



وزارة التعليم العالي والبحث العلمي جهاز
الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

دليل وصف البرنامج الأكاديمي والمقرر

المقدمة:

يُعد البرنامج التعليمي بمثابة حزمة منسقة ومنظمة من المقررات الدراسية التي تشتمل على إجراءات وخبرات تنظم بشكل مفردات دراسية الغرض الأساس منها بناء وصقل مهارات الخريجين مما يجعلهم مؤهلين لتلبية متطلبات سوق العمل يتم مراجعته وتقييمه سنوياً عبر إجراءات وبرامج التدقيق الداخلي أو الخارجي مثل برنامج الممتحن الخارجي.

يقدم وصف البرنامج الأكاديمي ملخص موجز للسمات الرئيسة للبرنامج ومقرراته مبيناً المهارات التي يتم العمل على اكسابها للطلبة مبنية على وفق اهداف البرنامج الأكاديمي وتتجلى أهمية هذا الوصف لكونه يمثل الحجر الأساس في الحصول على الاعتماد البرامجي ويشترك في كتابته الملاكات التدريسية بإشراف اللجان العلمية في الأقسام العلمية.

ويتضمن هذا الدليل بنسخته الثانية وصفاً للبرنامج الأكاديمي بعد تحديث مفردات وفقرات الدليل السابق في ضوء مستجدات وتطورات النظام التعليمي في العراق والذي تضمن وصف البرنامج الأكاديمي بشكلها التقليدي نظام (سنوي، فصلي) فضلاً عن اعتماد وصف البرنامج الأكاديمي المعمم بموجب كتاب دائرة الدراسات ت م ٢٩٠٦/٣ في ٢٠٢٣/٥/٣ فيما يخص البرامج التي تعتمد مسار بولونيا أساساً لعملها.

وفي هذا المجال لا يسعنا إلا أن نؤكد على أهمية كتابة وصف البرامج الأكاديمية والمقررات الدراسية لضمان حسن سير العملية التعليمية.

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة . جامعة بابل

الكلية/ المعهد: كلية الهندسة

القسم العلمي: قسم .. الهندسة المدنية

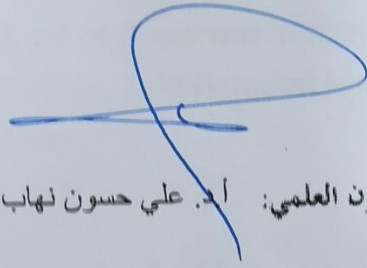
اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة مدنية

اسم الشهادة النهائية: بكالوريوس في الهندسة المدنية

النظام الدراسي: فصلي

تاريخ اعداد الوصف: 2024/4/7

تاريخ ملء الملف: 2024/4/14



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التاريخ :



التوقيع :

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التاريخ :

دقق الملف من قبل

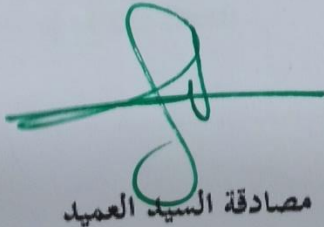
شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي:

التاريخ

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مصادقة السيد العميد

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1. Overview

This catalogue is about the courses (modules) given by the program of Civil Engineering to gain the Bachelor of Science degree. The program delivers (48) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظرة عامة

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج الهندسة المدنية للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (48) مادة دراسية، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
EnCIMal 1 01 01	Mathematics I	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>The course aims to teach students mathematics, which is the basics of engineering because it is related to most engineering subjects. The student can be enabled to understand and explain the various phenomena in a mathematical way through scientific presentation and logical analysis, linking these phenomena with each other and knowing the effect of different phenomena on each other, as the course paves the way for entering the wider world of mathematics in the later stages. And an attempt to link this science with the different sciences by teaching the student how to draw different functions, which are mathematical representations of natural events, knowing the slope and equation of the straight line.</p>			

Module 2

Code	Course/Module Title	ECTS	Semester
EnCIMel 1 02 02	Engineering Mechanics I	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>Engineering mechanics represents the first step in understanding and understanding the principles of many of the subjects that the student will study in the academic stages that deal with topics related to the resistance of engineering materials and structural analysis. The course of engineering mechanics that is taught to first-year students sheds light on a group of selected topics that are related By preparing the student's mind to understand the basic physical and engineering concepts, which at the same time give him the mental skill necessary to interact with many engineering issues.</p>			

