3	1		4	60	40		3	100
CVE 4177	Geodetic survey	3	1		4	60	40		3	100
CVE 4178	Geographic information system (GIS)	3	1		4	60	40		3	100
CVE 4179	Railway engineering (1)	3	1		4	60	40		3	100
CVE 426x- Specialized Elective Course (3)										
CVE 4261	Earthquake Engineering	3	1		4	60	40		3	100
CVE 4262	Durability of concrete	3	1		4	60	40		3	100
CVE 4263	Vacuum steel structures	3	1		4	60	40		3	100
CVE 4264	Soil improvement	3	1		4	60	40		3	100
CVE 4265	Traffic management and operation systems	3	1		4	60	40		3	100

CVE 4266	**Environmental Engineering**	3	1		4	60	40		3	100
CVE 4267	**Transportation planning**	3	1		4	60	40		3	100
CVE 4268	**Railway engineering (2)**	3	1		4	60	40		3	100
CVE 427x- Specialized Elective Course (4)										
CVE 4271	**Finite element method**	3	1		4	60	40		3	100
CVE 4272	**The construction behavior of the steel structures**	3	1		4	60	40		3	100
CVE 4273	**Geotechnical analysis using the computer**	3	1		4	60	40		3	100
CVE 4274	**Methods of concrete structure construction**	3	1		4	60	40		3	100
CVE 4275	**Road construction technology**	3	1		4	60	40		3	100
CVE 4276	**Airport engineering**	3	1		4	60	40		3	100
CVE 4277	**Road and airport maintenance**	3	1		4	60	40		3	100

6. Courses Specifications

These courses specifications were revised and approved in2020. Program– courses LO's Matrix is given in **Appendix 1.9.** Course specifications are listed in **Appendix 2.**

7. Program admission requirements

- Secondary Egyptian Schools Graduates.
- Secondary School Certificate Graduates of other countries are eligible to join this program if they meet the minimum grades set by Admission office of the Ministry of Higher Education.
- The study begins with a preparatory year for all students before specialization in Civil Engineering. Students' departmental allocation is in accordance with the institute Council regulations.

8. Regulations for progression and program completion

a. The student is considered successful if he passes the examinations in all courses of his class.

b. The student is promoted to the next higher level if he fails in not more than two subjects of his class or from lower classes,

c. In addition to the two subjects mentioned in the previous item, the student who fails in

two subjects in humanities and social sciences, whether from his class or from lower classes, is admitted to the transfer to the consecutive higher level. Passing successfully in all courses before obtaining the B.Sc. degree is a prerequisite.

d. The referred student must sit the examination in the courses in which he has failed together with the students studying the same courses. The student gets a passing grade when he passes the examination successfully. In case the student was considered absent with acceptable excuse in a course, he gets the actual grade,

e. The grades of the successful student in a course and in the general grade are evaluated as follows:

- Distinction (A^+): from 95% of the total mark and upwards. (GPA = 4)
- Distinction (A): from 90% to less than 95% of the total mark. (GPA = 3.7)
- Distinction (A^-): from 85% to less than 90% of the total mark. (GPA = 3.3)
- Very good (B^+): from 80% to less than 85% of the total mark. (GPA = 3)
- Very good (B): from 75% to less than 80% of the total mark. (GPA = 2.7)
- Good (C^+): from 70% to less than 75% of the total mark. (GPA = 2.3)
- Good (C): from 65% to less than 70% of the total mark. (GPA = 2)
- Pass (D^+): from 60% to less than 65% of the total mark. (GPA = 1.7)
- Pass (D): from 55% to less than 60% of the total mark. (GPA = 1.3)
- Pass (D^-): from 50% to less than 55% of the total mark. (GPA = 1)

f. The grades of a failing student in a course are estimated in one of' the following grades:

- Weak (F): less than 50% of the total mark. (GPA = 0)

g. The B.Sc. general grade for students is based on the cumulative marks obtained during all the years of study. The students are then arranged serially according to their cumulative sum.

