MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Geology**			**Module Delivery**	
Module Type	**Basic**			☐ **Theory** ✓ **Lecture** ✓ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE114**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Dr. Ihsan Qasim		**e-mail**	ihsan.qasim@sa-uc.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	None		**e-mail**	None	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. To outline the contribution of engineering geology to the civil and mining works 2. To explain the classical approach to solve an engineering geological problem 3. The extensive uses of engineering geology maps 4. The role and effect of engineering geology in the improvement of earth materials
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student will be trained to know the description of soil and rock masses for engineering purposes and is also expected to know the following: 1. Engineering geological maps and its applications. 2. Rock engineering properties and the geotechnical problems they cause. 3. The various techniques for soil and rock improvement.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.26
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	7,12	5, 6, 10, and 11
	Assignments	2	10% (10)	4, 14	1, 2, 11, and 12
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	3, 4, and 11
Summative assessment	Midterm Exam	2 hr	10% (10)	8	1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	An introduction to engineering geology
Week 2	Minerals and rocks
Week 3	Physical and mechanical properties of rocks
Week 4	**Soil geology and properties**
Week 5	Groundwater (Part 1)
Week 6	Groundwater (Part 2)
Week 7	Geology maps
Week 8	Mid-term Exam
Week 9	Topography maps (Part 1)
Week 10	Topography maps (Part 2)
Week 11	Soil investigations (Part 1)
Week 12	Soil investigations (Part 2)
Week 13	Geological principles for the selection of foundations (problems of foundations)
Week 14	Geological investigation of building materials and road paving
Week 15	Preparatory Week
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction
Week 2	Discovery of metal
Week 3	Discovery of rocks
Week 4	Geology maps
Week 5	Topography maps
Week 6	Final Exam
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Engineering Geology by Dr. Majeed Al-Taa'e	Yes
Recommended Texts	ENGINEERING GEOLOGY by Sabinoy Gangopadhyay	No
Websites	-	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer software**			**Module Delivery**	
Module Type	**Basic**			☐ **Theory** ✓ ☐ **Lecture** ✓ ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ✓ ☐ **Seminar**	
Module Code	**E125**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Khalid A. Saber		**e-mail**		
Module Leader's Acad. Title	Ass. Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor			**e-mail**		
Peer Reviewer Name	none		**e-mail**	None	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	• To knowledge of the most important components and basics of a computer • To understand algorithms and flowcharts • To learn how to use computer software (Word, Excel, and Power point)
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Knowledge of computer basics • Building an integrated algorithm for any program • Draw a flowchart for any program • Using Word and creating a Word file • Drawing charts using Excel • Perform all calculations and obtain results using Excel • Preparing a presentation using PowerPoint
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5,10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2,12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	

	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to computer**
Week 2	Computer programming language
Week 3	Flowcharts
Week 4	Algorithms
Week 5	Introduction to Microsoft word
Week 6	Word Tutorial
Week 7	Word Tutorial
Week 8	Introduction to Microsoft excel
Week 9	Find solutions for various mathematical operations
Week 10	How to insert different functions using Excel
Week 11	Draw charts using Excel
Week 12	Introduction to power point
Week 13	prepare a presentation using Power point
Week 14	Seminar
Week 15	Seminar
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Learning about computer parts and important tasks in Windows

Week 2	Learning the basics of the Word software by controlling the type, size and color of the font and other setting
Week 3	Learning how to insert an image, chart, text, etc
Week 4	Learning the basics of the Excel and how to find the solutions for different equations
Week 5	Learn drawing different charts
Week 6	Learning the basics for power point
Week 7	Learning how to prepare a presentation using Power point

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Microsoft Word 2016 Step by Step An introduction to EXCEL for civil Engineers Microsoft Power Point 2016 Step by Step	No
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Drawings**			**Module Delivery**	
Module Type	**Core**			■ **Theory** **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**E118**				
ECTS Credits	**10**				
SWL (hr/sem)	**250**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Amel Jabbar		**e-mail**		
Module Leader's Acad. Title	Ass. Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. To enable the students to identify the tools/instrument needed. 2. To familiarize the student, with the proper techniques, manipulation, uses, and care of the drawing instruments. 3. To introduce the students to a specific language of engineers which is a graphical language. 4. To help and guide the students to learn how technical drawings can be drawn in different methods. 5. To acquire some different skills such as the ability to read and prepare engineering drawings, the ability to make free-hand sketching of objects, the power to imagine, analyze, and communicate, and the capacity to understand other subjects. 6. To acquire adequate skills in measuring/scaling dimension accurately, and the method of placing dimensions. 7. To acquire basic analysis skills in orthographic/section/isometric drawing 8. To know the proper drawing conventions/symbols to describe the engineering drawings.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Get information about the important tools for engineering drawing. This will give student basic knowledge of technical drawings professions and means of communications to others. 2. Knowing the types of lines and their applications in technical drawings. 3. Learning the steps to construct different geometric figures like lines, arcs, polygon, ellipse etc. which is essential for engineer. 4. Comprehend general projection theory, with emphasis on orthographic projection to represent three-dimensional objects in two-dimensional views. 5. Develop student's imagination and ability to represent the shape size and specifications of physical objects. 6. Learning how to draw sectional views. 7. Knowing how to place dimensions on engineering drawings. 8. Equipped with the skill that enables the students to convert orthographic projection into isometric projection.
Indicative Contents المحتويات الارشادية	Introduction to Engineering Drawing, Drawing Tools, Pencils, Drawing Sheets, Title Block of a Sheet, Types of Lines and their Uses. (10 hrs) Exercises in the Use of Instruments: Straight lines (Solid, Dashed and Center Lines), Circles and Tangents. (10 hrs) Graphic Geometry: Bisections, Parallels, Divisions, Angles, Geometric Shapes Tangents (Straight and Curved Lines), Ellipse. (30 hrs) Orthographic Projection: Theory, Orthographic Views, Representation of

	Lines, Hidden Features, Center Lines. Precedence of Lines, Exercises in Projection. (30 hrs) Sectional Views: Definition, Classification, Full and Half Sections, Exercises in Sectional Views. (20 hrs) Dimensioning Practices: Introduction, Terminology and Conventions, Exercises in Dimensioning. (10 hrs) Introduction to Types of Pictorial Drawing: Pictorial Methods Classified, Isometric. (10 hrs) Isometric Drawing: Perspective Drawing, Sketching, Layout of Circles, Exercises in Isometric Drawings. (30 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, lectures and by considering a variety of assignments that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	1,2,3,4,5,6
	Assignments	12	15% (15)	2,3,4,5,6,7, 9,10,11,12,13 ,14	1,2,3,4,5,6,7,8
	Projects / Lab.	15	15% (15)	1,2,3,4,5,6,7, 8,9,10,11,12, 13,14,15	1,2,3,4,5,6,7,8
	Report				
Summative assessment	Midterm Exam	2 hr	10% (10)	8	1,2,3,4,5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to engineering drawing and graphic instruments and their uses
Week 2	Exercises in the use of instruments
Week 3	Graphic geometry I
Week 4	Graphic geometry II
Week 5	Graphic geometry III
Week 6	Orthographic Projection I
Week 7	Orthographic Projection II
Week 8	Orthographic Projection III
Week 9	Sectional Views I
Week 10	Sectional Views II
Week 11	Dimensioning Practices (introduction, terminology and conventions)
Week 12	Introduction to types of Pictorial Drawing
Week 13	Isometric Drawing I
Week 14	Isometric Drawing II
Week 15	Isometric Drawing III
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	الرسم الهندس المؤلف: عبدالرسول الخفاف بغداد – 1990	Yes
Recommended Texts	The Fundamentals of Engineering Drawing & Graphic Technology, Fifth Edition Thomas E. French & Charles J. Vierck	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
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	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics**			**Module Delivery**	
Module Type	**Basic**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**E112**				
ECTS Credits	**10**				
SWL (hr/sem)	**250**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Jasim Mohsen		**e-mail**		
Module Leader's Acad. Title	Lecture		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	• Good understanding of General Mathematics. • To give information about Integrations and derivations and how they are used in the physics field. • Helping students to connect mathematics with physics. • solving mathematical examples in their physics modules. • better understanding of integration and derivations and their importance of them in physics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of the module, students should be able to: • Work with functions represented in various ways: graphical, numerical, analytical, or verbal. They should understand the connections among these representations. The functions include linear, polynomial, absolute value, rational, exponential, logarithmic, trigonometric, inverse trigonometric, hyperbolic, inverse hyperbolic, and piecewise defined functions. • Define and apply the concepts of limits and continuity to the mentioned functions and study them graphically and analytically. • Understand the meaning of the derivative in terms of a rate of change and local linear approximation, and should be able to use derivatives to solve a variety of problems. • Understand the meaning of the definite integral both as a limit of Riemann sums as the net accumulation of change and should be able to use integrals to solve a variety of problems. • Understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus. • Use various integration techniques to obtain anti-derivatives without an integral table or calculator.
Indicative Contents المحتويات الارشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Different forms of teaching will be used to come across with objectives of the course. PowerPoint presentations for the head titles, definitions, graphs, and many useful illustrations with a summary at the end of each chapter will be presented and discussed. • The PowerPoint contains information about new topics and unsolved examples, and then the whiteboard will be used to solve them and to let students to see the solutions.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Algebraic Preliminaries** Numbers, Sets, Inequalities & Absolute value.
Week 2	**Functions** Domain, Range, graphs, Symmetry, Asymptotes.
Week 3	**Limits** Definition of Limit, Theorems, Continuity, One-Sided Limits, Limits at Infinity, L Hopital's rule.
Week 4	**Derivatives** Definition, Power and Sum Rules, Product and Quotient Rules, Chain rule, High-Order derivatives, Implicit differentiation.
Week 5	**Applications of Derivative** Maximum and minimum, mean value theorem, Increasing and Decreasing Functions, Concavity and Points of inflection, Second Derivative Test.
Week 6	**Definite Integration** Definition, Integral Theorems, Length of a Curve, Areas, Volume of Solids, Surface Area, Indefinite Integrals.
Week 7	**Transcendental Functions** Trigonometric Functions, Graphs, Derivatives of trigonometric functions, Inverse trigonometric functions, Graphs, Derivatives of Inverse trigonometric functions, Natural Logarithm Functions, Exponential Functions, Functions a^u and $\log_a u$.

Week 8	**Complex Number** Invented number systems, The Argand diagram. Addition, Subtraction, product, Qutient, Power and Roots. Demoivers theorem.
Week 9	**Hyperbolic Functions** Definition, Derivatives, Integrals, Inverse Hyperbolic Functions.
Week 10	**Plane Analytic Geometry** Circle, Parabola, Ellipse, Hyperbola
Week 11	**Volume of Revolution** Disk Method & Washer Method
Week 12	**Volume of Revolution** Volumes by Cylindrical Shells & solid with known cross sections
Week 13	**Methods of Integrations** Integration by substitution, Trigonometric Integrals & Quadratic Functions
Week 14	**Methods of Integrations** Integration by Parts, Integration by partial fractions, Integration of Rational Functions, improper integrals.
Week 15	**Matrices and Determinates** Definition, Properties of Matrices, Operations on Matrices, Determinants, Matrix Inverse, Solution of Linear Simultaneous Equations (Gramer's Rule).
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1. Calculus with Analytical Geometry, Fourth Edition, By Robert Ellis and Denny Gulick, 1990. 2. Calculus, Fifth Edition, By Stanley I. Cross may1992. 3. Calculus, International Edition, By Thomas, 2005.	Yes

Recommended Texts	1. Calculus, 11th Edition, By Thomas, 2013. 2. Understanding Basic Calculus, by S.K. Chung, 2007	Yes
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**English**			**Module Delivery**	
Module Type	**Supported**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**U111**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Ihsan Qasim		**e-mail**		
Module Leader's Acad. Title	Ass. Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	23/05/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	Improve the students' skills of reading, speaking, and writing. Enrich the vocabulary of the student with new words related to Civil Engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Clarify the basic concepts of the English language by defining the tools for grammar, formulating sentences, texts, and pronunciation. • Acquisition of skills in speaking and writing research and reports. • The ability to read, write and to gain experience in dealing with foreign companies.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teaching and learning strategies of English include a range of whole class, group of two or three students and individual activities to examine the different abilities, skills and learning rates of each student and allow every student to participate and to achieve some degree of success. Some of these strategies are: • Readings with a focus on improving the spelling of some complex words. • Exercises and activities during the lecture. • Homework assignments. • Directing students to some websites for learning and practicing. • Conducting seminars to explain and analyze a specific issue and find solutions to it.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	8	20% (20)		
	Seminar	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Present tense
Week 2	Past tense
Week 3	Future tense
Week 4	Punctuation
Week 5	Capitalization
Week 6	Simple sentences
Week 7	Compound sentences
Week 8	Prewriting techniques
Week 9	Midterm exam
Week 10	Connecting ideas
Week 11	Comparison
Week 12	Nouns
Week 13	Pronouns
Week 14	The passive.
Week 15	How to write an academic report
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Lectures and handouts	No
Recommended Texts		No
Websites	https://www.english-grammar.at	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering workshop**			**Module Delivery**	
Module Type	**Supported**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** √ **Practical** ☐ **Seminar**	
Module Code	**E116**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Jasim Mohsen		**e-mail**	muthana.shaker@uobasrah.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1.تعليم و تدريم الطلبة عىل الورش الفعاليات العملية ذات العلاقة بالجانب العمليفي موقع العمل 2. ايصال المبادى االساسية الستخدام المكائن و المعداتفي الورش الهندسية و تعليمها للطالب.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- تعليم الطالب عىل المبادى استخدام المكائن و المعدات الموجودةفي الورش الهندسية وكيفية التعامل معها 2-تعليم و تدريبه عىل الجانب العمليللورش الهندسية بمختلف انواعها. 3- تنمية المهارات االلزمة للتعامل العدد و االدوات المكائن الموجودةفي الورش الهندسية مع اعداد التقارير الخاصة باستخدام و فائدة هذه المعدات.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		

Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	ورشة النجارة
Week 2	ورشة النجارة
Week 3	ورشة النجارة
Week 4	ورشة اللحام
Week 5	ورشة اللحام
Week 6	ورشة الخراطة
Week 7	ورشة الخراطة
Week 8	ورشة لربلة
Week 9	ورشة لربلة
Week 10	ورشة السباكة
Week 11	ورشة السباكة
Week 12	ورشة لفرينية
Week 13	ورشة لفرينية
Week 14	ورشة اللحام
Week 15	ورشة اللحام
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Engineering Workshop	Yes
Recommended Texts		No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Human rights and democracy**			**Module Delivery**	
Module Type	**Supportive**			✓ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**E126**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Amel Jabbar		**e-mail**		
Module Leader's Acad. Title	Assist. Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	None		**e-mail**	None	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- Introducing students to the basic principles of human rights and clarifying those rights according to various sources. 2- Addressing the basic concepts of democracy and its historical development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Educating the student on the principles and laws related to the subject of human rights. 2 -Teaching students the foundations upon which human rights and the democratic system are built. 3- Developing the necessary skills to deal with the democratic system. 4- The student acquainted with the constitutional rights in the Iraqi law
Indicative Contents المحتويات الارشادية	Universal Declaration of Human Rights

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Teaching and learning strategies of Human rights and democracy of whole class, group of five students and individual activities and jobs to examine abilities, skills and learning. • Learn about most of the ideas and theories related to the systems of political governance and the way of looking at the issue of human rights and democratic behavior • How to preserve the right of opposition constitutionally • Preserving the rights of minorities in society • Manage discussions on topics related to the curriculum • method of democratic dialogue Respect the different opinions on the chosen topics.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4,14	LO #1-3, 8-12
	Assignments	2	20% (20)	8,15	LO # 5-6, 13-14
	Report	1	10% (10)	12	LO # 1-8
Summative assessment	**Midterm Exam**	2 hr	10% (10)	10	LO # 1-8
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The historical development of human rights throughout history
Week 2	Human rights in the Christian and Jewish religions
Week 3	Human rights in Islam
Week 4	Women's rights in ancient civilizations and Islam
Week 5	Universal Declaration of Human Rights
Week 6	National Human Rights Resources
Week 7	Human rights in the constitution of the Republic of Iraq for the year 2005
Week 8	Human rights and citizenship