Module 3

Code	Course/Module Title	ECTS	Semester
EnCIDE 1 03 03	Engineering Drawing and Drawing by Computer	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
-	6	93	57
Description			
<p>This course provides a basic engineering drawing instrument, method of writing in Kufic letters, engineering operations to draw a parallel line to other line, bisecting the straight lines, moving the angles, bisect the angles, drawing an arc touches two intersecting lines, drawing an arc touches the straight line and circle, drawing a tangent to two circles, dividing the straight lines to a number of equal parts, dividing circumference of a circle to a number of equal parts, drawing the ellipse, projection method, drawing the vertical, front and side view of three-dimensional shapes, drawing a three-dimensional shape from its projections, sections, hatch, dimensions.</p>			

Module 4

Code	Course/Module Title	ECTS	Semester
EnCIEs 1 04 04	Engineering Statistics	4	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
<p>Engineering Statistic is a sequence that covers the fundamental elements of statistic methods for engineering applications and problems. Statistics is one of the most important sciences on which political, economic and cultural development depends, etc. Statistics has a key role in the work of academic institutions and the research organizations. In these semesters, students will study statistic with respect to engineering applications and problems in order to obtain knowledge and proficiency for predicting the Solutions and the logical explanation of these problems.</p>			

Module 5

Code	Course/Module Title	ECTS	Semester
EnCIBm 1 05 05	Building Materials	6	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	96	54
Description			
<p>The student will understand the basic properties of various types of construction materials and the tests used to characterize those materials' properties. The course specify materials, and material combinations suitable for civil engineering structures. Discuss origins and/or manufacturing process associated with construction materials such as gypsum, lime and Portland cement, concrete, steel, polymers and clay bricks. Also , in which the course determines the physical and chemical properties of construction materials and its constituents.</p>			

Module 6

Code	Course/Module Title	ECTS	Semester
EnCIEI 1 06 06	Arabic Language	2	1
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	-	33	17
Description			
<p>Grammar is generally defined as a specific language's exclusive design or structure. The better we understand how a language works, the more we get a complete command of it and convey meanings eloquently. The Quran is revealed in the Arabic language, which is challenging for the non-experienced Arabic speaker to understand the message and meaning in the way of assisting for writing essays, papers, and other document with perfect finishing and grammar.</p>			

Module 7

Code	Course/Module Title	ECTS	Semester
EnCIMall 1 07 07	Mathematics II	6	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>Mathematics II subject is calculus course, incorporating innovative features to enhance student learning. The course guides students through the core concepts of calculus and helps them understand how those concepts apply to their lives and the world around them. The course covers matrices, sequences and series, parametric equations and polar coordinates, vectors, functions of several variables, multiple integration, complex numbers, and second-order differential equations.</p>			

Module 8

Code	Course/Module Title	ECTS	Semester
EnCIMell 1 08 08	Engineering Mechanics II	6	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>Engineering Mechanics teaches civil engineering students to learn the fundamental to the basic quantities and idealizations of mechanics, Newton's laws of motion and gravitation. Also learn types of forces systems and how to determine the resultant of forces. In addition, learn how to calculate the internal forces in the members of a truss using the method of joints and the method of sections, analyzing the forces acting on the members of frames and machines composed of pin-connected members. As well as, learn how to find the centroidal coordinates of bodies or cross section area and moment of inertia. This course is needed for all engineers/structural design courses.</p>			

Module 9

Code	Course/Module Title	ECTS	Semester
EnCICI 1 09 09	Computer Language	4	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
<p>The student will be able to know the hardware and software components of the computer. The student can Learn about algorithms and their importance in being the rationale for a solution Any arithmetic or logical question. The student can write programs in BASIC to solve mathematical and engineering problems. Learning Outcomes, Teaching ,Learning and Assessment Method Cognitive goals The student will be familiar with number systems and writing flowcharts. Recognition Input and output sentences And the Library functions in BASIC and how to use them in writing its program The student recognizes on one-dimensional matrices And the Two-dimensional arrays and their great importance in software applications . Identify the first section of the subprograms, which is the external function And theThe second section of the subprograms, which is the subroutines.</p>			