Grade	GPA	Percentage	
		From	Up to
Distinction^{+} (A^{+})	4	95%	100%
Distinction (A)	3.7	90%	Less than 95%
Distinction^{-} (A^{-})	3.3	85%	Less than 90%
Very good^{+} (B^{+})	3	80%	Less than 85%
Very good (B)	2.7	75%	Less than 80%
Good^{+} (C^{+})	2.3	70%	Less than 75%
Good (C)	2	65%	Less than 70%
Pass^{+} (D^{+})	1.7	60%	Less than 65%
Pass (D)	1.3	55%	Less than 60%
Pass^{-} (D^{-})	1	50%	Less than 55%
The grades of a failing student in a course are estimated in one of' the following grades:			
Weak (F)	0	0%	Less than 50%

9. Teaching and Learning Methods

1- Lectures (face to face / online)
2- Presentations/ Movies
3- Discussions
4- Tutorials
5- Practical and Lab. Experiments
6- Problem Solving
7- Brain Storming
8- Projects and Team working
9- Site visits
10-Research/ Reports
11-Self-Learning
12-Modeling and Simulation

Assessment Methods

Method (tool)	LO's
1. Written exam	To assess competencies: A & B
2. Quizzes and reports	To assess competencies: A &B
3. Oral exams	To assess competencies: B
4. Practical	To assess competencies: A
5. Project applied on a practical field problem	To assess competencies: A & B

Program Evaluation

Evaluator	Tool	Sample
1. Senior students	Meeting Questionnaire	25%
2. Alumni	Meeting	5%
3. Stakeholders (Employers)	Meeting Questionnaire	Samples representative from all Sectors
4. External Evaluator(s) (External Examiner(s))	Reviewing according to an external evaluator Checklist report	Reports **Appendix 3**
5. Internal Evaluator(s) (Internal Examiner(s))	Report	Reports
6. Others	None	

Head of
Civil Engineering Program

Prof. Dr. Ahmed Hamdy

Date / 9 / 2023

Appendices

Appendix 1 *Matrices*

- **Appendix 1.1: Matching matrix of institute mission and program mission.**
- **Appendix 1.2: Matching matrix of program mission and program aims.**
- **Appendix 1.3: Matching matrix of program mission and program attributes.**
- **Appendix 1.4: Matching matrix of program attributes and program aims.**
- **Appendix 1.5: Matching matrix of program attributes and program competencies**
- **Appendix 1.6: Matching matrix of program aims and program competencies.**
- **Appendix 1.7: Matching matrix of program Competencies and Program Learning Outcomes**
- **Appendix 1.8: Matching matrix of Courses and program Competencies.**

Appendix 1.1

Matching matrix of institute mission and program mission

Key Words of Institute Mission / Key Words of Program Mission	Preparing of distinguished engineering cadres	Meet the needs of the local and regional market	Adopting the latest methods of education, learning, and knowledge exchange	development of the cognitive abilities of individuals in the community
Preparing an engineer who can understand and solve the civil design problems [1]	√		√	
Managing civil design problems implementation [2]		√	√	
Meet the needs of society [3]		√		√
Graduating qualified cadres of engineers capable of local, regional, and international competition [4]			√	√

Appendix 1.2
Matching matrix of program mission and program aims.

Key Words of Program Mission / Program Aims	*Preparing an engineer who can understand and solve the civil design problems [1]*	Managing civil design problems implementation [2]	*Meet the needs of society [3]*	*Graduating qualified cadres of engineers capable of local, regional, and international competition [4]*
X1	√	√		
X2		√	√	
X3	√	√		
X4			√	√
X5				√
X6			√	√
X7		√		√

Appendix 1.3
Matching matrix of program mission and program attributes

Key Words of Program Mission / Attributes	*Preparing an engineer who can understand and solve the civil design problems [1]*	Managing civil design problems implementation [2]	*Meet the needs of society [3]*	*Graduating qualified cadres of engineers capable of local, regional, and international competition [4]*
1	√			
2	√	√		
3		√	√	
4		√		
5	√		√	
6		√	√	
7		√		√
8				√
9		√		√

