



Civil Engineering Department
College of Engineering



Vision: Local and International Leadership in civil engineering education, innovative research, and knowledge dissemination.

Civil Engineering Department Booklet (2023)

Mission: Providing an outstanding education and scientific research in line with advances in the field of civil engineering in order to prepare competitive engineering graduates capable of solving industry and community problems.

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Welcome to Civil Engineering (CE)

The program, the department, the profession

Civil Engineering is a broad engineering discipline with a variety of unique and interesting sub-disciplines. The undergraduate degree in civil engineering at Shaqa University is designed for students with a broad exposure to many of these sub-disciplines.

Some graduates from the program use the broad knowledge and skills they acquire as “stepping-stone” to non-engineering careers, such as in business or management, while many go on to practice engineering as licensed professionals.

This booklet summarizes the important information that Shaqa civil engineering students need to know.

Head of the department

Dr. Hani Alharbi

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General Information

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CE Program at Shaqa University

The beginning!

The Civil Engineering program was implemented since the establishment of the college (2008). The program provides a broad knowledge of different civil specialties such as Structure, Construction, Transportation, Geotechnical, and water and environmental.

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Values

Students are our focus: *We believe the education, development, empowerment, and welfare of our students are the primary focus of our efforts.*

Civil and construction Engineers as principled Leaders: *We believe the engineering profession requires the highest professional and ethical standards, which we seek to model, teach, and prepare our students to embrace.*

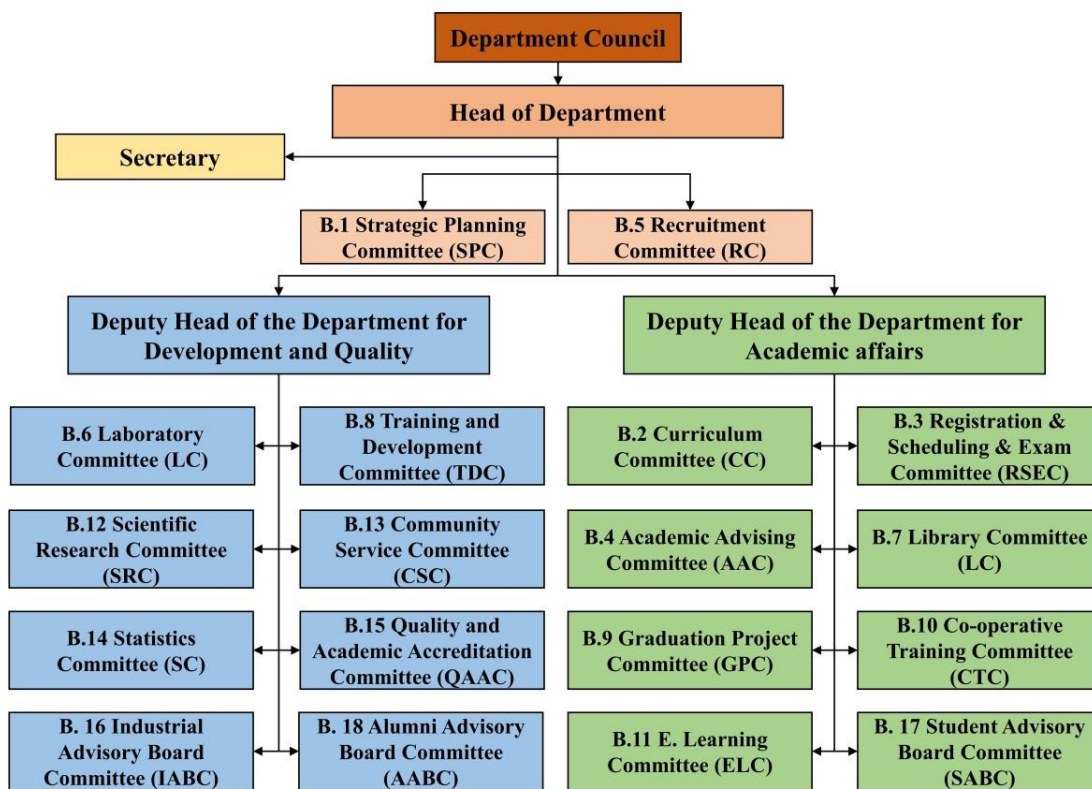
Collaborative Teaching and Learning Environment: *We believe a collaborative collegial environment among our faculty, staff and students is critical in sustaining advancement in educational excellence.*

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Growth through Assessment: We believe data-driven inquiry and improvement will lead us to sustained advancement in educational excellence.

Organizational Structure



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Faculty Members

Dr. Hani Alharbi

Room No. S030. **Ext.** 8151

Specialty: Geotechnical Engineering

Research Interest: Bio-geotechnical Engineering and Soil Stabilization

Dr. Ali Al-Otaibi

Room No. S-230. **Ext.** 8149

Specialty: Construction Management

Research Interest: Sustainable construction, delay management, value management, construction safety, waste management

Prof. Alaa M. Rashad

Room No. S037. **Ext.** 8381

Specialty: Structural Engineering - Building Materials and Quality Control

Research Interest: Innovative construction materials, Thermal insulation and fire resistance, Durability, Recycling

Dr. Mustafa El-Rawy

Room No. S035. **Ext.** 8382

Specialty: Water Resources Engineering

Research Interest: Water Resources Management, Groundwater modeling, hydrology, Flood hazard assessment and mitigation, Climate change, Water Quality, Artificial Intelligence, Managed Aquifer Recharge

Dr. Mahmoud M. Abdel Daiem

Room No. S039. **Ext.** 8383

Specialty: Environmental Engineering

Research Interest: Sustainable Development, Renewable Energy, Solid Waste Management and Treatment, Material Fabrication, Environmental Impact Assessment, Wastewater Treatment, Water Quality

Dr. Sultan Alotaibi

Room No. S032. **Ext.** 8384

Specialty: Structural Engineering

Research Interest: Strengthening structures, Innovative Construction Materials, Renewable Energy Infrastructure

Dr. Mohammad Abdur Rasheed

Room No. S017. **Ext.** 8386

Specialty: Structural Engineering

Research Interest: Innovative Construction Materials, Renewable Energy Infrastructure

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Dr. Amro Alamri

Room No. S041. Ext. 8385

Specialty: Geotechnical Engineering

Research Interest: Structural frame systems, seismic performance design, seismic effects, Steel and RC design development

Eng. Mohammad Sadique Nawab

Room No. S009. Ext. 8387

Specialty: Civil Engineering

Research Interest: Emerging Contaminants, Filtration, Adsorption Techniques, Engineering Education

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Committees

<p><i>Strategic Planning Committee (SPC)</i> Dr.Hani Alharbi Dr.Mustafa El-Rawy Dr.Mahmoud M. Abdel Daiem</p>	<p><i>Curriculum Committee (CC)</i> Dr. Ali Alotaibi Dr. Hani Alharbi Dr. Alaa Rashad Dr. Mustafa El-Rawy Dr. Mahmoud M. Abdel daiem Dr. Mohamed Abdur Rashed Dr. Sultan Alotaibi Eng. Mohamed Sadique</p>
<p><i>Registration & Scheduling & Exam Committee (RSEC)</i> Dr.Mustafa El-Rawy Dr. Ali Alotaibi Dr. Hani Alharbi</p>	<p><i>Academic Advising Committee (AAC)</i> Dr.Mustafa El-Rawy Dr. Ali Alotaibi Dr. Hani Alharbi</p>
<p><i>Recruitment Committee (RC)</i> Dr. Hani Alharbi Dr.Ali Alotaibi Dr. Sultan Alotaibi</p>	<p><i>Laboratory Committee (LAC)</i> Dr. Mohamed Sadique Dr. Alaa Rashad Dr. Mohamed Abdur Rashed</p>
<p><i>Library Committee (LC)</i> Dr.Alaa Rashad Dr.Mohamed Abdur Rashed Dr. Mohamed Sadique</p>	<p><i>Training and Development Committee (TDC)</i> Dr. Mohamed Sadique Dr. Alaa Rashad Dr. Hani Alharbi</p>
<p><i>Graduation Project Committee (GPC)</i> Dr.Alaa Rashad Dr.Mustafa El-Rawy Dr. Mahmoud M. Abdel daiem</p>	<p><i>Co-operative Training Committee (CTE)</i> Dr. Mustafa El-Rawy Dr. Hani Alharbi Dr. Sultan Alotaibi</p>
<p><i>E. Learning Committee (ELC)</i> Dr.Hani Alharbi Dr.Alaa Rashad Dr.Mohamed Abdur Rashed</p>	<p><i>Scientific Research Committee (SRC)</i> Dr. Mohamed Abdur Rashed Dr. Sultan Alotaibi Dr. Mohamed Sadique</p>

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Community service committee (CSC)

Dr.Sultan Alotaibi

Dr.Ali Alotaibi

Dr.Alaa Rashad

Statistics Committee (SC)

Dr.Mohamed Sadique

Dr.Ali Alotaibi

Dr.Sultan Alotaibi

Quality and Academic Accreditation Committee (QAAC)

Dr. Mahmoud M. Abdel daiem

Dr. Hani Alharbi

Dr.Ali Alotaibi

Dr.Alaa Rashad

Dr.Mustafa El-Rawy

Dr.Mohamed Abdur Rashed

Dr.Sultan Alotaibi

Dr.Mohamed Sadique

Industrial Advisory Board Committee (IABC)

Dr.Hani Alharbi

Dr.Ali Alotaibi

Dr.Sultan Alotaibi

Student Advisory Board committee (SABC)

Dr.Hani Alharbi

Dr.Ali Alotaibi

Dr.Mustafa El-Rawy

Alumni Advisory Board committee (AABC)

Dr.Sultan Alotaibi

Dr.Ali Alotaibi

Dr.Mustafa El-Rawy

Program Goals (PGs)

Goal 1: Apply knowledge, skills, and competences to service the Community and environment development.

Goal 2: Participate in leadership and management in both public and private sectors in Civil Engineering.

Goal 3: To be distinguished in scientific research, ready for academic career and pursue life-long Learning.

Goal 4: To be recognized and certified by national and international Professional engineering organizations.

Program learning Outcomes (PLOs)

K.1.: The student will acquire comprehensive knowledge of language, mathematics, and sciences necessary for advanced understanding of the theories, principles, concepts, axioms, and terminology related to civil engineering.

K.2.: The student will acquire knowledge necessary for specialized understanding and for doing research related to recent developments in civil engineering specialization.

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S.1.: Apply complex knowledge, advanced skills and creativity to design a system, component, or process to meet desired needs

S.2.: Practice experimental investigation related to civil engineering topics and theories using necessary tools, machines, materials, devices, and software.

S.3.: Apply the underlying concepts, principles, and theories to solve engineering problems.

S.4.: Communicate effectively with a range of audience in various ways to demonstrate an understanding theoretical knowledge, imparting knowledge, specialized skills, and complex ideas.

S.5.: Apply mathematical operations and use advanced techniques and tools for both solving complex civil engineering problems and supporting specialized research and projects.

V.1.: Function effectively on a team, either as a team cooperative member, or as a flexible and effective leader who creates a collaborative and inclusive environment, establish plan goals, tasks, or meet objectives.

V.2.: Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

V.3. Use engineering judgment to take logical decisions in work or learning contexts supported by evidence based on analyzing and interpreting information.

Attributes of CE graduates

A1: Comprehensive knowledge and understanding of the fundamentals and theories of science, engineering, and mathematics and advanced specialized knowledge in one of the Civil Engineering tracks.

A2: Having the skills of innovation, creative and critical thinking that enable student to follow systematic ways for analyzing and finding innovative solutions of complex and unexpected engineering problems in the reality of the surrounding environment.

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A3: Having the attribute of lifelong learning to keep up with the latest developments in the field of specialization, as well as to use modern digital technologies and applications to analyze and process data and information.

A4: Working effectively either individually or in groups, with the ability to lead work teams flexibly and effectively and having the skills of listening and communicating effectively.

A5: Commitment to professional ethics that are compatible with societal and cultural values, participation in finding valuable solutions to some societal issues, and a commitment to responsible citizenship.