Module 10

Code	Course/Module Title	ECTS	Semester
EnCI Eg 1 10 10	Engineering Geology	3	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	27
Description			
<p>Engineering Geology teaches civil engineering students to learn the fundamental of soil formations, minerals of the different layer. The source syllabus includes: Introduction, Minerals, Rocks, Physical and Mechanical Properties of Rock, Soil Engineering, Underground Water Geology, Geological Maps, Tunnel Geology, Types and Location of Tank and Dams, Geological Investigation Quarry. Engineering Geology teaches civil engineering students to learn the fundamental of soil formations, minerals of the different layer. The source syllabus includes: Introduction, Minerals, Rocks, Physical and Mechanical Properties of Rock, Soil Engineering, Underground Water Geology, Geological Maps, Tunnel Geology, Types and Location of Tank and Dams, Geological Investigation Quarry.</p>			

Module 11

Code	Course/Module Title	ECTS	Semester
EnCIBc 1 11 11	Building Construction	3	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	48	27
Description			
<p>Providing the most important basic information that the student needs in the College of Engineering in the matter of constructing buildings and preparing for the assimilation of a lot of information related to his studies the practice of the profession after that. The course mainly means introducing the student to the sequence of building paragraphs starting from planning, then excavations, foundation works, floors, brick and stone construction, concrete works and stairs, with an emphasis on topics that are not discussed in other stages. The skills goals special to the course The student is introduced to the general concepts of . The student learns about the use of civil maps in engineering projects</p>			

Module 12

Code	Course/Module Title	ECTS	Semester
EnCIEI 1 12 12	English Language	8	2
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
8	-	123	77
Description			
<p>Technical English is a two-semester sequence that covers a general introduction about the importance of studying and learning the English language, reading paragraphs and vocabularies for different engineering topics such as mathematics and physics in addition to multi-exercises for writing numbers, fractions, units, and mathematical equations in correct English language. Primary rules for grammar and other topics of daily English such parts of speech, tenses, conjunctions, greetings, and telling the time in English.</p>			

Module 13

Code	Course/Module Title	ECTS	Semester
EnCIMA 2 13 01	Mathematics	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>The aim of this course is for students to learn how to solve problems in matrices, sequences and series, parametric equations and polar coordinates, vectors, functions of several variables, multiple integration, complex numbers, and second-order differential equations. The other aim is how to connect the aforementioned materials to real life problems and its actual applications. Cognitive goals Study and comprehend general concepts and basic principles in mathematics Take advantage of connecting topics with equations to solve them correctly. Learn the correct ways to solve mathematical problems and train the student to solve within the general concepts of speed and accuracy Refining the scientific concept and consolidating the scientific material correctly through continuous examinations and activating the role of the student not in obtaining the degree, but in understanding and benefiting from this material to the maximum extent.</p>			

Module 14

Code	Course/Module Title	ECTS	Semester
EnCISml 2 14 02	Strength of Materials I	4	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The course starts with an introduction and definition for the strength of material including analysis of forces. The concept of simple stresses is introduced in which the direct (normal) and shearing stresses are explained according to each type of these stresses which includes also the behavior of the generated stresses in the pressure vessels. Simple strain represented by axial deformations for the determinate or indeterminate models are given for the case of indeterminate and indeterminate systems. The torsional stress which is the stress that usually subjected on the shafts is considered also. Plotting methods of shear and bending moment diagrams are studied according to two methods, equations and graphical methods. The behavior of the generated flexural stresses in beams are studied including the composite type of beams. Similarly, the behavior of shearing stresses in beams is given taking into account the vertical shear and the shear flow subjected upon the cross section. The combination between axial and flexural stresses will be studied accordingly. Plane stress and strain are given later using the equations and Mohr's circle of transformation of the plane stress. Methods that used to determine the deflection in beams is given at the end of the second semester.</p>			

Module 15

Code	Course/Module Title	ECTS	Semester
EnCIEsl 2 15 03	Engineering Surveying I	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			

It enables the student to understand the means and devices of engineering surveying and to know the handling and measurement of them with practical applications for determining and measuring distances, areas and volumes of roads and other engineering sites Learning Outcomes, Teaching ,Learning and Assessment Method Cognitive goals Study and comprehend general concepts and basic principles in engineering space, benefit from linking topics with equations to solve them correctly. Learn the correct ways to solve mathematical problems and train the student to solve within the general concepts of speed and accuracy. Refining the scientific concept and consolidating the scientific material correctly through continuous examinations and activating the role of the student not in obtaining the degree, but in understanding and benefiting from this material to the maximum extent.