10		√	√	

Appendix 1.4

Matching matrix of program attributes and program aims

Program Aims	Program Attributes									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
X1	√	√		√			√			√
X2		√	√			√	√			
X3	√			√			√			√
X4					√	√	√		√	
X5		√						√	√	
X6			√		√			√		
X7		√			√					√

The attributes of civil engineer	***Program Aims***
4. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real-life situations. 5. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation. 6. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance. 7. Use techniques, skills, and modern engineering tools necessary for engineering practice. 10. Demonstrate leadership qualities, business administration and entrepreneurial skills	*X1.* Graduating engineering cadres capable of working efficiently and effectively in many areas of design and implementation civil engineering practice.

The attributes of civil engineer	*Program Aims*
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. 6. Improve the analysis and solving problems skills for electrical engineers 7. Use techniques, skills, and modern engineering tools necessary for engineering practice.	*X2.* Training students to practice the methodology in thinking and describing design problems and requirements using scientific methods that ensure meeting the needs of current and future generations in terms of social, psychological, and cultural aspects as an entry point for achieving sustainable intellectual and scientific development.
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. 4.Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance. 7. Use techniques, skills, and modern engineering tools necessary for engineering practice. 10. Demonstrate leadership qualities, business administration and entrepreneurial skills	*X3.* Providing students with academic and technical skills to design and implement civil engineering projects by utilizing modern technologies through proper planning and participatory work.
5. Recognize his/her role in promoting the engineering field and contribute to the development of the profession and the community. Value the importance of the environment, both physical and natural, and work to promote sustainability principles. 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. 9. Communicate effectively using different modes, tools and	*X4.* Strengthening the links between the sectors participating in the process of establishing national civil projects and the graduates of the program in the field of practical training and entrepreneurship and qualifying the graduates

The attributes of civil engineer	*Program Aims*
languages with various audiences; to deal with academic/professional challenges in a critical and creative manner.	to compete for leadership positions in their profession.
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation. 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.	*X5.* Enabling graduates to pursue continuing education and self-learning, and to qualify for advanced scientific degrees.
3. Behave professionally and adhere to engineering ethics and standards. 5. Recognize his/her role in promoting the engineering field and contribute to the development of the profession and the community. 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.	*X6.* Use their understanding of professional, ethical, and social responsibilities and the importance of life-long learning in the conduct of their careers.
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation. 5. Recognize his/her role in promoting the engineering field and contribute to the development of the profession and the community. 10. Demonstrate leadership qualities, business administration and entrepreneurial skills.	*X7.* Work with contemporary field instrumentation, design and perform experiments, and analyze and interpret the results.

Appendix 1.5

Matching matrix of program attributes and program competencies

Program Attributes	Program Competencies														
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
1	√	√									√			√	
2	√		√	√	√							√			
3			√	√											√
4						√	√	√						√	
5			√	√									√	√	
6			√	√									√		√
7		√			√			√	√	√	√			√	
8					√			√	√						
9							√	√	√						√
10						√	√		√					√	

Appendix 1.6

Matching matrix of program aims and program competencies

Program Aims	Program Competencies														
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
X1	√		√	√							√	√			
X2		√	√			√					√	√		√	√
X3	√			√		√	√					√	√	√	
X4		√		√				√	√						
X5					√				√	√					
X6			√	√	√					√					√
X7		√			√							√			

Program Aims	Program Competencies														
	PLo1	PLo2	PLo3	PLo4	PLo5	PLo6	PLo7	PLo8	PLo9	PLo10	PLo11	PLo12	PLo13	PLo14	PLo15
X1	√		√	√							√	√			
X2		√	√			√					√	√		√	√
X3	√			√		√	√					√	√	√	
X4		√		√				√	√						
X5					√				√	√					
X6			√	√	√					√					√
X7		√			√							√			