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Academic

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Terminology

Academic advisor: *It means the faculty member and the like who are charged with supervising, directing, and following up on the student during his studies at the university.*

Study Plan: *It is a set of compulsories, elective, and free courses, whose units constitute the graduation requirements that the student must successfully pass in order to obtain the degree of the specified specialization. For preparatory year students, it is the set of courses that must be successfully passed for assignment to one of the targeted colleges after the preparatory year program.*

Study load: *The total number of academic units that a student is allowed to register in a semester, and the upper and lower limits of the study load are determined according to the university's executive rules.*

Overall rating: *A description of the student's level of educational attainment during his/her study at the university.*

Cumulative average: *It is the result of dividing the total points obtained by the student in all the courses he has studied since joining the university by the total units prescribed for those courses.*

Semester average: *It is the result of dividing the total points obtained by the student by the total units assessed for all the courses he studied in any semester. Points are calculated by multiplying the unit assessed by the weight of the grade obtained by the student in each course he studied.*

Registration Folding: *It means the termination of the student's relationship with the university, whether through dismissal, withdrawal, or interruption.*

Minimum course load: *It is the minimum number of units of study that the student registers during the academic level.*

Withdrawal for the study: *It means that the student does not continue studying for the academic year or semester in which he registered with an acceptable excuse while counting the withdrawal period within the regular period of graduation.*

Academic warning: *The notice given to the student because his cumulative average is below the minimum set forth in these regulations.*

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***Academic Advising:** It is the counseling activity carried out by a faculty member in order to assist students academically, and this includes all the various academic advising work directly related to undergraduate students.*

***Annual Academic Advising Plan:** It is the work plan that clarifies the general academic guidance objectives throughout the academic year and is presented at the beginning of the year through a meeting of the members of the Academic Advising Unit. It includes the semester plan (first semester, second semester, summer semester), and links the objectives of the semester plans directly to the annual plan.*

Bachelor of science

General

The program has been designed to give the student the flexibility to enroll in many options. Among these options is a choice of different tracks related to civil engineering discipline. The CEP offers five different tracks as follows:

Construction Engineering and Management Track

This track prepares the student to handle essential tasks related to constructions engineering and management fields such as planning, constructing, and repairing projects and contracts. Also, it prepares the student to manage constructions project in a construction organization.

Water Resources and Environmental Engineering Track

This track equips the student with processes and methods that are related to water resources, irrigation and drainage systems, and environmental engineering field. For examples, water supply and wastewater estimation, different technologies used for treatment of water and wastewater Also, to evaluate the environmental impacts for different projects and obtain the needed knowledge that essential to contemporary environmental issues.

Transportation Engineering Track

This track focuses on designing transit systems and the planning of transit traffic. In this track, students obtained needed skills to deal with issues related to transportation field. These issues include

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transportation systems, urban planning and pavement design and traffic planning and how to design transportation systems in the most efficient and safe way.

Structural Engineering Track

This track focuses on designing and analyzing beams, columns, buckling of beams, and advances topics related to structural fields. Students specialized in any track should be able to understand, predict, calculate the major elements of building and non-building structures using concrete, steel, and other materials.

Geotechnical Engineering Track

This track focuses on the design and the construction of foundation for structures. This track prepares the student to understand and work with soil, investigate site and structural conditions, determine the footing types for structures.

Degree Requirements

After successfully passing the preparatory year and to complete the graduation requirements for a B.Sc. in Civil Engineering, the student is required the completion of a minimum of 136 credit hours (excluding the Preparatory Year credit hours) for a degree to be awarded. The credit hour requirements within the civil engineering curriculum are distributed as follows:

- *12 credit hours of university requirements (Table 2).*
- *51 credit hours of college compulsory and complementary requirements (Table 3A, 3B).*
- *73 credit hours of departmental requirements (Table 4) of which 54 credit hours are core courses (Table 4A), 3 credit hours are courses from other department (Table 4B), 4 credit hours of senior design projects (Table 4C), and 12 credit hours of elective courses (Table 4D). The elective courses are to be selected from one of the modules offered by the department (Tables 5A to 5E inclusive).*

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Preparatory Year

The preparatory year aims at enhancing the skills of the students through intense English courses and other courses that improve their communication and computer skills. The credit hour requirements within the Preparatory Year are 32 credit hours. The table below illustrates the modules studied during the preparatory year.

Level 1				Level 2			
Course Code	Course Title	Cr. Hr	Pre-requisite	Course Code	Course Title	Cr. Hr	Pre-requisite
CHS 101	Health and Fitness	2		RAD 101	Entrepreneurship	2	
PHYS 107	Introduction to physics 1	3		ACT 105	Academic and Life Skills	3	
ENGL 109	English -1	6		ENGL 110	English -2	4	ENGL 109
CT 130	Computer Skills	3		ENGL 128	English for Engineering Purposes	2	
MATH 130	Introduction to Math	3		MATH 135	Mathematics	4	MATH 130
Total		17		Total		15	

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Plan of study

Table 2. University requirements

Course Code	Course Title	Cr. Hr
IC 101	Introduction to Islamic Culture	2 (2,0,0)
IC 102	Islam and Society Building	2 (2,0,0)
IC 103	The Islamic Economic System	2 (2,0,0)
IC 104	Fundamentals of the Islamic Political System	2 (2,0,0)
ARAB 101	Language Skills	2 (2,0,0)
ARAB 103	Expository Writing	2 (2,0,0)
Total		12

Table 3A. College Requirement (Compulsory)

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
MATH 105	Differential Calculus	3 (3,1,0)	--	
MATH 106	Integral Calculus	3 (3,1,0)	MATH 105	
MATH 107	Vectors and Matrices	3 (3,1,0)	MATH 105	
MATH 203	Differential & Integral Calculus	3 (3,1,0)	MATH 106 MATH 107	
MATH 204	Differential Equations	3 (3,1,0)	MATH 203	
MATH 254	Numerical Methods	3 (3,1,0)		
STAT 324	Engineering Probability and Statistics	3 (3,1,0)		
PHYS 103	General Physics (1)	4 (3,1,2)		
PHYS 104	General Physics (2)	4 (3,1,2)	PHYS 103	
CHEM 101	General Chemistry	4 (3,1,2)		
ENGL 107	Technical Writing	3 (3,0,0)		
ENGL 116	English Composition	3 (3,0,0)		
Total		39		

Table 3B. College Requirements (Complementary)

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Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
GE 106	Introduction to Engineering Design	2 (1,0,2)		
GE 107	Engineering Drawing and Design	3 (1,0,4)	GE 106	
GE 212	Computer Programming	3 (2,0,2)		
GE 403	Engineering Economy	2 (2,1,0)		
GE 490	Ethics and Professional Practice	2 (2,1,0)		
Total		12		

Table 4A. Civil Engineering Requirements (Core Courses)

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 201	Statics	3 (3,1,0)	MATH 106 MATH 107	
CE 212	Surveying	3 (2,1,2)	MATH 107	
CE 240	Introduction to Environmental Engineering	3 (2,1,2)	CHEM 101	
CE 302	Mechanics of Materials	3 (3,1,0)	CE 201	CE 305
CE 305	Mechanics of Materials Laboratory	1 (0,0,2)	CE 201	CE 302
CE 307	Construction Materials	3 (2,0,2)	CE 302	
CE 320	Fluid Mechanics	3 (3,1,0)	CE 201 PHYS 103	CE 319
CE 319	Fluid Mechanics Laboratory	1 (0,0,2)	CE 201 PHYS 103	CE 320
CE 323	Water Resources Engineering	3 (3,1,0)	CE 320	
CE 330	Traffic Engineering (1)	3 (3,1,0)		
CE 341	Water Supply and Wastewater Treatment Engineering	3 (2,1,2)	CE 240 CE 323	
CE 360	Structural Analysis (1)	3 (3,1,0)	CE 302	
CE 370	Reinforced Concrete Design (1)	3 (3,1,0)	CE 360	
CE 381	Geotechnical Engineering (1)	2 (2,1,0)	CE 302	CE 382
CE 382	Geotechnical Engineering Laboratory	1 (0,0,2)	CE 302	CE 381
CE 404	Management of Engineering Projects	2 (2,1,0)		
CE 410	Construction Engineering and Management	3 (3,1,0)		
CE 431	Highway Engineering	3 (3,1,0)	CE 330 CE 481	CE 432
CE 432	Highway Engineering Lab	1 (0,0,2)	CE 330 CE 481	CE 431
CE 460	Structural Analysis (2)	3 (3,1,0)	CE 360	

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Course Code	Course Title	Cr. Hr.	Requisites	
CE 481	Geotechnical Engineering (2)	2 (2,1,0)	CE 381 CE 382	
CE 482	Foundation Engineering	2 (2,1,0)	CE 481 CE 370	
CE 499	Cooperative Summer Training	0 (0,0,0)	102 hours excluding PYP hours	
Total		54		

Table 4B. Engineering courses from other departments

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
ME 202	Dynamics	3 (3,1,0)	CE 201	
Total		3		

Table 4C. Senior Design Projects

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 496	Senior Design Project (1)	2 (2,0,0)	Completion of 100 credit hours	
CE 497	Senior Design Project (2)	2 (2,0,0)	CE 496	
Total		4		

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Table 4D. Elective Courses

(Each student is required to take 12 cr. hr. from the elective courses offered by the department)

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 4**	Elective (1)	3 (3,1,0)		
CE 4**	Elective (2)	3 (3,1,0)		
CE 4**	Elective (3)	3 (3,1,0)		
CE 4**	Elective (4)	3 (3,1,0)		
Total		12		

Table 5A. Construction engineering and Management

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 411	Introduction to Construction Contracts	3 (3,1,0)		CE 404
CE 412	Estimating Construction Cost	3 (3,1,0)		CE 404
CE 413	Construction Scheduling	3 (3,1,0)		CE 404
CE 414	Construction Management	3 (3,1,0)		CE 404
CE 417	Construction Equipment and Methods	3 (3,1,0)		CE 404
CE 419	Selected Topics in Construction Engineering & Management	3 (3,1,0)		CE 404

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Table 5B. Water Resources and Environmental Engineering

Water Resources Engineering				
Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 423	Hydraulics Structures	3 (3,1,0)	CE 323	
CE 425	Surface and Groundwater Hydrology	3 (3,1,0)	CE 323	
CE 426	Water Resources Planning	3 (3,1,0)	CE 323	
CE 427	Hydraulics of Pressurized Flow	3 (3,1,0)	CE 323	
CE 428	Hydraulics of Open Channel Flow	3 (3,1,0)	CE 323	
CE 429	Computer Applications in Water Resources	3 (3,1,0)	CE 323	
CE 430	Coastal Engineering	3 (3,1,0)	CE 323	
Environmental Engineering				
Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 445	Wastewater Reclamation and Use	3 (3,1,0)	CE 341	
CE 446	Environmental Impact Assessment	3 (3,1,0)	CE 341	
CE 447	Computer Aided Design of Water Distribution System	3 (3,1,0)	CE 341	
CE 448	Computer Aided Design of Sewerage System	3 (3,1,0)	CE 341	
CE 449	Sanitary Installations and Specifications.	3 (3,1,0)	CE 341	
CE 450	Renewable energy	3 (2,1,2)	CE 341	
CE 451	Solid waste management and treatment	3 (2,1,2)	CE 341	

Table 5C. Transportation Engineering

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 433	Urban Public Transportation	3 (3,1,0)	CE 330	
CE 434	Railway Engineering	3 (3,1,0)	CE 431	
CE 435	Airport Engineering	3 (3,1,0)	CE 431	
CE 436	Traffic Engineering (2)	3 (3,1,0)	CE 330	
CE 437	Analysis and Design of Pavement Systems	3 (3,1,0)	CE 431	
CE 438	Transportation Planning	3 (3,1,0)	CE 330	
CE 439	Pavement Maintenance	3 (3,1,0)	CE 431	

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Table 5D. Structural Engineering

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 464	Structural Analysis Using Finite Elements	3 (3,1,0)	CE 370	
CE 466	Bridge Engineering	3 (3,1,0)	CE 370	
CE 468	Wind and Earthquake Resistant Design	3 (3,1,0)	CE 370	
CE 470	Reinforced Concrete Design (2)	3 (3,1,0)	CE 370	
CE 473	Steel Structure	3 (3,1,0)	CE 360	
CE 475	Pre-stressed Concrete Design	3 (3,1,0)	CE 370	
CE 476	Advanced Concrete Technology	3 (3,1,0)	CE 307	
CE 477	Concrete Technology	3 (3,1,0)	CE 307	

Table 5E. Geotechnical Engineering

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
CE 483	Deep Foundations	3 (3,1,0)	CE 481 CE 482	
CE 484	Geotechnical Engineering in Arid Regions	3 (3,1,0)	CE 481	
CE 485	Introduction to Rock Mechanics	3 (3,1,0)	CE 481	
CE 486	Improvement of Geotechnical Materials	3 (3,1,0)	CE 481	
CE 487	Selected Topics in Geotechnical Engineering	3 (3,1,0)	CE 481	