Module 16

Code	Course/Module Title	ECTS	Semester
EnCICt 2 16 04	Concrete Technology	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57

Description

This course provides a comprehensive treatment of the materials and civil engineering principles which results in production and construction of high quality concrete for buildings and infrastructure. During the semester, students will practice and learn to characterize and predict the behavior of aggregates, Portland cement, and concrete products. In-depth study of composition, characteristics and hydration of cements; structure and properties of hardened cement paste; aggregates; workability, production, handling; placing; vibration; and curing of concrete; strength; mix design; volume changes and permeability of concrete; durability to chemical and physical attacks.

Module 17

Code	Course/Module Title	ECTS	Semester
EnCIFml 2 17 05	Fluid Mechanics I	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72

Description

The course Fluid Mechanics is designed to introduce students to the fundamental engineering science concepts related to the mechanics of fluids. This includes basic fluid properties, fluid statics, fluid dynamics, fluid viscosity and turbulence, introduction to flow in closed conduits, pumps and pumping. The aim of this course is to provide students with an understanding of the basic principles of fluid mechanics and of their application to civil engineering problems. There is a strong focus on water in the course as this is one of the most important fluids for Civil Engineering practice.

Module 18

Code	Course/Module Title	ECTS	Semester
EnCIHu 2 18 06	Human Rights	2	3
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	-	33	17
Description			
<p>Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status. Human rights include the right to life, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Everyone is entitled to these rights, without discrimination. One of the duties of the Human Rights Unit is to promote a culture of human rights for the student. In the first course, lectures were given that were limited to this period, after it was a full year, in which the student studies the concept of human rights from the definition, descriptions, types and categories, and the historical development of human rights in the ancient civilizations of Iraq, and ancient civilizations Others, and human rights in divine laws, focus on the Islamic conception of human rights, as well as the study of human rights in modern societies, and the statement of legal sources for these rights, as well as the International Bill of Human Rights, in international charters and organizations, intellectual, social, economic and cultural freedoms, and the study of non-governmental organizations .</p>			

Module 19

Code	Course/Module Title	ECTS	Semester
EnCIEa 2 19 07	Engineering Analysis	4	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)

2	2	63	37
Description			
<p>This class is an introductory level on applying some numerical methods in civil/structural engineering. The class will cover several topics include a solution of non-linear equations, solution of simultaneous equations, numerical interpolation, numerical integration, Fourier series for the function of one variable, solution of initial and boundary value problems in ordinary differential equations, method of least squares, and solution of high order equation finite differences.</p>			

Module 20

Code	Course/Module Title	ECTS	Semester
EnCISmII 2 20 08	Strength of Materials II	4	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The course starts with an introduction and definition for the strength of material including analysis of forces. The concept of simple stresses is introduced in which the direct (normal) and shearing stresses are explained according to each type of these stresses which includes also the behavior of the generated stresses in the pressure vessels. Simple strain represented by axial deformations for the determinate or indeterminate models are given for the case of indeterminate and indeterminate systems. The torsional stress which is the stress that usually subjected on the shafts is considered also. Plotting methods of shear and bending moment diagrams are studied according to two methods, equations and graphical methods. The behavior of the generated flexural stresses in beams are studied including the composite type of beams. Similarly, the behavior of shearing stresses in beams is given taking into account the vertical shear and the shear flow subjected upon the cross section. The combination between axial and flexural stresses will be studied accordingly. Plane stress and strain are given later using the equations and Mohr's circle of transformation of the plane stress. Methods that used to determine the deflection in beams is given at the end of the second semester.</p>			

Module 21

Code	Course/Module Title	ECTS	Semester
EnCIEsII 2 21 09	Engineering Surveying II	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72

Description
<p>Engineering Surveying is the broad term used to describe the work of surveyors on civil engineering jobs. The role of an engineering surveyor is a lot larger than simply set out for construction of a structure and survey pick-ups. Engineering Surveyors will usually be the professionals who first examine a finished design for a project and often will identify any design or practicality issues. The course aims to study and teach students the work of engineering surveying and how to deal with the means and devices of engineering surveying. It enables the student to understand the means and devices of engineering surveying and to know the handling and measurement of them with practical applications for determining and measuring distances, areas and volumes of roads and other engineering sites</p>