Appendix 1.7:

Matching matrix of program Competencies and Program Learning Outcomes

Program Learning Outcomes	Program Competencies														
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
PLO1	√														
PLO2		√													
PLO3			√												
PLO4				√											
PLO5					√										
PLO6						√									
PLO7							√								
PLO8								√							
PLO9									√						
PLO10										√					
PLO11											√				
PLO12												√			
PLO13													√		
PLO14														√	
PLO15															√

Appendix 1.8:

Matching matrix of Program Learning Outcomes and Courses Learning Outcomes

Courses learning outcomes	Program Learning Outcomes														
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PLO13	PLO14	PLO15
CLO1	√														
CLO2	√														
CLO3		√													
CLO4		√													
CLO5		√													
CLO6			√												
CLO7			√												
CLO8			√												
CLO9				√											
CLO10				√											
CLO11				√											
CLO12					√										
CLO13						√									
CLO14						√									
CLO15							√								
CLO16								√							
CLO17									√						
CLO18									√						
CLO19										√					
CLO20										√					
CLO21											√				
CLO22											√				
CLO23											√				
CLO24												√			
CLO25													√		
CLO26													√		
CLO27													√		
CLO28														√	
CLO29														√	
CLO30															√
CLO31															√

Appendix 1.9: Matching matrix of Courses and program Competencies

Course Code	Course Name	Engineering Competencies (2018)										"Department" Civil Engineering Competencies (NARS)				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
PHM 0101	Mathematics (1)	√	√													
PHM 0102	Physics (1)	√	√													
PHM 0103	Mechanics (1)	√	√	√												
HUM xx01	Technical language (1)							√	√							
MCE 0101	Engineering drawing & projection (1)								√	√						
PHM 0204	Chemistry (1)	√	√	√												
CSE 0101	Computer skills	√							√							
PHM 0201	Mathematics (2)	√	√													
PHM 0202	Physics (2)	√	√													
PHM 0203	Mechanics (2)	√	√	√												
MCE 0201	Engineering drawing & projection (2)		√						√	√						
MCE 0202	Production technology & History of Engineering		√	√				√								
PHM 0204	Chemistry (2)	√	√	√												
CVE 1101	Structural Analysis (1)	√														

Course Code	Course Name	Engineering Competencies (2018)										"Department" Civil Engineering Competencies (NARS)				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
CVE 1102	Properties And Testing of Materials (1)		√			√						√				
CVE 1103	Plane Surveying (1)	√						√	√			√				
HUM xx02	Technical Reports Writing								√	√						
CVE 1104	Civil Engineering Drawing			√	√											
PHM 1141	Mathematics (3)	√	√													
PHM 1221	Mathematics (4)	√	√									√				
CVE 1204	Fluid Mechanics	√	√													
CVE 1201	Structural Analysis (2)	√										√				
CVE 1202	Properties and Testing of Materials (2)		√			√		√				√				
CVE 1203	Plane Surveying (2)	√						√	√			√				
EPE 1221	Mechanical and Electrical Engineering															
CVE 2101	Structural Analysis (3)	√										√				
CVE 2102	Properties and Testing of Materials (3)		√		√				√			√		√		
CVE 2104	Geotechnical and Geological Engineering		√									√				
CVE 2103	Design of Reinforced Concrete (1)	√										√	√			