*Recommended Semester Schedule ***

Level 3				
Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Coe-
IC 101	Introduction to Islamic Culture	2 (2,0,0)		
MATH 105	Differential Calculus	3 (3,1,0)		
CHEM 101	General Chemistry	4 (3,1,2)		
PHYS 103	General Physics (1)	4 (3,1,2)		
GE 212	Computer Programming	3 (2,0,2)		
GE 106	Introduction to Engineering Design	2 (1,0,2)		
Total		18		

Level 4				
Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Coe-
ARAB 101	Language Skills	2 (2,0,0)		
MATH 106	Integral Calculus	3 (3,1,0)	MATH 105	
MATH 107	Vectors and Matrices	3 (3,1,0)	MATH 105	
PHYS 104	General Physics (2)	4 (3,1,2)	PHYS 103	
GE 107	Engineering Drawing and Design	3 (1,0,4)		
ENGL 116	English Composition	3 (3,0,0)		
Total		18		

Level 5				
Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Coe-
IC 102	Islam and Society Building	2 (2,0,0)		
MATH 203	Differential & Integral	3 (3,1,0)	MATH 106	

Level 6				
Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Coe-
ARAB 103	Expository Writing	2 (2,0,0)		
MATH 204	Differential Equations	3 (3,1,0)	MATH 203	

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	Calculus		MATH 107	
ENGL 107	Technical Writing	3 (3,0,0)		
CE 201	Statics	3 (3,1,0)	MATH 106 MATH 107	
CE 212	Surveying	3 (2,1,2)	MATH 107	
CE 240	Introduction to Environmental Engineering	3 (2,1,2)	CHEM 101	
Total		17		

ME 202	Dynamics	3 (3,1,0)	CE 201	
CE 320	Fluid Mechanics	3 (3,1,0)	CE 201 PHYS 103	CE 319
CE 319	Fluid Mechanics Lab	1 (0,0,2)	CE 201 PHYS 103	CE 320
CE 302	Mechanics of Materials	3 (2,1,2)	CE 201	CE 305
CE 305	Mechanics of Materials Lab	1 (0,0,2)	CE 201	CE 302
Total		16		

Level 7				
Course Code	Course Title	Cr. Hr	Requisites	
			Pre-	Coe-
IC 103	The Islamic Economic System	2 (2,0,0)		
MATH 254	Numerical Methods	3 (3,1,0)		
CE 307	Construction Materials	3 (2,0,2)	CE 302	
CE 323	Water Resources Engineering	3 (3,1,0)	CE 320	
CE 360	Structural Analysis (1)	3 (3,1,0)	CE 302	
CE 381	Geotechnical Engineering (1)	2 (2,1,0)	CE 302	CE 382
CE 382	Geotechnical Engineering Lab.	1 (0,0,2)	CE 302	CE 381
Total		17		

Level 8				
Course Code	Course Title	Cr. Hr	Requisites	
			Pre-	Coe-
STAT 324	Engineering Probability and Statistics	3 (3,1,0)		
CE 341	Water Supply and Wastewater Treatment Eng.	3 (2,1,2)	CE 240 CE 323	
CE 330	Traffic Engineering (1)	3 (3,1,0)		
CE 460	Structural Analysis (2)	3 (3,1,0)	CE 360	
CE 370	Reinforced Concrete Design (1)	3 (3,1,0)	CE 307 CE 360	
CE 481	Geotechnical Engineering (2)	2 (2,1,0)	CE 381 CE 382	
Total		17		

Level 9				
Course Code	Course Title	Cr. Hr	Requisites	
			Pre-	Coe-
CE 431	Highway Engineering	3 (3,1,0)	CE3 30 CE 481	CE 432
CE 432	Highway Engineering Lab	1 (0,0,2)	CE 330 CE 481	CE 431
CE 482	Foundation Engineering	2 (2,1,0)	CE 370 CE 481	
CE 404	Management of Engineering Projects	2 (2,1,0)		
CE 4xx	Department Elective (1)	3 (3,1,0)		
CE 4xx	Department Elective (2)	3 (3,1,0)		
CE 496	Senior Design Project (1)	2 (2,0,0)		
CE 499	Cooperative Summer Training	0 (0,0,0)	100 hours excluding PYP hours	
Total		16		

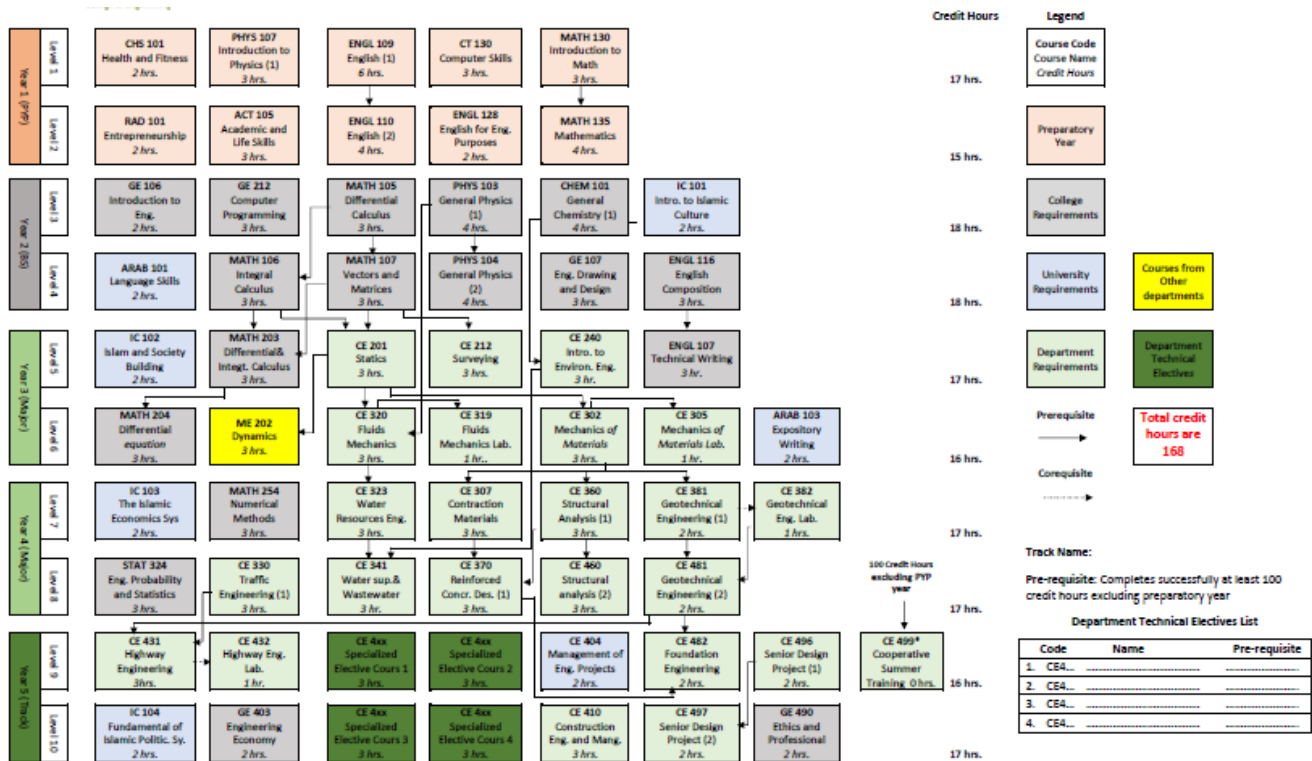
Level 10				
Course Code	Course Title	Cr. Hr	Requisites	
			Pre-	Coe-
IC 104	Fundamentals of the Islamic Political System	2 (2,0,0)		
GE 403	Engineering Economy	2 (2,1,0)		
GE 490	Ethics and Professional Practice	2 (2,1,0)		
CE 410	Construction Engineering and Management	3 (3,1,0)		
CE 4xx	Department Elective (3)	3 (3,1,0)		
CE 4xx	Department Elective (4)	3 (3,1,0)		
CE 497	Senior Design Project (2)	2 (2,0,0)	CE 496	
Total		17		

** PROGRAM IS PRECEDED BY A 2-LEVEL PREPARATORY YEAR

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Civil Engineering Degree Flow Chart



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Student must take at least 12 credit hours with adviser's approval

Track Name: CONSTRUCTION ENGINEERING AND MANAGEMENT

Course Code	Course Title	Prerequisites
CE 411	Introduction to Construction Contracts	--
CE 412	Estimating Construction Cost	--
CE 413	Construction Scheduling	--
CE 414	Construction Management	--
CE 417	Construction Equipment and Methods	--
CE 419	Selected Topics in Construction Engineering & Management	--

Track Name: WATER RESOURCES AND ENVIRONMENTAL ENGINEERING

WATER RESOURCES ENGINEERING

Course Code	Course Title	Prerequisites
CE 423	Hydraulics Structures	CE 323
CE 425	Surface and Groundwater Hydrology	CE 323
CE 426	Water Resources Planning	CE 323
CE 427	Hydraulics of Pressurized Flow	CE 323
CE 428	Hydraulics of Open Channel Flow	CE 323
CE 429	Computer Applications in Water Resources	CE 323
CE 430	Coastal Engineering	CE 323

ENVIRONMENTAL ENGINEERING

Course Code	Course Title	Prerequisites
CE 445	Waste Water Reclamation and Use	CE 341
CE 446	Environmental Impact Assessment	CE 341
CE 447	Computer Aided Design of Water Distribution System	CE 341
CE 448	Computer Aided Design of Sewerage System	CE 341
CE 449	Sanitary Installations and Specifications	CE 341
CE 450	Renewable energy	CE 341
CE 451	Solid waste management and treatment	CE 341

Track Name: TRANSPORTATION ENGINEERING

Course Code	Course Title	Prerequisites
CE 433	Urban Public Transportation	CE 330
CE 434	Railway Engineering	CE 431
CE 435	Airport Engineering	CE 431
CE 436	Traffic Engineering (2)	CE 330
CE 437	Analysis and Design of Pavement Systems	CE 431
CE 438	Transportation Planning	CE 330
CE 439	Pavement Maintenance	CE 431

Track Name: STRUCTURAL ENGINEERING

Course Code	Course Title	Prerequisites
CE 464	Structural Analysis Using Finite Elements	CE 370
CE 466	Bridge Engineering	CE 370
CE 468	Wind and Earthquake Resistant Design	CE 370
CE 470	Reinforced Concrete Design (2)	CE 370
CE 473	Steel Structure	CE 360
CE 475	Pre-stressed Concrete Design	CE 370
CE 476	Advanced Concrete Technology	CE 307
CE 477	Concrete Technology	CE 307

Track Name: GEOTECHNICAL ENGINEERING

Course Code	Course Title	Prerequisites
CE 483	Deep Foundations Engineering	CE 481
CE 484	Geotechnical Engineering in Arid Regions	CE 481
CE 485	Introduction to Rock Mechanics	CE 481
CE 486	Improvement of Geotechnical Materials	CE 481
CE 487	Selected Topics in Geotechnical Engineering	CE 481

For questions, please feel free to contact us at coe.ce@su.edu.sa

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Course Descriptions

College Requirements

MATH 130 Introduction to Mathematics (4,4,0,2): Constants, variables and mathematical expressions, basic operations, laws of indices, brackets, and factorization. Polynomial division, the factor theorem, the remainder theorem. The partial fraction. Solving simple equations, simultaneous equations, quadratic equations, and inequalities. Logarithms and exponential functions and their laws. The binomial series with integer, fractional and negative powers. (4,4,0,2)

GE 106 Introduction to Engineering (3,3,0,0): This course is designed to introduce engineering disciplines and careers and the role of the engineer in society, an understanding of the concepts of innovative thinking and innovation practices, an introduction to problem-solving strategies and the innovation process, an introduction to the design decision-making process, and an introduction to intellectual property.

PHYS 107 Introduction to physics (4,3,2,2): History of physics, Fundamental units and measurement, Velocity and acceleration, Gravity and falling bodies, Vectors, Newton's laws of motion, Balanced and unbalanced forces: equilibrium, Work, energy and power, Laws of conservation of energy and momentum, Rotation, General properties of matter.