Week 9	Definition of democracy - historical development - characteristics - types of authorities - Islam and democracy
Week 10	Defining freedom linguistically and idiomatically - Sources of freedom - Freedom in the West - Individual and public freedom in Islam - Economic, labor and intellectual freedom
Week 11	Political and civil rights in the democratic system
Week 12	characteristics of the democratic system
Week 13	Democratic guarantees - types of guarantees - constitutional guarantees - judicial guarantees - political guarantees - combating organized corruption
Week 14	Elections systems
Week 15	Types of democratic systems
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Human rights, children and democracy for the Ministry of Education Human rights and children and democracy for the Ministry of Higher Education and Scientific Research - University of Tikrit	Yes
Recommended Texts	**Curriculum lectures**	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Building Material**			**Module Delivery**	
Module Type	**Core**			☑ **Theory** ☑ **Lecture** ☑ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE124**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level		1	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Hawraa Sami		**e-mail**		
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- Definition of building materials and the importance of studying them. 2- Studying models of building materials. 3- How to deal with building materials and benefit from them. 4- History of building materials and ways to develop them. 5- Studying all the properties related to building materials, including physical, chemical, mechanical, etc.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Knowing the building materials used previously and at the present time. 2- Methods of preparing old and modern building materials. 3- The different properties of building materials. 4- Laws and equations related to each material. 5- Knowing the factors affecting these materials as well as ways to develop them.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The strategy used in this curriculum is to direct the student to study building materials and think about ways to develop them and understand their properties and everything related to them through studying them theoretically and conducting experiments for each material in the laboratory.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to the science of building materials.
Week 2	General properties of building materials.
Week 3	General properties of building materials.
Week 4	Mechanical properties of engineering materials.
Week 5	Stress-strain curves for some materials.
Week 6	Modulus of elasticity for some engineering materials.
Week 7	Creeping and the factors affecting it and its curve.
Week 8	Fatigue and finding the limit of continuity.
Week 9	Bricks, their types, methods of classification and manufacture.
Week 10	Bricks, their types, methods of classification and manufacture.
Week 11	Wood, its composition and methods of preservation.
Week 12	Ferrous materials, their types, methods of preparation, and factors affecting them.
Week 13	Tiles, its types and specifications.
Week 14	Types of plaster and the most important gypsum products.
Week 15	Binding materials and their uses locally and their types.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction
Week 2	Brick test
Week 3	Iron test.
Week 4	Tiles test.
Week 5	Plaster test.
Week 6	Wood test.
Week 7	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Building materials science,	Yes
Recommended Texts	Natural building materials technology, For the author, Dr. Ahmed Ibrahim Al-Attiyah.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Mechanics**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE113**				
ECTS Credits	**10**				
SWL (hr/sem)	**250**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Jasim Mohsen		**e-mail**		
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		

	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction**: Definitions, International System of Units, Newton's laws of motion and Force Systems
Week 2	Resultant Of Forces System: System of Forces, Composition and Resolution of Forces, Resolution and Composition of Two Concurrent, Coplanar forces, Resolution and Composition of three or more Concurrent, Coplanar forces, Equivalent couple, Force – couple system.
Week 3	Equilibrium: General, Free Body diagram (F.B.D), Modeling the Action of Forces in 2D Analysis, Two- and Three-Force Member, Equilibrium conditions
Week 4	Friction: Theory of Dry Friction, The static and kinetic friction forces, Coefficients of Friction, Angles of Friction, Problems Involving Dry Friction, Procedure for Analysis,
Week 5	Trusses; method of joint
Week 6	Method of section
Week 7	Center Of Gravity And Centroid
Week 8	Moments Of Inertia
Week 9	Dynamics: Introduction ,
Week 10	Dynamics: Introduction
Week 11	Rectilinear Kinematics
Week 12	Continuous Motion,
Week 13	Coplanar Curvilinear Motion of a Particle Using Rectangular Components
Week 14	Motion of Projectiles
Week 15	Motion of Projectiles
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Vector Mechanics for Engineers, Ferdinand P. Beer Statics and Dynamics • Engineering Mechanics: by R. C. HIBBELER • Engineering Mechanics: Statics and Dynamics; by Archie Higdon and William B. Stiles. • Theory and Problems of Engineering Mechanics: Statics and Dynamics; by Mclean and Nelson. • Engineering Mechanics : Dynamics; 5th Edition by R. C. Hibbeler.	Yes
Recommended Texts		No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings

	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Ethics**			**Module Delivery**	
Module Type	**Supportive**			√☐ **Theory** √☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** √☐ **Seminar**	
Module Code	**U211**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	تهيئة الطلبه للعمل الهندسي بعد التخرج للتعامل مع التحديات الخاصه ببيئة العمل. ✓ تعليم ممارسات المهندس في بيئة العمل والتعامل البشري مع المشاريع المختلفه. ✓ زيادة وعي المهندس للتعامل مع التحديات قي بيئة العمل والتعامل مع اطراف العمل المختلفه. ✓
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	طرق التعامل الانساني مع المشاكل التي تحصل في العمل. ✓ الموازنه بين مصالح الاطراف المختلفه في المشاريع الهندسيه. ✓ التحلي بالصفات الشخصيه المطلوب التحلي بها في مهنة الهندسه من ناحية التعامل مع ✓ رفاق العمل بما لا يخل بمصلحة العمل او مصلحه ايا من الاطراف داخله. معرفة حقوق وواجبات اطراف العمل المختلفه في المشاريع الهندسيه ✓
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	توجيه الطلبه بضرورة الحذر عند التعامل مع رب العمل والجهه المنفذه فضلا عن العمال واساليب التعامل مع كل الاطراف كلا حسب موقعه وعلاقته بالمشروع والتصرفات المطلوبه في حالة حصول مشاكل في اي مرحله من مراحل العمل ومراعاة القوانين النافذه الرسميه وغير الرسميه كالتاثيرات الاجتماعيه الخاصه بموقع العمل وتاثر سلوكيات الاطراف المختلفه بها سلبا وايجابا.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	20	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.33
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	8, 13	LO# 1-7 and 8-13
	Assignments	1	10% (10)	5	LO# 1-5
	Projects / Lab.	0	0% (0)		
	Report	1	20% (10)	11	LO# 9-11
Summative assessment	Midterm Exam	2 hr	10% (10)	13	LO# 1-13
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	المفهوم العام لاخلاقيات المهنه اللغوي والاصطلاحي والخلاصه
Week 2	اهمية اخلاقيات المهنه في الحياه, اهمية العمل
Week 3	المقومات العامه لاخلاقيات المهنه وتنظيم وعقد ومراقبة العمل
Week 4	الاخلاق التي لها صله مباشره باخلاقيات المهنه
Week 5	اخلاقيات مهنة الهندسه, اخلاقيات ممارسة المهنه وتاريخ المدونات الهندسيه
Week 6	المدونات والمهن
Week 7	تعدد مدونات قواعد السلوك ونماذج من بعض الكوارث الهندسيه المشهوره
Week 8	تدريس اخلاقيات المهنه
Week 9	مكونات جهاز الاشراف المركزي على المشاريع الهندسيه ومستلزمات عملية الاشراف
Week 10	تسليم الموقع وتخطيطه والمخططات وانواعها
Week 11	التخطيط والمتابعه والبرمجه والسيطره على العمل
Week 12	التفتيش والتدقيق والفحص والسيطره على الكلفه
Week 13	المقايسه والتغييرات والاعمال الاضافيه والمدد الاضافيه
Week 14	اعمال الانجاز وتسلم المشروع اوليا ونهائيا
Week 15	Preparatory Week
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	اخلاقيات مهنة الهندسه للدكتور نبيل غبد الرزاق جاسم طباعة جامعة البصره	Yes
Recommended Texts	دليل المهندس المقيم للمشاريع الانشائية الطبعة الثانية وزارة الاعمار والاسكان العراقيه 2015	No
Websites	https://www.tutorialspoint.com/engineering_ethics/engineering_ethics_introduction.htm	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Statistics**			**Module Delivery**	
Module Type	**Supportive**			☐ **Theory** ✓ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE227**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The module aims to present the basic of engineering statistics by analyzing, organizing and describing data in tables and drawings, knowing the measures of dispersion and central tendency, in addition to knowing the theory of probability and inference from the data to make decisions and linking them to engineering reality.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding 1- Understand the importance of statistics and its divisions. 2- Learn how to show and represent statistical data with tables or graphics. 3- Identify the most important measures of central tendency and dispersion of data. 4- Learn about probability theory and its different distributions. 5- Identifying the design of samples, their estimation, and knowledge of their properties. B. Subject-specific skills 1- Analyze, organize, and describe data in tables and/or curves. 2- Describe the averages of the data and methods of measuring their dispersion. 3- Engineering inference from the statistical data to take the appropriate decision. 4- Linking information to engineering reality.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Weekly homework and daily and weekly quizzes. Giving assignments and activities in the classroom. As well as guiding students to the important scientific sources and taking some exercises to practice on them.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	INTRODUCTION TO ENGINEERING STATISTICS (Brief definition in statistics)
Week 2	PRESENTATION OF STATISTICS DATA cont. (Frequency distributions, Frequency distributions table)
Week 3	PRESENTATION OF STATISTICS DATA (Cumulative frequency distribution, Graphical representation of data)

Week 4	Graphical representation of data (Cumulative frequency curves, Histogram, Frequency polygon)
Week 5	MEASURES OF CENTRAL LOCATION (Measures of center, four types)
Week 6	MEASURES OF DISPERSION, THE PROBABILITY (Measures of dispersion, four types, Probability theory)
Week 7	THE PROBABILITY cont. (Combinations of Three or More Events)
Week 8	THE PROBABILITY cont. (Probability theory rules, Conditional Probability, Bayes' theorems)
Week 9	Geometric Probability (Geometric Probability examples)
Week 10	PROBABILITY DISTRIBUTION (Discrete probability distribution, Discrete Uniform Distribution)
Week 11	PROBABILITY DISTRIBUTION, cont. (Geometric Distribution, Negative binomial Distribution, Binomial Distribution)
Week 12	Continuous Probability Distributions, Continuous Uniform Distributions, Normal Distributions, Exponential Distribution)
Week 13	SAMPLING DISTRIBUTION (Sampling Distribution of the Sample Mean, Central Limit Theorem, applications)
Week 14	THE EXPECTATION (Expectation properties and Moments)
Week 15	THE ESTIMATION (point estimator, interval estimator)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	

Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Statistics with engineering applications Entry to statistics	--
Recommended Texts	Fundamentals of Behavioral Statistics ,1988	--
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer programming**			**Module Delivery**	
Module Type	**Supportive**			☐ **Theory** ✓ **Lecture** ✓ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE217**				
ECTS Credits	**3**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Fortran is a general-purpose programming language mainly used by the scientific community. It is fast, and portable and it has seamless handling of arrays and parallelism. It is one of the earliest high level programming languages, and many recognize the original versions which used punched cards to encode the programs. Its name is a contraction of FORmula TRANslation (old versions of the language are typically stylized as FORTRAN) and its creation marked the representation of mathematical expressions with more ease than lower-level assembly language. It is still widely used today in numerical weather prediction, physical and chemical modelling, applied mathematics, and other high-performance computing purposes. Fortran has a rich array of mathematical libraries and scientific codebases available. The newer standards continuously add modern functionality and are fully backward compatible.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding 1- Familiarity with the programming language FORTRAN. 2- Learn how to write the program in the FORTRAN language. 3- Applying several engineering programs using the FORTRAN programming language. 4- Use physical problem using FORTRAN 5- Identify the variables and constants in the programming language. 6- Identify loops, arrays, and subprograms. B. Subject-specific skills 1- Writing an engineering program in Fortran. 2- Convert any problem to a program written in Fortran. 3- Reserving locations for engineering data in the program's memory and using them. 4- Linking information to engineering reality.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Weekly homework and sudden daily and weekly tests. Giving homework and activities in the classroom. As well as guiding students to important scientific sources and taking some exercises to train on them. The practical side also contributes to applied knowledge.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to the Fortran language Program(initialization section, program structure)
Week 2	Variables and constants (how to write variables and constants)
Week 3	Inputs and outputs (how to start writing inputs and outputs)
Week 4	GOTO and FORMAT (statement and its types)
Week 5	Control statement (recognize control statement)
Week 6	DO loop statements (use Loop rules)
Week 7	IF statements and their types (Arithmetic and Boolean IF statements)
Week 8	Relationship rules and examples (some relationships between DO and IF)
Week 9	Multiple selected examples (A collection of examples)
Week 10	A collection of notes, general summaries of the previous chapters
Week 11	Introduction and properties of ARRAYs
Week 12	DIMENSION statement rules
Week 13	Using more than one method for reading and printing Reading and printing arrays
Week 14	Where statement selects the domain of the matrix
Week 15	External and internal functions Sub Routines
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Learn how to operate a computer with FORTRAN software
Week 2	Application on Variables and constants in FORTRAN language

Week 3	Start writing inputs and outputs in FORTRAN language with application
Week 4	Use GOTO and FORMAT statements with examples in Lab.
Week 5	Application of Control statements
Week 6	Learn to use DO loop statements and its rules in computer
Week 7	Apply IF statements and their types in PC.
Week 8	Use some relationships between DO and IF statements in the Lab.
Week 9	A collection of examples for civil engineering application part1
Week 10	A collection of examples for civil engineering application part2
Week 11	Use ARRAYs in the Lab. For Fortran language
Week 12	Apply DIMENSION statement rules
Week 13	Applications for students
Week 14	Use Where statement and apply it
Week 15	Learn how to use External and internal functions Sub Routines and application

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	FORTRAN FOR SCIENTISTS & ENGINEERS 4th Edition, by Stephen Chapman	--
Recommended Texts	Computing for Scientists: Principles of Programming with Fortran 90 and C++ R. J. Barlow, A. R. Barnett	--
Websites	https://fortran-lang.org/en/learn/	

Grading Scheme

مخطط الدرجات

Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance

(50 - 100)	**B -** Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Concrete technology**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE216**				
ECTS Credits	**9**				
SWL (hr/sem)	**175**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتوياتالإرشادية	
Module Aims أهداف المادة الدراسية	This Module aims at helping students: 1. To develop an understanding about the fundamentals of concrete technology. 2. To be aware of concrete historical development, general characteristics, types, and factors influencing Concrete properties. 3. To discuss and understand the materials involved in making Concrete. 4. Studying the concrete at its Fresh Stage including its design, estimation of material proportions as well as manufacturing, delivery, placing and curing. 5. Study the concrete at it Hardened stage including understanding concepts such as Shrinkage and Creep as well as Durability of concrete. 6. To understand the various laboratory tests required to be done for the concrete at various stages of its development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be able to exhibit the following key learning outcomes of this module: 1. Recall key historical stages of concrete development over the centuries. Discuss and list concrete types, characteristics and factors influencing its properties. 2. Define and list the various types of cementitious binders. Explain the process of manufacturing Portland cement and its chemical composition. 3. Explain the hydration process of Portland cement and define Portland cement types. 4. Explain the effect of aggregate on concrete and classify the various types of aggregates. Discuss and explain the properties of aggregates. 5. Calculate the various moisture conditions of aggregate moisture content, fineness modules and Bulk specific gravity. Discuss the characteristics of water used in concrete. 6. Define the workability of fresh concrete and explain its method of measurement, segregation, bleeding and list the factors affecting workability of concrete. 7. Explain and carry out the relevant calculations for concrete mix design using both the American and British methods. 8. Discuss the manufacturing process of concrete and explain the key factors to be considered during the delivery and placing of concrete. 9. Discuss the Hardened stage of Concrete including explaining key topics such as strengths of Hardened Concrete, Dimensional Stability—Shrinkage and Creep, Durability as well as non-destructive tests.
Indicative Contents المحتوياتالإرشادية	Indicative content includes the following: 1. Introduction to Concrete Concrete Definition and Historical Development, Concrete as a Structural Material, Characteristics of Concrete, Types of Concrete, Factors Influencing Concrete Properties. 2. Materials for Making Concrete Cementitious Binders, Aggregates, Admixtures and Water 3. Fresh Concrete

	Workability of Fresh Concrete, Mix Design, Procedures for Concrete Mix Design, Manufacture of Concrete, Delivery of Concrete, Concrete Placing, Early-Age Properties of Concrete. 4. Hardened Concrete Strengths of Hardened Concrete, Dimensional Stability—Shrinkage and Creep, Durability, Nondestructive tests

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدرا المنتظم للطالب خلال الفصل	100	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	7
Unstructured SWL (h/sem) الحمل الدرا غ المنتظم للطالب خلال الفصل	75	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	5
Total SWL (h/sem) الحمل الدرا ال للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	15% (15)	4, 13	LO # 2, 3, 4, 5 and 7
	Assignments	2	8% (8)	3, 9	LO # 1 and 6
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	7% (7)	14	LO # 7, 8 and 9
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1 to 5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Concrete Definition and Historical Development, Concrete as a Structural Material, Characteristics of Concrete, Types of Concrete and Factors Influencing Concrete Properties.
Week 2	Cementitious Binders: Classification of binders, Portland cement, Manufacture of Portland cement, Chemical composition, Hydration of Portland cement
Week 3	Cementitious Binders: Types of Portland cement, The role of water, Basic tests of Portland cement, Geopolymers
Week 4	Aggregates: Effects of aggregates, Classification of aggregates, Properties of aggregates, Moisture conditions, Moisture content (MC) calculations, Density and specific gravity, Unit weight,
Week 5	Measurement of moisture content, Grading aggregates, Shape and texture of aggregates. Solved examples for Moisture content (MC) calculations.
Week 6	Admixtures: Definition and classifications, Chemical admixtures, Air-entraining admixtures, Mineral admixtures. Water: Mixing water, Impurities in water, Water for curing and washing.
Week 7	Midterm Exam Workability of fresh concrete, Segregation and bleeding, slump loss.

