

Curriculum for Associate Degree Program in Civil Engineering Specialization

The curriculum of associate degree in “Civil Engineering” specialization consists of (72 credit hours) as follows:

Serial No.	Requirements	Credit Hours
First	University Requirements	12
Second	Engineering Program Requirements	17
Third	Specialization Requirements	43
Total		72



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**The curriculum of associate degree
in
Civil Engineering Specialization**

First: University Requirements (12 credit hours) as follows:

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
22001101	Arabic Language	3	3	-	
22002101	English Language	3	3	-	
21901100	Islamic Culture	3	3	-	
21702101	Computer Skills	3	1	4	
Total		12	10	4	

Second: Engineering Program Requirements (17 credit hours) as follow:

Course No	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20201111	Engineering Workshops	1	-	3	-
20204111	AutoCAD	2	-	6	-
20506111	Occupational Safety	2	2	-	-
21301111	General Mathematics	3	2	2	-
21302111	General Physics	3	2	2	-
21302112	General Physics Laboratory	1	-	3	-
21702111	Communication Skills and Technical Writing	3	2	2	22002101
20201121	Engineering Materials	2	2	-	-
Total		17	10	18	

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Third: Spatiality Requirements (43 credit hours) as follows:

Course No.	Course Title	Credit Hours	Weekly Contact Hours		Prerequisite
			Theoretical	Practical	
20104111	Building Materials	3	3	0	
20104112	Building Construction	3	2	2	20104111
20102111	Surveying 1	3	3	0	
20102112	Surveying 1 Lab	2	0	6	20102111*
20104181	Statics	2	2		21302111*
20204121	Strength of Materials	2	2	0	20207121 or 20104181
20204122	Strength of Materials Lab	1	0	3	20204121*
20104121	Civil Engineering Drawing	2	0	6	21702101*
20109111	Quantity Surveying	3	2	3	
20104231	Structural Analysis	2	2	0	20204121
20104241	Concrete Technology	2	2	0	
20104242	Concrete Technology Lab	1	0	3	20104241*
20104251	Soil Mechanics	2	2	0	
20104252	Soil & Asphalt Lab	1	0	3	20104251*
20104243	Reinforced Concrete	2	2	3	20104231*
20104261	Highway Engineering	2	2	0	
20104271	Projects Management	2	2	0	
20105221	Sanitary Engineering	2	2	0	
20104291	Training**	3	0	-	-
20104292	Project	3	0	-	-
Total		43	28	44	

*-Co-requisite

** Equivalent to 280 training hours



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Guiding Plan

First Year					
First Semester			Second semester		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
22002101	English Language	3	21702101	Computer Skills	3
21301111	General Mathematics	3	22001101	Arabic Language	3
21302111	General Physics	3	21901100	Islamic Culture	3
21302112	General Physics Lab	1	20104112	Building Construction	3
20104181	Statics	2	21702111	Communication Skills & Technical Writing	3
20102111	Surveying 1	3	20104111	Building Materials	3
20102112	Surveying 1 lab	2			
20201111	Engineering Workshops	1			
Total		18	Total		18

Second Year					
First Semester			Second semester		
Course No.	Course Title	Credit Hours	Course No.	Course Title	Credit Hours
20204121	Strength of Materials	2	20104252	Soil & Asphalt Lab	1
20506111	Occupational Safety	2	20104271	Projects Management	2
20104241	Concrete Technology	2	20104291	Training	3
20104242	Concrete Technology lab	1	20104292	Project	3
20104251	Soil Mechanics	2	20105221	Sanitary Engineering	2
20104243	Reinforced Concrete	2	20104121	Civil Engineering Drawing	2
20104261	Highways Engineering	2	20109111	Quantity Surveying	3
20201121	Engineering Materials	2	20104231	Structural Analysis	2
20204111	AutoCAD	2			
20204122	Strength of Materials lab	1			
Total		18	Total		18