Module 22

Code	Course/Module Title	ECTS	Semester
EnCIFmII 2 22 10	Fluid Mechanics II	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
<p>The course Fluid Mechanics is designed to introduce students to the fundamental engineering science concepts related to the mechanics of fluids. This includes basic fluid properties, fluid statics, fluid dynamics, fluid viscosity and turbulence, introduction to flow in closed conduits, pumps and pumping. The aim of this course is to provide students with an understanding of the basic principles of fluid mechanics and of their application to civil engineering problems. There is a strong focus on water in the course as this is one of the most important fluids for Civil Engineering practice.</p>			

Module 23

Code	Course/Module Title	ECTS	Semester
EnCISd 2 23 11	Structural Drawing	4	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
-	4	63	37

Description
<p>A structural drawing, a type of engineering drawing, is a plan or set of plans and details for how a building or other structure will be built. Structural drawings are generally prepared by registered professional engineers, and based on information provided by architectural drawings. The structural drawings are primarily concerned with the load-carrying members of a structure. They outline the size and types of materials to be used, as well as the general demands for connections. They do not address architectural details like surface finishes, partition walls, or mechanical systems. The structural drawings communicate the design of the building's structure to the building authority for review</p>

Module 24

Code	Course/Module Title	ECTS	Semester
EnCIEMe 2 24 12	Engineering Management & Economy	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	2	93	57
Description			
<p>It may be concluded that management plays a key role in improving standard of living of the people in the society through developing an ideal organizational structure and making economic use of available resources. The knowledge of management theory and practice enables managers to take more realistic view about organizational and social problems and to find out their effective solution. Management is an important factor for the success of any organized activity. Today management basically concern with changes and challenges, and it is difficult to manage. Management is an art of getting things done through others. Management is to plan, organize, direct and control the resources of the organization for obtaining common objectives or goals. It is related with resources like material, money, machinery, methods, manufacturing and marketing. Management principles are universal in nature. Management is necessary for all types of organization, such as public sector, private sector, govt. department, hotel, hospital, hostels, educational institutes, require management for several growth and expansion.</p>			

Module 25

Code	Course/Module Title	ECTS	Semester
EnCISl 3 25 01	Theory of Structures I	4	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>Theory of Structures is a two semesters sequence that covers the fundamental elements of structural analysis of plane (two-dimensional) structures. The first part of this course introduces the types and classifications of structures and structural elements as well as the stability and determinacy of structures. Then, two main parts are:</p> <ul style="list-style-type: none"> • Analysis of statically determinate structures which includes computing internal actions, constructing influence lines, studying moving loads, and deformation calculations of the different types of structures (beams, frames, arches, trusses, and composite structures) • Analysis of statically indeterminate structures which includes approximate methods, force methods, and displacement methods. 			

Module 26

Code	Course/Module Title	ECTS	Semester
EnCISml 3 26 02	Soil Mechanics I	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
<p>Soil Mechanics is a two semesters sequence that covers the fundamental elements of soil mechanics. Soil is treated as an engineered material with physical properties such as strength, compressibility, permeability...etc. It is important to be able to understand, predict, and control these properties to increase the likelihood that structures placed on top of soil will perform satisfactorily. In these semesters, students will study soil with respect to these properties in order to obtain knowledge and proficiency for predicting and controlling soil behavior.</p>			

Module 27

Code	Course/Module Title	ECTS	Semester
EnCIRcl 3 27 03	Design of Reinforced Concrete I	4	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The frames are analyzed to resist bending moments using Direct Design Method DDM. The slab thickness will be calculated to control deflection. The slab will be designed to resist one way shear and punching shear, and the shear resistance will be increased by stirrups. Analysis of frames will be done using Equivalent Frame Method EFM to have results that are more accurate. Slabs of irregular shape will be analyzed using yield line method. The design of Pre-stressed concrete beams to resist flexure will be introduced.</p>			

Module 28

Code	Course/Module Title	ECTS	Semester
EnCIEAn 3 28 04	Engineering Analysis and Numerical Methods	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57
Description			
<p>This class is an introductory level on applying some numerical methods in civil/structural engineering. The class will cover several topics include a solution of non-linear equations, solution of simultaneous equations, numerical interpolation, numerical integration, Fourier series for the function of one variable, solution of initial and boundary value problems in ordinary differential equations, method of least squares, and solution of high order equation finite differences.</p>			

