

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Human rights		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	HRAD103		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	
Administering Department		College	Civil Engineering
Module Leader	Dr. Ammar Mezal	e-mail	ammar.mezal@gmail.com
Module Leader's Acad. Title	Asst. Lecture	Module Leader's Qualification	MSc
Module Tutor	-	e-mail	E-mail
Peer Reviewer Name	Kifaa Abdulkareem shaker	e-mail	Kifaa.kareem@gmail.com
Scientific Committee Approval Date	03/06/2023	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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Introduce students to human rights and duties towards society.2. Highlight the importance of knowing the rights of the individual in carrying out his duties to the fullest.3. Learn about the history of human rights and the stages of their development through the ages.4. To promote the culture of human rights among students, to take care of the rights of others and to promote a culture of peace based on justice and respect for human rights.5. To promote people's awareness of their rights, to enable them to transform the principles of human rights into a social, cultural, economic and political reality.6. The development and prosperity of the human personality with its emotional, intellectual and social dimensions and its sense of dignity, freedom, equality and social justice.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Preparing graduates who are familiar with human rights and safeguarding these rights.2. Creating confidence in the student during the dialogue about human rights3. Raise the spirit of cooperation and work within a team4. Study theories of human rights and democracy5. Clarify the historical stages of human rights6. Clarify the most important rights and duties of an individual7. Knowing the rights and duties of the Iraqi individual8. Respect for others' rights and non-infringement to ensure a better society.
<p>Indicative Contents المحتويات الإرشادية</p>	<ol style="list-style-type: none">1. The concept of human rights and objectives and characteristics of human rights and its concept in ancient civilizations and heavenly religions [10hrs.]2. Sources of Human Rights in Iraq Civil Rights, Political Rights, Economic rights, social rights and cultural rights. [10 hrs]3. Individual freedoms and their types. [6 hrs]4. Means of protection of human rights. Including legal protection and judicial protection [4 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ol style="list-style-type: none"> 1) Direct discussion about asking questions, opening dialogue and interacting with students 2) Tests and Exams. 3) Strategies for thinking within a group 4) Critical thinking strategy in learning 5) Connection between Theory and Application. 6) In- and Out-Class oral conversations. 7) Reports, Presentations, and Posters.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.2
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	1	10% (10)	5	LO #1, 2,6 and 7
	Assignments	1	10% (10)	9	LO #3 and 4
	Report	2	20% (20)	4, 11	LO # 7,9
Summative assessment	Midterm Exam	2 hr	10% (10)	12	LO # 1-9
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Origins of civil rights and freedom, including: legislation for civil rights.
Week 2	Objectives and characteristics of human rights
Week 3	Legal basis for the rule of law
Week 4	human rights in ancient civilizations & ancient heavenly religions
Week 5	Sources of Human Rights in Iraq
Week 6	Understanding civil rights, economical conception of civil rights
Week 7	Legal basis for the rule of law
Week 8	Legal protection
Week 9	Social rights
Week 10	Cultural rights
Week 11	Individual freedoms
Week 12	Mid Exam
Week 13	judicial protection
Week 14	Types of individual freedoms
Week 15	Freedom of owning property, capitalistic & socialist understanding of ownership
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Book of Human Rights حقوق الانسان بين النص والتطبيق دكتور علي الشكري	Yes
Recommended Texts	حقوق الانسان دكتور ماهر علاوي	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	Engineering Mechanics I		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Aseel Qadoorri	e-mail	aseel20071984@gmail.com
Module Leader's Acad. Title	Asst. Lecture	Module Leader's Qualification	M.Sc
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr.Mohanad Hatem	e-mail	mohshadhar@gmail.com
Scientific Committee Approval Date	11/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Explain the principles basic definitions and introductory concepts of engineering mechanics/statics.2. Analyze forces and find out the resultant forces in plane and space.3. Differentiate between various type of supports and draw free-body-diagram, compute the reaction force in simple structure (beam, frame, truss).4. Explain the principles of static equilibrium and solve problems relating to dry friction.5. Use free body diagrams to solve static problems involving components and pulley systems6. Solve problems relating to the forces in truss members using the method of joints and the method of sections.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Analyze units, and basic principles.2. Solving problem of equilibrium plane and space.3. Solving Truss problems.4. Define Newton's laws of motion.5. Recall trigonometric laws and apply to the addition and decomposition of vectors quantities.6. Identify the moment of a force and calculate its value about a specified axis. Define the moment of a couple.7. Describe the concept of dry friction and analysis the equilibrium of rigid bodies subjected to this force.8. Construct "Free Body Diagrams" of real-world problems and apply Newton's Laws of motion and vector operations to evaluate equilibrium of particles and bodies.9. Apply the principles of equilibrium of particles and bodies to analysis the forces in planar truss members.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>Part A- Introduction</u> Introduction, units, definitions and basic principles. [6hrs] <u>Part B- Forces Resultant</u> <ul style="list-style-type: none"> • Forces, forces resolution and combination in plane and in space. [10hrs] • Rigid Body Force Systems, moment of a force about a point, moment of a force about an axis. [10hrs] • Rigid Body Force Systems, couples, reduction of force and couple systems, • resultant of concurrent coplanar force system resultant of parallel coplanar force system. [10hrs] • Resultant of non-concurrent non parallel coplanar force system. (10hr) <u>Part C- Equilibrium</u> <ul style="list-style-type: none"> • Equilibrium of a Particles, free body and force diagrams; equilibrium of a particle. [10hrs] • Equations of equilibrium, Equilibrium of a rigid body plane, Solving equation of equilibrium plane, Equations of equilibrium, Equilibrium of a rigid body space, Solving problem of equilibrium space [10hrs] <u>Part D- Trusses:</u> <ul style="list-style-type: none"> • Joints method. • Section method, Solving Truss problems [10hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The formal learning activities are a combination of lecture and tutorial style formats. For example, new material will be presented and supported by problem solving exercises (formative assessment) to be completed by students. Students will benefit from participation in the interactive environment during formal contact times.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	113	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)	2,3, 10,15	LO #1, 2,7 and 8
	Assignments	2	10% (10)	4,7	LO #3 and 4
	Report	1	10% (10)	13	LO # 8
Summative assessment	Midterm Exam	2 hr	10% (10)	12	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

0

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Introduction, course orientation, units, definitions and basic principles.
Week 2	Forces, forces resolution and combination in plane and in space
Week 3	Rigid Body Force Systems, moment of a force about a point, moment of a force about an axis.
Week 4	Rigid Body Force Systems, couples, reduction of force and couple systems.
Week 5	Resultant of concurrent coplanar force system
Week 6	Resultant of parallel coplanar force system.
Week 7	Resultant of non-concurrent non parallel coplanar force system.
Week 8	Equilibrium of a Particles, free body and force diagrams; equilibrium of a particle.
Week 9	Equations of equilibrium, Equilibrium of a rigid body plane
Week 10	Solving equation of equilibrium plane
Week 11	Equations of equilibrium, Equilibrium of a rigid body space
Week 12	Solving problem of equilibrium space
Week 13	Trusses: method of joints
Week 14	Trusses: method of sections
Week 15	Solving Truss problems
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. Meriam, J. L. & Kraige, L. G. (2013). Engineering Mechanics Statics , 7th Edition, Wiley. 2. Hibbeler, R. C. (2017). <i>Engineering Mechanics Statics</i> , 14th Edition in SI units, Pearson.	Yes
Recommended Texts	3. Beer, Ferdinand Pierre, et al. <i>Vector mechanics for engineers</i> . Vol. 4. New York: McGraw-Hill, 1977.	NO
Websites	http://www.adelaide.edu.au/mathsllearning/resources/statics/	

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	Mathematics I		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE103		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Ibtihaj Abdulwahhab Abdulrazzak	e-mail	dr.eng.ibtihaj@gmail.com
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Mahmood Mohammed Hamza	e-mail	mms1988@gmail.com
Scientific Committee Approval Date	11/06/2023	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	At the end of the course, the student will be familiar with: <ol style="list-style-type: none">1. The fundamental of mathematics including functions and their graphs and shifting.2. To enable students to understand and solve the general Integration problems.3. To enable students to understand and solve the Derivatives of all functions.4. Matrix calculations
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1- Learning how to think, apply and visualize by drawing functions.2- Studying and understanding the problem and true thinking to find a correct solution3- Study and analyze the problem and how to select the best solution4- Developing skills through understanding, solving, then comparing5- Improve the observation, collecting information, comparing and analyzing the results6- Develop general skills (skills related to the personal development) to achieve a correct solution
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Functions</u> Definition of functions (Line, Circle, Ellipse, Parabola, Trigonometric functions). Equations of functions. Graph the functions and graph the shifting functions. Find the limits and continuity. [15hrs] <u>Part B - Derivatives</u> Explanation the Differentiations and finding the derivatives of different functions. Applying Chain Rule in differentiations. L'Hopital Rule and finding the slop of the functions as an applications of derivatives. [15hrs] <u>Part C – Integration</u> Explanation the Integration (definite and indefinite Integration). Use the integration to find the area between curves as an application of integration. [15hrs] <u>Part D - Matrix and Determinants</u> Identifying matrices and Determinants and their properties. Using matrices to find the variables in equations by applying Cramer's rule. [15hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The course is taught through three approaches: Classroom lectures to present the basic mathematics, online lectures, and interactive tutorials to solve the problems to encourage students' participation in the exercises.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	20% (20)	5, 10	LO #1, 2, 5
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6
	Report	1	10% (10)	13	LO # 3, 4 and 6
	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
Summative assessment	Final Exam	3 hr	50% (50)	15	All
	100% (100 Marks)				

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
Functions	
Week 1	1-1 Line, Circle, Ellipse, Parabola, Trigonometric functions
Week 2	1-2 graph and shifting a graph of functions
Week 3	1-3 Limits
Week 4	1-4 Continuity
Derivatives	
Week 5	2-1 Differentiations

Week 6	2-2 Chain Rule
Week 7	2-3 Higher Derivatives
Week 8	2-4 Implicit Differentiation
Week 9	2-5 Applications of Derivatives
Integration	
Week 10	3-1 Integration definite and indefinite Integration
Week 11	3-2 applications of Integration
Week 12	3-3 Area between curves
Matrix and Determinants	
Week 13	4-1 Determinants of second and third orders
Week 14	4-2 Properties of determinants
Week 15	4-3 Cramer's rule
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	<ul style="list-style-type: none"> - Thomas Calculus”, 12th ED, George B. Thomas Jr., Maurice D. Weir, Joel R. Hass, 2009 - Mathematics For Engineers: A Modern Interactive Approach”, 2nd ED, Tony Croft and Robert Davison, 2003. 	Yes
Recommended Texts	<ul style="list-style-type: none"> - Scientific journals and mathematical researches in mathematic their applications 	No
Websites	Electronic references, Internet sites, Application of mathematics https://byjus.com/maths/differentiation/ https://byjus.com/maths/integration/ https://www.cuemath.com/algebra/matrices-and-determinants/	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Construction Materials		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	UICE103		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Doha Mothefer Abdul-Razzaq	e-mail	doha.m.alsaffar@gmail.com
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	MSc
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Omar Riyadh	e-mail	dr.omaralobaidi@gmail.com
Scientific Committee Approval Date	11/06/2023	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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. The main aim is to familiarize students with physical properties and mechanical behavior of various construction materials such as clay brick, concrete block, glass block, sand lime brick.....etc. 2. To make the students capable of suggesting the most suitable material which may fit the exact requirements of the construction items. In this course, the technology related to some of the important and widely used construction materials has been dealt with. 3. Robust the confidence of the students in this construction materials domain as they will be able to select appropriate material for the given item of work on site. 4. Provide the student with theoretical concepts of the different construction materials. 5. Achieve sustainability, health and safety in the field of construction.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Understand the properties, characteristics, and applications of various building materials used in construction, including Metals, timber, masonry, and plastic. An ability to understand physical properties, uses, manufacturing process of building materials that are used in structural components. 2. Solve exercises related to the calculation of stresses and deformations in the materials. 3. Implement different engineering tests on Masonry units and find their properties to ascertain suitability of different construction materials. 4. Carry out the test procedures for the principal laboratory properties of construction materials and collect and analyze experimental data and present them in a report with summarized conclusions. 5. Differentiate the advantages, disadvantages, availability of the construction materials and the suitability of these materials in construction. 6. Recognize the environmental impact of building materials and construction methods, and explore sustainable alternatives and practices for reducing resource consumption and minimizing waste.
<p>Indicative Contents المحتويات الإرشادية</p>	<p><u>Part A- Material Selection and Specifications</u></p> <ul style="list-style-type: none"> • Factors influencing material selection in construction projects. • Material specifications and standards. • Durability and service life considerations. • Cost analysis and value engineering. [6hrs] <p><u>Part B- Properties of Materials</u></p> <ul style="list-style-type: none"> • Microstructure of materials • Physical Properties • Mechanical properties [6hrs] <p><u>Part C- Masonry Materials</u></p> <ul style="list-style-type: none"> • Bricks, blocks, tile, stone units and mortar. • Types of bricks and blocks. • Types of tiles and their properties. • Masonry material standards and quality control. [8hrs]