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Brief Course Description

University Requirements

Course Title	Course No	Credit Hours (Theoretical /Practical)
Arabic Language	22001101	3 (3-0)
<p>تتضمن هذه المادة مجموعة من المهارات اللغوية بمستوياتها وأنظمتها المختلفة: الصوتية، والصرفية، والنحوية، والبلاغية، والمعجمية، والتعبيرية، وتشتمل نماذج من النصوص المشرقة: قرآنية، وشعرية، وقصصية، من بينها نماذج من الأدب الأردني؛ يتوخى من قراءتها وتدوقها وتحليلها تحليلاً أدبياً؛ تنمية الذوق الجمالي لدى الطلاب الدارسين.</p>		
English Language	22002101	3 (3-0)
<p>English 1 is a general course. It covers the syllabuses of listening, speaking, reading, writing, pronunciation and grammar, which are provided in a communicative context. The course is designed for foreign learners of the English language, who have had more than one year of English language study. The extension part would be dealt with in the class situation following the individual differences.</p>		
Islamic Culture	21901100	3 (3-0)
<ol style="list-style-type: none"> 1. تعريف الثقافة الإسلامية وبيان معانيها وموضوعاتها والنظم المتعلقة بها - وظائفها وأهدافها. 2. مصادر ومقومات الثقافة الإسلامية والأركان والأسس التي تقوم عليها. 3. خصائص الثقافة الإسلامية. 4. الإسلام والعلم، والعلاقة بين العلم والإيمان 5. التحديات التي تواجه الثقافة الإسلامية. 6. رد الشبهات التي تنثار حول الإسلام. 7. الأخلاق الإسلامية والآداب الشرعية في إطار الثقافة الإسلامية. 8. النظم الإسلامية. 		
Computer Skills	21702101	3 (1-4)
<p>An introduction to computing and the broad field of information technology is given. Topics covered include the basic structure of digital computer system, microcomputer, operating systems, application software, data communication and networks, and the internet. Hands-on learning emphasizes Windows xp, MS-office2000, and the internet.</p>		

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Engineering Program requirements

Engineering Workshops	20201111	1 (0-3)
Development of basic manual skills in Mechanical and Electrical works. Use of manual tools and measuring devices. Hand filing, welding, metal cutting and forming. Electrical wiring.		
AutoCAD	20204111	2 (0-6)
Introduction to AutoCAD, application of AutoCAD, commands, geometric entities. Geometric construction. Dimensioning, free –hand sketching, object representation, orthographic drawing and projections.		
Occupational safety	20506111	2 (2-0)
Role of technicians in economic development First aid accident prevention. Protective devices and equipment. Industrial safety standards. Nature of fire hazards. Sand fire regulations. Physiological effects of electrical shock on human body. First aid and treatment for the effects of electric shock. Rules of spare and chemicals storage and handing.		
Communication Skills and Technical Writing	21702111	3 (2-2)
The main goal of this course is to equip the students with the necessary communication skills in everyday life & work situations and improve their abilities in technical writing to meet market needs. For this course, the English language is the language of teaching & the means of communication for all classroom situations.		
Engineering Materials	20201121	2 (2-0)
Definition of engineering materials. Classification of materials and their properties. Metallic and non-metallic materials. Metals, alloys and composite materials. Conductors, insulators and semiconductors. Mechanical, Magnetic, Thermal and electrical characteristics of materials. Industrial applications of different types of materials.		
General Mathematics	21301111	3 (2-2)
Real numbers coordinate planes, lines, distance and circles. Functions: (operations and graphs on functions), limits, continuity, limits and continuity of trigonometric functions. Exponential and logarithmic functions. Differentiation (techniques of differentiation, chain rule, implicit differentiation). Application of differentiation (increase, decrease, concavity). Graphs of polynomials. Applications: Rolle's Theorem and Mean-Value Theorem, Integration (by substitution, definite integral, fundamental theorem of Calculus). Application of definite integral (area between two curves, volumes)		
General Physics	21302111	3 (2-2)
Physics and measurement, motion in one dimension, vectors, laws of motion, circular motion, energy and energy transfer, potential energy, linear momentum and collisions, electric fields, Gauss's law, electric potential, capacitance and dielectrics, current and resistance, direct current circuits, magnetic fields, sources of the magnetic field, and Faraday's law of electromagnetic induction.		
General Physics lab	21302112	1 (0-3)
In this course, the student performs thirteen experiments in mechanics and in electricity.		