Week 8	Introduction to Mix Design. Procedures For Concrete Mix Design using the American Institute of Concrete method
Week 9	Solved Examples for American method for concrete Mix design.
Week 10	Procedures For Concrete Mix Design using the British Standards Institute.
Week 11	Solved Examples for British method for concrete Mix design.
Week 12	Manufacture of Concrete. Delivery of Concrete. Concrete Placing: Site preparation, conveying concrete, Depositing concrete in forms, Compacting and finishing, Curing. Early-Age Properties of Concrete
Week 13	Strengths of Hardened Concrete: Definitions, Compressive strength, and corresponding tests.
Week 14	Uniaxial tensile strength and corresponding tests, Flexural strength and corresponding tests, Bond strength.
Week 15	Shrinkage and Creep, Durability. Non-destructive tests
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Fineness of Cement measurement: Method 1 & 2: Blaine Air Permeability & Sieve Analysis.
Week 2	Lab 2: Determination of Standard Consistency of Cement.
Week 3	Lab 3: Initial and Final Setting Time of Cement.
Week 4	Lab 4: Portland Cement Compressive and Tensile Strength: Casting stage.
Week 5	Lab 5: Portland Cement Compressive and Tensile Strength: Testing Stage.
Week 6	Lab 6: Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate.
Week 7	Lab 7: Standard Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.
Week 8	Lab 8: Sieve Analysis of Fine and Coarse Aggregate Test.
Week 9	Lab 9: Slump Test for Concrete.

Week 10	Lab 10: Compaction Factor Test for Concrete
Week 11	Lab 11: Compressive and Tensile Strength Test for Concrete
Week 12-14	For Students to Carry out the relevant tests to complete their Module report.
Week 15	Practical Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Zongjin Li. Advanced Concrete Technology. Advanced Concrete Technology, Published by John Wiley & Sons, Inc.	No
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتـاز	90 - 100	Outstanding Performance
	B - Very Good	جـد جدا	80 - 89	Above average with some errors
	C - Good	جـد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قـد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Applied mathematics**			**Module Delivery**	
Module Type	**Basic**			x **Theory** x **Lecture** ☐ **Lab** x **Tutorial** ☐ **Practical** x **Seminar**	
Module Code	**E212**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	2		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The course aims to; 1- Presenting polar coordinates and their applications in engineering 2- Presenting vectors and their applications in engineering 3- Presenting series and their applications in engineering 4- Presenting partial derivatives and their applications in engineering 5- Presenting multiple integral and their applications in engineering 6- Presenting complex numbers and their applications in engineering
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Knowledge and Understanding 1- Understanding polar coordinates and their relation to Cartesian coordinates and their applications. 2- Studying vectors and use them to study the analytic geometry of space with their important applications in engineering. 3- Studying different types of series and their applications in solving different engineering and mathematical problems 4- Using partial differentiation in deriving different surface equations, rate of change, optimization problem and estimation of change. 5- Studying and using multiple integral and their applications in civil engineering such as determining areas, volumes, center of masses and moments of inertia. 6- Studying complex numbers and their relations in solving different mathematical problems.
Indicative Contents المحتويات الإرشادية	– Graphing in Polar coordinates, calculating areas and lengths of curves using polar coordinates. - Study the analytic geometry of space using vectors. Vectors provide simple ways to define equations for lines, planes, curves, and surfaces in space with their many important applications in science, engineering. - study partial derivatives for the functions of two or multiple variables, chain rules, directional derivatives and critical points. - Study the multiple integrals in Cartesian and polar coordinates and area, volume, centroid and moment of inertia calculations using multiple integrals.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم

Strategies	Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all assignments and report work submitted is evaluated and responded to.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	102	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO # 1, 2, 4, 5
	Assignments	2	10% (10)	4, 9	LO # 1, 2, 4, 5
	Report	1	10% (10)	13	LO # 3, 6
Summative assessment	**Midterm Exam**	2 hr	20% (20)	7	LO # 1,2,3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition of Polar Coordinates, Polar Equations and Graphs, Relating Polar and Cartesian Coordinates, Graphing Polar Coordinate Equations
Week 2	Areas and Lengths in Polar Coordinates
Week 3	Vectors and the Geometry of Space, Component Form and Vector Algebra Operations
Week 4	Unit Vectors, Midpoint of a Line Segment, Navigation, forces action on a single object
Week 5	The Dot Product, Angle Between Vectors, orthogonal Vectors, work and Vector Projections
Week 6	The Cross Product, Calculating the Cross Product as a determinant, Area of a Parallelogram and Torque, Lines and Planes in Space
Week 7	Infinite Sequences and Series, Infinite Series, Taylor and Maclaurin Series,
Week 8	Power Series, The Binomial Series and Applications of Taylor Series
Week 9	Partial Derivatives, Limits and Continuity in Higher Dimensions, Partial Derivatives of a Function of Two and Three Variables Second-Order and higher Partial Derivatives.
Week 10	The Chain Rule, Directional Derivatives and Gradient Vectors, Tangent Planes and Differentials, Estimating Change in a Specific Direction
Week 11	Extreme Values and Saddle Points, optimization
Week 12	Double Integrals in Cartesian and Polar Form, Area by Double Integration
Week 13	Triple Integrals, Area, volume, centroid and moment of inertia
Week 14	Triple Integrals in Cylindrical and Spherical Coordinates
Week 15	Complex Numbers, Argand Diagrams, Euler's Formula, Operations on complex number
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas' Calculus, George B. Thomas	Yes
Recommended Texts	Calculus , STANLEY I. CROSSMAN	No
Websites		

Grading Scheme

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Survey**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical**	
Module Code	**CE215**				
ECTS Credits	**9**				
SWL (hr/sem)	**225**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	ENGINEERING DRAWING	**Semester**	1-1

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The aim of this Module is to provide the student with a deep understanding of surveying and construction activities; practical application of topographic surveying skills, an awareness of the preliminary considerations involved in construction developments and a knowledge of the materials and procedures employed in construction of small commercial/industrial building works.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Apply the basic surveying concepts, principles, and theories on distance and angular measurements as well as area computation. 2. Solve distances, elevations, and areas from a provided set of survey data. 3. Apply the basic surveying concepts, principles, and theories on determining horizontal and vertical distances using stadia. 4. Compute the missing data from incomplete traverse data. 5. Acquire a working knowledge of the design and layout of horizontal or vertical curves in highways or railways. 6. Determine and use the appropriate methodology in calculating earthworks in various civil engineering constructions.
Indicative Contents المحتويات الإرشادية	LESSON 1: Introduction to Surveying a. Surveying Concepts b. Types of Surveys c. Importance of Surveying d. Surveying Equipment and Accessories e. Measurement f. Sources of Errors g. Errors and Mistakes h. Accuracy and Precision Distance Measurement a. Measurement of Horizontal Distance - Pacing - Taping - Tachymetry - Graphical & Mathematical Method - Mechanical Devices - Photogrammetry b. Taping Over Level Ground Taping Along Sloping Ground LESSON 3: Distance Corrections a. Types of Correction b. Incorrect Tape Length c. Temperature Variations d. Slope Corrections e. Sag and Tension Corrections f. Combined Taping Corrections g. Errors in Taping h. Taping Precision LESSON 4: Leveling Methods a. Importance of Leveling b. Reference Elevations or Datums c. Types of Level d. Methods of Leveling e. Differential Leveling f. Leveling Errors g. Profile Leveling h. Profiles and Cross Sections LESSON 5: Angles and Directions Measurements a. Meridians b. Azimuth c. Bearings d. The Compass e. Local Attraction f. Traverse Angle Definitions g. Traverse Computations h. Transits and Theodolites i. Introduction to Total Stations j. Advantages and Disadvantages of Total Stations k. Surveying with Total Stations l. Measuring Horizontal Angles m. Closing the Horizon n. Measuring Zenith Angles CLO 1, 2, & 3 Synchronous • Lesson 5: Angles and Direction Measurement Sample Problems • Discussion of QUIZ # 1 • Asynchronous • Lesson 5: Angles and Direction Measurement Asynchronous Seatwork # 4 Assignment # 4 5th

	Traverse Adjustment and Area Computation a. Methods of Calculating Areas b. Balancing Angles c. Latitudes and Departures d. Error of Closure e. Balancing Latitudes and Departures f. Double Meridian Distances g. Double Parallel Distances h. Rectangular Coordinates i. Areas Computed by Coordinates j. Areas Within Irregular Boundaries LESSON 8: Topographic Survey a. Introduction to Topographic Survey b. Contours c. Plotting of Contour Characteristics d. Map Symbols e. Transit-Stadia Method of Mapping f. Plane Table Surveys g. Profiles from Contour Maps h. The Stadia Theory a. Measurement by Stadia for Horizontal distances b. Measurement by Stadia for inclined Distance c. Sources of Error in stadia work. LESSON 9: Horizontal curves a. Simple Curve b. Compound Curve c. Reverse Curve Spiral Curve Lesson 10: Vertical Curves a. Symmetrical Parabolic Curve b. Unsymmetrical Parabolic Curve

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Problem set assignments are due at the beginning of class. Homework can be turned in early if a student expects to be absent. • Guidelines for homework: a. All solutions will be submitted on 8 ½" x 11" paper. b. Solutions will be presented on one side of each sheet only. c. The first page will contain the following in the upper left margin: - Student's name - Student number - Course code and Course Title - Indicate the Problem set d. The final answer must be boxed together with the correct units. e. Clarity and neatness are vital. Points may be taken off for sloppiness.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	9

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	3&9	LO 1&2&3
	Assignments	2	10% (10)	5&13	LO 2&5
	Projects / Lab.	1	10% (10)	12	LO 6
	Report	1	10% (10)	10	LO 5 & 4
Summative assessment	**Midterm Exam**	2 hr	10% (10)	15	All
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Surveying Distance Measurement
Week 2	Distance Corrections
Week 3	Leveling Methods
Week 4	Angles and Directions Measurements
Week 5	Traverse Adjustment and Area Computation
Week 6	Topographic Survey
Week 7	Topographic Survey
Week 8	Horizontal curves
Week 9	Vertical Curves
Week 10	Earthwork Operations & Mass Diagram
Week 11	Earthwork Operations & Mass Diagram

Week 12	Global Positioning System
Week 13	Satellite survey
Week 14	GIS
Week 15	GIS
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Tape measurement
Week 2	Tape measurement
Week 3	Tape measurement
Week 4	Leveling
Week 5	Leveling
Week 6	Leveling
Week 7	Theodolite
Week 8	Theodolite
Week 9	Total Station
Week 10	Total Station
Week 11	Total Station
Week 12	Total Station
Week 13	Total Station
Week 14	Total Station
Week 15	Total Station

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		no

Recommended Texts	1. Surveying: Theory and Practice by James M. Anderson and Edward M. Mikhail, (7th Edition), 2002 2. Kavanagh, Barry F., Surveying: Principles and Applications (9th Edition), 2014 3. Kavanagh, Barry F., Surveying with Construction Applications (8th Edition), 2015 4. Ghilani, C.D., and Wolf, P.R., Elementary Surveying: An Introduction to Geomatics (13th Edition), 2011 5. Schofield W. and M. Breach, Engineering Surveying, (6th Edition), 2007 6. La Putt, J.P., Elementary Surveying (3rd Edition) 2013 Reprint 7. La Putt, J.P., Higher Surveying (2nd Edition) 2013 Reprint	No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Building construction method and drawings**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE228**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشاد ية	
Module Aims أهداف المادة الدراسية	1. Understanding the types of construction systems. 2. The steps of starting and completing construction projects. 3. Specifications and use of various construction equipment. 4. The requirements and methods of implementation of projects. 5. The general requirements and specifications of various construction works.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The ability to distinguish the type of construction system. 2. Select the appropriate procedure to perform certain construction work. 3. Select the most suitable equipment. 4. Select the type of foundation. 5. The knowledge required to distinguish the works that met the specifications.
Indicative Contents المحتوياتالإرشادية	1. Types and development of buildings. 2. Earthworks types and methods of implementation. 3. Dewatering methods. 4. Types and properties of foundations. 5. Construction of walls 6. Finishing 7. Concrete works 8. Joints types and methods of installation.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Encouraging students to participate in presenting opinions and ideas relating construction. 2. Letting the students to select the right choice to perform certain construction work. 3. Testing students' understanding by inviting them to participate by discovering the errors, mistakes, and disadvantages of the method of implementing a certain step within a construction project and suggesting the appropriate method.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction on building and construction projects
Week 2	Earthworks and excavation using hand tools and the methods of supporting them.
Week 3	Excavation with mechanical equipment, dewatering, earth filling, and compaction.
Week 4	Shallow footings types and requirements.
Week 5	Raft, buoyancy, and pier foundations and the settlement and vibration of foundations.
Week 6	Pile foundations types and methods of installation.
Week 7	Concrete works details requirements and equipment.
Week 8	Masonry works units' types and requirements.
Week 9	Requirements and design of brick walls.
Week 10	Frameworks and scaffolding

Week 11	Water and dump proofing
Week 12	Joints in buildings
Week 13	Means of transition between levels.
Week 14	Beams, columns, and floor systems.
Week 15	Finishing works.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Zuheir Sako and Artin Levon "Building construction (in Arabic)"	Yes
Recommended Texts	1. Edward Allen and Joseph Iano "Fundamentals of Building Construction M a t e r i a l s a n d M e t h o d s" 2. T.D. Ahuja and G.S. Birdi "CIVIL ENGINEERING building construction" 2.PURUSHOTHAMA RA J "Building Construction Materials and Techniques"	No
Websites		