Course Code	Course Name	Engineering Competencies (2018)										"Department" Civil Engineering Competencies (NARS)				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
CVE 2105	Topographic Surveying (1)	√						√	√			√				
CVE 2106	Hydraulics		√								√					
CVE 2201	Structural Analysis (4)	√										√				
CVE 2202	Properties and Testing of Materials (4)		√		√				√			√		√		
CVE 2203	Topographic Surveying (2)	√						√	√			√				
CVE 2204	Design of Reinforced Concrete (2)			√						√		√	√			
CVE 2205	Irrigation and Drainage Engineering	√				√					√				√	
ARE 2221	Architectural Engineering						√							√		
CVE 3101	Structural Analysis (5)	√														
CVE 3102	Design of Reinforced Concrete (3)			√					√				√			
CVE 3103	Steel Structures Design (1)	√														
CVE 3104	Geotechnical Engineering	√										√	√			
CVE 3105	Engineering Surveying	√						√	√			√				
CVE 3106	Highway & airport Engineering			√		√							√			
CVE 3201	Design of Reinforced Concrete (4)			√					√				√			

Course Code	Course Name	Engineering Competencies (2018)										"Department" Civil Engineering Competencies (NARS)				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
CVE 3202	Steel Structures Design (2)	√		√												
CVE 3203	Design of Irrigation Works (1)	√						√					√	√		
CVE 3204	Sanitary Engineering (1)		√	√									√			
CVE 3205	Transport planning and traffic engineering			√								√	√			
HUM xx04	Feasibility study and project management				√		√									
CVE 4101	Design of Reinforced Concrete (5)									√			√			
CVE 4102	Steel Structures Design (3)			√						√						
CVE 4103	Foundation Engineering		√							√		√	√			
CVE 4161	Special types of concrete		√			√		√				√				
CVE 4162	Steel structures consisting of iron plates (2)	√		√						√			√			√
CVE 4163	Structures with load-bearing walls	√	√			√		√				√	√			
CVE 4164	Project resources management				√		√									
CVE 4165	Sanitary Engineering (2)			√									√			
CVE 4166	Water quality measurement	√		√												
CVE 4167	Industrial water purification			√								√				

Course Code	Course Name	Engineering Competencies (2018)										"Department" Civil Engineering Competencies (NARS)				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
CVE 4171	Modern construction materials		√			√		√				√				
CVE 4172	Using models and structural analysis methodology	√										√				
CVE 4173	Advanced analysis of reinforced concrete bridges			√						√			√			√
CVE 4174	Soil and rocks in arid regions		√		√							√				
CVE 4175	Restoration and consolidation of facilities			√					√				√			
CVE 4176	Remote sensing	√						√	√			√				
CVE 4177	Geodetic survey			√				√				√	√			
CVE 4178	Geographic information system (GIS)	√						√	√			√				
CVE 4179	Railway engineering (1)			√								√	√			
CVE 4199	Graduation Project (1)			√		√	√		√		√					
HUM 4141	Legislation and contracts								√				√			
CVE 4201	Design of Reinforced Concrete (6)			√						√			√			
CVE 4202	Steel Structures Design (4)									√			√			√
CVE 4203	Structural Analysis (6)	√										√				
CVE 4261	Earthquake Engineering									√			√			√

Course Code	Course Name	Engineering Competencies (2018)										"Department" Civil Engineering Competencies (NARS)				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
CVE 4262	Durability of concrete					√						√	√	√		
CVE 4263	Vacuum steel structures	√		√						√			√			√
CVE 4264	Soil improvement		√									√	√			
CVE 4265	Traffic management and operation systems			√								√	√			
CVE 4266	Environmental Engineering		√	√	√				√							
CVE 4267	Transportation planning			√								√	√			
CVE 4268	Railway engineering (2)			√								√	√			
CVE 4271	Finite element method	√										√				
CVE 4272	The construction behavior of the steel structures									√			√			√
CVE 4273	Geotechnical analysis using the computer		√		√							√	√			
CVE 4274	Methods of concrete structure construction									√			√			√
CVE 4275	Road construction technology			√		√							√			
CVE 4276	Airport engineering			√								√	√			
CVE 4277	Road and airport maintenance	√		√										√		
CVE 4299	Graduation Project (2)			√		√	√		√		√					

Course Code	Course Name	Engineering Competencies (2018)										"Department" Civil Engineering Competencies (NARS)				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5
HUM xx07	Environmental impacts of the projects			√						√				√		