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Specialization Requirements

Building Construction	20104112	3 (3-0)
The Properties of materials specifications and codes . Site investigation; excavation and fills; foundations; construction of walls; beams and slabs; brickwork and masonry; plastering and painting; sound and thermal insulation; steel structures		
Concrete Technology	20104241	2 (2-0)
Cements and aggregates, water, admixtures, concrete industry, properties of fresh concrete, properties of hardened concrete, special types of concrete, mix design.		
Concrete Technology Lab	20104242	1 (0-3)
Experiments of Concrete 'Cements; aggregates; Fresh concrete; Hardened concrete; nondestructive testing of concrete.		
Civil Engineering Drawing	20104121	2 (0-6)
Basic concepts and conventional symbols of building drawing ,topographic maps ,plans, elevations ,vertical sections , detailing of stairs ,foundations ,beams ,columns, slabs ,drawing of sanitary and electrical installations ,manholes ,and inlets ,drawing of multistory building ,using AutoCAD 2005 in building drawing and steel structures drawing (3 hours drafting room drawing + 3 hours AutoCAD drawing).		
Reinforced Concrete	20104243	2 (2-0)
Properties of Concrete Steel. Allowable Stresses. Strength Design. Whitney Block. Singly and Doubly reinforced sections. T-sections and other shapes. Design for bending. Shear Design. One-way solid and ribbed slabs. Approximate method for two-way slabs. Design of columns. Axially loaded short columns.. Design of isolated and wall footings.		
Quantity Surveying	20109111	3 (2-3)
Conditions of Contracts, Measurement Rules, and Quantity take off and Calculations of areas and volumes, calculation quantities of all civil and architectural works orientation in tables.		
Projects Management	20104271	2 (2-0)
Introduction to Project Management, Scheduling Methods, Arrow Networks, Critical path Method (CPM), Bar Chart, Cost-time Trade –off, Analysis of Resources, Computer- Aided Project Management.		
Soil Mechanics	20104251	2 (2-0)
Physical properties of soil, Atterberg limits, soil classification systems, stresses in soil, shear strength of soil, water in soil and theory of permeability and settlements of soil, lateral earth pressure and retaining structure, soil compaction, bearing capacity.		
Soil and Asphalt Lab	20104252	1 (0-3)
Experiments of Soil and asphalt pavement.		
Building Materials	20104111	3 (3-0)

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Statics	20104181	2 (2-0)
Statics of particles; equilibrium of particles; rigid bodies; equivalent system of forces; centroids and centers of gravity; analysis of structures; frames, machines; moments of inertia.		
Highways Engineering	20104261	2 (2-0)
Highway types, road users, highway geometric design, horizontal and vertical alignments of roads, cross sections, design of rigid and flexible pavement, drainage and erosion control traffic engineering, road maintenance.		
Sanitary Engineering	20105221	2 (2-0)
Water resources and water demand, water characteristics, water distribution hydraulics, pumping stations, sanitary fixtures, sewage disposal and sewage treatment, solid waste disposal, Central heating.		
Structural Analysis	20104231	2 (2-0)
Basic statics, determinacy and stability of structures, structural analysis of plane trusses, analysis of indeterminate beams using moment distribution method.		
Strength of Materials	20204121	2 (2-0)
Principles of statics including equilibrium and static equivalence. Determination of moment and force resultants in slender members. Introduction to mechanics of deformable bodies; concepts of stress and strain, classification of material behavior, stress-strain relations and generalized Hook's Law. Application to engineering problems involving members under axial load, torsion of circular rods and tubes, bending in beams, buckling of columns.		
Strength of Materials Lab	20204122	1 (0-3)
Applying theory gained within the strength of materials theoretical through practical experimentation		
Surveying 1	20102111	3 (3-0)
Introduction to Surveying measurements, Types of measurement, Linear measurement, bearings (directions and angles), Leveling, Theodolite and angle (horizontal, vertical) measurements, setting of horizontal angle and alignments Coordinates, Theory of errors.		
Surveying 1 Lab	20102112	2 (0-6)
Exercises and project covering the topics discussed in the Surveying 1 course.		
Training	20104291	3 (280 training hours)
Equivalent to 280 Hours of field training targeted to emphasize the ability of students to apply the Theories in the real word of the profession.		
Project	20104292	3
An integrated design project to practice the principles of analysis and design acquired throughout the course of the student's study.		