Module 29

Code	Course/Module Title	ECTS	Semester
EnCITe 3 29 05	Traffic Engineering	4	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)

2	2	63	37
Description			
<p>This course introduces basic concepts of transportation and traffic engineering. It is a two semesters sequence that covers the fundamental elements of traffic engineering. It focuses on procedures used in traffic road transportation system design, operations management, and planning. Issues affecting modes other than the automobile are discussed. Students become familiar with transportation and traffic engineering topics through an analysis of transportation infrastructure problems.</p>			

Module 30

Code	Course/Module Title	ECTS	Semester
EnCIS1 3 36 12	Selected Topic (I)	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>selected topics represents the first step in understanding and getting the principles of many of the subjects that the student will study in the academic stages that deal with topics related to the resistance of engineering materials and structural analysis. The course of engineering mechanics that is taught to first-year students sheds light on a group of selected topics that are related By preparing the student's mind to understand the basic physical and engineering concepts, which at the same time give him the mental skill necessary to interact with many engineering issues.</p>			

Module 31

Code	Course/Module Title	ECTS	Semester
EnCIS1 3 31 07	Theory of Structures II	4	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>Theory of Structures is a two semesters sequence that covers the fundamental elements of structural analysis of plane (two-dimensional) structures. The first part of this course introduces</p>			

the types and classifications of structures and structural elements as well as the stability and determinacy of structures. Then, two main parts are:

- Analysis of statically determinate structures which includes computing internal actions, constructing influence lines, studying moving loads, and deformation calculations of the different types of structures (beams, frames, arches, trusses, and composite structures).
- Analysis of statically indeterminate structures which includes approximate methods, force methods, and displacement methods.

Module 32

Code	Course/Module Title	ECTS	Semester
EnCISmII 3 32 08	Soil Mechanics II	6	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
<p>Soil Mechanics is a two semesters sequence that covers the fundamental elements of soil mechanics. Soil is treated as an engineered material with physical properties such as strength, compressibility, permeability...etc. It is important to be able to understand, predict, and control these properties to increase the likelihood that structures placed on top of soil will perform satisfactorily. In these semesters, students will study soil with respect to these properties in order to obtain knowledge and proficiency for predicting and controlling soil behavior. The objectives of these courses are to introduce soil mechanics to civil engineering undergraduate students and to familiarize the students with soil terminology and concepts commonly encountered in engineering practice.</p>			

Module 33

Code	Course/Module Title	ECTS	Semester
EnCIRcII 3 33 09	Design of Reinforced Concrete II	4	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The frames are analyzed to resist bending moments using Direct Design Method DDM. The slab</p>			

thickness will be calculated to control deflection. The slab will be designed to resist one way shear and punching shear, and the shear resistance will be increased by stirrups. Analysis of frames will be done using Equivalent Frame Method EFM to have results that are more accurate. Slabs of irregular shape will be analyzed using yield line method. The design of Pre-stressed concrete beams to resist flexure will be introduced.

Module 34

Code	Course/Module Title	ECTS	Semester
EnCITe 3 34 10	Transportation Engineering	6	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57
Description			
<p>From the construction and development of highways, air transportation, pipeline, waterway, port, aerospace, coastal to the ocean and urban transportation, the Transportation Engineers play a pivotal role. Transportation Engineering is the study of planning, designing, development, construction and maintenance of efficient transportation structures and systems. As a prominent one in the different types of Civil Engineering, It encompasses the designing of airport pavement, toll plaza, traffic signal, highway elements, interchanges, parking facilities etc. It aims to design systems that can ensure the safe and comfortable movement of people and goods.</p>			

Module 35

Code	Course/Module Title	ECTS	Semester
EnCIIDe 3 35 11	Irrigation and Drainage Engineering	4	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>Irrigation and drainage engineering is a two semesters sequence that covers the fundamentals of Irrigation and drainage engineering and open channel hydraulics. The study of Irrigation and Drainage engineering is very critical to civil engineers who are planning to practice in this field after graduation. For civil engineers, the material provided in this course will provide fundamental knowledge for future practicing in Irrigation and drainage systems designs</p>			

especially in this region where the economy is greatly enhanced by agricultural products exports. This course introduces the fundamentals of Irrigation and drainage design to students including, surface irrigation systems, sprinkler irrigation system, Trickle irrigation system, open channel hydraulics, and drainage systems. In irrigation engineering, students will learn the design of surface irrigation systems, sprinkler irrigation systems, and trickle irrigation systems given land physical properties and climate conditions dominated in the region. In drainage irrigation, the students will be introduced to the methods used for land draining and the equations governing the flow in a porous media and their derivatives.