Part D- Bonding Materials

- Mortar: properties, types, and uses
- Lime: properties, types, and uses
- Gypsum: properties, types, and uses. [6hrs]

Part E- Metals (ferrous and non-ferrous metals) and alloys

- Types and Properties of metals used and their applications in construction (e.g., steel, aluminum).
- Steel reinforcement and its role in reinforced concrete.
- Corrosion protection of metals in construction. [6hrs]

Part F- Timber Products

- Introduction to wood as a construction material.
- Types of wood and their properties.
- Engineered wood products and their applications.
- Wood preservation and treatment methods. [6hrs]

Part G- Glass

- Overview
- Types of glass
- Properties of glass.
- Sustainable glass material. [6hrs]

Part H- Polymer Materials

- Types of plastics and their properties
- Applications of plastics and composites in building construction.
- Sustainability and recycling of plastic materials.
- Sustainable construction materials.
- Green building materials and their benefits.
- Innovative materials and technologies in construction. [6hrs]

Part I- Miscellaneous Materials

- Adhesives
- Asbestos
- Insulating Materials
- Water Proofing Materials
- Fiber
- Smart Materials
- Composite Materials. [6hrs]

Part J-Sustainable and Innovative Construction Materials;

- Introduction to sustainable construction materials,
- green building materials and their benefits
- Innovative materials and technologies in construction, future trends in sustainable construction materials[6hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ul style="list-style-type: none"> - Visual Aids and Multimedia: Using visual aids and multimedia to enhance the learning process. - Group Projects and Collaborative Learning: Assigning group projects that require students to work together to solve construction material-related problems. - Field Trips and Site Visits: Organizing field trips to construction sites or visits to manufacturing facilities that produce construction materials. - Interactive Discussions and Debates: Encouraging interactive discussions and debates on topics related to construction materials. - Online Resources and Simulations: Utilizing online resources and simulations to support the learning process. <p>These strategies aim to enhance students' understanding of construction materials and their applications through hands-on interaction and collaborative learning.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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)	3, 6	LO # 1, 2 and 3
	Seminar	1	10% (10)	8	LO # 5
	Report / Lab.	1	10% (10)	12	LO # 4
	Project report	4	10% (10)	8	LO # 6
Summative assessment	Midterm Exam	2hr	10% (10)	13	LO # 1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to Construction Materials; Overview of the course and learning objectives, Material Selection and Specifications; factors influencing material selection in construction projects, Material specifications and standards
Week 2	Properties of building materials: physical properties, mechanical properties, chemical properties, and thermal properties
Week 3	Masonry Materials; Introduction to masonry materials: bricks, blocks, tile, and mortar, types of bricks and blocks and their properties
Week 4	Masonry Materials; Types of tiles and their properties, masonry material standards and quality control
Week 5	Masonry Materials; mortar composition, properties, and applications
	Masonry Materials: stone units, their properties and applications in construction.
Week 6	Metals and Alloys; properties of metals used in construction (e.g., steel, aluminum), steel its role in reinforced concrete, Corrosion protection of metals in construction, quiz
Week 7	Wood and Timber Products; introduction to wood as a construction material, types of wood and their properties, engineered wood products and their applications, wood preservation and treatment methods
Week 8	Glass Overview, Types of glass, Properties of glass, and Sustainable glass material.
Week 9	Polymers; Types of plastics and their properties, applications of plastics and composites in building construction, sustainability and recycling of plastic materials
Week 10	Miscellaneous Materials: Adhesives, Asbestos, Insulating Materials, Water Proofing Materials, Fiber, Smart Materials, Composite Materials
Week 11	Sustainable and Innovative Construction Materials; Introduction to sustainable construction materials, green building materials and their benefits
Week 12	Sustainable and Innovative Construction Materials; Innovative materials and technologies in construction, future trends in construction materials
Week 13	Mid-term Exam
Week 14	Recap
Week 15	Preparatory week before the final Exam
Week 16	final Exams

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Student Responsibilities, Report Writing, overview on List of Experiments
Week 2	Shape & dimension test of clay brick, Determination of water absorption of bricks
Week 3	Efflorescence test for Brick
Week 4	Compressive strength of clay bricks

Week 5	Tile dimensions and shape
Week 6	Water absorption of tile, face Water absorption test of tile
Week 7	Modulus of rupture of tile
Week 8	Shape & dimension test of Stones, Determination of water absorption of stones
Week 9	Compressive strength of Blocks
Week 10	Fineness of gypsum test, Standard consistency
Week 11	Setting time of gypsum
Week 12	Fineness of Lime test, Standard consistency
Week 13	Modulus of rupture of Timber
Week 14	Other Different construction materials tests.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ol style="list-style-type: none"> 1. Peter Domone and John Illston (2010) construction materials, their nature and behaviour, 4th ed, Spon Press 2. Duggal, S. K. (2017). Building materials. Routledge. 3. Khatib, J. (Ed.). (2016). Sustainability of construction materials. Woodhead Publishing. 	No
Recommended Texts	Venkateshwara, P., & Vishnukanth, M. (2006). Building Materials and Construction (For the Course of Water Supply and Sanitary Engineering). Hyderabad: The Telugu Akademi.	No
Websites	https://www.masterclass.com/articles/building-materials-guide	

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	Physics for Engineers		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE104		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Assit.Lec. Roaa Ayad	e-mail	Roaaayad90@gmail.com
Module Leader's Acad. Title	Assistant Lecture	Module Leader's Qualification	MSC
Module Tutor	-	e-mail	-
Peer Reviewer Name	Mahmood Mohammed	e-mail	mmhsh1988@gmail.com
Scientific Committee Approval Date	11/06/2023	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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. The student will be able to deal with systems of physical units, distinction between physical quantities, vector analysis and its applications.2. Develop the student's ability to understand The Concept of Force Newton's Laws and Gravitational Force, Weight Free body diagram, with learning the Forces of Friction.3. Identify the definition of torque, Center of Gravity and The Rigid Object in Equilibrium.4. Learn about the elastic properties of solids and what are the modulus of elasticity.5. Understand the principle of constant force and know the difference between kinetic energy and potential energy and identify the law of conservation of energy.6. Identify the properties of liquids (density, pressure, surface tension, and viscosity) with learn the method of measuring pressures, and understand the continuity equation, Bernoulli's equation and its applications.7. Identify thermal expansion, its types and how to measure it.8. Understanding the properties of waves, sound waves and their speed, learning about the Doppler effect, ultrasound and its applications.9. Understanding the nature of light and its properties, and identifying some of the applications of light.10. Learn about electric field and magnet field and what is the difference between them.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Writing the correct units and dimensions of physical quantities and know the concept of friction.2. Identify the definition of torque, Center of Gravity and The Rigid Object in Equilibrium.3. Identify Solids, identifying the meaning of viscosity and knowing the modulus young's, shear, and bulk.4. Define constant forces, kinetic energy and potential energy and conservation of energy.5. Explain the properties of liquids, and understand the continuity equation, Bernoulli's equation and its applications.6. Define thermal expansion and list the various types of it.7. Explain the properties of sound waves and the Doppler effect, ultrasound and its applications.8. Identify the nature of light and its properties, refracting and refraction and i the applications of light.9. Explain Electricity, resistivity and the concept of current, resistance and explain electric field and magnet field.
<p>Indicative Contents المحتويات الإرشادية</p>	<ul style="list-style-type: none">• History and nature of science. [5hrs]• Metric system, units of measurements. [5hrs]• The atomic nature of matter. [5hrs]• States of matter. [5hrs]

	<ul style="list-style-type: none"> • Liquids. [5hrs] • Solids, elasticity, young's modulus, shear modulus and bulk modulus. [5hrs] • Forces, work, energy, momentum, power and friction. [5hrs] • Electricity. [5hrs] • Thermal expansion. [5hrs] • Simple harmonic motion (kinetic and potential energy). [5hrs] • Electrical and magnetic properties of matter. [5hrs] • Magnetic states of matter, a diamagnetic, paramagnet ferromagnetic and ferromagnetic. [5hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy In Civil Engineering, the laws of physics can tell you about forces, tension, tensile strength, elasticity, and all kinds of other concepts that you can use to make calculations about your designing and construction work.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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)	5, 10	LO #1, 2, 10
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	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

Week	Material Covered
Week 1	History and nature of science
Week 2	Metric system , units of measurements
Week 3	The atomic nature of matter
Week 4	States of matter - solids , liquids, gases, qualitative differences between solids, liquids and gases
Week 5	Continued
Week 6	Liquids, structure of liquids, surface energy, surface tension capillary action, flow properties and viscosity
Week 7	Solids, elasticity, young's modulus, shear modulus and bulk modulus
Week 8	Forces, work, energy, momentum, power and friction
Week 9	Electricity, charge, current, resistance, resistivity , thermistor, galvanometer, ammeter and voltmeter
Week 10	Thermal expansion, linear, surface and volume expansion , transfer of heat, temperature and scales
Week 11	Simple harmonic motion (kinetic and potential energy)
Week 12	Electrical and magnetic properties of matter, insulators, conductors, semiconductor and superconductors
Week 13	Continued
Week 14	Magnetic states of matter, a diamagnetic, paramagnet ferromagnetic and ferromagnetic
Week 15	Continued
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Simple pendulum
Week 2	Hook's law
Week 3	Forces test
Week 4	Melting and freezing point
Week 5	Ohm's law

Week 6	Faraday's law
Week 7	Refractive index

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Engineering Physics, Dr. Hasan Maridi, 1st edition, 2017	
Recommended Texts	Physics for Scientists and Engineers , Thomson Brooks/Cole © 2004, 6th Edition,	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 Information				
معلومات المادة الدراسية				
Module Title	Engineering Drawing		Module Delivery	
Module Type	Core		<input type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	UICE105			
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	Mostafa Waleed		e-mail	mostafa.waleed@aliraqia.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.
Module Tutor	-		e-mail	-
Peer Reviewer Name	Mohammed Ghazi		e-mail	mohammed.ghazi@aliraqia.edu.iq
Scientific Committee Approval Date	11/06/2023		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 Objectives أهداف المادة الدراسية	The aim of this module is to provide students with a comprehensive understanding of engineering drawing principles and techniques. It aims to develop their skills in creating and interpreting technical drawings, which are essential in the field of engineering. The module also aims to enhance students' spatial visualization abilities and their understanding of the relationship between 2D representations and 3D objects.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Demonstrate an understanding of the principles and conventions of engineering drawing. 2. Apply appropriate techniques to create accurate and precise engineering drawings. 3. Interpret and analyze technical drawings, including dimensions and annotations.