MATH 135 Introduction to Mathematics (2) (4,4,0,1). Pre-MATH 130: Areas and volumes; Areas of common shapes, The circle, Volumes, and surface areas of common solids. Trigonometry; Introduction to trigonometry, Trigonometric waveforms, Triangles and some practical applications, Trigonometric identities and equations, Compound angles. Graphs of linear and quadratic equations. The conic sections (Parabola, Ellipse and Hyperbola). Complex numbers, De Moivre's theorem. Introduction to matrices, Types of matrices, Basic operation on matrices, solving system of linear equations using inverse of matrices.

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GE 104 Basics of Engineering Drawing (4,24,0): *Constructional geometry and basics of lettering; Sketching; Orthographic projection; Pictorial and auxiliary views; Dimensioning; Introduction to computer graphics; Engineering applications. Computer-aided design using Auto CAD.*

CHEM 101 General Chemistry (1)(5,4,4,1): *Stoichiometry: SI Units, chemical formulas, the mole, methods of expressing concentration, Calculations based on chemical equations. Gases: laws, kinetic theory, deviation and van der Waals equation. Thermochemistry, Solutions: Type of solutions and laws related, colligative properties. Chemical kinetics: Law of reaction rate, reaction order, factors affecting the rates. Chemical Equilibrium: Relation between K_c & K_p , Le Chatelier's principle and factor affecting equilibrium. Ionic equilibrium: Acid and base concepts, pH calculations of acid, base, and buffer solutions. Atomic Structure: emission spectrum, Bohr's theory de Broglre's hypothesis, quantum numbers, electronic configuration of elements, consequences of the periodic table*

Lab: Discovering salts, detection of acidic radical (anions), checking basic radicals (cations), determining acidic and alkaline parts concentration, heating value (bomb calorimeter)

MATH 105 English for Engineering Purposes (4,4,0,1): *This course is designed to provide students with a secure foundation in the English language used for Engineering purposes. It provides the first-year students with rich, high-frequency technical vocabulary as well as grammar accuracy in Engineering related speaking and writing.*

ENGL 128 English for Engineering Purposes (4,2,4,0): *This course is designed to provide students with a secure foundation in the English language used for Engineering purposes. It provides the first-year students with rich, high-frequency technical vocabulary as well as grammar accuracy in Engineering related speaking and writing.*

MATH 106 Integral Calculus (4,4,0,1). Pre-MATH 105: *Definite integral, fundamental theorem of calculus, the indefinite integral, change of variable, numerical integration. Area, volume of revolution, work, arc length. Differentiation and integration of inverse trigonometric functions. The logarithmic, exponential, hyperbolic and inverse hyperbolic functions. Techniques of integration: substitution, by parts, trigonometric substitutions, partial fractions, miscellaneous substitutions. Indeterminate forms, improper integrals. Polar coordinates.*

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GE 212 Computer Programming (4,2,4,0): This course is designed to provide fundamentals of computers programming for undergraduate students in many engineering disciplines such as mechanical and electrical engineering. Topics include Compilers and numbers of systems; Program structures, program debugging, variables, arithmetic operators, and expressions, access of input/output files, program control using: if-else statement, switch commands, for loops, and while loops, user-defined functions, one- and two-dimensional Arrays, multidimensional arrays, strings and pointers and Engineering Applications.

PHYS 103 General Physics (1) (5,4,2,2): Motion: vectors, gravitational fields, and its applications (measurement of the acceleration of the gravity by the simple pendulum and by the compound pendulum experiment) - applications of Newton's laws (one and two dimensions). Fluid Mechanics: fluid static and fluid dynamics (measurement of surface tension by direct method and by capillary tube experiment) – viscosity (measurement of the coefficient of viscosity experiment) - static equilibrium and elasticity. Conservation of Energy: temperature (measurement of specific heat experiment) – (measurement of the thermal conductivity experiment) – first law of thermodynamics heat engines – entropy and second law of thermodynamics – the kinetics theory of gases – waves – sound waves (measurement of sound velocity experiment)

Lab: Simple pendulum- compound pendulum – Hooke's law – measurement of coefficient of viscosity of liquid- surface tension – measurements of thermal conductivity – measurement of the specific heat of solid bodies.

MATH 107 Vectors and Matrices (4,4,0,1). Pre-MATH 105: Vectors in two and three dimensions, scalar and vector products, equations of lines and planes in space, surfaces, cylindrical and spherical coordinates. Vector valued functions, their limits, continuity, derivatives, and integrals. Motion of a particle in space, tangential and normal components of acceleration. Functions in two or three variables, their limits, continuity, partial derivatives, differentials, chain rule, directional derivatives, tangent planes, and normal lines to surfaces. Extrema of functions of several variables, Lagrange multipliers. Systems of linear equations, matrices, determinants, inverse of a matrix, Cramer's rule.

PHYS 104 General Physics (2) (5,4,2,1). Pre-:PHYS 103: Electrostatics: charge and matter- electric field – Gauss's law – electric potential – direct current – electric circuits (Ohm's law experiment) –

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capacitors (measurement of capacitance of a capacitor). Magnetism: magnetic field (magnetic field experiment) Ampere's law – Biot & Savart law – magnetic materials- Faraday's law of induction. Geometrical optics: reflection and refraction of light (refractive index experiment) - (measurement of magnification factor of the microscope) - fiber optics - dispersion of light – lenses law (determination of the radius of the curvature of lens experiment), (determination of the focal length of the lens experiment).

Lab: Ohm's law – measurement of capacitance of a capacitor – magnetic field - determination of radius of curvature and focal length of a lens - measurement of refractive index of glass – microscope - measurement of light velocity.

ENGL 107 Technical Writing (4,4,0,0): *Types of documents. Principles of organizing, developing, and writing technical information. Report structure and components. Report forms and rhetorical patterns common to scientific and technical Disciplines. Technical writing conversions including headings, illustrations, style, and tone. Extensive writing assignments for various report and document types.*

ENGL 116 English Composition (3,3,0,0): *Introduction , Basics of Writing, Developing Sentences, writing a paragraph: Paragraph Structure, Types of Paragraphs, Writing Definitions, Procedures & Processes, Notes & Summaries, Visuals & Diagrams, Developing Paragraphs into Essays*

MATH 203 Calculus for Engineering Students (4,4,0,1). Pre-MATH 106 & MATH 107: *Infinite series, convergence and divergence of infinite series, integral test, ratio test, root test and comparison test. Conditional convergence and absolute convergence, alternating series test. Power series, Taylor, and Maclaurin series. Double integral and its applications to area, volume, moments, and center of mass. Double integrals in polar coordinates. Triple integral in rectangular, cylindrical, and spherical coordinates and applications to volume moment and center of mass. Vector fields, line integrals, surface integrals, Green's theorem, the divergence theorem, Stoke' theorem.*

MATH 204 Differential Equations (4,4,0,1). Pre-MATH 203: *Various types of first order equations and their applications. Linear equations of higher order. Systems of linear equations with constant coefficients, reduction of order. Power series methods for solving second order equations with polynomial coefficients. Fourier series, Fourier series for even and odd functions. Complex Fourier series. The Fourier integral*

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GE 254 Numerical Methods in Engineering (4,4,0,1). Pre-MATH 107 & GE 212: Linear and Nonlinear Systems of Equations; Concept of Error; Least Square Methods; Function Expansions; Taylor Series; Numerical Integration; Initial Value and Boundary Value Problems for ODE and PDE; Introduction to Finite Difference and Finite Element Methods; Introduction to Optimization Techniques.

STAT 324 Engineering Probability and Statistics (4,4,0,1): Probability and probability distribution. Mathematical expectations of random variables. Discrete and continuous distributions. Sampling distributions. Estimation and testing of hypothesis - Regression and correlation.

GE404 Management of Engineering project (3,3,0,1): This course is designed to provide the concepts and fundamentals of project management and the activities required for the successful completion of projects. In addition, this course is aimed at introducing students to the foundation of project management knowledge, processes, skills, tools, and techniques and the activities required in managing projects such as Work Breakdown Structure (WBS), Gantt Charts, Network Diagrams, and Scheduling Techniques using Critical Path Method (CPM) among others.

GE403 Engineering Economy (3,3,0,1): This course is designed to provide the students with the knowledge in order to understand the basic principles of engineering economy, how time and interest affect money, combining factors, nominal and effective interest rates. Also, the topics of project financing and non-economic attributes, replacement and retention decisions, independent projects with budget limitation, breakeven and payback analysis are thoroughly covered.

GE 490 Ethics and Professional Practice (3,3,0,1): Why Study Engineering Ethics? Professionalism and Codes of Ethics. Ethical Theories. Ethical Problem-Solving Techniques: Line Drawing, Flow Charting. Risk, Safety, and Accidents. The Rights and Responsibilities of Engineers. Whistleblowing. Ethical Issues in Engineering Practice. Bidding and Contract Basics.

Department Requirements

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CE 240 Introduction to Environmental Engineering (4,3,2,1). Pre-CEHM 101: Introduction to environment and environmental engineering, environmental concerns and polices, natural water systems, self-purification mechanisms, water pollution, air pollution, land pollution, dispersion of pollutants, control technology, solid waste management and treatment, renewable energy, noise, light and thermal pollution, measurements and control of pollution, Environmental Impact Assessment for projects.

Lab: Measurements of air pollution (concentration of CO, CO₂, NO_x, SO₂) measurements of water pollution (salinity, turbidity, hardness, softness, COD, BOD, suspended and dissolved matter), measurements in land pollution (concentration of organic and inorganic pollutants), biogas production from organic wastes, wind energy, solar energy.

CE 212 Surveying (5,4,2,1). Pre-MATH 107: Introduction & definitions; surveying types & importance, measurements units; basics of Linear Measurements (tape, optical & electronic); theodolites & angular measurements; levels & leveling operations; applications of leveling (contouring); planimetric (cross-sectional area & volume determination); introduction to total station; setting out; introduction to underground surveying; introduction to photogrammetry & remote sensing.

CE 201 Statics (4,4,0,1). Pre- MATH 106 & MATH 107: Force systems; vector analysis, moments, and couples in 2D and 3D. Equilibrium of force systems. Analysis of structures; plane trusses and frames. Distributed force system; centroids and composite bodies. Area moments of inertia. Analysis of beams. Friction.

CE 302 Mechanics of Materials (4,4,0,1). Pre-CE 201: Stresses and Strains - Introduction and fundamentals of mechanics of deformable materials. Concept of stress and strain and Hooke's law. Concept of failure, yield, and allowable stresses. Factor of safety and allowable stress design. Transformation of stress and strain and Mohr's circle. Stresses in Beams - Normal stress under axial loading and bending. Shear stress and stress due to torsion. Analysis of Determinate Beams and frames - Shear force and bending moment diagrams. Deflections in Determinate Beams and Cantilevers - Deflection of beams; Load deflection relationship, Deflection calculation by double integration, moment area and conjugate beam methods. Buckling of columns.

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CE 305 Mechanics of Materials Lab (1,0,2,0). Pre-CE 201. Co-CE 302: Concepts and fundamentals of Experimental demonstrations of uniaxial deformations and Poisson's effect, beam deflection, slope and curvature, angle of twist and shearing strain in a twisted circular shaft. Column buckling.

CE 320 Fluid Mechanics (4,4,0,1). Pre-CE 201 & PHYS 103: Dimensions and units; fluid properties, pressure at a point, pressure variation with depth, hydrostatic forces on plane surfaces, hydrostatic forces on curves surfaces, buoyant forces, stability of floating bodies, continuity equation, Bernoulli equation, energy equation, momentum equation, Internal incompressible viscous flow and external viscous flow, Introduction to pumps, velocity and discharge measurements, steady pipe flow.

CE 360 Structural Analysis (I) (4,4,0,1). Pre- CE 302: General - Classification of structures; loads and structural design. Concept of static and kinematic indeterminacies. Analysis of determinate truss and arches. Analysis of statically indeterminate beams and frames – Application of force and displacement methods – Use of the theorem of three moment equations, slope deflection and moment distribution methods for the analysis of various types of indeterminate beams, non-sway, and sway frames. Deformation of beams, frames and trusses using virtual work methods.

CE 321 Hydraulics (4,4,0,1). Pre- CE320: Basic principles of hydraulics, laminar and turbulent, losses in pipes (frictional losses, minors' losses), series piping, parallel piping, design of pipe networks, uniform flow in open channel, design of canal cross sections, non-uniform flow, rapidly varied flow and gradually varied flow, hydraulic jump.