Grading Scheme

مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتـاز	90 - 100	Outstanding Performance
	B - Very Good	جـد جدا	80 - 89	Above average with some errors
	C - Good	جـد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قـد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Human rights and democracy**			**Module Delivery**	
Module Type	**Supportive**			✓ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**E126**				
ECTS Credits	**3**				
SWL (hr/sem)	**100**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name	None		**e-mail**	None	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1-Introducing students to the basic principles of human rights and clarifying those rights according to various sources. 2-Addressing the basic concepts of democracy and its historical development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Educating the student on the principles and laws related to the subject of human rights. 2 -Teaching students the foundations upon which human rights and the democratic system are built. 3- Developing the necessary skills to deal with the democratic system. 4-The student acquainted with the constitutional rights in the Iraqi law
Indicative Contents المحتويات الإرشادية	Universal Declaration of Human Rights

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Teaching and learning strategies of Human rights and democracy of whole class, group of five students and individual activities and jobs to examine abilities, skills and learning. • Learn about most of the ideas and theories related to the systems of political governance and the way of looking at the issue of human rights and democratic behavior • How to preserve the right of opposition constitutionally • Preserving the rights of minorities in society • Manage discussions on topics related to the curriculum • method of democratic dialogue Respect the different opinions on the chosen topics.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4,14	LO #1-3, 8-12
	Assignments	2	20% (20)	8,15	LO # 5-6, 13-14
	Report	1	10% (10)	12	LO # 1-8
Summative assessment	**Midterm Exam**	2 hr	10% (10)	10	LO # 1-8
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The historical development of human rights throughout history
Week 2	Human rights in the Christian and Jewish religions
Week 3	Human rights in Islam
Week 4	Women's rights in ancient civilizations and Islam
Week 5	Universal Declaration of Human Rights
Week 6	National Human Rights Resources
Week 7	Human rights in the constitution of the Republic of Iraq for the year 2005
Week 8	Human rights and citizenship

Week 9	Definition of democracy - historical development - characteristics - types of authorities - Islam and democracy
Week 10	Defining freedom linguistically and idiomatically - Sources of freedom - Freedom in the West - Individual and public freedom in Islam - Economic, labor and intellectual freedom
Week 11	Political and civil rights in the democratic system
Week 12	characteristics of the democratic system
Week 13	Democratic guarantees - types of guarantees - constitutional guarantees - judicial guarantees - political guarantees - combating organized corruption
Week 14	Elections systems
Week 15	Types of democratic systems
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Human rights, children and democracy for the Ministry of Education Human rights and children and democracy for the Ministry of Higher Education and Scientific Research - University of Tikrit	Yes
Recommended Texts	**Curriculum lectures**	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Fluid Mechanics**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE214**				
ECTS Credits	**9**				
SWL (hr/sem)	**225**				
Module Level	2		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشاد ة	
Module Aims أهداف المادة الدراسية	1- To develop problem solving skills and understanding of Fluid Mechanics in civil engineering. 2- This course deals with the basic concepts of Fluid Mechanics. 3- This is the basic subject for all electrical and electronic circuits. 4- 4- To understand viscous fluid flow problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- To understand general principles of fluid mechanics 2- To understand incompressible and compressible flow 3- To understand flow through pipes and open channel
Indicative Contents المحتوياتالإرشاد ة	This module covers a wide range of topics of fluid mechanics in order to offer basic knowledge and foundations applicable to various civil engineering problems. This module introduces fundamental of conservation (mass, momentum and energy) laws of fluid flow, potential (ideal) flow, inviscid compressible flow and viscous flow. This module is also complemented by lab classes and tutorials

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, and interactive tutorials.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Fluid Properties and Units and Dimensions
Week 2	Fluid pressure and its measurements
Week 3	Hydrostatic forces on surfaces: plane Surfaces
Week 4	Hydrostatic forces on surfaces: Non plane Surfaces
Week 5	Buoyancy and floatation
Week 6	Kinematics and dynamics of fluid flow, Bernoulli's equation
Week 7	Fluids Subjected to constant acceleration
Week 8	Applications of Bernoulli's equation
Week 9	Discharge measurements
Week 10	Momentum equation
Week 11	Laminar and turbulent flow
Week 12	Flow through pipes, Major and minor head losses
Week 13	Flow through pipes, Major and minor head losses
Week 14	Open channel flow
Week 15	Open channel flow
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Some Physical Properties of Fluids
Week 2	Fluid Pressure at a Point
Week 3	Simple Manometers, Differential Manometers
Week 4	Hydrostatic Forces on Submerged Surfaces
Week 5	Impulse Momentum Equation
Week 6	Types of Resistances and Losses of Energy in Pipes
Week 7	Flow Measuring Devices

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fluid Mechanics, Streeter	Yes
Recommended Texts	Fluid Mechanics, White, F.M., 2016	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Strength of Material**			**Module Delivery**	
Module Type	**Core**			☑ Theory ☑ Lecture ☐ Lab ☑ Tutorial ☐ Practical ☐ Seminar	
Module Code	**CE213**				
ECTS Credits	**9**				
SWL (hr/sem)	**225**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mechanics (Static)	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	The objective of this course is elaborate on the knowledge of engineering mechanics (statics) and to teach the students the purpose of studying strength of materials with respect to civil engineering design and analysis. The course introduces the students to the concepts of engineering mechanics of materials and the behavior of the materials and structures under applied loads
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply the knowledge of fundamental sciences mainly mathematics and physics to identify, formulate and solve civil engineering problems including stress, strain and deflection calculations as well as calculating axial force, shear and bending moment diagrams used in civil engineering analysis and design
Indicative Contents المحتويات الإرشادية	The objectives of CE213, Strength of Materials, are to learn the principles of mechanics applied to different materials [III] and to develop problem solving skills through application of these principles to basic engineering problems. Specific topics covered in this class include: behavior of axially loaded members; torsion of circular shafts; stresses and deflections in beams; connectors in built-up beams; stress transformation under rotation of axes; principal stresses; triaxial stress and maximum shear stress; pressure vessels; and buckling behavior of columns. The course will rely on students' prerequisite knowledge of mathematics and basic science [II] in developing principles and analytical techniques of mechanics of materials.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module will be delivered with a strategy that encourage students' to participate in the discussion, exercises solving, and at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple projects involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2,12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction and review of statics – equilibrium.
Week 2	Simple stresses and strains
Week 3	Mechanical properties of materials
Week 4	Axial load and deformation on axial load
Week 5	Thermal stresses and strains
Week 6	Thin walled cylinder
Week 7	Torsion-calculation of simple torsion for circular shafts.
Week 8	Plan Stress Analysis (Two Dimensional Stress Analysis)
Week 9	Shearing Forces and Bending Moments in Beams
Week 10	Shear force and bending moment diagrams.
Week 11	Bending stress in Beams
Week 12	Shearing stress in beams
Week 13	Deflection of Beams-Integration Method

Week 14	Deflection of Beams-Singularity Method
Week 15	Buckling of Columns.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Mechanics of Materials-Andrew Pytel	No
Recommended Texts	Strength of Materials-Ferdinand L.Singer	No
Websites	https://www.coursera.org/courses?query=mechanics%20of%20materials	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جد جدا	80 - 89	Above average with some errors
	C - Good	جد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Project management and engineering economics**			**Module Delivery**	
Module Type	**Core**			☑ **Theory** ☑ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE316**				
ECTS Credits	**6**				
SWL (hr/sem)	**100**				
Module Level	3		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	None		**e-mail**	None	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Engineering Statistics	**Semester**	Level 2 – Semester 2
Co-requisites module	None	**Semester**	None

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	**Course Description**: Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project's requirements. Basic project management for engineering; project development and economic justification; estimating; scheduling; network methods; critical path analysis; earned value management; project organizational structures; project risk assessment; resource allocation; ethics; characteristics of project managers. **Objectives**: Develop the ability to identify, formulate, and solve problems of cost analysis in engineering decision making and the management and control of complex projects. Engineering project management topics include methods for planning, evaluation, organization, ethics, budgeting, cost estimating, scheduling, expediting, reporting, monitoring, and implementation of projects. Engineering economics topics including interest formulas and equivalence calculations, inflation, measures of investment worth, after tax analysis, depreciation accounting and replacement analyses, life-cycle costing and design economics, risk analysis and cost-benefit analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Participants will be able to understand and implement simple tools and techniques of the main project management areas composed of: project integration management, project scope management, project time management, project costs management, and project risk management. So that he has the ability to accomplish the following:- • Understand the current state of the project management professional • Apply project management tools and techniques • Explore the appropriate methods to initiate, plan, execute, control and close projects • Perform economic calculations involving the time value of money using standard formulas and tables. • Compare alternatives using Present Worth, Annual Worth, Rate of Return and Benefit-Cost analysis. • Define and select a project and proper organizational structure to manage it. • Create a structured project plan that includes resource and cost analysis, and manages risk. • Apply economic and project management knowledge to schedule resources, identify constraints, and track time in a project.
Indicative Contents المحتويات الارشادية	This course will cover the basic tools, skills, and knowledge necessary to successfully manage a project through its inception, design, planning, construction, and transition phases. Students will learn a variety of tools and techniques to see what works and what does not in the real world of project management. Therefore, this course is divided into two main parts:- Part 1: Time control – Project Scheduling Management Part 2: Cost control – Economy Engineering

	The courses discusses the details of the processes required to manage timely completion of the project. It also includes the processes involved in estimating, budgeting and controlling costs so that the project can be completed within the approved budget. So that the vocabulary of the curriculum and the distribution of lecture hours will be as follows:- Part 1: Project Management 1- General Introduction [2hrs] 2- Project Planning [4hrs] 3- Bar chart (Gantt Chart) [4hrs] 4- Network Analysis Technique [4hrs] 5- Project Resource Management (Leveling & Scheduling) [4hrs] 6- Program Evaluation and Review Technique (PERT) [4hrs] 7- Repetitive Projects Planning by Line of Balance (LOB) [4hrs] Part 2: Engineering Economy 1- Project Selection Process [4hr] 2- Estimation of Construction Cost [4hr] 3- Cash Flow of Project [4hr] 4- Project Evaluation by Earned Value management [4hrs] 5- Reducing Project Duration by Crashing Management [4hrs] 6- The Basis of construction contracts [4hrs] 7- Project Risk Management [2hrs] 8- Linear Programming (Operation Research) [4hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1-5, and 8-10
	Assignments	15	20% (20)	1-15	LO # 1-15
	Projects / Lab.	1	10% (10)	Continuous	
	Report	-	-	-	-
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	General Introduction
Week 2	Project Planning
Week 3	Bar chart (Gantt Chart)
Week 4	Network Analysis Technique
Week 5	Project Resource Management (Leveling & Scheduling)
Week 6	Program Evaluation and Review Technique (PERT)
Week 7	Repetitive Projects Planning by Line of Balance (LOB)
Week 8	Project Selection Process
Week 9	Estimation of Construction Cost
Week 10	Cash Flow of Project
Week 11	Project Evaluation by Earned Value Management
Week 12	Reducing Project Duration by Crashing Management
Week 13	The Basis of construction contracts
Week 14	Project Risk Management
Week 15	Linear Programming (Operation Research)
Week 16	**Preparatory week before the final Exam**

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Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	

Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	إدارة المشاريع الانشائية والعالقات المهنية: احسان العطار	Yes
Recommended Texts	1. A Guide to the project management body of knowledge, 4th edition, PMI 2. Project Management, A Systems Approach to Planning, Scheduling, and Controlling, 10th edition, KERZNER 3. Principles of Construction management By: Roy Piltcher 4. Construction management By: Robert Hares & Frank Hares 5. Operations Management Creating Value Along the Supply Chain Russell - Chapter 9: Project management", By: Russell and Taylor (2011)	No
Websites	https://www.pmi.org/ https://www.pmi.org/pmbok-guide-standards/foundational/pmbok	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering and Numerical Analysis**			**Module Delivery**	
Module Type	**Core**			■ **Theory** **Lecture** **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE311**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Mathematics I	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- Enable knowledge and understanding of practical applications of engineering analysis. 2- Ability to identify different differential equations. 3- Ability to build a mathematical model to represent various engineering processes. 4- Ability to analyze and discuss. 5- Enable knowledge and understanding of practical applications by numerical methods. 6- Aability to identify different numerical method. 7- Brainstorming by encouraging students to produce a large number of ideas about an issue or problem. 8- Cooperative learning by working collectively.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Knowing types and classification of differential equations. 2- Ability to solve first order ordinary differential equations. 3- Recognizing some engineering applications on first order DE. 4- Ability to solve second and higher order linear ordinary DE. 5- Recognizing some engineering applications on second order DE. 6- Ability to solve a set of ordinary DE. 7- Ability to use matrices in solving a set of algebraic equations. 8- Identifying numerical methods and when to use them. 9- Ability to solve algebraic equations numerically. 10- Ability to solve a set of algebraic equations numerically. 11-Derivation of different functions by numerical methods. 12-Performing numerical integration to different functions. 13- Solving ordinary DE numerically. 14-Finding a suitable curve for a set of points. 15-Performing interpolation and extrapolation to approximate required functional value.
Indicative Contents المحتويات الارشادية	Indicative content includes the following. Part One – Engineering Analysis 1- Introduction – Definition, classification, solution, and origin of differential equations DE. [2 hr] 2- First order ordinary differential equations ODE – Separable variables, homogeneous, exact, linear, Bernoulli's, reducible to first order DE. [20 hr] 3- Applications on 1st order ordinary differential equations – Orthogonal trajectories, suspended cables, flow through orifices, motion of bodies and general applications. [8 hr] 4- Second and higher order linear ordinary differential equations – Homogeneous and non-homogeneous linear DE with constant coefficients, undetermined coefficients method, variation of parameters method, linear DE with variables coefficients, Euler-Caushy equations, and Legender equations. [10 hr] 5- Applications on 2nd and higher order ordinary diff. equations –

	Deflection of beams, buckling of columns, deflection of beam-columns, simple vibration and vibration of structures. [14 hr] 6- Simultaneous linear ordinary differential equations. [2] 7- Matrices and determinants for solving simultaneous algebraic equations - Cramer's rule, Gauss elimination, Gauss-Jordan elimination and matrix inverse. [4 hr] 8- Fourier series - Definition, type and applications of Fourier series. [8 hr] Part Two – Numerical Analysis 1- Introduction – Definition of numerical methods, exact and approximate solution and error calculation. [2 hr] 2- Numerical solution of algebraic equations –Bisection method, fixed-point iteration, Newton-Raphson method and modified Newton method. [6 hr] 3- Numerical solution to a set of algebraic equations –Solution of a set of linear equations, Jacobi method, Gauss-Siedel method and Solution of a set of non-linear equations. [4 hr] 4- Taylor series –Maclaurin series, Taylor series and application of Taylor series to approximate functions. [4 hr] 5- Numerical differentiation –Finite differences approximations and application of finite differences in derivation of different functions. [4 hr] 6- Numerical integration –Trapezoidal method, Simpson method and Romberg integration. [6 hr] 7- Numerical solution of ordinary differential equations ODE – Initial value problems, Euler's method, Runge-Kutta method, boundary value problems. [8 hr] 8- Curve fitting – Finding a suitable curve for a set of points using Least-squares criterion (linear regression), statistical comparison, and Non-polynomial models (nonlinear regression). [4 hr] 9- Interpolation and extrapolation – Interpolation with equally spaced data, Gregory-Newton forward interpolation formula, Lagrange interpolation polynomial and interpolation with unequally spaced data. [4 hr] 10- Numerical solution of partial differential equations PDE . [4 hr]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, develop the student's ability to perform duties and deliver them on time and logical and programmatic thinking to find solutions to various problems, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4, 11	Lo # 1, 2, 3 and 9
	Assignments	2	10% (10)	6, 12	Lo # 1, 5, and 11
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	Lo # 9, 10, 11 and 12
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	Lo # 1 - 7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	First order ordinary differential equations ODE – Definition and classification of DE, Separable variables DE and homogeneous DE.
Week 2	First order ordinary differential equations ODE – Reducible to homogeneous DE, exact DE, reducible to exact DE and inspection method.
Week 3	First order ordinary differential equations ODE – Linear DE, Bernoulli's DE and reducible to first order DE. Applications on 1st order ordinary differential equations – Orthogonal trajectories.
Week 4	Applications on 1st order ordinary differential equations – Suspended cables, Flow through orifices, motion of bodies and general applications.
Week 5	Second and higher order linear ordinary differential equations – Homogeneous linear DE with constant coefficients, non-homogeneous linear DE with constant coefficients, undetermined coefficients method and variation of parameters method.