	<ol style="list-style-type: none"> 4. Use CAD (Computer-Aided Design) software effectively to generate engineering drawings. 5. Demonstrate proficiency in visualizing and sketching 3D objects from different perspectives.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A- Introduction to Engineering Drawing</u></p> <ul style="list-style-type: none"> • Importance of engineering drawing in the design and manufacturing process. • Standards and conventions in engineering drawing. • Types of technical drawings: orthographic projections, isometric projections, etc. [3hrs] <p><u>Part B- Drawing Instruments and Techniques</u></p> <ul style="list-style-type: none"> • Overview of drawing instruments and their uses. • Sketching techniques and line types. • Scaling, dimensioning, and labeling [3hrs] <p><u>Part C- Orthographic Projections</u></p> <ul style="list-style-type: none"> • Principles of orthographic projection. • Multiview drawings. • Sectional views and conventions. [25hrs] <p><u>Part D- Isometric Projections</u></p> <ul style="list-style-type: none"> • Introduction to isometric projections. • Isometric drawing techniques and isometric scales. • Isometric views of objects and assemblies. • Extracting 2D Drawings form Isometric drawing. [29hrs]

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<p>In this module, a combination of project-based learning, lectures, and group discussions will be utilized to create an engaging learning environment. Students will apply engineering drawing principles and techniques to real-world scenarios, participate in interactive lectures using visual aids and examples, collaborate in group discussions to analyze and problem-solve, engage in practical exercises and workshops to develop technical drawing skills with traditional tools and CAD software, and conduct independent study.</p>

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	38	Unstructured SWL (h/w) 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	In Class Applications	1	20% (20)	Continuous	All
	Projects	1	20% (20)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to Engineering Drawing
Week 2	Sketching techniques and line types & Scaling, dimensioning, and labeling
Week 3	Continued
Week 4	Principles of orthographic projection
Week 5	Multiview drawings in orthographic projection
Week 6	Sectional views and conventions
Week 7	Mid-term Exam
Week 8	Introduction to isometric projections
Week 9	Isometric drawing techniques and isometric scales
Week 10	Isometric views of objects and assemblies
Week 11	Extracting 2D Drawings form Isometric drawing
Week 12	Orthographic project of small frame structure

Week 13	Continued
Week 14	Isometric drawing of small frame structure
Week 15	Continued
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. Giesecke, Frederick Ernest, et al. Technical drawing with engineering graphics. Vol. 15. Prentice Hall, 2016.	Yes
Recommended Texts	1. French, Thomas Ewing, and Charles J. Vierck. The fundamentals of engineering drawing and graphic technology. McGraw-Hill Companies, 1978.	Yes
Websites	https://sphero.com/blogs/news/engineering-drawing	

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	Workshop		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	WRK062		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Mahmood Mohammed Hamzah	e-mail	Mmhsh1988@gmail.com
Module Leader's Acad. Title	Assistant Lecture	Module Leader's Qualification	master
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Omar Riyadh Khaleel	e-mail	dr.omaralobaidi@gmail.com
Scientific Committee Approval Date	30/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Apply knowledge and wide-ranging understanding of health, safety and environment principles and legal framework within which the construction industry operates, and undertake full ethical and professional responsibilities in the discharge of their duties.2. Apply in-depth knowledge and detailed understanding of structural and hydrological analysis, hydraulic design, innovative construction and maintenance techniques to civil engineering infrastructure.3. Apply innovative and advanced computational methods and simulation tools to model and analyse complex civil engineering and environmental systems.4. Apply wide-ranging understanding of experimental, analytical and numerical techniques for investigative studies in hydrological, environmental and geotechnical engineering.5. Apply detailed understanding in proposal development and writing; use innovative knowledge in sourcing, analysing and presenting data; and apply research methodologies to undertake independent investigation and academic writing of a specialized topic.6. Develop personal abilities in teamwork, leadership and communication.7. Apply corporate strategy and systems theory to the management of projects in engineering and construction industry.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1- Acquire knowledge and understanding.2- To be able subject-specific skills.3- To be able discussion and dialogue.4- Brain storming by encouraging students to produce a large number of ideas about some issue or problem raised during the job.5- Cooperative learning by team working.6- How to use a range of workshop equipment safely to manufacture components from engineering drawings.7- Identify the advantages and drawbacks of common manufacturing methods8- Understand how the design process is affected by manufacturing considerations such as material, cost, time and geometric limitations.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none">• Occupational Safety and importance. [3hrs]• Hand Tools. [3hrs]• Measuring Tools. [3hrs]• Marking-Out and Chisel Cutting. [6hrs]• File Work. [6hrs]• Drilling and Turning and Milling. [12hrs]• Casting and Welding Processes. [9hrs]• Wood Working. [3hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ol style="list-style-type: none"> 1. Homework and Assignments. 2. In-Class Questions and Discussions. 4. Extracurricular Activities. 5. Seminars. 6. In- and Out-Class oral conversations. 7. Reports.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
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	LO #1, #3 and #5, #6
	Assignments	2	10% (10)	2 and 12	LO #4 and #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #2 and #8
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to the basics occupational Safety and importance and importance of safety in life, learning about occupational safety means and practical work
Week 2	Introduction to hand tools, Types of tools, how to use many types of tools, occupational Safety of hand tools and practical work
Week 3	Introduction to measuring Tools, types of measuring tools, how to use vernier caliper and its importance in workshop and practical work
Week 4	What is meaning by Marking-Out; introduction and meaning theory and practical work
Week 5	What is meaning by Chisel Cutting; introduction and meaning theory and practical work
Week 6	What is meaning by File Working; introduction and meaning theory and practical work
Week 7	Continue practical work
Week 8	Introduction to; Drilling, Turning and Milling; learning about every means
Week 9	practical work
Week 10	practical work
Week 11	practical work
Week 12	What is meaning by Casting and Welding Processes; learning about every means
Week 13	practical work of casting process
Week 14	practical work of welding process
Week 15	Wood Working importance and means and practical work

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1: Occupational Safety in Workshop
Week 2	Lab 2: How to use some types of hand tools
Week 3	Lab 3: How to use some types of measuring Tools
Week 4	Lab 4: Marking-Out; tools and technique
Week 5	Lab 5: How to cut by Chisel
Week 6	Lab 6: Making a model sample by file work
Week 7	Lab 7: Completing the model sample

Week 8	Lab 8: Operating the drilling machine and its uses: practical exercises
Week 9	Lab 9: Operating the turning machine and its uses: practical exercises
Week 10	Lab 10: Operating the milling machine and its uses: practical exercises
Week 11	Lab 11: Making a model sample by casting
Week 12	Lab 12: An exercise about welding two pieces; butt joint
Week 13	Lab 13: Making a model sample by woodworking

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. General Engineering Workshop Practice - third edition 1963 Reference Book	No
Recommended Texts	2. Engineering Workshop Data. A Book of Reference containing Data, Formulae, Tables, hints and Recipes relating to all Phases of Engineering Workshop Practice. Hardcover – 1 Jan. 1947.	No
Websites	https://www.slideshare.net/JosephKonnullu/workshop-practise	

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	Academic English		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	ENG081		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Sarah Dhurgham Al-Jarjees	e-mail	sarah.aljarjees@aliraqia.edu.iq
Module Leader's Acad. Title	Lecturer Assistant	Module Leader's Qualification	MSc.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Mohanad Hatem	e-mail	mohshadhar@gmail.com
Scientific Committee Approval Date	11/06/2023	Version Number	1

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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. This course aims to enable the learner to use English effectively for study purposes across the curriculum.2. To enable learners to grasp the technical engineering terms and to use them in real-life situations.3. To develop and integrate the usage of Civil- technical English terms and vocabulary with speaking and writing skills.4. To enhance the ability to write clear, concise, and accurate technical texts using a wide range of technical vocabulary.5. To communicate easily and appropriately in real-life situations.6. To introduce learners to the lifelong learning and self-development available resources for English language learning.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Communication Skills: Students will demonstrate effective communication skills in the English language, specifically tailored to the field of civil engineering.2. Technical Vocabulary: Students will acquire a comprehensive understanding of technical vocabulary specific to civil engineering. They will be proficient in using industry-specific terms and terminology related to construction, structural engineering, geotechnical engineering, transportation engineering, and other relevant sub-disciplines.3. Reading Comprehension: Students will develop advanced reading comprehension skills, enabling them to understand technical documents and engineering specifications written in English.4. Writing Skills: Students will be introduced to the technical writing skills that required in civil engineering, such as geometric shapes description.5. Continuous Learning: Students will recognize the importance of lifelong learning and self-improvement in the ever-evolving field of civil engineering. They will develop strategies for independent learning, such as utilizing online resources, staying updated with industry publications, and actively seeking opportunities for professional development.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A – English grammar basics</u></p> <ul style="list-style-type: none">- English tenses (Present simple, Past simple regular and irregular, Present continuous, Future tense).- Possessive adjectives.- Prepositions.- Conditional sentences.[8hrs] <p><u>Part B – Technical English vocabulary and terminology</u></p> <ul style="list-style-type: none">- Collocations, Compound words, Idiomatic expressions, industry-specific terms, and technical vocabulary delivered as texts related to construction, structural engineering, geotechnical engineering, transportation engineering, and sanitary engineering. [8hrs]

	<p>Part C – General language skills</p> <ul style="list-style-type: none"> - Reading skills (skimming and scanning). - Writing skills (2D & 3D shapes description, principles of writing a technical report). - Request and offers. [8hrs] <p>Part D – Long life learning concept</p> <ul style="list-style-type: none"> - Utilizing online resources, industry publications, and professional development platforms. [6hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>The strategy for teaching this course is the communicative approach. It will focus on encouraging active participation and engagement from students, emphasizing real-life communication situations Instead of solely focusing on grammar rules and vocabulary memorization. Students will be given tasks or projects that require them to use English to achieve a specific goal, encouraging collaboration, critical thinking, and language production. Besides, the four language skills - listening, speaking, reading, and writing are integrated into lessons to reflect how language is used in real-life situations.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.2
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)	5, 10	LO # 1, 2, 3 and 4
	Assignments	2	10% (10)	2, 12	LO # 1, 2, 3 and 4
	Seminar	1	10% (10)	13	LO # 5
	Report	1	10% (10)	15	LO # 4
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to English grammar - English tenses (Present simple, Past simple regular and irregular) + Possessive adjectives.
Week 2	English grammar - English tenses (Present continuous, Future tense) + Prepositions.
Week 3	English grammar - Conditional sentences Technical English vocabulary - text on construction materials topic, including idiomatic expressions.
Week 4	Technical English vocabulary - text on structural engineering topic, including idiomatic expressions.
Week 5	Technical English vocabulary - text on geotechnical engineering topic including idiomatic expressions.
Week 6	Technical English vocabulary – Collocations + Compound words
Week 7	Mid-term Exam
Week 8	Reading skills - skimming and scanning skills.
Week 9	Technical English vocabulary - text on transportation engineering topic including industry-specific terms.
Week 10	Technical English vocabulary - text on sanitary engineering topic including industry-specific terms.
Week 11	Writing skills (2D & 3D shapes description).
Week 12	Introduction to professional development platforms and utilizing online resources.
Week 13	Seminar
Week 14	Writing skills (principles of writing a technical report).
Week 15	Practical training on industry publications reading.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Technical English for Civil Engineering. Izar Landeta, J.M., 1 st edition. ISBN: 968-7674-66-0 2. New Headway: Intermediate. John Soars and Liz Soars, 4 th edition, Oxford publication.	No
Recommended Texts	1. Technical English for Civil and Structural Engineers. Kambiz Narmashiri and Fatemeh Daliri A., 1st edition. ISBN: 9783848484300	No
Websites	1. https://www.coursera.org/learn/writing-english-university 2. https://www.futurelearn.com/courses/english-for-stem-understanding-engineering-vocabulary	

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Mechanics II		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE202		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Aseel Qaddoori	e-mail	aseel20071984@gmail.com
Module Leader's Acad. Title	Asst.Lecture	Module Leader's Qualification	MS.c
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Mohanad Hatem	e-mail	mohshadhar@gmail.com
Scientific Committee Approval Date	11/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mechanics I	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none"> 1. Explain centroid and moment of inertia a for various shapes. 2. Describe the motion of a particle in terms of its position. 3. Demonstrate velocity and acceleration in different frames. 4. Analyze the forces causing the motion of a particle. 5. Use the equation of motion to describe the accelerated motion of a particle. 6. To apply work, energy, impulse and momentum relationships for a particle in motion. 7. Describe the motion of a rigid body in different frames of reference
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Solving Rectilinear Motion of a particle. 2. Solving Angular Motion of a Line and motion of projectile. 3. Solving problem Curvilinear Motion of Particle using normal and tangential component, and using radial and transverse components. 4. Find Motion of rigid bodies. 5. Find Kinematics relative motion and kinetics- force. 6. To find Mass, acceleration, centroids and center of gravity. 7. To solving problem Kinetics-Work and Energy. 8. understand dynamics, definitions and basic principles.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>Part A- static</u> <ul style="list-style-type: none"> • Centroids and Center of Gravity • Second Moment or moment of inertia. [10hrs] <u>Part B- Rectilinear Motion</u> <ul style="list-style-type: none"> • Dynamics, definitions and basic principles. [4hrs] • Rectilinear Motion of a particle. [4hrs] • Angular Motion of a Line. [6hrs] <u>Part C- Curvilinear Motion</u> <ul style="list-style-type: none"> • Motion of particle using rectangular components. • Motion of Particle using normal and tangential components. • Motion of particle using radial and transverse components. [5hrs]. • Motion of Projectile. [4hrs] • Motion of rigid bodies. [4hrs] <u>Part D- Kinematics relative motion</u> <ul style="list-style-type: none"> • Kinematics relative motion, Kinetics- Force, Mass and acceleration. [15hrs] • Kinetics-Work and Energy. [6hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ol style="list-style-type: none"> 1) Tutorials. 2) Homework and Assignments. 3) Tests and Exams. 4) In-Class Questions and Discussions. 5) Connection between Theory and Application. 6) Extracurricular Activities. 7) In- and Out-Class oral conversations. 8) Reports, Presentations, and Posters.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	88	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)	1,4, 11,13	LO #1, 2,6 and 7
	Assignments	2	10% (10)	5,14	LO #3 and 8
	Report	1	10% (10)	7	LO # 4
Summative assessment	Midterm Exam	2 hr	10% (10)	10	LO # 1-6
	Final Exam	2hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Rectilinear Motion of a particle.
Week 2	Angular Motion of a Line.
Week 3	Curvilinear Motion of particle using rectangular components.
Week 4	Motion of Projectile.
Week 5	Curvilinear Motion of Particle using normal and tangential components.
Week 6	Curvilinear Motion of particle using radial and transverse components.
Week 7	Motion of rigid bodies.
Week 8	Kinematics relative motion.
Week 9	Kinetics- Force.
Week 10	Mass and acceleration.
Week 11	Centroids and Center of Gravity.
Week 12	Second Moment or moment of inertia.
Week 13	Kinetics-Work and Energy.
Week 14	Dynamics, definitions and basic principles.
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ol style="list-style-type: none"> 1. Meriam, J. L. & Kraige, L. G. (2013). Engineering Mechanics Statics, 7th Edition, Wiley. 2. Hibbeler, R. C. (2017). <i>Engineering Mechanics Statics</i>, 14th Edition in SI units, Pearson. 	Yes
Recommended Texts	<ol style="list-style-type: none"> 1. I. H. Shames, <i>Engineering Mechanics: Statics and dynamics</i>, 4th Ed, PHI, 2002. 2. F. P. Beer and E. R. Johnston, <i>Vector Mechanics for Engineers</i>, Vol I - Statics, Vol II – Dynamics, 9th Ed, Tata McGraw Hill, 2011. 	No
Websites	https://highered.mheducation.com/sites/0073380318/information_center_view0/	