CE 322 Hydraulics lab. (1,0,2,0). Pre-CE 321: Determination of dynamic viscosity. Verification of Bernoulli's equation. Flow through small orifices, venture-meters. Impact of water jets on plates. Flow over weirs (rectangular & v-notch). Stability of floating bodies. Losses in pipes and pipe fittings. Velocity measurements in open channels. Uniform open channel flow. Applications of specific energy and specific force principles in hydraulic jumps.

CE 381 Geotechnical Engineering (I) (3,3,0,1). Pre-CE 302. Co-CE 382: Geotechnical Engineering (I) deals with the fundamental aspects of soils starting from their origin to various engineering applications. The course discusses the basic classification, characterization, hydraulic and mechanical properties of soils in depth. The expected outcome of the course is to make the students familiarize themselves with soil

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and to showcase its behavior during various engineering applications such as foundation, retaining wall etc.

CE 382 Geotechnical Engineering Lab. (1,0,2,0). Co-CE 381: Geotechnical Engineering Laboratory focuses mainly on testing properties of soil. This includes Determination of Consistency Limits and Indices, Determination of Specific Gravity (Using Pycnometer), Determination of Field Density of Soil (Sand Replacement Method), Compaction Test (Standard and Modified Proctor Compaction), Permeability Test (Constant and Variable head), Grain Size Analysis (Sieve Analysis), Direct Shear Test, Consolidation Test, Triaxial Compression Test, Unconfined Compression Test.

CE 307 Construction materials (4,3,2,1). Pre-CE 302: Cement, Aggregate and cement concrete: Methods of manufacturing of cement and its chemistry, Types of cement, Hydration mechanism, testing of cement and aggregates, Properties of fresh and hardened concrete and their tests, Introduction to mix design. Conventional and Non-conventional construction materials: Bricks & Concrete blocks Classification and tests. Types of masonry bonds. Timber - Structure and characteristics of hard and soft wood, Engineering applications: Defects, Seasoning, Preservation, Fire proofing. Steel: Types and mechanical properties of various structural steel.

Lab: Tests on cement (consistency, setting time, compressive strength), tests on aggregate (fineness modulus of sand & gravel, bulking of sand, silt content), tests on concrete (slump test, compaction factor, compressive strength, flexural strength, non-destructive testing- rebound hammer & PUNDIT).

CE 481 Geotechnical Engineering (2) (3,3,0,1). Pre-CE 381 & CE 382: The course covers wide range of advanced soil behavior which include Compressibility of soils; consolidation of soils, Shear strength of soils; Slopes Stability; Lateral earth pressures; Retaining walls; Soil improvement: compaction concepts, measurement and field techniques, overview of other soil improvement techniques.

CE 323 Water Resources Engineering (4,4,0,1). Pre-CE 321 & CE 322: Hydrologic cycle and budget, meteorological data, hydrologic processes: precipitation; evaporation; transpiration Infiltration, rainfall, runoff, flood flows, watersheds, hydrograph of basin outflow, flood flow (Flood definitions, Causes of flood, Damages caused by flood, Flood estimation, Flood control methods, Rainwater Harvesting (RWH),

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introduction to groundwater hydrology, groundwater movement, aquifer characteristics, hydraulics of wells, water wells types, wells construction methods.

CE 370 Reinforced Concrete Design (1) (4,4,0,1). Pre- CE 307 & CE 360: *Introduction to reinforced concrete and building codes. Limit states and working stress design philosophy. Flexural behavior of reinforced concrete simple and continuous beams: Design of beams for flexure and shear in accordance with strength design method of SBC-304. Development and splice length of reinforcement. Design of one-way and two-way floor systems. Design of compression members: short column, Columns with uniaxial and bi-axial bending; Long columns, use of design charts. Design of staircase.*

CE 441 Water and Wastewater Networks (4,4,0,1). Pre-CE 321 & CE 322: *This course is designed to provide the concepts and fundamentals of Water Supply and Drainage Systems and this course include the following items: An introduction about water systems, sources, and its quality and the importance of water storage in ground and elevated tanks for residential area, population studies, consumption rates, designing water networks. Moreover, an introduction about the characteristics of collected wastewater defines the sewer systems and its accessories, finally studying the inlet design, and making a case study in water cad and sewer cad programs.*

CE 330 Traffic Engineering (1) (5,5,0,1): *Introduction to Transportation Engineering, Concepts and definitions, Principles of Transportation Planning, Prediction of Demand, Transportation Supply, Introduction to Traffic Engineering, Characteristics of Driver, Vehicles and Pedestrian, Studies of Main Traffic Elements (Speed Studies – Traffic volume Studies – Trip Duration Studies), Relations between Speed, Volume and Density, Highway Capacity and Level of Service, Parking Characteristics, Traffic Control System, Traffic Signals, Traffic Signs.*

CE 460 Structural Analysis (2) (5,5,0,1). Pre-CE 360: *Analysis of Building frames: Vertical Loadings: Approximate methods, Horizontal Loadings: Portal Method, and Cantilever methods. Matrix method of Analysis: Stiffness and Flexibility methods, development of Stiffness and Flexibility Matrices, application to the beams and frames. Moving Loads on Structures: Use of Influence line diagram for determinate and indeterminate beams and frames, Introduction to structural dynamics, Computer applications*

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CE 482 Foundation Engineering (4,4,0,1). Pre-CE 370 & CE 481: *Subsurface investigations, design of shallow and deep foundations including piles and drilled shafts to resist combined loadings; design of permanent and temporary retaining structures; and control of groundwater. Although the practice of foundation engineering requires significant knowledge in the areas of structural analysis, concrete and steel design, as well as construction means and methods, this course will focus on the geotechnical aspects of foundation engineering.*

CE 470 Reinforced Concrete Design-2 (4,4,0,1). Pre-CE 370: *Design of foundation: Isolated and combined footing. Water tank and staging: Introduction, Design criteria, Design of rectangular and circular water tank. Design of retaining walls, Serviceability of RC structures.*

CE 442 Water and Wastewater Treatment Plants (4,4,0,1). Pre- CEHM 101 & CE 240. Co-CE 443: *This course is designed to provide the concepts and fundamentals of water and wastewater treatment technologies by making design for all units inside the plants. The course includes the following items: An introduction about water resources, water quality and its importance for urban communities, population studies, consumption rates, design of water treatment units (Sedimentation, filtration, and disinfection processes). Moreover, an introduction about wastewater works, wastewater characteristics, estimation of wastewater quantities and sources, design of wastewater treatment units (preliminary, primary, biological, and tertiary treatment). Furthermore, the management of sludge.*

CE 443 Water and Wastewater Lab. (1,0,2,0). Pre- CEHM 101 & CE 240. Co-CE 442: *A number of tests in the field of water & wastewater treatment will be taught in this lab. Solution pH, Alkalinity, and Hardness, Total Solids, Total Suspended Solids, and Total Dissolved Solids. Total Volatile Solids and Total Fixed Solids, Turbidity, Jar test, Disinfection residual, Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Microbiological examinations, Total Nitrogen Kadajah, Nitrite, Nitrate, Phosphorus, Heavy metals, and Monitoring of water quality.*

ARCH 239 Architectural Design (3,1,4,0): *This course is the definition of building construction and main building elements. Engineering drawings are required at design and construction levels. Reading architectural drawings. Studies and research problems for engineering projects, such as: feasibility and soil studies. Studying some building elements such as stairs and materials.*

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CE 431 Highway Engineering (4,4,0,1). Pre-CE 212, CE 330 & CE 481: Introduction to Highway Engineering, Highway Travel Characteristics, Economic Analysis of Highways, Highway and the Environment, Highway Planning and Alignment, Geometric Design of Highway (Cross-Section Elements), Intersections and Interchanges, an introduction to pavement structural design, flexible pavement design, Pavement Evaluation and Maintenance.

CE 432 Highway Engineering Lab. (1,0,2,0). Co-CE 431: Aggregate Testes (sieve analysis, water absorption, aggregate impact value, aggregate abrasion value, aggregate crushing value), Asphalt Tests (Bitumen content, ductility of bitumen, penetration of bitumen, specific gravity of bitumen, softening point of bitumen), CBR Test, Marshall Mix design.

CE 477 Concrete Technology (4,4,0,1). Pre-CE 307: Constituent materials of concrete, Types, Properties and Tests as per Code, Characteristic and Target strengths, Equipment and methods for mixing, compacting, curing, Quality control, Non-destructive tests. Chemical and mineral admixtures. Hot weather concreting and the influence of curing. Durability of concrete (permeability, water absorption, sulfate attack, alkali aggregate reaction, chloride ion attack – corrosion, seawater attack, carbonation, acid attack, fire resistance, freeze-thaw resistance, wear resistance). Concrete mix design.

CE 473 Steel Structures (4,4,0,1). Pre-CE 360: Introduction to types of structural steel and steel structures. Concept of LRFD method. Strength and design of tension members with bolted and welded connections. Simple and Staggered Configurations. Threaded Rod Design. Buckling of Columns. AISC column curves. Strength and design of columns. Elastic and Plastic Section Modulus of Beams. Lateral Torsional Buckling of Beams. Design of Beams: Fully Braced, Partially Braced, and Discretely Braced. Design of bolted and welded connections.

CE 410 Construction Engineering & Management (4,4,0,1): Construction documents; Construction project procurement & delivery method; Construction operations and methods; Construction estimating process (Earthwork /Concrete /Masonry /Carpentry /Steel/ Mechanical and Electrical estimating); Contemporary issues in construction management.

CE 499 Cooperative Summer Training (0,0,0,0): Students could go for practical training of 8 weeks (240 hours) at one of the Civil construction companies. Students could acquire new skills, get used to

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creative thinking, teamwork, writing professional reports, practice problem solving and decision-making. The training provides students with an opportunity to enrich their university experience by relating academic studies to practice.

Engineering Courses from other departments

ME 202 Dynamics (4,4,0,1). Pre-CE 201: *Kinematics of a particle: curvilinear motion and relative motion; Kinematics of a rigid body in plane motion: relative velocity relative acceleration, and rotating axes; Kinetics of particles: Newton's 2nd law, work and energy, impulse and momentum, and impact; Kinetics of a rigid body in plane motion: translation, fixed axis rotation, general motion, work and energy, and impulse and momentum.*

Senior Design Projects

CE 496 Senior Design Project (1) (2,0,0,4): *This is the first phase of the capstone design project that is a continual project over three semesters and involves a number of students working as one team tackling different aspects of the civil engineering works. This phase introduces knowledge of ethical responsibilities, public policies, administration, leadership, and contemporary issues related to Civil Engineering practice. It also includes project selection, data collection, identification of real-life constraints (e.g., economy, environmental, global, and contemporary issues), generation of possible design alternatives considering client needs, and preparation of a work plan for implementing and completing the project. All work conducted during the semester must be compiled in a final report.*

CE 497 Senior Design Project (2) (2,0,0,4). Pre-CE 496: *This is the implementation phase of the capstone design project. It includes generation of possible design alternatives considering client needs, and preparation of a work plan for implementing and completing the project. All work conducted during the semester must be compiled in a final report and presentation.*

CE 498 Senior Design Project (3) (2,0,0,4). Pre-CE497: *This is the implementation phase of the capstone design project. It includes analysis of design criteria, parameters, and constraints for the design alternatives to select the preferred option, and design calculation and/or use of experimental tools (if required) to refine design. The final report to be submitted by the team includes project title, description,*

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objectives, and constraints; data and assumption; design alternatives and analysis; details of preferred design analysis and calculations along with pertinent drawings; and summary and conclusions.

Elective Courses

Construction Engineering and Management Track

CE 411 Introduction to Construction Contracts (5,5,0,1): Basics of construction law. Types and selection of construction contracts. Essentials of plans and specifications. Bidding. Awarding and administration of contracts. Liability. Bonding claims. Construction contracts in Saudi Arabia. Introduction to computer applications. Group project.

CE 412 Estimating Construction Cost (5,5,0,1): The estimating process. Conceptual estimation. Range estimation. Detailed estimate. Earthwork. Concrete. Masonry. Carpentry and steel. Mechanical and Electrical estimating. Heavy construction. Profit and bonds. Labor productivity. Computers in estimating. Bidding strategy, Group Project.

CE 413 Construction Scheduling (5,5,0,1): Construction Planning. Construction Scheduling using different CPM techniques. Probabilistic scheduling. Constrained and unconstrained resource allocation. Network compression. Techniques for scheduling repetitive work. Updating construction schedules.