Week 6	Second and higher order linear ordinary differential equations – Linear DE with variables coefficients, Euler-Caushy equations, and Legender equations. Applications on 2nd and higher order ordinary differential equations – Deflection of beams, buckling of columns and deflection of beam-columns.
Week 7	Applications on 2nd and higher order ordinary differential equations – Simple vibration, undamped free vibration, undamped forced vibration, damped vibration and vibration of structures.
Week 8	Simultaneous linear ordinary differential equations. Matrices and determinants - Cramer's rule, Gauss elimination, Gauss-Jordan elimination and matrix inverse.
Week 9	Numerical Analysis – Introduction to numerical methods. Numerical solution of algebraic equations – Bisection method, fixed-point iteration, Newton-Raphson method and modified Newton method.
Week 10	Numerical solution of a set of algebraic equations – Solution of a set of linear equations, Jacobi method, Gauss-Siedel method and Solution of a set of non-linear equations. Taylor series – Definition, Maclaurin series and applications.
Week 11	Numerical differentiation – Finite differences calculus. Numerical integration – Trapezoidal and Simpson rule.
Week 12	Numerical integration – Applications and Romberg integration. Numerical solution of ordinary differential equations ODE – Initial value problems, Euler's method, Runge-Kutta method and Simultaneous differential equations.
Week 13	Numerical solution of ordinary differential equations ODE – Boundary value problems. Curve fitting – Least-squares criterion (linear regression) and Non-polynomial models (nonlinear regression).
Week 14	Interpolation and extrapolation – Gregory-Newton formula and Lagrange interpolation polynomial. Numerical solution of partial differential equations PDEs.
Week 15	Fourier series – Definition, types and applications of Fourier series.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Numerical solution of algebraic equations – Newton-Raphson method.
Week 2	Lab 2: Numerical solution to a set of algebraic equations – Gauss-Siedel method.
Week 3	Lab 3: Taylor series.
Week 4	Lab 4: Numerical integration – Simpson rule.
Week 5	Lab 5: Numerical integration – Romberg integration.
Week 6	Lab 6: Numerical solution of ordinary DE – Runge-Kutta method.
Week 7	Lab 7: Numerical solution of ordinary DE – Finite differences approximation.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- "Advanced Engineering Mathematics", Tenth Edition, Erwin Kreyszig, John Wiley & Sons, Inc., 2011. 2- "Numerical Methods for Engineers", Sixth Edition, Steven C. Chapra and Raymond P. Canale, McGraw-Hill Companies, Inc., 2010.	Yes
Recommended Texts	1- "Advanced Engineering Mathematics", Sixth Edition, Dennis G. Zill, Jones & Bartlett Learning, 2018. 2- "An Introduction to Numerical Methods and Analysis", Second Edition, James F. Epperson, John Wiley & Sons, Inc., 2013.	No
Websites	https://www.youtube.com/channel/UCxsxuE2-FcWiSyLjlCbJ6QQ?view_as=subscriber&authuser=0	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Reinforced Concrete Design**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE314**				
ECTS Credits	**10**				
SWL (hr/sem)	**250**				
Module Level		3	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Reinforced Concrete Design	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	The model description provides the basic description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program. The course aims to present the basic methods of analysis and design of reinforced concrete structure including the introduction to the materials which produce the concrete and the materials tests in laboratory
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding A1- Application of the analysis method of reinforced concrete structures including rectangular beam, T beams and special shape beams structural A2- Application of analysis and design the beams for shear. A3- Analysis and design of one-way slab using ACI coefficient method in analysis. A4- Application Examples and problem of analysis and design of two-way slab system using ACI coefficient method. A5- analysis and design of short column. A6- Examples and application for using design chart and table in analysis and Design of column A7- .application on understanding and calculation the development length of steel bars B. Subject-specific skills B1 - Apply quantitative and numerical methods for the purpose of solving problems. B2 - Use basic knowledge to research new technologies. B3 - Derive and evaluate the information needed to apply engineering analysis methods to unfamiliar problems. B4 - Apply quantitative and numerical methods for the purpose of solving engineering problems. B5 - Use basic knowledge to research new technologies
Indicative Contents المحتويات الارشادية	**Indicative content includes the following.** 1- Mixing, Placing, Compacting and Curing of concrete [2 hr] 2- Concrete Behavior in Compression and Tension. And Quality Control. [3 hr] 3- Reinforcing Steel for Concrete and Load and safety Provisions. [2 hr] 4- Behavior of R.C beam under loading and working stress method. [3 hr] 5- Introduction to Working Stress Method. And applications of the Working Stress Method. [2 hr] 6- Introduction and Behavior of Reinforced Concrete Beam under Bending. [2 hr] 7- Introduction and Behavior of Reinforced Concrete Beam under Bending. [2 hr] 8- Design of Tension Reinforced Rectangular Beams [2 hr] 9- Rectangular Sections with Tension and Compression Reinforcement. [3hr]. 10- Flexural Analysis and Design of T-beams [3hr]. 11- Practical Consideration in the Design of Beams. [3 hr] 12- Shear and Diagonal Tension in Beams. [2 hr] 13- . Shear Strength of Concrete without Reinforcement. And Reinforced Concrete Beams with Web Reinforcements. [3 hr] 14- . Types of Slabs. And Analysis and Design of One-Way Slab. [2 hr]

	15- . Temperature and Shrinkage Reinforcement [2 hr] 16- . Analysis and Design of Two-way slab, Slabs type [3 hr] 17- . Two-way slab behavior under load [3 hr] 18- . Load slab transfer to adjacent beams [3 hr] 19- . Two-way slab analysis using ACI code Coefficient method [2 hr] 20- Reinforced two-way slabs system design [3 hr] 21- Application Examples on design and analysis of Two-way slab [3 hr] 22- Columns, Introduction [2 hr] 23- Analysis and Design short Column under concentrated axial load [3 hr] 24- Analysis and Design short Column under concentrated axial load [3 hr] 25- Analysis and Design short under uniaxial load [2 hr] 26- Analysis and Design short under uniaxial load [3 hr] 27- Analysis and Design short under biaxial loads [2 hr] 28- Analysis and Design short under biaxial loads [3 hr] 29- Development length, Introduction [2 hr] 30- Development length, Application Example. [3hr]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment. • Scientific and research skills are developed through teaching and learning activities. Analysis and problem-solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (10)	4, 8	All
	Assignments	2	10% (10)	3,5,7,9,11,13	All
	Projects / Lab.	0	0% (0)		
	Report	0	0% (0)	0	
Summative assessment	Midterm Exam	2 hr	20% (10)	10	Lo # 1 - 7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction: Concrete, Mixing, Placing, Compacting and Curing Shrinkage and Temperature Effect. Concrete Behavior in Compression and Tension. Reinforcing Bars, Reinforcing Steel for Concrete. Properties of Reinforcing Bars. Steel Behavior in Compression and Tension. Quality Control. Design Codes and Specifications. Loads and Safety Provisions.
Week 2	Behavior of R.C beam under loading and working stress method: Introduction to Working Stress Method. Applications of the Working Stress Method.
Week 3	Flexural analysis of Beam, Rectangular Section: Introduction to Ultimate Strength Method. Behavior of Reinforced Concrete Beam under Bending.
Week 4	Design of Tension Reinforced Rectangular Beams. Design Aids. Practical Consideration in the Design of Beams. Rectangular Sections with Tension and Compression Reinforcement.
Week 5	Flexural Analysis and Design of T-beams.
Week 6	Shear and Diagonal Tension in Beams. Shear Strength of Concrete without Reinforcement.

	Reinforced Concrete Beams With Web Reinforcements. ACI Provisions for Shear Design.
Week 7	Analysis and design of continuous beams.
Week 8	Design and Analysis of Slabs. Types of Slabs. Analysis and Design of One-Way Slab. Temperature and Shrinkage Reinforcement.
Week 9	Analysis and Design of Two-Way Slab. Analysis and Design of Two-Way Slab by the Coefficient Method (Method 2).
Week 10	Analysis and Design of Two-Way Slab by the Coefficient Method (Method 3). ACI Code Provisions.
Week 11	Analysis and design of short columns. Introduction to Axial Compression. Compression Plus Bending of Rectangular Columns. Strain Compatibility Analysis and Interaction Diagram. Balanced Failure.
Week 12	Distribution of Longitudinal and Lateral Reinforcement. Circular Columns. Design and Analysis for Biaxial Bending of Columns. ACI Code Provisions for Column Design.
Week 13	Introduction of torsion in beams. Torsion in Plain Concrete Beams. Torsion in Reinforced Concrete Beams.
Week 14	ACI Code Provision for Torsion Design
Week 15	Bond Development of Cut Off and Reinforcing Bars.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1- Structural Concrete Theory and Design , By Nadim Hasson, Akthem Aktham Al manseer , 6th Edition 2015. 2- 2- Reinforced concrete design , 7th Edition 2007 By Chu Kai Wang, Charles G salmon and Joe A Pincheire 3- 5- Reinforced concrete design , 6th Edition 2009 By Edward G. Nawy. 4- 6- ACI Code 318- 2019.	Yes

Recommended Texts	1- Design of Reinforced concrete Structures , 2nd Edition 2008 By Mohammed Tharwat Ghonein, Vol. 3 . 2- 4- Design of concrete Structure , 14th Edition 2010 By Arthur H. Nilson , Daved Derwin and Charles W . Dolan.	
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer applications**			**Module Delivery**	
Module Type	**Supportive**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE318**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	تعليم طلبة الدراسة الاولية كيفية التعامل مع البرامج الهندسية التطبيقية كبرنامج ETABS المستخدم لتحليل وتصميم المنشئات الحديدية والخرسانية وكذلك برنامج Microsoft project المستخدم في تخطيط المشاريع الانشائية وتخمين الكلف ومدة انجاز المشروع والسيطرة على المشاريع.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- تعليم الطلبة كيفية التعامل مع البرامج الانشائية بشكل متكامل والمقارنة مع الدراسة النظرية لتصميم وتحليل الاعضاء الانشائية وكيفية تسليط الاحمال على الابنية الهيكلية بمختلف أنواعها. 2- تعليم الطلبة كيفية انشاء جداول الكميات للمشاريع الانشائية من خلال السيطرة عل مسار العمل
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	استخدام برامج هندسية مثل ETABS و Microsoft project

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.26
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	مقدمةفي برنامج ETABS
Week 2	تعريف المواد الانشائية المستخدمة في الابنية الهيكلية وكذلك تعريف الاعضاء الانشائية
Week 3	تعريف الاحمال المختلفة المسلطة على المنشاء وكيفية تسليط الاحمال بشكل منفرد او متجمعة
Week 4	كيفية تقسيم الارضيات Floors بطريقة Strip method
Week 5	تحليل وتصميم المنشاء الهيكلي الخرساني
Week 6	كيفية الاستفادة من مخرجات البرنامج ومقارنتها مع الجانب النظري
Week 7	عمل سمينار للطلبة بشكل مجاميع
Week 8	اختبارات ألبنية مختلفة للوقوف على مدى فهم الطالب
Week 9	مقدمة في برنامج Microsoft project)مفهوم ادارة المشروعات(
Week 10	المراحل الاساسية للمشروع + عناصر ادارة المشروع
Week 11	إدارة وتخطيط المشروع باستخدام MS Project
Week 12	إدخال بيانات المشروع الاولية
Week 13	تسجيل صفات المشروع+ إدخال المهام والمدة الزمنية
Week 14	ضبط تقويم المشروع
Week 15	عمل سمينار للطلبة بشكل مجاميع
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts		No
Websites	• User's Guide ETABS® 2016 https://ottegroup.com/wp-content/uploads/2021/02/ETABS2016-Users-Guide.pdf • دليل مبسط لاستخدام برنامج MS PROJECT file:///C:/Users/user/Downloads/[KtabPDF.Com]1493303430Jj9M1%20(1).pdf D:\Downloads\User's Guide ETABS® 2016 https:\ottegroup.com\wp-content\uploads\2021\02\ETABS2016-Users-Guide.pdf	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Soil Mechanics**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ⇨ ☐ **Lecture** ⇨ ☐ **Lab** ⇨ ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE313**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**	E-mail	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Mechanics of fluids	**Semester**	
Co-requisites module	Mechanics of Material	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. Preparing and qualifying specialized engineers to meet the requirements of the labor market in its private and public sectors in civil engineering through diversification in methods of learning and teaching and training students to apply the acquired knowledge and skills to solve realistic problems. 2. Providing distinguished academic programs in the field of civil engineering, both theoretical and practical, that comply with international standards of academic quality and meet the needs of the labor market. 3. Encouraging and developing scientific research in the fields of civil engineering in general. 4. Preparing a stimulating environment for faculty members to develop their knowledge and educational and research skills. 5. Building and developing partnership with the governmental and private sectors and society in all its various institutions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A. Knowledge and Understanding: 1. Clarify the basic concepts of civil engineering and identify the methods of analysis and design. 2. Acquiring skill in dealing with problems. 3. Understand the engineering principles and the ability of apply it. 4. Knowledge of the properties of engineering materials, equipment, and processes related to civil engineering. 5. Understand the practical codes of the profession and professional specifications. 6. Appreciation of the need for a high degree of professional and ethical behavior.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures. 4. Laboratories. 5. Graduation projects. 6. Scientific visits. 7. Seminars held in the department. 8. Summer training.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Basic Characteristics of Soils
Week 2	Weight-Volume Relationships
Week 3	Plasticity of Fine-Grained Soils
Week 4	Classification of Soil, Mechanical Analysis (Particle Size Analysis) of Soils
Week 5	Classification of Soil, Unified Soil Classification System (ASTM D-2487)
Week 6	Soil Compaction
Week 7	Soil Permeability
Week 8	Seepage, Seepage Calculation from a Flow Net
Week 9	Seepage, Seepage Stress and Seepage Force
Week 10	In Situ Stresses
Week 11	Compressibility of Soil-Consolidation Settlement, Fundamentals of Consolidation
Week 12	Compressibility of Soil-Consolidation Settlement, One-Dimensional Laboratory Consolidation Test
Week 13	Compressibility of Soil-Consolidation Settlement, Normally Consolidated and Over-consolidated Clays
Week 14	Shear Strength of Soil
Week 15	Lateral Earth Pressure
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Specific Gravity of Soil
Week 2	Sieve analysis & Hydrometer Analysis of Soil
Week 3	Liquid Limit & plastic Limit Tests
Week 4	Standard Proctor & Modified Proctor Tests
Week 5	Field Compaction, Core cutter & Sand cone method
Week 6	One-Dimensional Laboratory Consolidation Test
Week 7	Direct shear test & Triaxial test

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Structure theory**			**Module Delivery**	
Module Type	**Core**			✓ **Theory** ✓ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE312**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Engineering Mechanics Strength of Materials	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. To develop an understanding of the basic principles of structural analysis and be able to explain them. 2. To determine and analyze models of applied loads on structures. 3. To develop and utilize influence lines of structures. 4. To utilize various methods of analysis of beams, trusses, and frames to determine the response of both determinate and indeterminate structures. 5. To understand the role of structural analysis within the context of engineering design and decision making.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to apply knowledge of basic mathematics through differential equations, science, and engineering to solving engineering problems. 2. Ability to formulate and solve civil engineering problems. 3. Understanding of professional and ethical responsibility. 4. Recognition of the need for, and an ability to engage in, life-long learning. 5. Ability to use modern tools, techniques, and computation methods necessary for civil engineering practice.
Indicative Contents المحتويات الارشادية	<u>Part I: Statically Determinate Structures</u> Types of structural elements, Types of structures, Types of loads, Types of supports, Equations of equilibrium, Equations of condition, Determinancy and stability. Internal loadings developed in structural members, sign convention, Shear force and bending moment diagrams for a beam, Relationships between load, shear force and bending moment, Moment diagrams by method of superposition, Shear and moment diagrams for a frame. Determinancy and stability of trusses, The method of joints, The method of sections. Influence lines for statically determinate structures, Influence lines for beams, Relationships of influence lines and structural loading, Influence lines for trusses, Moving loads on beams, Absolute maximum moment in a beam. Approximate analysis of statically indeterminate structures, Indeterminate trusses, Vertical loads on building frames, Lateral loads on building frames: portal method. Deflection of a beam, Significance of beam deflections, Double integration method, Singularity function method, Moment-area method. <u>Part II: Statically Indeterminate Structures</u> Force methods, Method of consistent deformations, Basic procedure, Primary structure, Redundant reaction components. Displacement methods, The slope-deflection method, Derivation of the slope-deflection equations, Application of the slope-deflection method to the analysis of statically indeterminate beams, Analysis of rigid frames without joint translation. The moment distribution method, General description of the moment distribution method, Distribution factor, Procedure, Modified stiffness factor for hinged far end, Support settlement, Application of moment distribution to frames without sidesway.