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	Mathematics II		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE203		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Ibtihaj Abdulwahhab Abdulrazzak	e-mail	dr.eng.ibtihaj@gmail.com
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Mahmood Mohammed Hamza	e-mail	Mmshs1988@gmail.com
Scientific Committee Approval Date	11/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none">1. To enable students to understand the methods of integration.2. To enable students to understand the Multivariable functions and partial derivatives.3. To enable students to understand the Differential equations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1. Identify the goals, imagination and thinking.2. Understanding the problem to find a suitable solution3. Studying the problem and choosing the best method to solve it.4. Developing skills through understanding, solving, then comparing the results.5. Improve the observation, focusing, remembering and analyzing results6. Developing skills (skills related to employability and personal development) to achieve a realistic thinking and treatment.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p><u>Part A - Methods of integration</u></p> <p>Solving mathematical problems by using different methods (Substitution method, Integration by parts, Partial fractions, Tabular method, Integration powers of Sin and Cos).[20hrs]</p> <p>Solving the Improper integral to find converge and diverge integrals.</p> <p><u>Part B - Multivariable functions and partial derivatives</u></p> <p>Identifying Functions of several variables and finding Limit and continuity, Application of Partial derivatives, Differentiability, and Linearization. Chain rule. [20hrs]</p> <p><u>Part C- Differential equations</u></p> <p>Using First order differential equations. Variable separable. Homogeneous equation and non- homogeneous second order with constant coefficients. [20hrs]</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The course is taught through three approaches: Classroom lectures to present the basic mathematics, online lectures, and interactive tutorials to solve the problems to encourage students' participation in the exercises.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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	20% (20)	5, 10	LO #1, 2, 5
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6
	Report	1	10% (10)	13	LO # 3, 4 and 6
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3 hr	50% (50)	15	All
			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Methods of integration.	
Week 1	1-1 Substitution method
Week 2	1-2 Integration by parts
Week 3	1-3 Partial fractions
Week 4	1-4 Tabular method
Week 5	1-5 Integration powers of Sin and Cos
Week 6	1-6 Improper integral
Multivariable functions and partial derivatives	

Week 7	2-1 Functions of several variables
Week 8	2-2 Limit and continuity
Week 9	2-3 Partial derivatives
Week 10	2-4 Differentiability
Week 11	2-5 Linearization
Week 12	2-6 Differentials
Week 13	2-7 Chain rule
Differential equations	
Week 14	3-1 First order differential equations, variable separable, homogeneous, linear first order.
Week 15	3-2 Non- homogeneous second order with constant coefficients

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	<ul style="list-style-type: none"> - Thomas Calculus”, 12th ED, George B. Thomas Jr., Maurice D. Weir, Joel R. Hass, 2009 - Mathematics For Engineers: A Modern Interactive Approach”, 2nd ED, Tony Croft and Robert Davison, 2003. 	Yes
Recommended Texts	<ul style="list-style-type: none"> - Scientific journals and mathematical researches in mathematic their applications 	No
Websites	Electronic references, Internet sites, Application of mathematics https://www.cuemath.com/calculus/methods-of-integration/ https://ocw.mit.edu/courses/18-02sc-multivariable-calculus-fall-2010/pages/2.-partial-derivatives/ https://www.khanacademy.org/math/differential-equations	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Engineering Geology		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	UICE204			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	1	Semester of Delivery		2
Administering Department	-	College	-	
Module Leader	Sarah Dhurgham Al-Jarjees		e-mail	sarah.aljarjees@aliraqia.edu.iq
Module Leader's Acad. Title	Assistant lecturer		Module Leader's Qualification	MSc.
Module Tutor	-		e-mail	-
Peer Reviewer Name	Mustafa Jamal Abraham		e-mail	mustafajamal763@gmail.com
Scientific Committee Approval Date	11/06/2023		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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Understanding the basic definitions and introductory concepts of geological processes and their impact on engineering projects.2. To teach students geotechnical engineering principles and topics, like soil properties, slope stability, foundation design, and soil improvement techniques.3. Identify soils and explain its physical and mechanical properties (Shear strength).4. Soils, minerals, and rocks formations, types, and properties.5. To classify the different soil types according to USCS6. The physical and mechanical properties of rocks, identify the different factors affecting the rock properties, with the structural geology for different rocks.7. Identify all factors affecting the earth crust and its components (internal and external forces).8. To understand the concept of earthquakes, classify earthquake according to Mercalli or Richter scales.9. To understand surface and ground water distribution.10. To develop students' skills in reading maps, identifying geological formations, and understanding their implications for engineering projects.11. The course aims to ensure successful integration of geological knowledge into engineering projects.12. To equip students with the knowledge and skills to ensure safe and sustainable design and construction practices.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Students would understand the main principles of engineering geology, and its impacts on engineering projects.2. The student would be able to identify soils and explain its physical and mechanical properties (Shear strength)3. To classify the different types of soil according to USCS4. Discuss the physical and engineering properties of rocks.5. Students will be able to differentiate various types of minerals and rocks formations.6. The student would be able to calculate the normal stress and strain of rocks and soil samples7. Students will study the mechanical behavior of soils and rocks under different loading conditions.8. They will learn about concepts such as stress, strain, deformation, and failure criteria, this knowledge is essential for designing foundations, slopes, and retaining structures.9. Understand and read topographic and geological maps.10. Explain surface and ground water distribution.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following <u>Part A – Introduction to Engineering Geology</u></p>

	<p>Introduction to Engineering Geology, engineering geology applications, relationship between geology and civil engineering, earth structure (crust, mantle, core), geological cycle.[10hrs]</p> <p><u>Part B – Minerals and rocks</u></p> <p>Soil, Soil weathering, soil formation, classification, physical and mechanical properties (Shear strength), transported and residual soils, classify the different soil types according to USCS, Minerals and rocks, crystallography, mineral composition, definition and occurrence, types of minerals, rocks (definition + rock cycle), sedimentary rocks, metamorphic rocks, physical and engineering properties of rocks, soils of Iraq. [15hrs]</p> <p><u>Part C- Structural geology</u></p> <p>Types of earth movements, basic definitions, folds, faults, joints, and their types, Surface, erosion of rocks, mechanical behavior of soils and rocks under different loading conditions, mechanical properties of rocks (applications), and ground water. [10hrs]</p> <p><u>Part D -Topographic and geological maps</u></p> <p>Geotechnical and geological maps. [5hrs]</p> <p><u>Part E- Surface and ground water</u></p> <p>Surface and ground water distribution. [5hrs]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>The main strategy that will be adopted in delivering this module is Interactive lectures and demonstrations to enhance student engagement by utilizing visual aids, such as diagrams, photographs, and videos, which help illustrate complex geological concepts and processes. besides, Interactive discussions, question-and-answer sessions, and group activities strategies will be incorporated into this course to encourage active participation and facilitate knowledge retention.</p>

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	47	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	78	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5.2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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, 3, 4, 5, 6, and 7
	Assignments	2	10% (10)	2, 12	LO #1, 2, 3, 4, 5, 6, 7 and 8
	Seminar	1	10% (10)	15	All
	Report	1	10% (10)	12	LO #1, 2, 3, 4, 5, 6, 7 and 8
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction: Relationship between geology and civil engineering, earth structure (crust, mantle, core), geological cycle
Week 2	Minerals and rocks: soil, soil weathering, soil formation, classification, physical and mechanical properties (Shear strength)
Week 3	Minerals and rocks: transported and residual soils, classify the different soil types according to USCS
Week 4	Minerals and rocks: crystallography, mineral composition, definition and occurrence, types of minerals
Week 5	Minerals and rocks: rocks (definition + rock cycle), sedimentary rocks, metamorphic rocks
Week 6	Minerals and rocks: physical and engineering properties of rocks, soils of Iraq.
Week 7	Mid-term Exam
Week 8	Structural geology: basic definitions, types of earth movements, folds, faults, joints, and their types.

Week 9	Structural geology: erosion of rocks, mechanical behavior of soils and rocks under different loading conditions.
Week 10	Structural geology: mechanical properties of rocks (applications).
Week 11	Physical and engineering properties of rocks
Week 12	Topographic and geological maps
Week 13	Continued
Week 14	Surface and ground water + seminar
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. K. M. BANGAR (1995) : "A textbook of Geology: General and Engineering". Standard Publisher Distributors, Lumos Offset Press, Delhi, India. 2. MUNI BUDHU (2011): " Soil Mechanics and Foundations". 3rd edition, John Wily & Sons, Inc., USA.	No
Recommended Texts	1. Hencher, S., 2013. Practical engineering geology.	No
Websites	https://geology.com/	

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 Aided Graphics		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE205		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Mohammed ghazi abbas	e-mail	mohammed.ghazi@aliraqia.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Msc
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Mostafa Waleed	e-mail	mostafa.waleed@aliraqia.edu.iq
Scientific Committee Approval Date	11/06/2023	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 Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">1. To develop problem solving skills and understanding of circuit theory through the application of AutoCAD.2. Describing the AutoCAD program and Its icons, knowing what's new in AutoCAD version.3. The students will have skills to use that's program and drawing any things (2D).4. Reading plans of projects.5. The Autodesk Revit 2023 course will teach students how to create and modify grids, levels, walls, doors, etc. They will also learn how to manage views and create 3D renderings of them projects.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1. Learn drawing skills by AutoCAD.2. Learn to read construction plans by AutoCAD.3. Practical, project-focused exercises encourage readers to "learn by doing," giving them a deeper understanding of the BIM.4. Power User/BIM Manager tips throughout the text offer readers practical insights on what is required to manage building information modeling in a modern architectural setting.5. Creating and Modifying Components by Revit.6. Modeling and Modifying Elements by Revit.7. Managing Views by Revit.8. Managing Documentation by Revit.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <ul style="list-style-type: none">• Title bar the name of the AutoCAD program (with its version) and the name of the file are displayed.• Menu bar.• Toolbars.• Drawing Window.• Command Window.• Status Bar.• Creating and Modifying Components by Revit.• Modeling and Modifying Elements by Revit.• Managing Views by Revit.• Managing Documentation by Revit.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

St6rategies	<ol style="list-style-type: none">1- The AutoCAD program allows building a technical visualization of industrial and engineering models, drawings and artistic ideas, in addition to the possibility of modification and restructuring on ready-made designs, so that the program is suitable for all uses.
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	<p>2- Making the student ready for the labor market by knowing the importance of AutoCAD in the site, how to read plans and clarify the ideas.</p> <p>3- Revit combines a straightforward, reader-friendly style with detailed project-focused exercises that encourage you to learn by doing. Readers will gain practical, firsthand experience with the powerful and popular Autodesk® Revit® software leading architects and building design professionals are using to move beyond traditional Computer Aided Design (CAD) and drafting to manage complex projects, foster collaboration and boost productivity.</p> <p>4- Revit offers the modern architect everything they need to be successful in today's competitive market.</p>
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.8
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

week	Material Covered
Week 1	Introduction - Theory lectures on history of AutoCAD program, what's new versions ,how to install program. Explanation the main window for program, how to arrange it before start work.
Week 2	Toolbar
Week 3	continued
Week 4	term Exam + tutorial. And Application of previous orders. Layer order
Week 5	Explanation of construction and architectural plans and types of lines (showing examples) and Application of previous orders.
Week 6	The history of the Revit and the most important versions, apply projects, quick access toolbar
Week 7	Modify and Architecture orders
Week 8	Navigation bar and main orders
Week 9	Systems and insert
Week 10	Systems and insert, annotation
Week 11	Application of previous orders.
Week 12	Modify and Architecture orders
Week 13	Application of previous orders.
Week 14	Mid exam
Week 15	continued
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Shoukry Y, Pandey J. Practical Autodesk AutoCAD 2021 and AutoCAD LT 2021: A no-nonsense, beginner's guide to drafting and 3D modeling with Autodesk AutoCAD. Packt Publishing Ltd; 2020 May 15. 2- Autodesk Revit 2023	No
Recommended Texts	1- Introduction to AutoCAD 2021 for Civil Engineering Applications: Learning to use AutoCAD for Civil Engineering Projects 1st Edition by Nighat Yasmin. 2- Autodesk Revit 2023 Architecture Fundamentals By ASCENT Published July 25, 2022	No
Websites	https://www.autodesk.com/ and /https://accounts.autodesk.com	