CE 414 Construction Management (5,5,0,1): Construction site organization. Analysis of contract cash flow. Construction economics. Design of a project control system. Site cost control. Role of BOQ in contract valuation.

Graduation Requirements

Student graduates after successfully completing all graduation requirements as given below, according to the degree plan, provided that his cumulative GPA is not less than 2.75. If the student has passed the required courses but his cumulative GPA is lower than 2.75, the College Council, on the basis of the recommendations of the council of the department concerned, is entitled to specify the appropriate courses that the student must complete in order to improve his GPA.

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A student who gets (incomplete (IC)) or who is allowed to have an alternative test in one course or more in his last level of his program, a single request should be send to complete his requirements of graduations. This semester will be his graduation semester. Following are the graduation requirements of a student in mechanical engineering program.

- *Student must satisfy total 168 credit hours.*
- *Student must have completed senior design project.*
- *Student must have completed cooperative (summer) training.*
- *Student must have a minimum cumulative GPA of 2.75 out of 5.*

To receive First honors degree and second honors' degree, the student should achieve a cumulative GPA of 4.75- 5.00 and 4.25-4.74 respectively. The rules of honors' degree are as follows:

- *Student must not have failed in any course in this university as well as in other university.*
- *Student must have satisfied graduation requirements within duration ranging between minimum and maximum limits of completing program study.*
- *Student must have completed 60% or more of the graduation requirements at the university from which he graduates.*

The student will be dismissed if he obtains maximum of three consecutive academic probations as the result of his cumulative GPA being less than 2.75 (out of 5). In order to avoid dismissal, maximum 12 academic semesters are given for a student to achieve the required credit hours and GPA.

Examinations and grades

The council of the faculty to which the course belongs, on the proposal of the department council, determines a grade for the semester work between (40% to 60%) of the final grade of the course, and it includes any practical or oral exams or others.

The degree of the course's semester work is calculated in one of the following two ways:

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The degree of the semester work of the course is calculated with two written tests, or at least one written test with an oral, practical, research or any other types of summer activities.

The council of the faculty to which the course is affiliated, upon the recommendation of the department council, may include the final exam in any course of practical or oral tests, provided that the practical and oral score does not exceed (50%) of the total marks of the final exam. The grades obtained by the student in each course are calculated, as follows:

Degree Centigrade	Appreciation	Appreciation symbol	Weight estimation of (5)
95 to 100	High Excellent	A+	5.00
90 to less than 95	Excellent	A	4.75
85 to less than 90	High Very Good	B+	4.50
80 to less than 85	Very Good	B	4.00
75 to less than 80	High Good	C+	3.50
70 to less than 75	Good	C	3.00
65 to less than 60	High Acceptable	D+	2.50
60 to less than 65	Acceptable	D	2.00
less than 60	Fail	F	1.00

The general estimate of the cumulative GPA upon graduation is based on his cumulative GPA out of (5.00) according to the following:

- *(Excellent): If the cumulative GPA is not less than 4.50.*
- *(Very good): If the cumulative GPA is from 3.75 to less than 4.5.*
- *(Good): If the GPA is from 2.75 to less than 3.7.*
- *(Acceptable): If the cumulative GPA is from 2.00 to less than 2.75.*

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The student may submit to the department a request to re-mark his paper, and the college council that teaches the course may, in cases of necessity, approve the re-marking of the answer papers according to the following rules:

The student submits a request to re-mark the answer papers to the department that studies the course with a mention of the justifications for the request for re-correction, and then submits the request to the College Council, provided that the request does not exceed one month from the end of the final exams period for the semester in which the student wishes to review the answer papers of one of his courses.

The student must not have previously applied for re-marking one of the tests, and his request was proven to be invalid.

A student may not submit a request to re-score more than one course in the semester, and three courses throughout his study period.

In the event of approval of the re-correction, the college council forms a committee of at least three members of the faculty to re-mark the answer sheets, and the committee submits a report to the college council for decision, and the council's decision is considered final.

Registration of Courses

*Students can change their registration by **adding or deleting courses during the first week of the semester** (or in the summer semester), or by deleting some courses according to the controls listed below:*

- 1. **The course to be registered must be within the study plan or approved elective or free courses if any.***
- 2. **The course to be registered should not conflict with another course in the academic schedule or in the final exams schedule.***
- 3. **The course to be registered does not have a previous requirement.***
- 4. **Seats are available in the course section for which registration is required.***
- 5. **If the course to be deleted is an accompanying requirement with another course, the student is not entitled to delete it except by deleting the two courses together.***

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6. *The minimum academic load for a student is (12) credits and the maximum are (22) credits in proportion to the student's cumulative average attached (C).*
7. *With the approval of the department and college councils, the upper limit of the academic load for the student expected to graduate may be increased by no more than three credit hours above the student's workload, attached (C).*
8. *The registration process is done automatically without the need for a request from the students if they did not have notes before the beginning of the semester according to the ideal plan for the student's academic program, starting from the lowest levels of the study plan, as permitted by the students' academic status.*
9. *When it is not possible for the students to register for the academic load from the courses of the next level (due to a conflict or failure to finish the previous requirement or to finish all the courses of that level), the students are allowed to complete their study load from the courses of the following levels allowed, and the opportunity is opened for the students to register any courses in the study plan Considering the order of levels unless it requires the study of previous subjects that the students have not studied, and if it is not possible to complete their study units, they will be satisfied with the study units that were available to them even if their number is less than the minimum.*
10. *The students are not allowed to delete any course from the zero level.*
11. *The number of levels allowed to be registered for courses at three consecutive levels of study.*
12. *Students of the preparatory year and first level in the rest of the faculties are not allowed to add or delete.*
13. *The student is transferred from his level to the next level if he successfully passes all the courses of that level.*
14. *To view the registration steps (deletion and addition) in the electronic system (the portal electronic) or scan the following code:*

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Deletion and addition through the electronic portal

Registration for the Summer Semester

1. The college council determines the courses that the college wishes to offer in the summer semester, provided that this is five weeks before the end of the second semester, and coordination is done with the Deanship of Admission and Registration in this regard.
2. The upper limit of the number of academic credits allowed to be registered during the summer semester is (6) credit units and (9) credit hours for a student expected to graduate.

Attendance

1. A regular student must attend lectures and practical lessons of all kinds, and he is denied entry to the final exam if his attendance rate is less than (75%) of the lectures and practical lessons of the types specified for each course during the semester or academic year for annual courses. Absence, a failure in the course, and the grade of the semester work is confirmed, and a deprived grade (H) or (DN) is noted for it.
2. The College Council may, on the recommendation of the department council to which the student belongs, or whomever he delegates, with exception, lift the deprivation and allow the student to enter the test, provided that the student provides an excuse accepted by the council, provided that

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attendance is not less than (50%) of the lectures and practical lessons specified for the course on the acceptable excuse must be presented before the start of the general preparation exams.

- 3. A student who is absent from the final exam will have a score of zero unless he presents an acceptable excuse and the College Council recommends his acceptance, and it is approved by the authorized person.*

Absence from the Final Exam

The student will be executed for absent the final exam or one of his courses and will be allowed to take an alternative exam if the following conditions are met:

- 1. To submit an excuse before the end of the last day of his course exams.*
- 2. The college council accepts the excuse submitted by the student who fulfills the conditions.*
- 3. The alternative test and its result will be monitored within the first two weeks of the beginning of the next semester as a maximum.*
- 4. The student is given the grade he/she gets, including his/she grades in the semester work.*
- 5. Compelling excuses and in the following cases of extreme necessity:*
 - a) Cases of death of relatives of the first, second and third degree for a period of five days from the date of death.*
 - b) Accidents and severe illness cases that require hospitalization.*
 - c) Birth and its rulings.*
 - d) Some other cases that the committee concerned with examining excuses in the college deems to be compulsive cases and do not fall under what was mentioned above and these cases must be sent to the Dean of Scientific Affairs.*

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Study Withdrawal

- 1. The student may withdraw from continuing to study a semester without being considered a failure, at least three weeks before the start of the final exams. As for the students of colleges that apply the school year system, they may withdraw for the school year before the end of the thirteenth week of the university year at least, taking into account the calculation of the results of the semester courses and the student succeeded in them, and the student is given a grade of (A) or (W), and the withdrawal period is calculated from the period required to complete the graduation requirements.*
- 2. The student is allowed to fully withdrawal for the summer semester during the first three weeks from the beginning of the semester after submitting an acceptable excuse and the approval of the college and the Deanship of Admission and Registration.*
- 3. The semesters of withdraw should not exceed two consecutive semesters or three non-consecutive semesters, as for students of faculties that apply the academic year system, it is not permissible to withdraw for two consecutive years, and the years of withdrawal should not exceed two non-consecutive academic years during the student's stay at the university and then his enrollment is folded after that. The Dean of Admission and Registration has an exception to this.*

A student may withdraw from one or more courses in a semester without being considered a failure in accordance with the following controls:

- 1. Student may withdrawal for a maximum of four academic courses during the period of his stay at the university.*
- 2. The number of academic credit hours remaining in the semester shall not be less than twelve credit hours.*
- 3. To present an acceptable excuse at least three weeks before the start of the final exams.*
- 4. Students of colleges that apply the academic year system may withdrawal for short courses before the start of exams equivalent to one-third of the course duration.*

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- 5. The Rector of the University or his authorized representative may make an exception in the event of extreme necessity, provided that the period for submitting the withdrawal request does not exceed the beginning of the final exams for general preparation courses, and the student is given a grade of (A) or (W) in the course from which he withdrew.*
- 6. Students of the preparatory year may not withdrawal for a course throughout its study in the preparatory year.*
- 7. To withdraw from a course or semester through the portal or you can scan the following code:*



To request to withdraw from a course



To request to withdraw from a semester

Study Postponement

It means the student is not registering for courses for the semester to be postponed, at the request of the student. The postponement period is not counted within the regular period of graduation. The postponement controls as follows:

- 1. The student may submit a request to postpone the study before the start of the semester for an excuse accepted by the dean of the college to which the student belongs or his representative, provided that the postponement period does not exceed two consecutive semesters or three non-consecutive semesters.*
- 2. Students of faculties that apply the system of the academic year may not be postponed for two consecutive years, and the period of postponement may not exceed a maximum of two non-consecutive years during his stay at the university and then his registration is folded after that.*

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3. *The rector of the university or his authorized representative, in case of necessity, may make an exception to this. The postponement period shall not be counted within the period necessary to complete the graduation requirements.*
4. *Female students accompanying their husbands on scholarships outside the Kingdom and students accompanying their wives on scholarships outside the Kingdom. An exception is allowed for the male/student upon the approval of the College Council after the recommendation of the relevant department council to postpone the study for a maximum of five consecutive years, provided that the student submits this before the beginning of each semester according to for the academic evaluation, provided that evidence of the scholarship student's accompaniment from the official authorities is present. The student whose postponement period is more than five years due to the scholarship's escort is considered to have dropped out of the study, and the previous study units are not counted for him/her, and if he/she wishes to study, he applies to the university as a new student according to the admission requirements.*
5. *The student can request a study postponement through via scanning the following barcode service guide:*



To request a study postponement

Dropping out of university

If a regular student stop studying for four weeks after the semester begins without requesting a withdrawal from the university.

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University Drooping out Service Guide

This service enables the student to submit a request to withdraw from the university.

Important notes:

A withdrawn student cannot apply to the university as a new student until two years have passed from the date of his withdrawal.

- 1. A withdrawn student has the right to submit a request for re-admission at the university within 3 semesters for students of the Applied College and six semesters for the rest of the colleges from the date of his withdrawal, and based on the study and examination regulations, the student cannot be re-admitted until after one semester of the semester in which he applied for re-admission.*

Example: A withdrawn/discontinued student who applied for reinstatement during the summer semester of 1442 AH and his request was approved, will not be re-enrolled until the second semester of 1443 AH.