Module 36

Code	Course/Module Title	ECTS	Semester
EnCIS11 3 36 12	Selected Topic (II)	6	6
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>selected topics represents the first step in understanding and getting the principles of many of the subjects that the student will study in the academic stages that deal with topics related to the resistance of engineering materials and structural analysis. The course of engineering mechanics that is taught to first-year students sheds light on a group of selected topics that are related. By preparing the student's mind to understand the basic physical and engineering concepts, which at the same time give him the mental skill necessary to interact with many engineering issues.</p>			

Module 37

Code	Course/Module Title	ECTS	Semester
EnCIRs 4 37 01	Design of Concrete Structures	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	2	93	57
Description			
<p>The frames are analyzed to resist bending moments using Direct Design Method DDM. The slab thickness will be calculated to control deflection. The slab will be designed to resist one way shear and punching shear, and the shear resistance will be increased by stirrups. Analysis of</p>			

frames will be done using Equivalent Frame Method EFM to have results that are more accurate. Slabs of irregular shape will be analyzed using yield line method. The design of Pre-stressed concrete beams to resist flexure will be introduced.

Module 38

Code	Course/Module Title	ECTS	Semester
EnCICe4 38 02	Method of Construction and Estimation	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	2	93	57
Description			
<p>This course is a two semesters sequence that investigates the principles and practices for the selection of methods, budget, and schedule for both vertical and horizontal construction projects. The course Enables students to work as a project engineer or as a resident engineer or consultant engineer in the projects. Topics studied include construction industry introduction, construction equipment production, formwork design, construction contracts, quantity surveying estimating construction materials and construction cost. In addition, topics studied include soil stabilization, selection of construction equipment and cost of possessing an equipment beside the requirement of codes and technical specifications. Furthermore, the students after completion of this course will be able to function ethically in their professional civil engineering roles.</p>			

Module 39

Code	Course/Module Title	ECTS	Semester
EnCIHs 4 39 03	Hydraulic Structures	4	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	37
Description			
<p>Teaching hydraulic structures aims to teach students the basics of this subject in terms of introducing them to most water structures and teaching them how to design and analyze these facilities. The fact that the civil engineer must be familiar with these structures such as dams, regulators, arches, and other things that have been listed below in the syllabus. This course is given in two semesters. A hydraulic structure is a structure submerged or partially submerged in</p>			

any body of water, which disrupts the natural flow of water. They can be used to divert, disrupt or completely stop the flow. An example of a hydraulic structure would be a dam, which slows the normal flow rate of river in order to power turbines. Hydraulic structure can be built in rivers, a sea, or any body of water where there is a need for a change in the natural flow of water

Module 40

Code	Course/Module Title	ECTS	Semester
EnCIEl 4 40 04	Foundation Engineering I	4	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The students learn the steps of site investigation program, the computation methods of settlement of shallow foundations, the methods used to estimate the bearing capacity of soil under shallow foundations and the design steps of them. Also, they learn the methods of estimating pile capacity, the concept of lateral earth pressure, the stability of different retaining structures and finally the analysis of the stability of unsupported soil slopes. In engineering, a foundation is the element of a structure which connects it to the ground, transferring loads from the structure to the ground. Foundations are generally considered either shallow or deep.[1] Foundation engineering is the application of soil mechanics and rock mechanics (geotechnical engineering) in the design of foundation elements of structures.</p>			

Module 41

Code	Course/Module Title	ECTS	Semester
EnCISIII 4 41 05	Selected Topic (III)	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>selected topics represents the first step in understanding and getting the principles of many of the subjects that the student will study in the academic stages that deal with topics related to the resistance of engineering materials and structural analysis. The course of engineering mechanics that is taught to first-year students sheds light on a group of selected topics that are related By</p>			

preparing the student's mind to understand the basic physical and engineering concepts, which at the same time give him the mental skill necessary to interact with many engineering issues.