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	Support		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	COMP105		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Ahmed Younus Yousuf	e-mail	Ahmedyounusyousif@aliraqia.edu.iq
Module Leader's Acad. Title	lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Mostafa Waleed	e-mail	mostafa.waleed@aliraqia.edu.iq
Scientific Committee Approval Date	11/06/2023	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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1- Identify the hardware components of a computer system and explore various programming languages.2- Acquire an introductory understanding of the fundamental principles and techniques involved in programming with MATLAB.3- Create algorithms and code solutions for a variety of problems.4- Build and interconnect multiple programs, utilizing various functions to achieve desired outcomes.5- Demonstrate proficiency in programming complex process problems and developing corresponding code.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1- Develop proficiency in at least one programming language, including the ability to write, debug, and test code to solve problems.2- Understand the principles of programming, including variables, data types, control structures, functions, and object-oriented programming concepts.3- Learn how to use programming tools such as integrated development environments (IDEs), version control systems, and debugging tools.4- Develop skills in problem-solving and algorithmic thinking, including the ability to break down complex problems into smaller, more manageable tasks.5- Learn how to read and write documentation for code, as well as how to use online resources to find solutions to programming problems.6- Understand the importance of code quality and best practices, including testing, code review, and refactoring.7- Gain an understanding of software development processes, including requirements gathering, design, implementation, testing, and maintenance.8- Develop a portfolio of projects that demonstrate proficiency in programming skills and problem-solving abilities.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>The inductive content of a computer programming subject may include the following:</p> <p><u>Part A- Introduction to programming</u></p> <ul style="list-style-type: none">• Concepts and terminology.• Basic syntax and semantics of at least one programming language such as Python, Java, or C++.• Using an integrated development environment (IDE) to write, debug, and test code. [10hrs] <p><u>Part B- Developing problem-solving skills</u></p> <ul style="list-style-type: none">• Breaking down complex problems into smaller, more manageable task.• Using online resources to find solutions to programming problems.• Testing and debugging code to ensure it is working correctly.• Understanding the basics of software development processes. [15hrs]

	<p><u>Part B- Introduction to data structures</u></p> <ul style="list-style-type: none"> • Arrays, linked lists, stacks, and queues. • Algorithms such as searching and sorting. • Basic concepts of database management systems and SQL. • Web development technologies such as HTML, CSS, and JavaScript. • Basic concepts of software engineering and software design patterns. [20hrs]
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<ol style="list-style-type: none"> 1- Practice coding regularly: Programming is a skill that requires practice to master. Students should practice writing code regularly, even if it's just a few lines at a time. 2- Work on projects: Programming is often best learned by doing. Students should work on projects that challenge them and allow them to apply programming concepts in a practical way. 3- Collaborate with others: Collaborating with other students can help reinforce programming concepts and provide opportunities to learn from others. Pair programming, where two students work together on the same code, is a popular collaboration strategy. 4- Use online resources: There are many online resources available for learning programming, including tutorials, documentation, and forums. Students should take advantage of these resources to supplement their learning. 5- Attend lectures and labs: Attending lectures and labs is important for understanding programming concepts and getting feedback on coding assignments.

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 and 4
	Assignments	2	10% (10)	4, 12	LO # 5, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 8
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO # 1-8
	Final Exam	2hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to the computer and its components.
Week 2	Learn about the levels of programming languages, including MATLAB
Week 3	Introduction to MATLAB; Overview of MATLAB environment and interface
Week 4	Basic syntax and commands
Week 5	Variables, arrays, and matrices
Week 6	Use of arithmetic and logical operations
Week 7	Conditional statements (if/else)
Week 8	Loops (for/while)
Week 9	Writing programs to solve complex problems
Week 10	Creating 2D; Customizing plots (labels, titles, legends)
Week 11	Creating 3D plots
Week 12	Introduction to Simulink environment
Week 13	Building and simulating models
Week 14	Introduction to GUI development in MATLAB
Week 15	Creating basic GUIs
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Hand-on exercise and project that enforce MATLAB programming concepts
Week 2	Hand-on exercise and project that enforce working with variables
Week 3	Hand-on exercise and project that enforce working with logical operation
Week 4	Hand-on exercise and project that enforce working condition statement
Week 5	Hand-on exercise and project that enforce working with repetition statements
Week 6	Hand-on exercise and project that enforce working with plotting 2D and 3D
Week 7	Hand-on exercise and project that enforce working with Simulink

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- MATLAB Programming Fundamentals, R2021a	No
Recommended Texts	1- Scientific journals and recent research in various applications that deal with MATLAB applications	No
Websites	1- https://www.mathworks.com 2- http://mayankagr.in/images/matlab_tutorial.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	Mechanics of Materials I		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE301		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	2	Semester of Delivery	
Administering Department		College	
Module Leader	Wael Raad	e-mail	ogaidiwael@gmail.com
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	Msc
Module Tutor	-	e-mail	-
Peer Reviewer Name	Yasir Wisam	e-mail	yasiraliris@gmail.com
Scientific Committee Approval Date	11/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mechanics I&II	Semester	1,2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Review some of the important principles of statics and show how they are used to determine the internal resultant loadings in a body.2. Introduce the concept of normal and shear stress.3. Analysis and design a member subjected to axial load or direct shear4. Define the quantities of deformation of a body using the concept of normal and shear strain.5. Show how stress can be related to strain by using experimental methods.6. Discuss the mechanical properties, and other tests that are related to the development of mechanics of materials.7. Discuss how to determine the deformation of the axially loaded members.8. An analysis of the effects of thermal stress.9. Determine the stress in beams and shafts caused by bending. And calculate the maximum bending stress.10. Develop a method for finding the shear stress in a beam having a prismatic cross section and made from homogeneous material that behaves in a linear-elastic manner.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Understand the distinction between internal and external forces.2. Learn the concepts of stress, strain at a point, and their relationships in different material types and different loads.3. Acknowledge the characterization of mechanical properties of materials to solve problems.4. Calculate the deformation in axially loaded members, and develop a method for finding the support reactions when these reactions cannot be determined strictly from the equations of equilibrium. And analyze the effects of thermal stress.5. Learn how to draw the shear and moment diagrams provide a useful means for determining the largest shear and moment in a member, and specify where these maximums occur, for straight beams and special cases like unsymmetric bending or sections.6. Calculate the bending stresses developed in beams and shafts by the bending loading and draw the stress distribution along the beam cross section.7. Understand a method of analysis to calculate the shear stresses, and discuss the concept of shear flow along with shear stress for beams and thin-walled members.
<p>Indicative Contents المحتويات الإرشادية</p>	<ol style="list-style-type: none">1. <u>Simple stresses</u>: Internal resultant forcing (normal, shear, bending, torsion), normal stress, shear stress, allowable stresses. [16 hrs]2. <u>Strain</u>: normal strain, and shear strain. [4 hrs]3. <u>Mechanical properties</u>: the tension and compression test, stress-strain diagram (conventional and true diagram), ductile and brittle materials, Hook's

	<p>law, strain hardening, Poisson's ratio, shear stress – strain diagram, fatigue and creep. [4 hrs]</p> <p>4. <u>Axial loads</u>: elastic deformation of axially loaded members, deformation formula, statically indeterminate axially loaded members, thermal stresses. [4 hrs]</p> <p>5. <u>bending</u>: shear and moment diagram (section and graphical methods), flexural formula, unsymmetrical bending and moments, composite beams. [16 hrs]</p> <p>6. <u>transverse shear</u>: shear in straight members, the shear formula, shear flow, built-up members, and thin-walled members.</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>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 types of simple experiments involving some sampling activities that are interesting to the students.</p>

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	112	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	4, 5, 12	LO # 1, 2, 4, and 6
	Assignments	2	15% (15)	8, 15	LO # 5, and 7
	Projects	1	10% (10)	Continuous	LO # 3
	Report	0	0	-	-
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-4
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Review some of the important principles of statics and show how they are used to determine the internal resultant loadings in a body.
Week 2	Introduce the concept of normal stress.
Week 3	Introduce the concept of shear stress.
Week 4	Analysis and design of a member subjected to axial load or direct shear.
Week 5	Define the quantities of deformation of a body using the concept of normal and shear strain.
Week 6	Discuss the mechanical properties and other tests that are related to the development of the mechanics of materials. And show how stress can be related to strain by using experimental methods. Learn the analysis of thermal effects.
Week 7	Mid-term exam
Week 8	Learn how to calculate the axial deformation and solve statically indeterminate members.
Week 9	Learn how to draw the shear and moment diagrams using the section method.
Week 10	Learn how to draw the shear and moment diagrams using the graphical method
Week 11	Calculate the bending stresses developed in beams and shafts by the bending loading.
Week 12	Calculate the bending stresses developed in unsymmetrical beams and composite beams.
Week 13	Understand a method of analysis to calculate the shear stresses
Week 14	Determine the shear flow in built-up beams and members
Week 15	Determine the shear flow in thin-walled beams and members
Week 16	A preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Mechanics of Materials, 9 th ed. , R.C Hibbeler	Yes
Recommended Texts	2. Strength of Materials 4 th ed., Singer and Pytel	No
Websites	3. https://www.udemy.com/course/mechanics-of-materials-sgt/	

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	Concrete Technology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE303		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Dr. Luma Ahmed Aday	e-mail	eng.luma00@gmail.com
Module Leader's Acad. Title	Assistant professor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Omar Riyadh	e-mail	dr.omaralobaidi@gmail.com
Scientific Committee Approval Date	11/06/2023	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	<ol style="list-style-type: none"> 1. Describe the manufacturing of concrete. 2. Provide the student with theoretical concept of the ingredients of concrete and their impact on fresh and hardened properties of concrete. 3. Comprehend the most appropriate methods to mix, handle, cure, place, compact, and evaluate concrete in its fresh and hardened states. 4. Provide basic understanding of objectives of different tests performed on concrete and its constituents. 5. learn the concept of mix design of concrete mixtures. 6. Know the principles of concrete properties. 7. Make a good base about types of concrete and the suitability of using them.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understand the process of cement manufacturing. 2. Discuss the constituents of concrete and their properties. 3. Carry out different tests on cement paste or mortar, mineral aggregate, concrete in its fresh and hardened state and all tests relevant to the site. And write report and analyses the data of tests and discuss them and draw the conclusions 4. Evaluate the performance of concrete in both fresh and hardened states particularly strength, durability and stability. 5. Design concrete mixtures to achieve the required fresh and hardened properties. 6. Know the appropriate methods to mix, handle, place, compact, and cure concrete and evaluating the durability of concrete under different Extreme Environmental severe.
Indicative Contents المحتويات الإرشادية	<p><u>Part A- Introduction to concrete and types of concrete</u></p> <ul style="list-style-type: none"> • Significance of concrete, Uses of concrete in structure and types of concrete. <p><u>Part B- Concrete constituents</u></p> <ul style="list-style-type: none"> • Cement: manufacturing of cement, Compound composition of Portland Cement, Structure and reactivity of compounds, special types of cement. • Aggregates: Significance, classification, Properties of aggregates and their significant. • Water. [15hrs] • Admixtures: introduction to admixtures; classifications, properties and applications of chemical admixtures and Mineral admixtures in concrete. [6hrs] <p><u>Part C- Fresh concrete</u></p> <ul style="list-style-type: none"> • Workability, workability factors, workability tests, segregation and bleeding. • Quality control in site: Mixing, handling, placing, compaction and curing. <p><u>Part D- hardened concrete</u></p> <ul style="list-style-type: none"> • Strengths of concrete: factors affecting strengths, compressive strength, tensile strength, destructive and non-destructive test of strengths. • Deformation of hardened concrete, stress-strain, Modulus of elasticity. • Dimensional Stability: Shrinkage and creep.