To apply for the service, you can refer to the guide via scanning the following barcode:



**To submit a request to withdraw
from the university**

Re-enrollment

A student whose enrollment has been closed may apply to his college for re-enrollment with his number and record before the interruption, according to the following rules:

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- 1. To apply for re-enrollment within four semesters (or two academic years for faculties that apply the academic year system) from the date of closing the enrollment, and the university director or whomever the delegates may make an exception if there are convincing reasons.*
- 2. That the college council, based on the recommendation of the department council to which the student belongs, agree to re-enroll him/her.*
- 3. The student will be re-enrolled after one semester of submitting and approving his application.*
- 4. If four semesters or more have passed since the student's enrollment has been terminated (or two academic years for faculties that apply the academic year system), he can apply to the university as a "new student" without referring to his previous academic record, provided that he meets all the admission requirements announced at the time, and the University Council has the right to make an exception for that.*
- 5. A student whose registration has been folded may not be re-enrolled more than once, and the University Council may make an exception in case of necessity.*
- 6. The deadline for implementing re-enrollment is the end of the first week of the beginning of the semester.*
- 7. A student who withdraws from the university is treated as a student whose registration has been folded.*

Dismissal from University

First: The student is dismissed from university for the following causes:

- 1. If student receives three consecutive warnings at most for dropping his cumulative average from the minimum (2.75) and the department and college councils may give the student an opportunity for someone who can raise his/her cumulative average according to the following conditions:*
 - a) The reason for the stumbling should be acceptable to the college council based on the department council's recommendation.*

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- b) The student should be able to raise his cumulative GPA to (2.75) when the student gets the opportunity.*
- c) That there has been an improvement in the student's performance in the last two semesters and does not fall within that summer semester.*

***Second:** If he does not complete the graduation requirements within a maximum period of half the period prescribed for his graduation in addition to the duration of the program, and the department and college councils may give an exceptional opportunity to the student to complete the graduation requirements with a maximum that does not exceed twice the original period specified for graduation in accordance with the conditions set forth in the first case.*

***Third (A):** The rector of the university or his authorized representative, based on the recommendation of the department and college councils, may give students who have been dismissed due to the exhaustion of twice the duration of the program an opportunity that does not exceed two semesters at most, according to the conditions mentioned in the first, in addition to the fact that the student still has to graduate courses that can be passed in duration not to exceed two semesters.*

***Third (B):** The Rector of the University or his authorized representative may give students dismissed due to warnings an opportunity not to exceed two semesters according to the following:*

- 1. The student is given the first opportunity (first semester) based on the recommendation of the department and college councils and in accordance with the conditions set out in the first.*
- 2. The student is given the second and last opportunity "Semester Two, based on the recommendation of the department and college councils and the approval of the Education Affairs Committee, and the approval of the person in authority, in accordance with the conditions set forth in firstly, in addition to the number of hours remaining in the student's plan to graduate not exceeding (20) hours Accredited, and that re-enrollment should take place after a semester of submitting and approving his application.*

***Fourth:** A health college student who is registered for courses in the annual system is dismissed if he is unable to raise his cumulative average to (2.50 out of 5) after being warned and given a full academic year.*

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Fifth: The summer semester is not counted among the semesters in which warnings are given to the student in the event of a drop in the average.

A student who has been dismissed from the university may apply for an additional opportunity, so that the application will be studied by the college, according to the following conditions:

No more than (4) semesters have passed since the student's absence/withdrawal.

Approval of the department and college council.

An additional opportunity is not granted to those who have received (6) warnings or more, and an additional opportunity cannot be granted to those who have received (5) warnings and have more than 20 hours left to graduate.

To request an additional opportunity through the online portal, or scan the following barcode:



To request an additional opportunity

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Civil Engineering Department
College of Engineering



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Admission

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The Programs of the College of Engineering

College	Program			Section	
				Boys	Girls
Engineering	Civil Engineering	Electrical Engineering	Mechanical Engineering	√	---

Introduction to rules for admission to Shaqa University

The Deanship of Admission and Registration determines the dates of admission, its procedures, the comparison between applicants, the announcement of the results and the notification of accepted students, as well as the mechanisms of admission tests and personal interviews, the number of seats available and the majors offered for admission based on what the department and college councils suggest.

Admission of a freshman to the University

- 1. The applicant must have a high school diploma or its equivalent from inside or outside the Kingdom of Saudi Arabia.*
- 2. No more than five years have passed since the applicant obtained a high school diploma or its equivalent.*
- 3. The applicant must successfully pass any test or personal interview deemed by the College Council.*
- 4. The applicant must be medically fit.*
- 5. The applicant should not be dismissed for academic or behavioral reasons from any university or any educational institution. If the information provided is found to be incorrect, his admission will be cancelled.*

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6. *Obtaining the result of the general aptitude test is a basic requirement for all applicants, and for health, engineering and computer faculties, and an achievement test is added.*
7. *No one who is on the job shall be accepted except by a dispatch decision from his employer.*
8. *The applicant should not have any health problems that hinder him from exercising his professional job (especially in medical, health, engineering, and education colleges).*

Freshman Admissions Guidelines Students at Shaqa University can be found by scanning this barcode:



**University admissions guidelines for
bachelor's and diploma programs**

After being accepted to the university, each student is given a university card to prove his identity, and each student is required to carry this card and present it upon request, especially when taking exams, proving identity in the university campus, or borrowing from the library, and if this card is lost, the student is given another alternative card after paying fees. Issuance of a 20-riyal-worth lost university card.

The admission criteria for Applicants

1. *For the health, engineering, computer, and information technology majors, all the above conditions are considered for admission fulfilling by the applicants. The Deanship of Admissions and Registration prepare a merit list of all applicants based on the following weights to the three types of scores:*
 - *High school certificate score (40%)*
 - *Aptitude test score (30%).*

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- *Summative assessment score (30%).*

Applicants are offered admissions in a college of their preferences based on merit list subject to the availability of seats. Once seats are filled in a particular college, the admission to that particular college is closed and remaining students have to make their choices from other colleges.

2. *For the rest of the colleges, the comparison between applicants in the high school test and the aptitude test score is made according to the following equivalent percentage (60% of the general cumulative average in high school, and 40% of the general aptitude test score).*

International Students

1. *To have a high school diploma or its equivalent from inside or outside the Kingdom.*
2. *No more than five years have passed since he obtained his high school diploma or its equivalent.*
3. *To be medically fit.*
4. *To successfully pass any test or interview deemed by the College Council.*
5. *The student should not be dismissed for academic or behavioral reasons from any university or educational institution, and if the information provided is found to be incorrect, his acceptance will be cancelled.*
6. *The student should not have obtained another scholarship from an educational institution in the Kingdom.*
7. *To have an aptitude test score.*
8. *To have a high school diploma in case of applying to the Colleges of Engineering and the College of Computer and Information Technology.*
9. *To have obtained (80% or more in the equivalent percentage).*
10. *To have obtained (85% or more of the composite percentage).*
11. *The secondary school percentage must be 85% or more in the case of applying to faculties of education.*

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12. *The student must be a regular resident in the Kingdom.*

13. *The student must not be less than 17 years old and not more than 25 years old.*

Required documents:

- *Copy of high school diploma.*
- *Copy of the student's valid residence permit.*

Note: *After the final acceptance, the original high school diploma and the original residence permit shall be brought for matching.*

Electronic Academic Services Provided by the university.

Online application

Shaqa University offers electronic services for the students at the University, as shows in the following website link and barcode: [Electronic services](#)



**Electronic academic services provided
Shaqa University for students**

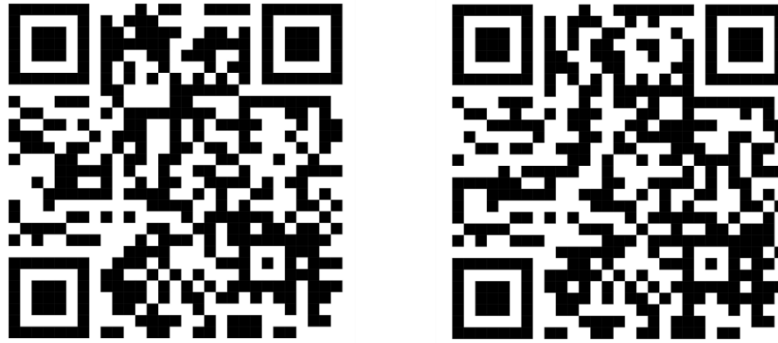
Admission and Registration at Shaqa University is one of the most important deanships at the university, and it is regarded as the engine and primary orderly for the academic process from the technical perspective. It is regarded as the link between the university and the community, as well as between professors and students from the beginning of their university life and continuing to pursue them until their graduation.

The Deanship of Admissions and Registration offers electronic academic services via the website link and barcode below.

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Electronic Services for subnets



Electronic academic services provided by the Deanship of Admission and Registration

The Deanship also provides many administrative, technical, and electronic services such as a registration system, an electronic admission system, an academic follow-up system, the monitoring of results, the graduation of students, the disclaimer and student statements, and also to publish the rules, instructions, and dates of admission and registering, as well as other things of what the Deanship offers and seeks to provide with diligence with the benefit of modern technologies and to work on the development of the system of the work continues to improve the provision to the community, students, reviewers, and professors of the services.

It also seeks to facilitate the support processes of the university's academic system, which is one of the largest and most important systems in the university and the most needed for modernization and development in terms of program establishment and maintenance or modification in response to academic changes within the university to keep abreast of the latest technical developments and to link them with the Deanship staff, which contributes to the development of the university.

After the student's admission to the College of Engineering

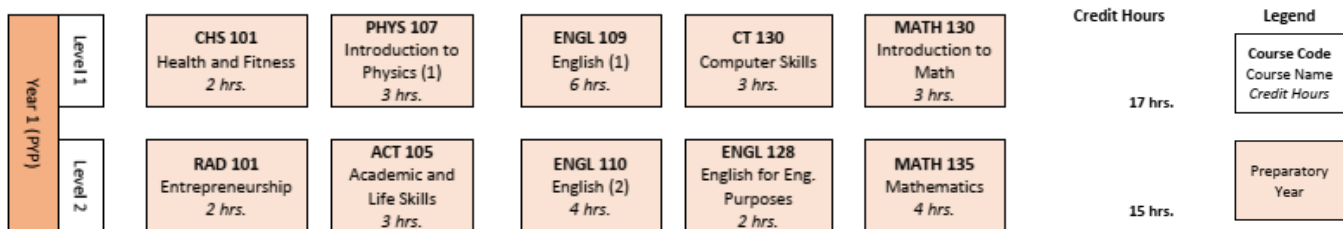
In general, students applying to the College of Engineering are centrally admitted to the preparatory year by the deanship of admission and registration. The number of admitted students for each upcoming year is decided by the Shaqra University council based on the recommendations of the faculties' councils. The University Council determines the number of students who can be accepted into the College of

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Engineering based on the college capacity each year. The Deanship of Admission and Registration sends a list of accepted students to the College of Engineering. During the first academic year, students accepted into the College of Engineering take general courses (Preparatory Year, PY).

The preparatory year aims to improve students' skills by providing intensive English courses as well as other courses that improve communication and computer skills. The Preparatory Year requires **32 credit hours** over two semesters. The following diagram depicts the modules studied during the preparatory year.



After completing the preparatory year, students on the Engineering track will be admitted to the College of Engineering based on two criteria: PY GPA and College capacity. Before being admitted to any of the college's three departments, students must complete third and fourth level, which includes courses, some basic and general courses (see table below).

Level 3				
Course Code	Course Title	Cr. Hr	Requisites	
			Pre-	Coe-
IC 101	Introduction to Islamic Culture	2 (2,0,0)		
MATH 105	Differential Calculus	3 (3,1,0)		
CHEM 101	General Chemistry(1)	4 (3,1,2)		
PHYS 103	General Physics (1)	4 (3,1,2)		
GE 212	Computer Programming	3 (2,0,2)		
GE 106	Introduction to Engineering	2 (1,0,2)		
Total		18		

Level 4				
Course Code	Course Title	Cr. Hr	Requisites	
			Pre-	Coe-
ARAB 101	Language Skills	2 (2,0,0)		
MATH 106	Integral Calculus	3 (3,1,0)	MATH 105	
MATH 107	Vectors and Matrices	3 (3,1,0)	MATH 105	
PHYS 104	General Physics (2)	4 (3,1,2)	PHYS 103	
GE 107	Engineering Drawing and Design	3 (1,0,4)		
ENGL 116	English Composition	3 (3,0,0)		
Total		18		

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Procedures for Student's Admission to the Civil Engineering Department

The number of students admitted to the Civil Engineering Department is determined by the Department Council and approved by the College Council. All students admitted to the Civil Engineering Department spend four years (eight semesters) studying various courses covering college requirements, core courses, and elective courses. To graduate in civil engineering, the student must typically complete 168 credits.

The Civil Engineering program's registration procedure is determined by the student's desire. The program selection registration form is distributed to 4th level students in order for them to select their desired college program. The student must meet the following requirements to be admitted to the Civil Engineering Program.