	Energy methods, Strain energy in an elastic system: axial loading, flexural loading, Castigliano's theorem method, Joint displacement in trusses, Application of Castigliano's theorem to statically indeterminate structures: beams, frames.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main objective is to insure that students understand the basic concepts and developing their problem solving strategies. Most engineering students have difficulty in application of the fundamental concepts they have learned to specific cases. Therefore, the lecture material is incorporated with as many possible illustrative examples in order to facilitate the application of principles to actual problems. Importance is placed on the significance of the results obtained for physical problems, as it is often the case nowadays with the development of engineering software, that the student is concerned with merely "solving the problem" and obtaining results without their interpretation physically.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5,10	1,2
	Assignments	2	10% (10)	2,12	1,2
	Projects / Lab.	1	10% (10)	6	1,2,3,4,5

	Report	1	10% (10)	13	1,2,3,4,5
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	1,2,3,4,5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction
Week 2	Internal Loadings Developed in Structural Members
Week 3	Analysis of Statically Determinate Trusses
Week 4	Influence Lines
Week 5	Influence Lines
Week 6	Approximate Analysis of Statically Indeterminate Structures
Week 7	Deflections
Week 8	Force Methods
Week 9	Force Methods
Week 10	Displacement Methods: Slope Deflection
Week 11	Displacement Methods: Moment Distribution
Week 12	Displacement Methods: Moment Distribution
Week 13	Energy Methods
Week 14	Energy Methods
Week 15	Preparatory week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	

Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Elementary Theory of Structures", Yan-yu Hsieh, Prentice-Hall, 1982.	Yes
Recommended Texts	"Structural Analysis", Russel C. Hibbeler, 9th ed., Pearson Education, 2014.	Yes
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Irrigation and Drainage engineering**			**Module Delivery**	
Module Type	**Core**			**×Theory** **x Lecture** **☐ Lab** **x Tutorial** **☐ Practical** **☐ Seminar**	
Module Code	**CE315**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Civil Eng. Dept.		**College**	College of Eng.	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Fluid Mechanics	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. Preparing and qualifying the civil engineer to meet the requirements of the labor market in the private and public sectors in irrigation and drainage engineering through diversifying the use of learning and teaching methods and training students to apply the acquired knowledge and skills to solve real problems of irrigation and drainage engineering designs. 2. Presenting different designs of irrigation and drainage engineering methods, both theoretical and practical, to comply with international standards of academic quality and meet the needs of the labor market. 3. Develop the knowledge and the method of scientific research in the field of irrigation and drainage engineering in a way that contributes to developing the design method, managing water resources and reducing waste in water resources. 4. Preparing a scientific basis to keep pace with scientific development and pave the way for studying accurate topics in this specialty. 5. It serves the needs of the governmental and private sectors and the society in all its institutions to establish irrigation and drainage systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Clarify the basic concepts of irrigation and drainage engineering systems and their applications in agricultural fields 2. Gaining the ability to address water wastage problems through the design of irrigation systems. 3. Acquisition of basic skills in the management of irrigation and drainage systems. 4. Gaining experience in designing the irrigation and drainage system and its suitability according to the different surrounding conditions.
Indicative Contents المحتويات الارشادية	1. Irrigation, benefits of irrigation, irrigation networks [8 hrs] 2. Types of irrigation methods, evaluating irrigation water sources [8 hrs] 3. Calculation of the volume of water in the soil, methods of calculating water consumption, Efficiency, adequacy and uniformity of irrigation [8 hrs] 4. Methods of Land grading design [8 hrs] 5. Surface irrigation process mechanism, water balance concept [8 hrs] 6. Layout of stationary system, the effect of wind direction on the Sprinkler irrigation [8 hrs]

	7. Design of sprinkler system [8 hrs] 8. Benefits of drip irrigation, the basic components of the drip system [8 hrs] 9. Design of drip system [8 hrs] 10. Drainage project investigations [8 hrs] 11. Soil permeability, a method for calculating the permeability coefficient [8 hrs] 12. Types of drainage system [8 hrs] 13. Open channel of drainage system [8 hrs] 14. Hooghoudt equation, Hooghoudt equation for layered soil [8 hrs] 15. Vertical drainage [8 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in introducing this module is to encourage students to participate in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through classes and interactive tutorials and by thinking about the type of simple experiments that include some sampling activities that are of interest to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO# 1,2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO# 3,4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO# 5,8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO# 1 -7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Irrigation networks
Week 2	Types of irrigation methods
Week 3	Efficiency, adequacy and uniformity of irrigation
Week 4	Methods of Land grading design
Week 5	Surface irrigation process mechanism, water balance concept
Week 6	Sprinkler irrigation
Week 7	Design of sprinkler system
Week 8	Benefits of drip irrigation, the basic components of the drip system
Week 9	Design of drip system
Week 10	Drainage project investigations
Week 11	Permeability coefficient
Week 12	Types of drainage system
Week 13	Open channel of drainage system
Week 14	Hooghoudt equation
Week 15	Vertical drainage
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Field Irrigation Systems Engineering, Drainage Engineering	Yes
Recommended Texts		No
Websites	Websites specialized in irrigation and drainage engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Traffic and Transportation Engineering**			**Module Delivery**	
Module Type	**Core**			☑ **Theory** ☑ **Lecture** ☑ **Lab** ☑ **Tutorial** ☑ **Practical** ☑ **Seminar**	
Module Code	**CE317**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	3		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	This module will present the basic design concepts of Traffic Engineering to the students. The module will also present the Intersection Control and Design to the students. In addition to presenting the basic concepts of Transportation Engineering and Planning to the students which includes trip generation, trip distribution, traffic assignment and modal split. Also, the module will introduce an introduction to the Public Transportation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The students will be able to: 1- Identify and define the Traffic Operations at the highways by conducting several traffic surveys and studies such as Speed, Volume, Capacity, Travel Time, Delay, and Parking; and build the relationship among the traffic stream parameters. 2- Also, the students will be able to identify the basic concepts of Traffic Control and will be able to design an at-grade Intersection Control. 3- In addition, the students will also be able to identify where the trips come from and where they go, and what modes and which routes will be used. 4- Also, the students will be able to identify the basic concepts of public Transportation and will be able to design and construct Bus Time schedules and determine the capacity of Bus Stops.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy to delivering this module will be through classes. In addition, to the laboratory. Also, we will try to encourage the students to participate in assignments, writing reports about their projects and present their works in seminars.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	7 12	Outcome 1 and 2 Outcome 3 and 4
	Assignments	2	10% (10)	8 13	Outcome 1 and 2 Outcome 3 and 4
	Projects / Lab.	1	10% (10)	8	Outcome 1 and 2
	Report	1	10% (10)	14	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)	14	All
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and Background of Traffic Engineering
Week 2	Volume Studies
Week 3	Speed Studies
Week 4	Travel Time and Delays Studies
Week 5	Parking Studies

Week 6	Traffic Flow Elements
Week 7	Intersection Control and Traffic Signals
Week 8	Intersection Control Design
Week 9	Overview and History of Transportation Engineering
Week 10	Urban Transportation Planning
Week 11	Trip Generation
Week 12	Trip Distribution
Week 13	Modal Split and Traffic Assignment
Week 14	Public Transportation
Week 15	Mid Term Exam
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Traffic Volume at Highways
Week 2	Traffic Volume at Intersection
Week 3	Spot Speed and Radar Gun Speed Meter
Week 4	Space Mean Speed
Week 5	Headway and Gap
Week 6	Traffic Delay at Intersection
Week 7	Saturation Flow Rate and Capacity

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	- Traffic & Highway Engineering	Available (Softcopy)

	Nicholas Garber and Lester Hoel (2010) 4th Edition	
Recommended Texts	- Transportation and Traffic Engineering Handbook (Institute of Traffic Engineers) - Highway Capacity Manual (HCM, 2010) (Transportation Research Board)	Available (Softcopy)
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering project**			**Module Delivery**	
Module Type	**Core**			☐ **Lecture** √ **Lab** ☐ **Tutorial** √ **Practical** ☐ **Seminar**	
Module Code	**CE420**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	-التأكد من قدرات الطالب الخريج على استثمار ما امتلكه من المعرفة والقدرات الكتابية والبحثية والتوثيقية خلال مرحلة دراسته. -منح الطالب الخريج فرصة ليطبق ما تعلمه وتنفيذه في الميدان الحيوي لتخصصه. -ترسيخ قيمة الامانة العلمية في البحث والكتابة البحثية خلال مراحل توثيق وكتابة تقرير البحث. -توفير فرصة للطالب الخريج للعمل التعاوني في حال عمل في إطار فريق -تعزيز المنظومة القيمية والمهارية للطالب من خلال تمكينه من الاختيار، والتطبيق، والبحث، والاستنتاج،والتحليل والالمام بقيم الامانة العلمية والقيم الاخلاقية للبحث العلمي.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	-اختيار موضوع المشروع و المشكلة ووضع عنوان مناسب له -بناء خطة مشروع التخرج -جمع المعلومات وتحليلها -تفسير النتائج –التوثيق على شكل تقرير
Indicative Contents المحتويات الارشادية	-البحث عن مشكلة من ميدان التخصص. -الابتعاد عن المشاكل المطروحة باستمرار -التأكد من أن المشكلة مهمة وأن لحلها عائدات إيجابية .اقتناع المشرف بأن المشكلة حيوية وقابلة للبحث -.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	:الاستراتيجية التي يجب اتباعها نابعة من. أ. محيط العمل . ب. القراءات الواسعة الناقدة لما تحويه الكتب والدوريات والصحف . . ج. البحوث السابقة . د. تكلفة من جهة ما

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	-----	----		
	Assignments	-----	----		
	Projects / Lab.	1	40% (40)		
	Report	1	30% (30)		
Summative assessment	**Midterm Exam**	-----	----		
	Final Exam	2hr	30% (30)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**اختيار موضوع المشروع أو المشكلة ووضع عنوان مناسب له**
Week 2	**بناء خطة المشروع**
Week 3	**جمع المعلومات وتحليلها**
Week 4	**جمع المعلومات وتحليلها**
Week 5	**جمع المعلومات وتحليلها**
Week 6	**جمع المعلومات وتحليلها**
Week 7	**جمع المعلومات وتحليلها**
Week 8	**جمع المعلومات وتحليلها**

Week 9	جمع المعلومات وتحليلها
Week 10	جمع المعلومات وتحليلها
Week 11	تفسير النتائج
Week 12	تفسير النتائج
Week 13	التوثيق على شكل تقرير
Week 14	التوثيق على شكل تقرير
Week 15	التوثيق على شكل تقرير
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	تعتمد على موضوع المشروع الهندسي المقترح
Week 2	تعتمد على موضوع المشروع الهندسي المقترح
Week 3	تعتمد على موضوع المشروع الهندسي المقترح
Week 4	تعتمد على موضوع المشروع الهندسي المقترح
Week 5	تعتمد على موضوع المشروع الهندسي المقترح
Week 6	تعتمد على موضوع المشروع الهندسي المقترح
Week 7	تعتمد على موضوع المشروع الهندسي المقترح

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	تعتمد على موضوع المشروع الهندسي المقترح	
Recommended Texts	تعتمد على موضوع المشروع الهندسي المقترح	
Websites	تعتمد على موضوع المشروع الهندسي المقترح	

Grading Scheme

مخطط الدرجات

Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group	**A** - Excellent	امتياز	90 - 100	Outstanding Performance

(50 - 100)	**B -** Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Foundation engineering**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE412**				
ECTS Credits	**10**				
SWL (hr/sem)	**250**				
Module Level	4		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Soil Mechanics Concrete Design	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	This course is intended to; 1. To evaluate the general suitability of the site and enable adequate and economical design for the proposed project 2. Calculate the safe bearing capacity of soils. 3. Estimate the settlement of shallow foundations 4. Estimate the size of shallow foundations to satisfy bearing capacity and settlement criteria. 5. Provide the steps of structural design for shallow foundations. 6. Determine the allowable axial load capacity of single piles and pile groups. 7. Determine the settlement of single pile and pile groups. 8. Understand and determine lateral earth pressure. 9. Understand the forces that lead to instability of earth retaining structures. 10. Determine the stability of eath retaining structures (retaining walls, sheet pile walls, braced excavation).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	When the student complete studying this course, he should be able to: 1. Understand the importance of soil investigations and be able to plan a soil investigation. 2. Estimate the bearing capacity and settlement of structures founded on soils. 3. Calculate stresses in soils from external loads. 4. Calculate one-dimensional consolidation settlement and time rate of settlement for foundations. 5. Estimation of elastic and secondary settlement for foundations. 6. Analyze and design shallow foundations. 7. Determine the allowable axial load capacity of single pile and pile group. 8. Estimation of pile load in a pile group. 9. Determine the stability of earth structures.
Indicative Contents المحتويات الارشادية	• Chapter 1; Foundations: Their Importance and Purpose, Foundation Classification, Requirements of Foundations • Chapter 2; Soil Exploration; CHAPTER 2; Purpose of Subsurface Exploration, Planning for Subsurface Exploration, Methods of Soil Exploration, Soil Samples, Causes of Disturbance, Soil Samplers, Number of Borings, Depth of Borings, In-Situ (Field) Tests, Standard Penetration Test - ASTM-D1586, Cone Penetration Test (CPT) - ASTM-D5778, Vane Shear Test (VST) - ASTM D 2573M, Plate Loading Test (PLT) - ASTM-D1194, Soil Exploration Report