	<ul style="list-style-type: none"> • Durability of Concrete • Concrete in hot weather. • Concrete in Marine Environment (chloride attack) • Concrete Under Extreme Environmental Conditions. • Acid Attack, sulphate attack • Fire Resistance • Thermal Properties of Concrete. [20hrs] <p><u>Part E- Mix design of concrete</u></p> <ul style="list-style-type: none"> • Introduction to nominal mix. • General Considerations of mix design. • Specific Considerations of mix design • Concrete mix design by ACI Method. • Trial and adjustment of mix proportions. [20hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<ol style="list-style-type: none"> 1. Lectures will be conducted with the aid of projector, 2. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. 3. Surprise tests/Quizzes/ will be conducted. 4. Assigning students to prepare reports on a particular subject and thus motivate students to learn the initial principles of scientific research. 5. explanation about the experiment procedures given by the lecturer, and thus a chance is available to the student to conclude and analyze the experiment results.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.2
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	15% (10)	5, 12	LO #1, 2, 4 and 5
	Projects / Assignment	2	10% (10)	11	LO # 6
	Lab. reports	1	15% (10)	Intermittently (determined by Module leader)	LO # 3
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1,2,4,5 and 6
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction - Significance of concrete, Uses of concrete in structure and types of concrete.
Week 2	Portland cement manufacturing, chemical composition of cement, hydration process of cement, stages of hardening cement, properties of cement, their physical and chemical properties.
Week 3	Aggregates: Significance, classification, Properties of aggregates and their significant.
Week 4	Aggregates: Significance, classification, Properties of aggregates and their significant.
Week 5	-Water in concrete -Admixtures in concrete: introduction to admixtures; classifications, properties and applications of chemical admixtures and Mineral admixtures in concrete.
Week 6	Workability of concrete: workability factors, workability tests, segregation and bleeding and problem of fresh concrete in the site.
Week 7	Workability of concrete: Quality control in site: Mixing, handling, placing, compaction and curing.
Week 8	Hardened Concrete: Strengths of concrete: factors affecting strengths, compressive strength, tensile strength, destructive and non-destructive test of strengths.
Week 9	Mid-term Exam
Week 10	Hardened Concrete: Deformation of hardened concrete, stress-strain, Modulus of elasticity. Dimensional Stability: Shrinkage and creep.
Week 11	Hardened Concrete (Durability of Concrete): Permeability of concrete, Concrete in hot weather, Concrete in Marine Environment (chloride attack), Concrete Under Extreme Environmental Conditions.

Week 12	Hardened Concrete (Durability of Concrete): Acid Attack, sulphate attack, Fire Resistance, Thermal and acoustic Properties of Concrete
Week 13	Concrete mix design, Basic considerations (General Considerations of mix design and Specific Considerations of mix design) and choice a mix proportion
Week 14	various methods of mix designs including ACI Code method and Trial and adjustment of mix proportions
Week 15	Recap and Preparatory week before the final Exam
Week 16	Final Exams

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Fineness Test of cement and specific gravity test of cement
Week 2	Standard Consistence Test
Week 3	Setting Time Test of cement
Week4	Compressive Strength of Cement Mortars
Week5	Aggregate Sampling
Week6	Sieve Analysis of Aggregates,
Week 7	Specific Gravity, Absorption test for aggregate and Determination of Organic Impurities
Week 8	Workability test: slump test, V-bee test, Compacting Factor Test and fresh density of concrete
Week9	Destructive tests: compressive strength, splitting tensile strength and flexural strength test
Week 10	None-destructive tests: Schmidt hammer test, ultra-pulse velocity, hardened density, Rapid Chloride Permeability test, Initial Surface Absorption Test (ISAT) and water absorption tests.
Week 11	Destructive tests: compressive strength, splitting tensile strength and flexural strength test
Week 12	None-destructive tests: Schmidt hammer test, ultra-pulse velocity, hardened density, Rapid Chloride Permeability test, Initial Surface Absorption Test (ISAT) and water absorption tests.
Week1 3	Destructive tests: compressive strength, splitting tensile strength and flexural strength test
Week 14	None-destructive tests: Schmidt hammer test, ultra-pulse velocity, hardened density, Rapid Chloride Permeability test, Initial Surface Absorption Test (ISAT) and water absorption tests.
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ol style="list-style-type: none"> 1. A.M. Neville, J.J. Brook, Concrete Technology, International Students' Edition 2. M. S. Shetty, Concrete Technology: Theory and Practice, S. Chand, New Delhi, 2015 3. P.K. Mehta, Paulo j. M. Monteiro, Concrete, Microstructure, Properties and Materials, University of California, Berkley (Indian Edition) 	NO
Recommended Texts	<ol style="list-style-type: none"> 1. ACI (American concrete institute), ASTM (American standards for testing methods) 2. BS (British standards) 3. I.Q.S(Iraqi standard specifications) 	NO
Websites	https://theconstructor.org/concrete/concrete-mix-design-calculation-procedure-example-m20-m25-m30/13020/	

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
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Concrete Technology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE303		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Dr. Luma Ahmed Aday	e-mail	eng.luma00@gmail.com
Module Leader's Acad. Title	Assistant professor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Omar Riyadh	e-mail	dr.omaralobaidi@gmail.com
Scientific Committee Approval Date	11/06/2023	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	<ol style="list-style-type: none"> 1. Describe the manufacturing of concrete. 2. Provide the student with theoretical concept of the ingredients of concrete and their impact on fresh and hardened properties of concrete. 3. Comprehend the most appropriate methods to mix, handle, cure, place, compact, and evaluate concrete in its fresh and hardened states. 4. Provide basic understanding of objectives of different tests performed on concrete and its constituents. 5. learn the concept of mix design of concrete mixtures. 6. Know the principles of concrete properties. 7. Make a good base about types of concrete and the suitability of using them.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understand the process of cement manufacturing. 2. Discuss the constituents of concrete and their properties. 3. Carry out different tests on cement paste or mortar, mineral aggregate, concrete in its fresh and hardened state and all tests relevant to the site. And write report and analyses the data of tests and discuss them and draw the conclusions 4. Evaluate the performance of concrete in both fresh and hardened states particularly strength, durability and stability. 5. Design concrete mixtures to achieve the required fresh and hardened properties. 6. Know the appropriate methods to mix, handle, place, compact, and cure concrete and evaluating the durability of concrete under different Extreme Environmental severe.
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	<ul style="list-style-type: none"> • Durability of Concrete • Concrete in hot weather. • Concrete in Marine Environment (chloride attack) • Concrete Under Extreme Environmental Conditions. • Acid Attack, sulphate attack • Fire Resistance • Thermal Properties of Concrete. [20hrs] <p><u>Part E- Mix design of concrete</u></p> <ul style="list-style-type: none"> • Introduction to nominal mix. • General Considerations of mix design. • Specific Considerations of mix design • Concrete mix design by ACI Method. • Trial and adjustment of mix proportions. [20hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<ol style="list-style-type: none"> 1. Lectures will be conducted with the aid of projector, 2. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. 3. Surprise tests/Quizzes/ will be conducted. 4. Assigning students to prepare reports on a particular subject and thus motivate students to learn the initial principles of scientific research. 5. explanation about the experiment procedures given by the lecturer, and thus a chance is available to the student to conclude and analyze the experiment results.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.2
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	15% (10)	5, 12	LO #1, 2, 4 and 5
	Projects / Assignment	2	10% (10)	11	LO # 6
	Lab. reports	1	15% (10)	Intermittently (determined by Module leader)	LO # 3
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1,2,4,5 and 6
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
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Week 6	Workability of concrete: workability factors, workability tests, segregation and bleeding and problem of fresh concrete in the site.
Week 7	Workability of concrete: Quality control in site: Mixing, handling, placing, compaction and curing.
Week 8	Hardened Concrete: Strengths of concrete: factors affecting strengths, compressive strength, tensile strength, destructive and non-destructive test of strengths.
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Week 14	various methods of mix designs including ACI Code method and Trial and adjustment of mix proportions
Week 15	Recap and Preparatory week before the final Exam
Week 16	Final Exams

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Fineness Test of cement and specific gravity test of cement
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Week6	Sieve Analysis of Aggregates,
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Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

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Grading Scheme

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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		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE304		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Mahmood Mohammed Hamzah	e-mail	mmhsh1988@gmail.com
Module Leader's Acad. Title	Asst.Lec.	Module Leader's Qualification	Master
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Ahmed Khalef	e-mail	ahmed.khalaf34@gmail.com
Scientific Committee Approval Date	15/06/2023	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 objective of this course is to provide an elementary, but rigorous mathematical presentation of continuum description, to introduce concepts and basic principles of fluid mechanics. In particular, the aim is to introduce tensors and elements of tensor algebra, governing equations and their application to modelling and solution of representative fluid mechanical problems relevant to industry and environment, to show various mathematical approaches and assumptions commonly used in the analysis of liquid flows. The module has been developed for students who have little or no experience in fluid mechanics
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1- Know, understand and apply the basic concepts of Fluid Mechanics to carry out professional engineering activities in the field of fluids.2- Apply scientific method strategies to fluid mechanics: analyze qualitatively and quantitatively the problem situation, propose hypotheses and solutions.3- Use specific vocabulary and terminology and the appropriate means to effectively communicate knowledge, procedures, results, skills and aspects inherent to fluid mechanics.4- Work efficiently in a group, integrating skills and knowledge to make decisions in the performance of fluid mechanics tasks, adopting a responsible and organized attitude to work and a willingness to learn.5- Plan and carry out designs and processes in the field of fluid mechanics in accordance with the relevant specific technology, applying the quality principles and methods and analyzing and assessing the social and environmental impact of the technical solutions adopted.6- Cooperative learning by team working.
Indicative Contents المحتويات الإرشادية	<p><u>Introduction & Definition of a Fluid</u></p> <ul style="list-style-type: none">• Dimensions & Units.• Fluid Properties.• Fluid Statics & Applications. [8hrs] <p><u>Concepts of System & Control Volume Approach & Applications</u></p> <ul style="list-style-type: none">• Bernoulli-Energy Equation & Applications.• Momentum Equation & Applications.• Viscous Effects-Fluid Resistance.• Laminar & Turbulent Flow.• Shear & Velocity Distributions.• Flow in Closed Conduits& Applications.• Drag Force on Immersed Bodies.• Dimensional Analysis & Similitude.• Friction and Minor Losses in Pipes.• Steady Flow in Open Channels. [53hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ol style="list-style-type: none"> 1- Tutorials 2- Homework and Assignment. 3- Test and Exams. 4- In class Question and Discussion. 5- Reports, Presentation and Posters
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
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, 11	LO #1, 2 and 4
	Assignments	2	10% (10)	8,12	LO # 4 and 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 2,3 and 5
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction
Week 2	Fluid Properties

Week 3	Definition of a Fluid
Week 4	Dimensions & Units
Week 5	Fluid Statics & Applications
Week 6	Concepts of System
Week 7	Bernoulli-Energy Equation & Applications
Week 8	Momentum Equation & Applications
Week 9	Viscous Effects-Fluid Resistance
Week 10	Laminar & Turbulent Flow
Week 11	Shear & Velocity Distributions
Week 12	Drag Force on Immersed
Week 13	Dimensional Analysis & Similitude Bodies
Week 14	Friction and Minor Losses in Pipes
Week 15	Steady Flow in Open Channels
Week 16	Final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1: An introductory lecture about the laboratory
Week 2	Lab 1: Tools Measurements
Week 5	Lab 2: Reynolds Apparatus
Week 6	Lab 3: Continue
Week 7	Lab 4: Bernoulli Apparatus
Week 8	Lab 5: Continue
Week 11	Lab 6: Flow Measurement
Week 12	Lab 6: Continue
Week 13	Lab 7: Hydrostatic Pressure
Week 14	Lab 7: Continue

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ol style="list-style-type: none"> 1. Y.A. Cengel J.M. Cimbala, Fluid Mechanics (Fundamentals and Applications), McGraw-Hill, latest edition. 2. F.M. White, Fluid Mechanics, McGraw-Hill, latest edition. 3. J.F. Douglas, J.M. Gasiorek and J.A. Swaffield, Fluid Mechanics, Pearson, latest edition 	Yes
Recommended Texts	<ol style="list-style-type: none"> 1. M.C. Potter, and D.C. Wiggert, Mechanics of Fluids, Prentice-Hall, latest edition. 	No
Websites	https://www.britannica.com/science/fluid-mechanics	