The registration procedures for the departments are as follows:

- 1. The department council determines the department's student absorptive capacity each year.*
- 2. The fourth level students fill out the registration form (see appendix: Specialization selection form)*
- 3. The student's first desire is chosen.*
- 4. If the number of students desiring to join the program exceeds the number specified for the program, the lower-rate students are moved to second desire.*
- 5. According to the decision of the College Educational Affairs Committee:*
 - a) That all students who pass the third and fourth level courses, as well as the remaining students have one, two or three courses, provided that all of the remaining three courses are not from courses (MATH 105, MATH 106, MATH 107, Phys 103, and PHYS 104). And deprived of assignment to the departments of students who have remaining three courses, all from the previous group, as well as the remaining of them more than three courses.*
 - b) Students who meet the previous conditions are allocated according to their initial desire and within the limits of the capacity specified by the department councils. In the event that the number of students desiring in one of the departments exceeds its capacity, a comparison is made between them according to their cumulative average, and the rest of the students are allocated to their*

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second or third wish according to the number of students desiring in other departments and their cumulative rates.

- c) *The minimum number of students in departments should be not less than 6 students, and in the event that this number of students does not apply to one of the departments as a first choose, the College Vice Dean for Educational Affairs or the Committee based on allocating students has the right to enroll students with Lower rates and those desiring the higher density sections to the less dense sections until the minimum is met in this section.*

Transfer Students

First: The student may, after the approval of the head of the department and the dean of the college to which the student wishes to transfer, accept his transfer from outside the university according to the following controls:

1. *The student must have studied as a regular student at an accredited college or university and must not be affiliated or distance studying.*
2. *The student must not be dismissed from the university he is transferring from for disciplinary or educational reasons.*
3. *The student must have spent at least two semesters at the university from which he wishes to transfer, provided that the number of academic units registered in his academic record for the two semesters shall not be less than (24) units.*
4. *The student must have passed the preparatory year for the majors that require the preparatory year.*
5. *The cumulative average of the student upon transfer must not be less than:*
 - *(4.50) out of (5.00) for the Faculty of Medicine.*
 - ***(4.00) out of (5.00) for the College of Engineering or Pharmacy.***
 - *(4.00) out of (5.00) for the College of Applied Medical Sciences.*
 - *(3.75) out of (5.00) for the College of Computer and Information Technology.*

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- *(3.00) out of (5.00) for the Faculties of Sciences and Arts, Education, Sciences and Humanities, and Business Administration.*
- *(2.00) out of (5.00) for Community College.*
- 6. *That the student's major is equivalent to the major into which he desires to transfer.*
- 7. *The student at Shaqra University must study at least 60% of the graduation requirements.*
- 8. *The student must submit a transfer request before the start of the semester in which he wishes to transfer, according to the academic calendar of the university.*
- 9. *Provides all documents to the new student, in addition to the original academic record of the student from the university from which he is transferred.*
- 10. *Availability of vacant seats in the college to be transferred to, according to the capacity.*
- 11. *The transfer applicant must not have withdrawn, dropped out of studies, or been expelled for educational or disciplinary reasons at his university.*
- 12. *Any other conditions determined by the College Council or the Deanship of Admission and Registration.*

To request a transfer to the university, please scan the following barcode:



**To request a transfer from outside
to Shaqra University**

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Course Equivalency

The College Council will equalize the courses that the student has studied outside the university and transferred to Shaqa University based on the recommendations of the departments that offer these courses:

- 1. The student's average in the courses to be equivalent must be at least a good grade.*
- 2. The number of hours in the course to be equivalent must be equal to or more than the number of hours of study at Shaqa University, and the college may consider exceptions to this condition, provided that the course is less than a maximum (one hour).*
- 3. The course content to be equalized must be at least (70%) identical to the course content at Shaqa University.*
- 4. The college may recommend evaluating the percentage of the course content as appropriate for the university.*
- 5. To request the equivalency of internal courses or external courses through the electronic portal, please scan the following code:*



**To request the equivalency of
internal courses**



**To request the equivalency of
external courses**

***Note:** The student must coordinate with his academic advisor and department before submitting the equivalency request to find out the courses that can be equivalency and submit the request correctly to avoid not approving the request, while emphasizing that this service is for internal equivalencies only or*

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equivalencies for courses that were studied outside the university (for transfer students or visitors) it has a separate service which is the external equation service.

Visiting Student

First: A Shaqa University student, who wishes to study as a visitor at another university during the first, second, or summer semester, must meet the following conditions:

- 1. The student must have spent at least one semester, and the number of credits registered in his academic record should not be less than (16) credits prior to his request to study as a visiting student.*
- 2. The approval of the department and the college, to which the student belongs, and the Deanship of Admission and Registration to allow him to study as a visiting student with specifying the courses he will study. The college has the right to require obtaining a certain rate to equal the course, and the study is directed to the study by an official letter from the Deanship of Admission and Registration of the university to be studied.*
- 3. The courses to be studied outside the university are not available for registration in the same college as the student, with the exception of those who have an excuse accepted by the college council.*
- 4. A preparatory year student may not study any preparatory year program course as a visiting student at any other university or branch of the university.*
- 5. The maximum total of credits that can be calculated from outside the university is (25%) of the total graduation credits from Shaqa University.*
- 6. The student must provide the Deanship of Admission and Registration with his results obtained immediately after the end of the exams and the issuance of the results. If he does not submit his results, he is considered suspended, with the exception of the summer semester.*
- 7. The monthly stipend is paid to the visiting student, if he is entitled to it, after submitting his results to the college and equivalency of the courses he studied and submitting it to the Deanship of Admission and Registration.*

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8. *The study should be at a recognized college or university.*
9. *To request a visit to other university, please scan the following barcode:*



**To request a visit to other
university**

Second: A student from another university who wishes to study as a visiting student at Shaqa University:

1. *The student must have spent at least one semester, and the number of credits registered in his academic record should not be less than (16) credits prior to studying as a visiting student.*
2. *That the student obtains a prior written approval from his university to study as a visiting student at Shaqa University, specifying the courses that the student will study at Shaqa University.*
3. *The student must obtain the approval of the Deanship of Admission and Registration and the college in which he wishes to study as a visitor at Shaqa University.*
4. *The maximum number of semesters that the student is allowed to study as a visitor (two terms), and the Dean of Admission and Registration may make an exception.*
5. *The courses are registered to the student by the Deanship of Admission and Registration, considering all the registration controls for courses.*
6. *A visiting student is not entitled to request housing at Shaqa University.*
7. *No stipend is given to the visiting student from Shaqa University.*

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8. *To request a visit from other university to Shaqa University, please scan the following barcode:*



**To request the equivalency of
external courses**

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Facilities

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List of laboratories and related taught and served courses.

No.	Room No.	Laboratory	Max. capacity	Course taught	Served Courses
1.	F-003	Surveying LAB	15	CE 212	CE 212 CE 496 CE 497
2.	F-013	Environmental Engineering LAB	10	CE 443	CE 240 CE 443 CE 496 CE 497
3.	G-014	Geotechnical Engineering LAB	20	CE 382	CE 381 CE 382 CE 496 CE 497
4.	G-017	Highway Engineering LAB	16	CE 432	CE 431 CE 432
5.		Construction Materials LAB		CE 307	CE 307 CE 477 CE 496 CE 497
6.	G-023	Computer LAB	25	ARCH 239	ARCH 239 CE 370 CE 496 CE 497
7.	G-161	Fluid Mechanics LAB	15	CE 319	CE 319 CE 320 CE 496 CE 497
8.	G-189	Structural Analysis LAB	10	CE 360	CE 201 CE 360

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List of laboratories equipment

Geotechnical Lab

Equipment Information

S. No.	Name	Qty	Description of experiments	Related course
1	Liquid limit (manual & automatic)	1	Liquid limit test	CE 381 & CE 382
2	Triaxial test (1700 & 3500)	1	Shear Strength	CE 381 & CE 382
3	Proctor test	1	OMC & $\gamma_{d(max)}$	CE 381 & CE 382
4	Direct Shear test	1	Shear Strength	CE 381 & CE 382
5	Automatic consolidation test (10kN)	1	Consolidation and Swelling	CE 381 & CE 382
6	Unconfined compression tester (10kN)	1	Compressive Strength	CE 381 & CE 382
7	Digital Sieve Shaker (30 cm & 20 cm)	1	Sieve Analysis	CE 381 & CE 382
8	Sand Cone Device	1	In situ Density	CE 381 & CE 382
9	Pocket Penetrometer ($0.45kGf/cm^2$)	1	Penetration resistance	CE 381 & CE 382
10	Plaster Extensometer	1	Expansion	CE 381 & CE 382
11	Shrinkage Measuring Device	2	Shrinkage Test	CE 381 & CE 382
12	Hubbard Specific gravity bottle (25 & 50 ml)	1	Specific Gravity	CE 381 & CE 382
13	Impact Fork test set	1	Impact Test	CE 381 & CE 382
14	Core Cutter Test	1	Dry Density	CE 381 & CE 382
15	Permeability Test Equipment	1	Permeability	CE 381 & CE 382

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Fluid Mechanics lab

Equipment Information				
S. No.	Name	Qty	Description of experiments	Related course
1	Flow Measurements	1	Bernoulli Experiment	CE 319 & CE 320
2	Jet Impact	1	Jet Impact	CE 319 & CE 320
3	Orifice Meter	1	Flow through Orifice	CE 319 & CE 320
4	Centrifugal Pump Test	1	Efficiency of a pump	CE 319 & CE 320
5	2.5 m Flow Channel	1	Open Channel flow	CE 319 & CE 320

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Construction Materials Lab

Equipment Information				
S.No.	Name	Qty	Description of experiments	Related course
1	Compression Testing Machine (2000kN Capacity)	1	Compressive strength of cement, cubic concrete , splitting tensile strength of concrete	CE 307
2	Concrete Cylindrical, Needle and plate vibrator	1	Consistency of concrete	CE 307
3	Compacting Factor Apparatus	1	Workability of fresh concrete	CE 307
4	Flexure Testing Machine for mini- Specimen and Beams	1	Flexural Strength of cubic concrete	CE 307
5	Slump Test apparatus	1	Workability of fresh concrete	CE 307
6	Vicat Apparatus	1	Consistency of standard cement paste, setting time	CE 307
7	Le Chatelier Test Apparatus	1	Soundness of cement	CE 307
8	Water Absorption test on aggregate	1	Absorption of aggregate	CE 307
9	Auto Sieve Shaker (15 & 30 cm)	1	Particle size	CE 307
	a. 3# Rebound Jammer			
10	b. Ultrasonic pulse velocity test	1	Non-Destructive testing of concrete	CE 307
11	Bulking of Sand equipment	1	Bulking of fine aggregate	CE 307
12	Aggregate crushing equipment t	1	Aggregate crushing value	CE 307

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Highway Engineering lab

Equipment Information

S. No.	Name	Qty	Description of experiments	Related course
1	Los Angeles	1	Abrasion Test	CE 431 & CE 432
2	Impact Value	1	Impact Value test	CE 431 & CE 432
3	Water Absorption test on aggregate	1	absorption of aggregates	CE 431 & CE 432
4	Auto Sieve Shaker (15 & 30 cm)	1	Particle Size	CE 431 & CE 432
5	Aggregate Crushing equipment	1	Aggregate crushing value	CE 431 & CE 432

Surveying Lab

Equipment Information

S. No.	Name	Qty	Description of experiments	Related course
1	Digital Theodolite	1	Determination of angles	CE 212
2	Digital Levelling	1	Leveling operation	CE 212
3	Total Station	1	Traversing	CE 212
4	Inclinometer	1	Measurements of angle	CE 212
5	Magnetic Compass	1	Measurements of angle	CE 212

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Structural Analysis Lab

Equipment Information				
S.No.	Name	Qty	Description of experiments	Related course
1		1	Bending of beams	CE 360 & CE 460
2		1	Behavior of two hinged/pinned arch	CE 360 & CE 460
3		1	Deflection of beams and cantilever	CE 360 & CE 460
4		1	Deflection of curved beams	CE 360 & CE 460
5		1	Studying the stress due bending	CE 360 & CE 460
6		1	Behavior of three hinged/pinned arch	CE 360 & CE 460
7		1	Behavior of torsion	CE 360 & CE 460
8		1	Behavior of pin jointed trusses	CE 360 & CE 460
9		1	Behavior of fixed arch	CE 360 & CE 460

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