	• Chapter 3; Bearing Capacity of Shallow Foundations; Introduction, Bearing Capacity, Modes of Soil Failure, Terzaghi's Bearing Capacity Equation, Factor of Safety, Effect of Water Table on B.C., Meyerhof's Bearing Capacity Equation, General (Hansen's) Bearing Capacity Equation, Skempton's Method [φ = 0], Footings with Eccentric Loadings, Footing on Layered Soils, Bearing Capacity of Footings Adjacent to a Slope, Bearing Capacity from Field Tests • Chapter 4; Foundation Settlement; Introduction, Contact Pressure, Stresses in a Soil Mass, Consolidation Settlement, Secondary Settlement, Allowable Settlement • Chapter 5; Spread Footing Design; Ultimate Strength Design Method (USD) (ACI: 318 - 19), Design of R.C. Spread Footings, Design of Plain Concrete Spread Footings, Rectangular Footings, Eccentrically Loaded Spread Footings • Chapter 6; Combined Footing Design; Introduction, Rectangular Combined Footing, Trapezoidal Combined Footing, Strap (or Cantilever) Footing • Chapter 7; Mat Foundation Design; Introduction, Types of Mat Foundations, Bearing Capacity of Mat Foundations, Mat Settlements, Design of Mat Foundations • Chapter 8; Pile Foundations: Single Pile Analysis; Introduction, Classification of Piles, Static Pile Capacity, Point Bearing Capacity, Point Bearing from Field Tests, SPT, CPT, Skin Friction Capacity, Pile Loading Test-Axial Compression (ASTM-D1143), Pile Capacity – Dynamic Analysis • Chapter 9; Pile Foundations: Groups; Introduction, The Carrying Capacity of Pile Groups, Efficiency of Pile Groups, Settlement of Pile Groups, Pile Caps, Negative Skin Friction • Chapter 10; Lateral Earth Pressure; Introduction, Coulomb Earth Pressure Theory, Rankine Earth Pressures • Chapter 11; Retaining Walls; Introduction, Stability of Retaining Walls, Base Key. • Chapter 12; Sheet Pile Walls; Introduction, Types of sheetpiling, Safety Factor, Cantilever Sheetpiling, Anchored Sheetpiling: Free-Earth Support, Capacity of Deadman, Location of Deadman.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	I view teaching as a process of encouraging students to make connections between their own experience and to foster critical thinking skills and problem-solving. I am more concerned with the student's understanding of fundamental course concepts and their ability to apply them in new problem-solving situations. Exams should be

	designed to bring together different concepts from individual examples and homework problems and combine them. My intent in developing exam questions is not to evaluate whether a student can solve a given problem, but to determine whether they understand and can apply the concepts required to solve this problem. After all, the chance that they will face the exact problem in practice is negligible, but the interaction of concepts to solve new problem is vital. As a result, students work is graded with respect to the process used in solving the problem rather than the final answer they will get. A professor should be sensitive to the background and preparation of the students. The way the students are treated has a great influence on the student's performance. I strive to demonstrate to each student my respect for them as individuals and for their contributions to the learning process. Thus, I try to learn every student's name and maintain a high level of classroom interaction. The class atmosphere is very relaxed, so students feel comfortable contributing and asking questions. To further facilitate students learning, I like to provide opportunities for reflection and feedback from students via after-class and office discussions, peer-to-peer feedback on assignments and learning activities and formal and informal evaluations. Students' responses and inputs are very helpful for improving my teaching skills.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	3 , 7	All
	Assignments	2	10% (10)	2,4,6,8,10,12	All
	Projects / Lab.	0	0% (0)		
	Report	0	0% (0)		
Summative assessment	**Midterm Exam**	2 hr	20% (10)	10	1-5
	Final Exam	2hr	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Chapter 1; Foundations: Their Importance and Purpose, Foundation Classification, Requirements of Foundations Chapter 2; Soil Exploration; CHAPTER 2; Purpose of Subsurface Exploration, Planning for Subsurface Exploration, Methods of Soil Exploration, Soil Samples, Causes of Disturbance, Soil Samplers, Number of Borings, Depth of Borings,
Week 2	In-Situ (Field) Tests, Standard Penetration Test - ASTM-D1586, Cone Penetration Test (CPT) - ASTM-D5778, Vane Shear Test (VST) - ASTM D 2573M, Plate Loading Test (PLT) - ASTM-D1194, Soil Exploration Report Chapter 3; Bearing Capacity of Shallow Foundations; Introduction, Bearing Capacity, Modes of Soil Failure, Terzaghi's Bearing Capacity Equation, Factor of Safety, Effect of Water Table on B.C., Meyerhof's Bearing Capacity Equation,
Week 3	General (Hansen's) Bearing Capacity Equation, Skempton's Method [$\varphi = 0$], Footings with Eccentric Loadings, Footing on Layered Soils, Bearing Capacity of Footings Adjacent to a Slope, Bearing Capacity from Field Tests
Week 4	Chapter 4; Foundation Settlement; Introduction, Contact Pressure, Stresses in a Soil Mass,
Week 5	Consolidation Settlement, Secondary Settlement, Allowable Settlement
Week 6	Chapter 5; Spread Footing Design; Ultimate Strength Design Method (USD) (ACI: 318 - 19), Design of R.C. Spread Footings, Design of Plain Concrete Spread Footings,
Week 7	Rectangular Footings, Eccentrically Loaded Spread Footings Chapter 6; Combined Footing Design; Introduction, Rectangular Combined Footing,
Week 8	Trapezoidal Combined Footing, Strap (or Cantilever) Footing Chapter 7; Mat Foundation Design; Introduction, Types of Mat Foundations, Bearing Capacity of Mat Foundations, Mat Settlements, Design of Mat Foundations
Week 9	Chapter 8; Pile Foundations: Single Pile Analysis; Introduction, Classification of Piles, Static Pile Capacity, Point Bearing Capacity, Point Bearing from Field Tests, SPT, CPT,

Week 10	Skin Friction Capacity, Pile Loading Test-Axial Compression (ASTM-D1143), Pile Capacity – Dynamic Analysis
Week 11	Chapter 9; Pile Foundations: Groups; Introduction, The Carrying Capacity of Pile Groups, Efficiency of Pile Groups, Settlement of Pile Groups, Pile Caps, Negative Skin Friction
Week 12	Chapter 10; Lateral Earth Pressure; Introduction, Coulomb Earth Pressure Theory, Rankine Earth Pressures
Week 13	Chapter 11; Retaining Walls; Introduction, Stability of Retaining Walls, Base Key.
Week 14	Chapter 12; Sheet Pile Walls; Introduction, Types of sheetpiling, Safety Factor, Cantilever Sheetpiling,
Week 15	Anchored Sheetpiling: Free-Earth Support, Capacity of Deadman, Location of Deadman.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Foundation Analysis and Design By; Joseph E. Bowles	Yes
Recommended Texts	Principles of Foundation Engineering – Ninth Edition By; Braja M. Das and Nagaratnam Sivakugan	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Method of Construction and estimation**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ✓ **Lecture**	
Module Code	**CE417**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	4	**Semester of Delivery**	2		
Administering Department	Type Dept. Code	**College**	Type College Code		
Module Leader		**e-mail**			
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**			
Module Tutor		**e-mail**			
Peer Reviewer Name	Name	**e-mail**	E-mail		
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0		

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	Concrete design, Mathematics, Survey	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	Introduction to the various construction techniques, practices, and equipment needed for different types of construction activities. It also leads the student through the steps of creating a detailed building estimate utilizing construction documents. Direct costs are generated by performing quantity take-offs and pricing with historical data, labor, and productivity rates. Students analyze subcontractor bids, generate indirect costs, and apply project margins to complete a building estimate.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Understanding of general concepts of methods of construction and/ oproject management, • Ability in: 1. Planning and scheduling of construction projects, 2. Estimating construction projects. 3. Participating in taking-over, final measurement, and acceptance of construction. 4. projects, selection of construction equipment properly. 5. Measuring of construction equipment and planning,
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Different forms of teaching will be used to reach the objectives of the course. Notes are to be written on the whiteboard, especially design equations, head titles, definitions and summary of conclusions, classification of materials, and any other illustration, there will be classroom discussions and the lecture will give enough background to solve examples. Power points presentations will be used when required, besides worksheets will be designed to let the chance for practicing. Students should read the lecture notes regularly and participate the classroom discussions.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	53	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4&9	1&4&5
	Assignments	2	10% (10)	3&11	1&2&3
	Projects / Lab.	1	10% (10)	13	All
	Report	1	10% (10)	10	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)	14	All
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Construction equipment and engineering fundamentals.
Week 2	Soil stabilization and compaction, Tractors
Week 3	Bulldozers, scrapers.
Week 4	Excavating equipment
Week 5	Trucks

Week 6	The form works for concrete structures
Week 7	Estimation fundamentals
Week 8	Buildings estimation material
Week 9	Buildings estimation material
Week 10	Buildings estimation material
Week 11	Earthwork estimation
Week 12	Earthwork estimation
Week 13	Cost estimation
Week 14	Contracts and technical specifications
Week 15	Contracts and technical specifications
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		--

Recommended Texts	1. Fundamentals of Behavioral Statistics,1988Peurifoy Robert L, and Ledbetter, William B. “Construction Planning, Equipment & Methods” 4th Edition, McGraw-Hill, 1985. 2. Nunnally, S. W. “Construction Methods and Management”, 7th Edition, Upper Saddle River, New Jersey: Prentice Hall, 2007. 3. Dutta, B. N. “ Estimating and Costing in Civil Engineering- Theory and Practice”, 24th Edition, USB Publishers’ Distributors Ltd., New Delhi, 1999.	--
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Sanitary engineering**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE416**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Fluid mechanics	**Semester**	2-2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	The aim of this module is to learn the students how to; 1. compute the quantity of potable water, 2. recognize the materials used in piping works, 3. design water pumping stations, 4. design water treatment systems, 5. assess the environmental impact of untreated sewage discharge, 6. compute the quantity of sanitary sewage, 7. compute the quantity of storm water, 8. design sewer systems, 9. design sewage treatment systems, and 10. design sludge treatment systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successful completion of this module, students will be able to; 1. compute the quantity of potable water for a specific city, 2. select the appropriate piping material, 3. analyze and design water networks, 4. design water pumping stations, 5. design water treatment systems. 6. compute the quantity of sanitary sewage for a specific city, 7. compute the quantity of storm water, 8. design sanitary sewer system, 9. design storm sewer system, 10. design sewage treatment systems. 11. design sludge treatment systems
Indicative Contents المحتويات الارشادية	**Part one: Water supply engineering** Water use, variations of water consumption rates, design period, population estimate, fire demand, ductile iron pipes, PVC pipes, steel pipes, concrete pipes, HDPE pipes, GRP pipes, flow in water pipelines, analysis of water networks using Hardy-Cross method, design of water networks, types of water pumping stations, types of pumps, power of pumping, system head curve, pump characteristics curves, pumps connection, pumps selection, water treatment, rapid mix unit, coagulation process, flocculation unit, sedimentation unit, filtration unit, disinfection unit **(56 hours).** **Part two: Sanitary sewage engineering** Sources of sewage, quantity of sanitary sewage, quantity of storm water, flow in sewers, manholes, catch basins, ventilation columns, partial flow diagram, design of sanitary sewer system, design of storm system, sanitary sewage treatment, screening unit, grit removal unit, primary sedimentation unit, biological treatment process, activated sludge system, trickling filters, secondary sedimentation unit, quantity of primary sludge, quantity of secondary sludge, gravity thickening unit, anaerobic digestion system, sludge dewatering using drying beds **(56 hours).**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module will be adopted through different strategies like; in-class lectures and interactive tutorials, field data collection for nearby water and sewage projects, in-lab experiments, and photo and video presentations for existing water and sewage treatment equipment and systems.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	10% (10)	1, 4, 7, & 8	LO #1, 4, 5, & 7
	Assignments	4	10% (10)	3, 9, 10, and 14	LO #3, 8, 10, & 11
	Projects / Lab.	1	10% (10)	Continuous	
	Report	2	10% (10)	4, 11	LO#2 & 9
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Quantity of water: Water use; variations in rates of water consumption; design period; population estimate; fire demand.
Week 2	Piping materials: Ductile iron piping works; PVC piping works; steel piping works; concrete piping works; HDPE piping works; GRP piping works; valves.
Week 3	Water distribution systems: Description of water distribution systems; analysis and design of water distribution systems.
Week 4	Water pumping stations: Types of pumping stations; types of pumps; pumps power; system head curve; pump characteristics curves; pumps connection; pumps selection.
Week 5	Water treatment: Aim of water treatment; description and design of Intake structure; description and design of rapid mix unit; coagulation process
Week 6	Water treatment: description and design of flocculation unit; sedimentation process; description and design of sedimentation unit
Week 7	Water treatment: description and design of filtration systems; description and design of disinfection systems.
Week 8	Mid-term Exam; Quantity of sanitary sewage and storm water
Week 9	Flow in sewers; Design of sewer systems
Week 10	Treatment of sanitary sewage: General introduction, flowsheet of a conventional sanitary sewage plant, description and design of screening unit
Week 11	Treatment of sanitary sewage: description and design of grit removal unit
Week 12	Treatment of sanitary sewage: description and design of primary sedimentation unit
Week 13	Treatment of sanitary sewage: description and design of biological treatment systems; description and design of secondary sedimentation unit
Week 14	Sludge treatment: Design and description of gravity thickening unit; design and description of anaerobic digestion unit; design and description of dewatering unit.
Week 15	A preparatory week before the final exam
Week 16	Final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Determination of pH; determination of turbidity.
Week 2	Determination of total, dissolved, and suspended solids.
Week 3	Jar test ; determination of total and free chlorine concentrations.
Week 4	Determination of EC; determination of watercolor; determination of dissolved oxygen.
Week 5	Determination of MLSS, MLVSS, and SVI.
Week 6	Determination of BOD and COD.
Week 7	Determination of nitrite, nitrate, sulfate, and phosphate.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	McGhee, T.J., "Water Supply and Sewage", 6th Ed., McGraw Hill, Tokyo, 1991.	Yes
Recommended Texts	Viessman, W., Hammer, M.J., Perez, E,M,, Chdik, P.A., Water supply and pollution control, 6th Ed., Pearson Education Limited 2014.	Yes

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Hydrology**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE418**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	4		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. Preparing and qualifying specialized engineers to meet the requirements of the labor market in the private and public sectors in civil engineering through diversification of methods of learning and education and training students to apply the acquired knowledge and skills to solve real problems. 2. Providing distinguished academic programs in the field of civil engineering, both theoretical and practical, that comply with international standards of academic quality and meet the needs of the labor market.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Outline the physical processes in the context of hydrology, including the hydrological cycle in general. 2- Define and understand key concepts related to hydrology, such as relative and cumulative frequency, the use of statistical data distributions, time of concentration, runoff and rainfall hydrographs, catchment storage, flood routing. 3- Apply a range of common techniques, such as flood frequency analysis, probabilistic rational, to estimate design peak flows. 4- Apply runoff-routing methods, rainfall hyetograph estimation to estimate flood hydrographs. 5- Compare and evaluate a number of methods for determining peak flows and flood hydrographs for urban and rural areas, including flood frequency analysis, the rational methods, the regional method and runoff routing methods. 6- Apply and evaluate stochastic modelling techniques and water storage behavior analysis to estimate the yield of a small rural water supply system. 7- Define and describe processes groundwater systems. Application the Darcy's law to determine groundwater.
Indicative Contents المحتويات الارشادية	This course serves as an introduction to the field of engineering hydrology. It covers fundamentals such as the hydrological cycle, catchment, hyetographs, losses, and hydrographs. Design topics covered will be selected from: flood frequency analysis, determination of design rainfall intensity and hyetographs, peak flow estimation, design hydrograph estimation, and groundwater process.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, and interactive tutorials.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and Hydrologic Cycle
Week 2	Precipitations: Forms of Precipitations, Rainfall intensity, Measurement of Precipitation
Week 3	Precipitations: Mean Areal Depth of Precipitation, Frequency of Point Rainfall
Week 4	Losses: Evaporation
Week 5	Losses: Infiltration:
Week 6	Runoff: Methods of estimation of runoff
Week 7	Flow Measurement: Water Stage Measurement, Measurements of Discharge
Week 8	Flow Measurement: Stage-Discharge rating curve, Reservoir mass curve and storage