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	Probability and Statistics		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE305		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Saba Raad	e-mail	Sabaraaad86@gmail.com
Module Leader's Acad. Title	Asst.lec	Module Leader's Qualification	M.S.C
Module Tutor	-	e-mail	-
Peer Reviewer Name	Ibtihaj Abdulwahhab	e-mail	ibtihaj.abdulwahhab@aliraqia.edu.iq
Scientific Committee Approval Date	15/06/2023	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	<ol style="list-style-type: none"> 1. Identify the types of Frequency tables and draw them Graphically. 2. Using statistical methods (Measures of Central Tendency, Measures of Dispersion) to identify the data . 3. Apply the rules of probability . 4. Solve discrete probability distribution problems . 5. Solve Continuous probability distribution problems . 6. Find correlation and regression for data .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Organizes the data into frequency distribution tables 2. Determine a value to represent a data set using a measure of central tendency. 3. Determine a value to represent a data set using a measure of dispersion. 4. Apply the rules of probability. 5. Calculate Binomial distributions. 6. Calculate poisson distributions. 7. Calculate standard normal “z” distributions by table of values Probability p(Z) 8. Calculate student “t” distributions by table of values Probability $t_{(1-\alpha, \nu)}$ 9. find Pearson correlation coefficient. 10. find spearman correlation coefficient. 11. find simple linear regression equation. 12. find linear equation by least square method.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p><u>Part A – Statistics :</u></p> <p>General Introduction - Statistics and methods of collecting data and organizing them in tables - Frequency Distributions: Proportionate” f^* ” , Upper Cumulative”F” , Lower Cumulative”F^{\setminus} “ - The Graphical Representation of the Distributions . [6 hrs]</p> <p>Measures of Central Tendency (Classified Data \ Unclassified Data): Mean “M”, Median”Me” , Mode”Mo” - Measures of Dispersion (Classified Data \ Unclassified Data): Range”R” , Variance”S^2” , Standard Deviation”S” , Mean Deviation”MD” . [8 hrs]</p> <p><u>Part B – Probability</u></p> <p>Probability rules : Union , Intersection - Conditional probability , independent event - Discrete Probability Distribution: Binomial , Poisson - Continuous Probability Distribution: Normal “Z” , Student “ t “ . [8 hrs]</p> <p>Correlation :(Pearson \ Spearman) correlation coefficient - regression :simple linear regression equation, least square method . [4 hrs]</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p><u>Part A – Statistics</u></p> <p>Brainstorm strategy: Where we present a problem to the students and study their suggestions and opinions to reach the most appropriate solution to the question</p> <p>Peer education strategy: The teacher gives a quick explanation of the subject and then takes the role of the student teacher to explain the subject to his classmates</p> <p><u>Part B – Probability</u></p> <p>inductive method : as we begin by writing the general law and its explanation, then applying it in practice to various examples</p>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	43	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	32	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	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	20% (20)	7, 13	LO #2, 3, 5 and 6
	Assignments	1	10% (10)	9	LO #7 and 8
	Report	1	10% (10)	10	LO #11 and 12
Summative assessment	Midterm Exam	2 hr	10% (10)	8,15	LO # 1-3 and 4-12
	Final Exam	3hr	50% (50)	16	All
			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	General Introduction - Statistics and methods of collecting data and organizing them in tables
Week 2	Frequency Distributions: Proportionate ,Upper Cumulative , Lower Cumulative
Week 3	The Graphical Representation of the Distributions
Week 4	Measures of Central Tendency (Classified Data): Mean , Median , Mode
Week 5	Measures of Central Tendency (Unclassified Data): Mean , Median , Mode
Week 6	Measures of Dispersion (Classified Data): Range , Variance , Standard Deviation , Mean Deviation
Week 7	Measures of Dispersion (Unclassified Data): Range , Variance , Standard Deviation , Mean Deviation
Week 8	Probability : Union , Intersection
Week 9	Discrete Probability Distribution: Binomial
Week 10	Discrete Probability Distribution: Poisson
Week 11	Continuous Probability Distribution: Normal , Student “ t “
Week 12	Correlation : Pearson
Week 13	Correlation : Spearman
Week 14	Regression : Simple Linear
Week 15	Regression : Least Square Method
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ul style="list-style-type: none"> • المشهداني, محمود وهرمز, امير (1989): الاحصاء, المكتبة الوطنية, العراق. • عمارة, نعمة وتوفيق, سحر (1989): الاحصاء وتطبيقاته الهندسية, الجامعة التكنولوجية, العراق. 	No
Recommended Texts	<ul style="list-style-type: none"> • Statistics ,fourth edition, Murray R. Spiegel, Larry J. Stephens . 	No
Websites	https://www.khanacademy.org/math/statistics-probability	

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 Surveying II		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE400		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Name: Hiba Akram	e-mail	Hiba.akram.at@gmail.com
Module Leader's Acad. Title	Asst.Lecturer	Module Leader's Qualification	M.Sc
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Mohammed Hadi	e-mail	mohammed.h.nahi@aliraqia.edu.iq
Scientific Committee Approval Date	11/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering surveying I	Semester	3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none"> 1. Explain direction, azimuth bearing, and magnetic declination. 2. Teaching them how to measure the horizontal and vertical angles and how to compute the unknown elevations and height of building. 3. Explain what the coordinate and traversing using theodolite instrument. 4. Explain the topographic map, contour line. 5. To teach them about GPS and EDM applications to determine apposition. 6. Explain about GIS application to record information on the map.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Solve mathematical problems using algebraic and trigonometric functions. 2. To learn to work as a team, ethics and prepare technical reports of surveying. 3. To relate theoretical knowledge of surveying to resolve real field problems. 4. Measuring directions (azimuth and bearing) and convert between them. 5. Ability to measure horizontal and vertical angle to compute the elevations of unknown points and compute the height of building. 6. Perform calculations of land areas of earth work given suitable data. 7. Determine the plane position and coordinate of points using arrange of surveying techniques. 8. Understand and use various methods of control surveying including traversing 9. Ability read and use topographic maps and draw contour lines. 10. Knowledge about how satellites position objects on and above surface of the earth. 11. Analyze spatial data using GIS, and analyze tools to record information on the map.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p>Introduction, Directions (Azimuth, Bearing), types of meridians, magnetic declination, computing directions, Angle measurement, accuracy of angle measurement. [15 hrs]</p> <p>Theodolite (component of an electronic theodolite and mechanical part of theodolite), Horizontal angle (repetition method and reiteration method), vertical angle (compute the height of building or compute the unknown elevation of points).[15 hrs]</p> <p>Aera (computation of aera, field measurement or map measurement by division in to simple figure, by offsets from straight lines regularly spaced offsets or irregularly spaced offsets. Coordinate Geometry (rectangular and polar coordinate). [10 hrs]</p> <p>Travers, types of traverses, traversing calculations, angle adjustment, direction adjustment, departure and latitude, linear misclosure, relative precision, compass rule. Calculation of coordinates of all points of traverse. [15 hrs]</p> <p>Topographic map, contour interval, horizontal equivalent, characteristics of contours, method of contouring, interpolation of contour map, the shape and pattern of</p>

	contours, contour gradient, draw contour lines with a suitable interval and horizontal scale. [10 hrs]
	GPS and EDM geomatics, introduction of GPS, using and importance of GPS. GIS hardware and software, GIS application for civil engineering. [13 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Tutorials 2- Homework and Assignment. 3- Test and Exams. 4- In class Question and Discussion. 5- Reports, Presentation and Posters 6- In and out class oral conservations.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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)	1, 8	LO #1, 2, 3, 4 and 6
	Assignments	2	10% (10)	5, 10	LO # 1, 2, , 5 and 8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 1, 2 ,3and 9
Summative assessment	Midterm Exam	2 hr	10% (10)	9	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	Introduction – Directions (Azimuth, Bearing), types of meridians
Week 2	Computing directions
Week 3	Angle measurement, accuracy of angle measurement
Week 4	Theodolite (component of an electronic theodolite and mechanical part of theodolite)
Week 5	Horizontal angle (repetition method and reiteration method)
Week 6	Vertical angles.
Week 7	Aera (computation of aera, field measurement)
Week 8	Aera (computation of aera, map measurement)
Week 9	Coordinate Geometry.
Week 10	Traversing.
Week 11	Adjustment of traversing.
Week 12	Topographic map
Week 13	Contouring
Week 14	GPS and EDM geomatics
Week 15	GIS application for civil engineering.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1: principles of angle measuring instrument (theodolite instrument), balancing theodolite instrument.
Week 2	Lab 2: measuring the horizontal angle by repetition method.
Week 3	Lab 3: measuring the horizontal angle by reiteration method.
Week 4	Lab 4: measuring the vertical angle to compute height of building, and compute unknown elevation of point.
Week 5	Lab 5: measuring area of land (field measurement and map measurement).
Week 6	Lab 6: Traversing.
Week 7	Lab 7: Draw contour line

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	<ol style="list-style-type: none"> 1. Schofield W, Breach M. Engineering surveying. CRC Press; 2007 Feb 14. 2. Shepherd FA. Engineering surveying: problems and solutions. (No Title). 1983. 3. Chandra AM. Plane surveying. New Age International; 2007. 	Yes
Recommended Texts	<ol style="list-style-type: none"> 1. Schofield W. Engineering surveying: theory and examination problems for students. Elsevier; 2001. 	No
Websites	https://www.survey-solutions.co.uk/site-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	Mechanics of Materials II		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE401		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department		College	
Module Leader	Wael Raad	e-mail	ogaidiwael@gmail.com
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	Msc
Module Tutor	-	e-mail	-
Peer Reviewer Name	Lec. Yasir Wisam	e-mail	yasiraliris@gmail.com
Scientific Committee Approval Date	11/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mechanics of Materials I	Semester	3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Discuss the effects of applying a torsional loading to a long straight member such as a shaft or tube.2. Review of the stress analysis that has been developed in the previous chapters regarding axial load, torsion, bending, and shear.3. Show how to transform the stress components that are associated with a particular coordinate system into components associated with a coordinate system having a different orientation.4. Here we will also discuss various ways for measuring strain associated with a coordinate system having a different orientation.5. Discuss various methods for determining the deflection and slope at specific points on beams and shafts.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Understand the concept of torsion and how to calculate the internal torques.2. Show how to determine the stress distribution within the member.3. Determine the angle of twist when the material behaves in a linear elastic manner.4. Statically indeterminate analysis of shafts and tubes will also be discussed, along with special topics that include those members having noncircular cross sections.5. Learn the solution of problems where several of these internal loads occur simultaneously on a member's cross section.6. Transform the stress components into components associated with a coordinate system having a different orientation. obtain the maximum normal and maximum shear stress at a point and find the orientation of elements upon which they act. discuss a method for finding the absolute maximum shear stress at a point when the material is subjected to both plane and three-dimensional states of stress.7. Understand various ways for measuring strain transformed in different orientation.8. Understand various methods for determining the deflection and slope at specific points on beams and shafts.
<p>Indicative Contents المحتويات الإرشادية</p>	<ol style="list-style-type: none">1. <u>Torsion</u>: torsional deformation of circular shafts, the torsion formula, angle of twist, statically indeterminate torque-loaded members, solid non-circular shafts, thin-walled tubes having closed cross sections. [12 hrs]2. <u>Combined loading</u>: state of stress caused by combined loading. [4 hrs]3. <u>Stress transformation</u>: plane stress transformation, general equation of plane stress transformation, Mohr's circle, principal stresses, maximum in-plane shear stress, absolute maximum shear stress. [12 hrs]4. <u>Strain transformation</u>: plane strain transformation, general equation of plane strain transformation, Mohr's circle, principal strains, maximum in-plane shear strain, absolute maximum shear strain. [4 hrs]

	5. <u>Deformation</u> : deflection in beams and shafts, the elastic curve, slope and displacement by integration, slope and displacement by the moment area method. [16 hrs]
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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 ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	3	15% (15)	3, 6, 10	LO # 1, 2, 3, 5, 7
	Assignments	2	15% (15)	5, 9, 13	LO # 4, 6, 8
	Projects	1	10% (10)	15	LO # 8
	Report	0	0	-	-
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-4
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Understand the concept of torsion and how to calculate the internal torques
Week 2	Determine the shear stress distribution within the member subjected to external torques.
Week 3	Determine the angle of twist when the material behaves in a linear elastic manner.
Week 4	Statically indeterminate analysis of shafts and tubes will also be discussed, along with special topics that include those members having noncircular cross sections.
Week 5	Discuss statically indeterminate shafts and tubes, along with special topics that include those members having noncircular cross sections.
Week 6	Learn the solution to problems where several of these internal loads occur simultaneously on a member's cross-section.
Week 7	Mid-term Exam
Week 8	Transform the stress components into different orientations and calculate these stresses using the general equations method.
Week 9	Transform the stress components into different orientations and calculate these stresses using Mohr's circle method.
Week 10	Calculate the principal stresses, the maximum in-plane shear stress and the absolute maximum shear stress.
Week 11	Learn how to transform the strain in any orientation using both methods: general equations and Mohr's circle, with calculating the principal strains and in-plane maximum shear strain, and absolute maximum shear strain.
Week 12	Introduce the integration method to calculate the beam deflection, the use of discontinuity functions, and the method of superposition.
Week 13	Introduce the method of superposition to calculate the beam deflection.
Week 14	Present a semi graphical technique called the moment-area method to calculate the beam deflection.
Week 15	we will use these methods to solve for the support reactions on a beam or shaft that is statically indeterminate.
Week 16	A preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Mechanics of Materials, 9 th ed. , R.C Hibbeler	Yes
Recommended Texts	1. Strength of Materials 4 th ed., Singer and Pytel	No
Websites	1. https://www.udemy.com/course/mechanics-of-materials-sgt/	