Module 42

Code	Course/Module Title	ECTS	Semester
EnCIPr 4 42 06	Project (Annual)	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	-	63	37
Description			
<p>Preparing qualified in the field of civil engineering. Contributing to the development of working in the field of civil engineering in state institutions and departments. Providing the community with civil engineers capable of managing engineering matters in terms of design and in terms of supervising engineering projects. The ability to develop engineering cadres and work on their modernity to ensure their conformity with the latest recommendations to the world in the field of civil engineering. Expanding the civil engineering specializations to serve the community and meet its needs, through the expansion of the development of various specializations in the field of civil engineering at the level of graduate studies.</p>			

Module 43

Code	Course/Module Title	ECTS	Semester
EnCISd 4 43 07	Design of Steel Structures	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	2	93	57
Description			
<p>Teaching engineering students to analyze and design steel structures used in civil engineering projects. The term steel structure refers to a metal layout developed with structural steel pieces connected to support loads and provide comprehensive stiffness. This construction is reliable and employs fewer raw materials than different forms of structure like concrete and timber structures because of the high resilience degree of steel. Steel is a material that is employed in</p>			

almost every kind of structure in a contemporary building, including airport terminals, big industrial factories, high-rise constructions, equipment support systems, bridges, buildings, heavy industrial constructions, and pipe stands. Steel fabricated with a proper form and chemical composition to satisfy the conditions of a project is understood as structural steel.

Module 44

Code	Course/Module Title	ECTS	Semester
EnCISe 4 44 08	Sanitary Engineering	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
<p>Introduce topics of environmental and sanitary engineering including; material balance, risk assessment, population growth, solid waste management, air pollution control as well as fundamentals of water and wastewater treatment. Water treatment will begin with water demand, followed by conventional treatment processes, and water distribution network analysis with associated pumps and pump stations. Wastewater includes analysis of sewerage networks, sewage flow variation, wastewater characteristics, conventional wastewater treatment processes, storm water and run-off estimation by means of the Rational method. Sludge treatment is overviewed. Self-purification of receiving streams and the Streeter Phillips eq. is introduced.</p>			

Module 45

Code	Course/Module Title	ECTS	Semester
EnCIH 4 45 09	Hydrology	4	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>Students will perform a hydrological study of the laws governing the occurrence, distribution, and movement of water in watershed systems. Topics include meteorological considerations, precipitation, evaporation, infiltration, streamflow, hydrograph analysis, flood routing, groundwater flow, well hydraulics and frequency analysis. The objectives of these courses are</p>			

to introduce Hydrology to civil engineering undergraduate students and to familiarize the students with hydrology terminology and concepts commonly encountered in engineering practice.

Module 46

Code	Course/Module Title	ECTS	Semester
EnCIFell 4 46 10	Foundation Engineering II	4	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
<p>The students learn the steps of site investigation program, the computation methods of settlement of shallow foundations, the methods used to estimate the bearing capacity of soil under shallow foundations and the design steps of them. Also, they learn the methods of estimating pile capacity, the concept of lateral earth pressure, the stability of different retaining structures and finally the analysis of the stability of unsupported soil slopes. In engineering, a foundation is the element of a structure which connects it to the ground, transferring loads from the structure to the ground. Foundations are generally considered either shallow or deep.[1] Foundation engineering is the application of soil mechanics and rock mechanics (geotechnical engineering) in the design of foundation elements of structures</p>			

Module 47

Code	Course/Module Title	ECTS	Semester
EnCISIV 4 47 11	Selected Topic (IV)	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	3	93	57
Description			
<p>selected topics represents the first step in understanding and getting the principles of many of the subjects that the student will study in the academic stages that deal with topics related to the resistance of engineering materials and structural analysis. The course of engineering mechanics</p>			

that is taught to first-year students sheds light on a group of selected topics that are related By preparing the student's mind to understand the basic physical and engineering concepts, which at the same time give him the mental skill necessary to interact with many engineering issues.

Module 48

Code	Course/Module Title	ECTS	Semester
EnCIPr 4 42 06	Project (Annual)	4	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
4	-	63	37
Description			
<p>Preparing qualified in the field of civil engineering. Contributing to the development of working in the field of civil engineering in state institutions and departments. Providing the community with civil engineers capable of managing engineering matters in terms of design and in terms of supervising engineering projects. The ability to develop engineering cadres and work on their modernity to ensure their conformity with the latest recommendations to the world in the field of civil engineering. Expanding the civil engineering specializations to serve the community and meet its needs, through the expansion of the development of various specializations in the field of civil engineering at the level of graduate studies.</p>			

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