Week 9	Hydrographs: components of a hydrograph, factors affecting hydrograph, hydrograph separation
Week 10	Hydrographs: unit hydrograph, the average unit-hydrograph, the unit-hydrograph from multi-period storms
Week 11	Hydrographs: The Conversion of U-H Duration, Synthetic UH
Week 12	Flood Routing: Hydrologic Storage Routing
Week 13	Flood Routing: Hydrologic Channel Routing
Week 14	An introduction to Groundwater Hydrology
Week 15	An introduction to Groundwater Hydrology
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Engineering hydrology / E. M. Wilson	Yes
Recommended Texts	Engineering hydrology/ Subramanya	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Steel structures design**			**Module Delivery**	
Module Type	**Core**			☐ **Theory √** ☐ **Lecture √** ☐ **Lab** ☐ **Tutorial √** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE413**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	1- Mechanics of materials 2- Theory of structures	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- Understanding steel as a structural material, and get knowledge of its mechanical properties. 2- Familiarity with design codes and standards. 3- Learning to identify and evaluate the various loads. 4- Acquiring the skills to design beams and plate girders 5- Design of tension members 6- Design of compression members. 7- Understanding the principles and techniques for designing steel connections
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the course, the students should have the necessary knowledge and skills to design safe and efficient steel structures in accordance with the applicable codes and standards. The acquired knowledge includes: 1- Properties of steel. 2- Information about the applicable code and standards. 3- Design of beams. 4- Plate girders. 5- Tension members. 6- Compression members. 7- Connections.
Indicative Contents المحتويات الارشادية	1- Introduction to steel structures design. 2- Design of beams. 3- Plate girders 4- Tension members. 5- Compression members. 6- Connections.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies for the course of steel structures design which will be employed are: 1- In-class lectures are used to illustrate the theoretical concepts , principles, and design methodologies related to steel structures. 2- Discussion: Encouraging class discussion enhances problem solving and collaboration among students. They can exchange ideas and learn from each other's. 3. Organizing field visits which can help students in linking the theoretical aspect to the practical aspects.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.26
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5,10	LO 1, 2, 4,and 5
	Assignments	2	10% (10)	2,12	LO 3, and 6
	Projects / Lab.	1	10% (10)	continuous	
	Report	1	10% (10)	13	LO 3, 4. And 6
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO 1 to 4
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction: Steel structures, properties of structural steel.
Week 2	Introduction: Design specifications, design methods, standard steel sections
Week 3	Design of beams: Laterally supported beams (design for bending and shear), web bearing and web buckling

Week 4	Design of beams: Laterally unsupported beams (design for bending and shear), beams subjected to biaxial bending
Week 5	Design of beams: Compound beams, deflection
Week 6	Plate girders: Design for bending, design of web
Week 7	Plate girder: Design of stiffeners
Week 8	Tension members: Tensile strength, effective section area
Week 9	Tension members: Built up tension members
Week 10	Compression members: Axially loaded compression members, built up columns
Week 11	Compression members: Members subjected to compression plus bending
Week 12	Compression members: Column base plate
Week 13	Connections: bolted connections
Week 14	Connections: bolted connections
Week 15	Connections: welded connections
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	AISC Steel construction manual/ American Institute of Steel	Yes

	Construction Structural steel design by McCormac and Csernak	
Recommended Texts	Steel design by Segui	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Design of concrete structure**			**Module Delivery**	
Module Type	**Core**			✓ **Theory** ✓ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE411**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Strength of Materials Theory of structure	**Semester**	2 1
Co-requisites module	Concrete technology Engineering Mechanics	**Semester**	1 2

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. To develop an understanding of the basic principles of structural analysis and be able to explain them. 2. To determine and analyze models of applied loads on structures. 3. To develop and utilize influence lines of structures. 4. To utilize various methods of analysis of beams, trusses, and frames to determine the response of both determinate and indeterminate structures. 5. To understand the role of structural analysis within the context of engineering design and decision making.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to apply knowledge of basic mathematics through differential equations, science, and engineering to solving engineering problems. 2. Ability to formulate and solve civil engineering problems. 3. Understanding of professional and ethical responsibility. 4. Recognition of the need for, and an ability to engage in, life-long learning. 5. Ability to use modern tools, techniques, and computation methods necessary for civil engineering practice.
Indicative Contents المحتويات الارشادية	<u>Part I: Statically Determinate Structures</u> Types of structural elements, Types of structures, Types of loads, Types of supports, Equations of equilibrium, Equations of condition, Determinancy and stability. Internal loadings developed in structural members, sign convention, Shear force and bending moment diagrams for a beam, Relationships between load, shear force and bending moment, Moment diagrams by method of superposition, Shear and moment diagrams for a frame. Determinancy and stability of trusses, The method of joints, The method of sections. Influence lines for statically determinate structures, Influence lines for beams, Relationships of influence lines and structural loading, Influence lines for trusses, Moving loads on beams, Absolute maximum moment in a beam. Approximate analysis of statically indeterminate structures, Indeterminate trusses, Vertical loads on building frames, Lateral loads on building frames: portal method. Deflection of a beam, Significance of beam deflections, Double integration method, Singularity function method, Moment-area method. <u>Part II: Statically Indeterminate Structures</u>

	Force methods, Method of consistent deformations, Basic procedure, Primary structure, Redundant reaction components. Displacement methods, The slope-deflection method, Derivation of the slope-deflection equations, Application of the slope-deflection method to the analysis of statically indeterminate beams, Analysis of rigid frames without joint translation. The moment distribution method, General description of the moment distribution method, Distribution factor, Procedure, Modified stiffness factor for hinged far end, Support settlement, Application of moment distribution to frames without sidesway. Energy methods, Strain energy in an elastic system: axial loading, flexural loading, Castigliano's theorem method, Joint displacement in trusses, Application of Castigliano's theorem to statically indeterminate structures: beams, frames.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main objective is to insure that students understand the basic concepts and developing their problem solving strategies. Most engineering students have difficulty in application of the fundamental concepts they have learned to specific cases. Therefore, the lecture material is incorporated with as many possible illustrative examples in order to facilitate the application of principles to actual problems. Importance is placed on the significance of the results obtained for physical problems, as it is often the case nowadays with the development of engineering software, that the student is concerned with merely "solving the problem" and obtaining results without their interpretation physically.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	1,2
	Assignments	2	10% (10)	2,12	1,2
	Projects / Lab.	1	10% (10)	6	1,2,3,4,5
	Report	1	10% (10)	13	1,2,3,4,5
Summative assessment	Midterm Exam	2 hr	10% (10)	7	1,2,3,4,5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction
Week 2	Yield line analysis for slabs
Week 3	One-Way Joist Slab (Ribbed Slab)
Week 4	Flat slab
Week 5	Waffle slab
Week 6	Precast slab
Week 7	Slabs on grade
Week 8	Composite slab
Week 9	Prestress concrete
Week 10	Analysis of flexural member of prestress concrete beams
Week 11	Analysis of flexural member of prestress concrete beams
Week 12	Design of flexural member of prestress concrete beams
Week 13	Design of flexural member of prestress concrete beams
Week 14	development length and anchorage zone design
Week 15	Deflection and crack control for flextural member of prestress concrete beams
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	"Elementary Theory of Structures", Yan-yu Hsieh, Prentice-Hall, 1982.	Yes
Recommended Texts	"Structural Analysis", Russel C. Hibbeler, 9th ed., Pearson Education, 2014.	Yes
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Hydraulic Structures**			**Module Delivery**	
Module Type	**Core**			X☐ **Theory** X☐ **Lecture** ☐ **Lab** X☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE414**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- To study and design the different types of hydraulic structures. 2- Understand the causes of failure of the hydraulic structures and its solutions. 3-To choose a suitable hydraulic structures in the project.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Discuss the types of hydraulic structures according to its purposes. 2- Discuss the causes of failure of hydraulic structures . 3- Explain the different methods of floor design of the hydraulic structures. 4- Define and explain of the energy dissipation structures. 5- Define and design of stilling basins. 6- Explain and design of different types of culvert. 7- Discuss and design of pipe aqueduct and flume. 8- Define and design of siphon. 9- Study and design a steel vertical gates.
Indicative Contents المحتويات الارشادية	Indicative content includes the following: 1- Types the hydraulic structures , causes of failure and design of floor . (16 hrs) 2- Design of regulator and stilling basin with hydraulic jump . (12 hrs) 3- Design of crossing hydraulic structures .(16 hrs) 4- Study the sliding gates and its design. (6 hrs) 5- Revision problem classes. (6hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The students participation in the exercises and solved a problem in the class to expand the thinking skills .

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem)	42	**Unstructured SWL (h/w)**	2.8

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	1-2-3 and 4-5-6
	Assignments	2	10% (10)	3,6,9and 12	1-2-3-4-6-8
	Projects / Lab.	1	10% (10)	Continues	3- 8
	Report-seminar	1	10% (10)	14	5-6-7 and8
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	1-6
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction , types of hydraulic structures .
Week 2	Steps for design of hydraulic structures , site conditions.
Week 3	Causes of failure of hydraulic structures, Bligh's creep theory.
Week 4	Lane's weighted creep theory.
Week 5	Khosla 's theory.
Week 6	Solved problems of pervious methods.
Week 7	Hydraulic design of regulators.
Week 8	Solved problems about design of the regulators.
Week 9	Hydraulic jump and solved problems.
Week 10	Design of vertical drop.
Week 11	Design of stilling basins.
Week 12	Design of pipes and box culverts.
Week 13	Design of pipe aqueduct and flume.

Week 14	Design of siphon .
Week 15	**Design of sliding steel gates .**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Irrigation , water power and water resources engineering. By Arora (2007) 2- Hydrulic structures by (Novak) (2007)	NO
Recommended Texts	Theory and design of Irrigation structures . By (Gupta).	yes
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Highway Engineering and Pavement Design**			**Module Delivery**	
Module Type	**Core**			x **Theory** x **Lecture** x **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE415**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- The course aims to present the basic elements of geometric design for highways and deals with the dimensions and layout of visible features of the highway. The features normally considered are the cross-section elements, sight distance consideration, horizontal curvature, gradients, and intersection. 2- The course aims to present the basic element for designing the pavement (flexible & Rigid) also analyze all stresses and applied loads on the pavement and take into consideration choosing the materials used in the pavement construction.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Gives us an idea about the roads of ancient times. 2- The emphasis of the geometric design is to address the requirement of the driver and the vehicle such as safety, comfort, efficiency, etc. 3- The characteristics of cross-sectional elements are important in highway geometric design because they influence safety and comfort. 4- Horizontal alignment is one of the most important features influencing the efficiency and safety of a highway. 5- Knowledge and Understanding of highway design features. 6- Bituminous materials, Natural Asphalt, constituents of asphalt cement, and test of asphalt. 7- The emphasis of the different aggregate characteristics with size and gradation, and methods of blending for dry mix design. 8- Bituminous mix design, with the objective of mix design. 9- Study of stress distribution through the pavement with the calculation of flexible pavement stresses and deflections. 10- Knowledge and Understanding of pavement design and analysis.
Indicative Contents المحتويات الارشادية	Indicative content includes the following: <u>Part A – Highway Engineering</u> - Proper design of a horizontal curve, including elements within a single curve and consistency of curvature along a highway.

	- Design speed is the single most important factor that affects the geometric design. - Derive and evaluate the information needed to apply engineering analysis methods to unfamiliar problems. - Soil stabilization methods and classification. - Highway Drainage and Design Equation Part B – Pavement Design and Analysis - Study of stress distribution through the pavement with the calculation of flexible pavement stresses and deflections. - Flexible pavement design methods (CBR method and AASHTO Design method). - Rigid pavement types and types of joints in the rigid pavement, and temperature stresses.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Scientific and research skills are developed through teaching and learning activities. Analysis and design-solving skills are further developed by employing a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	History of Highway Engineering, Factors affecting geometric design
Week 2	Road classification, Cross-Sectional Element
Week 3	Highway Location and survey, Horizontal alignment I, Analysis of super-elevation
Week 4	Extra Widening, Horizontal Curve Fundamentals, Reverse, compound, and Spiral curves
Week 5	Sight Distance on Horizontal Curve, Vertical Alignment, Parabolic Formula
Week 6	Stabilized Bases & Subases, Earthworks & Subgrades, Control of Embankment Construction
Week 7	Highway Drainage, Surface Drainage System Design
Week 8	Bituminous Materials, Test for Asphalt
Week 9	Aggregate, Physical Properties of Aggregate, Methods of Blending
Week 10	Bituminous Mix Design, Marshal Mix Design
Week 11	Stress distribution through the pavement, Calculation of stresses and deflections
Week 12	Design Introduction to Pavement, Types of Pavements, CBR Design Method
Week 13	Flexible pavement design methods, AASHTO Design Methods
Week 14	Rigid Pavement, Rigid Pavement Types, Types of Joints in Rigid Pavement
Week 15	Rigid Pavement, Critical load position, Temperature Stresses
Week 16	**The preparatory week before the Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	California Bearing Ratio CBR Test
Week 2	Bitumen Penetration Test
Week 3	Bitumen Ductility Tests
Week 4	Specific Gravity Test of Bitumen
Week 5	Bitumen Softening Test
Week 6	Viscosity Test of Bitumen, Flash Point Tests of Bitumen
Week 7	Marshall Tests

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**1**-Handbook: The Handbook of Highway Engineering.By T.F.Fwa.2006. **2.** Handbook: Highway Engineering Handbook.By Roger.L.b.and Kenneth J. 2nd.ed. 2004.	Yes
Recommended Texts	Handbook of Transportation Engineering. By Myer Kutz.2004.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Harbour Engineering**			**Module Delivery**	
Module Type	**Core**			x **Theory** x **Lecture** ☐ **Lab** x **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE419**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	4		**Semester of Delivery**	1	
Administering Department	Civil Eng. Dept.		**College**	College of Eng.	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. This module aims to produce human resources of well competent professionals in planning, designing and constructing of ports and harbors facilities with modern technologies. 2. Presenting different designs of harbour engineering methods, both theoretical and practical, to comply with international standards of academic quality and meet the needs of the labor market. 3. The purpose of the course is to provide an overview of techniques for the design of harbors as well as preserving and recovering beaches and the shoreline in the presence of human impact.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate a knowledge of the fundamental topics of port and harbour engineering; 2. Use new engineering applications in this field; 3. Apply a systems approach to port and harbour applications as a part of coastal and civil engineering; 4. Demonstrate highly developed analytical and problem solving skills.
Indicative Contents المحتويات الارشادية	1. Introduction (Ports and Harbors, Water-level Variations, Weather Factors) [6 hrs] 2. Port (Harbor) Elements: Design Principles and Considerations [9 hrs] 3. Design Loads [6 hrs] 4. Gravity-Type Quay Walls [9 hrs] 5. Offshore Deep Water Terminals [6 hrs] 6. Breakwater Design [12 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in introducing this module is to encourage students to participate in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through classes and interactive tutorials and by thinking about the type of simple experiments that include some sampling activities that are of interest to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	42	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	33	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	1. Introduction 1.1. Ports and Harbors 1.2. Water-level Variations
Week 2	1.3. Weather Factors 1.4. Wind 1.5. Currents 1.6. Waves
Week 3	2. Port (Harbor) Elements: Design Principles and Considerations 2.1. Port Classification 2.2. Port Details and Definitions 2.3. Ships and their Influence on Port Design 2.4. Access (Navigation) Channel 2.5. Port Water Area (Harbor)

	2.6. Location, Orientation, Size, and Shape of the Port
Week 4	2.7. Quay Basin 2.8. Structural Materials 2.9. Breakwaters 2.10. Fender Systems
Week 5	Design Loads 3.1. Environmental Loads 3.2. Mooring Loads
Week 6	3.3. Loads From Cargo Handling and Hauling Equipment and Uniform Distributed Loads 3.4. Ship Impact
Week 7	Gravity-Type Quay Walls 4.1. Basic Structural Arrangements 4.2. Basic Design Considerations
Week 8	4.3. Design of Block Work Quay Walls 4.4. Design of Quay Walls Composed of Large-Diameter Cylinders
Week 9	4.5. Design of L-Shaped Walls
Week 10	Offshore Deep Water Terminals 5.1. Layout
Week 11	5.2. Mooring System 5.3. Dolphins and Platforms
Week 12	Breakwater Design 6.1. Historic Development of Breakwaters 6.2. Design of Conventional Vertical Breakwaters
Week 13	6.3. Design of Vertical Breakwater
Week 14	6.4. Design of Horizontally Composite Breakwaters
Week 15	6.5. Design of Rubble-Mound Breakwaters
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	

Week 7	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Design and construction of port and marine structure	Yes
Recommended Texts	Handbook of port and harbor engineering	No
Websites	Websites specialized in harbor engineering	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.