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	Hydraulics and Hydrology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE402		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Salam J. Bash AlMaliki	e-mail	salambash2000@yahoo.com
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Mahmood Mohammed	e-mail	mmhsh1988@gmail.com
Scientific Committee Approval Date	11/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fluid Mechanics	Semester	3
Co-requisites module	Non	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. The course introduces the analysis of the flow and pressure distribution of flowing water and wastewater. 2. Demonstration of many fundamental engineering approaches and models for sizing pipes between tanks and taps, picking pumps, and assuring a good flow distribution in water or wastewater treatment works. 3. The course will cover both pressurized and open-channel flow and the hydraulics of pipes, pumps, networks, and channels. 4. Calculation of the flow of liquid through a culvert in the various conditions. 5. Calculation of the flow of liquid above the various types of spillways. 6. Introduction to the stream Flow Hydrograph and Calculate the runoff of a site
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. The ability to apply basic hydraulics to the solution of water and sanitation problems. 2. Learn how to solve such problems and how to think practically about the flow of water in engineered systems. 3. Summarize what is meant by a hydraulic structure. 4. Ability to make the initial calculations for culverts and spillways. 5. The ability to use the various charts, nomograms, and tables regarding the design procedures of each of the various cases. 6. The ability to use the various relevant conversion factors/units for the various hydraulic structures. 7. The ability to recognize the design requirements for the hydraulic structures in each of the various operating conditions. 8. The ability to analyze the hydrographs and calculate the runoff.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A- Hydraulics</u></p> <p><u>Pipes and pipe systems</u></p> <p>Calculate the flow of a liquid through pipes.</p> <ol style="list-style-type: none"> 1. Determination of the flow-relevant characteristics/variables of the various pipes. 2. Calculate the HGL and EGL of a pipe system. 3. Calculate the energy losses through pipe systems 4. Calculate the flow distribution in the various piping systems. 5. Determine the size of a pipe using design charts. [20hrs] <p><u>Open channel</u></p> <p>Calculate the flow of a liquid through open channel flow.</p> <ol style="list-style-type: none"> 6. Differentiate between uniform flow and non-uniform (varied) flow in an open channel. 7. Calculate the slope of a channel or pipe. 8. Calculate the cross-sectional area, wetted perimeter, and hydraulic radius of a channel or pipe. 9. Calculate the normal depth in a channel, pipe, or stream including over banks. 10. Calculate the critical depth in a channel or pipe. 11. Determine the size of a channel or pipe using design charts. [20hrs]

	<p><u>Culverts</u></p> <p>Determine the flow of liquid through a culvert.</p> <ol style="list-style-type: none"> 1. Identify the type of flow pattern in a culvert, and determine if it has inlet or outlet control. 2. Determine the adequacy of flow through an existing culvert using both inlet and outlet control. 3. Determine an adequate culvert size for a given discharge. <p>Revision problem classes [20hrs]</p> <p><u>Part B - Hydrology</u></p> <p>Explain the fundamentals of watershed hydrology and their application to industry.</p> <ol style="list-style-type: none"> 1. Explain the hydrologic cycle. 2. Explain a watershed's role in the hydrologic cycle, including hydrologic unit codes [15hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>The course is taught through a mix of three approaches: Classroom lectures to present the basic theory, problem-solving sessions where students put the theory to work in solving practical problems, and laboratory sessions where students will test the theory against their observations of real hydraulic systems. In groups of three (maximum), students will complete ONE project. These will include significant analyses and written reports. Individual effort assessment. At the end of the semester, team members will be asked to confidentially evaluate themselves and other members of the team. A student's individual grade for the projects will be raised or lowered from the group grade based on those evaluations.</p>

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
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	30min./2	10% (10)	5, 15	LO #1-4, and LO#13,14
	Assignments	3	10% (10)	continuous	All
	Projects / Lab.	14	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 3, 4,5, and 6
Summative assessment	Midterm Exam	1hr/2	10% (10)	8 and 13	LO # 1-7 and 9-12
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Head loss, flow computations for single conduits
Week 2	Pipelines in Series and parallel+ Calculations on simple systems.
Week 3	Introduction to network models.
Week 4	Worked examples for various piping systems.
Week 5	Introduction to Open Channel Flow: qualitative difference from pressure flow and the concept of normal flow.
Week 6	Specific Energy, subcritical, supercritical & critical flow.
Week 7	Economic section open channels+ worked problems
Week 8	Mid-term Exam
Week 9	Introduction to culverts; types, characteristics, limitations, and sections.
Week 10	Design aspects of culverts+ worked problems
Week 11	Introduction to spillways; types, characteristics, limitations, and sections.
Week 12	Design aspects of some types of spillways+ worked problems
Week 13	Introduction to the stream Flow Hydrograph.
Week 14	Calculate the runoff of a site
Week 15	Recap of material to date
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Study the friction and minor losses in pipes
Week 2	Flows in pipe networks
Week 3	Determination of Manning's co-efficient "n" and Chezy's co-efficient "C"
Week 4	Investigate the relationship between specific energy "E" and depth of flow "y" in a laboratory flume
Week 5	Study the flow characteristics over the hump or weir in a rectangular channel
Week 6	Study the flow characteristics of hydraulic jump developed in lab flume
Week 7	Flow Measurement using Notches or Thin-Plate Weirs
Week 8	Flow characteristics under a sluice gate.
Week 9	Flow characteristics through culverts
Week 10	Flow characteristics over various types of spillways
Week 11	Draw a Flow chart of the hydrologic cycle & discuss various components of the hydrologic Cycle
Week 12	Measurement of Rainfall by non-recording rain gauge.
Week 13	Measurement of rainfall by recording rain gauge.
Week 14	To determine the mean rainfall of an area by the Thiessen mean Polygon method

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Fundamentals of fluid mechanics, Bruce R. Munson, Theodore H. Okiishi, Wade W. Huebsch, Alric P. Rothmayer—7th edition.	NO
Recommended Texts	2. Hydraulics in Civil And Environmental Engineering, 5 th . Edition. Andrew Chadwick, John Morfett and Martin Borthwick	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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Management & Economics		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE404		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Saja Hadi Raheem	e-mail	Sajahadi22@gmail.com
Module Leader's Acad. Title	Lecture.Doctor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr.Salam J. Bash	e-mail	salambash2000@gmail.com
Scientific Committee Approval Date	11/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<p>Engineering Economy :</p> <ol style="list-style-type: none">1. Understand the types of questions engineering economy can answer.2. Determine the role of engineering economy in the decision-making process.3. Identify what is needed to successfully perform an engineering economy study.4. Perform calculations about interest rates and rate of return.5. Understand what equivalence means in economic terms.6. Calculate simple interest and compound interest for one or more interest periods.7. Identify and use engineering economy terminology and symbols. <p>Engineering Management:</p> <ol style="list-style-type: none">1. Students will learn primary engineering systems.2. Students will learn primary engineering methods and materials.3. Students will develop engineering cost accounting, management and control knowledge and skills.4. Students will learn engineering project management and control systems.5. Students will understand professional ethical responsibility.6. Students will learn to function as a member of a team.7. Students will learn to communicate effectively.8. Students will learn to apply mathematic skills to solve construction problems.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. An ability to select and apply the knowledge, technique, skills, and modern tools of the discipline to broadly-defined engineering management activities;2. An ability to select and apply knowledge of mathematics, science, business, management, construction and construction science to problems that require the application of engineering management principles and applied procedures or methodologies.3. An ability to identify, sequence, schedule, and estimate the costs of critical construction activities as associated with successful construction proposals.4. The ability to display fundamental knowledge of critical aspects of the body of knowledge expected of constructors entering the engineering management profession.5. An ability to function effectively as a member or leader on a engineering team.6. An ability to identify, analyze and solve broadly-defined engineering problems.7. An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.8. An understanding of the need for an ability to engage in self-directed continuing professional development.9. A knowledge of the impact of construction in a societal and global context; and10. A commitment to cost-effectiveness, quality, timeliness and continuous improvement.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following. <u>Part A – Fundamentals of Engineering management</u></p>

	<p>Concept of engineering management (EM), Introduction to project management, understanding the function of engineering management. [6 hrs.]</p> <p>Understanding construction planning techniques by using bar chart [3 hrs.], Understanding Critical Path Methods (Arrow Diagram, Precedence Networks, Overlapped Precedence Networks, PERT Technique) [12 hrs].</p> <p>Projects Planning Technique Using line of balance Technique, and project scheduling [6 hrs.]</p> <p><u>Part B –Applications of Engineering Economy Concepts:</u></p> <p>Introduction to quality control, Statistical quality control, Control charts and Types of control chart. [6 hrs.]</p> <p>Linear Programing, Definition of linear programming (LP),Transportation problems, and review what was presented during the course through a set of examples [9 hrs.]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<ol style="list-style-type: none"> 1. Tutorials. 2. Homework and Assignments. 3. Tests and Exams. 4. In-Class Questions and Discussions. 5. Connection between Theory and Application. 6. Extracurricular Activities. 7. In- and Out-Class oral conservations. 8. Reports.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
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 and 9	LO #1-2, and 3
	Assignments	2	10% (10)	3, 12	LO # 3-5
	Attendance	15	10% (10)	Continuous	ALL
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction; Concept of engineering management (EM)
Week 2	Engineering management functions and role, the function of engineering management
Week 3	Construction planning techniques; Bar chart technique
Week 4	Critical path method; Arrow diagram
Week 5	Critical path method; Precedence network
Week 6	Critical path method; Overlapped precedence network
Week 7	Mid-term Exam + Revision problems
Week 8	Critical path method, Pert technique
Week 9	Projects Planning Technique Using line of balance Technique
Week 10	Projects Scheduling; Time-Cost Relationship
Week 11	Statistical Quality Control (SQC); Quality Management
Week 12	Statistical Quality Control (SQC); Statistical quality control, control charts, types of control chart
Week 13	Linear Programming and Operation Research; definition of linear programming (LP)
Week 14	Linear Programming and Operation Research; Transportation problems
Week 15	Review (what was presented during this course). Provide a set of examples
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Khan, Mohammad Ibrahim. Industrial engineering. New Age International, 2004.	Yes
Recommended Texts	1. Vaughn, Richard C. Introduction to industrial engineering. Iowa State Pr, 1985. 2. Zuriarrain, Amador. "Maynard, HB: Manual de Ingeniería de la Producción Industrial (Book Review)." Boletín de Estudios Económicos 17 (1962): 646. Joseph C. Hartman, "Engineering Economy and the Decision Making Process" Prentice Hall, 2007	No
Websites	https://www.uoanbar.edu.iq/eStoreImages/Bank/6298.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
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Building Construction		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UICE403		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	
Administering Department	-	College	-
Module Leader	Dr.Luma Ahmed Aday	e-mail	eng.luma00@gmail.com
Module Leader's Acad. Title	Assistant professor	Module Leader's Qualification	Ph.D.
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr.Mohanad Hatem	e-mail	mohshadhar@hmail.com
Scientific Committee Approval Date	11/06/2023	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	<ol style="list-style-type: none"> 1. Familiarizing students with building systems and its various elements. 2. Study implementation mechanisms and supervision of the construction phases of the structural (primary) and various which include (foundations, walls, floors, stairs and others. 3. Knowledge of different materials to build and understand the composition of the Executive and requirements, and to identify the different characteristics and how to use them. 4. Identify local building materials in terms of their location and mechanisms manufactured various forms. 5. Drawing and show the shop drawings.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Identify components of building structures. 2. Propose suitable type of foundation for building structures. 3. Select suitable type of masonry for building structures. 4. Explain different types of walls, scaffolding, shoring, underpinning and their constructional methodology 5. Carry out the construction of brick wall. 6. Supervise rubble and ashlar types of stone masonry construction 7. Evaluate the possible reason of dampness at various level in building and remedial means 8. Select different types of doors, windows, floors and stairs cases in building 9. Select the relevant material for finishing works. 10. Execute safe practices in building construction activities.
Indicative Contents المحتويات الإرشادية	<p><u>Part A-Introduction</u></p> <ul style="list-style-type: none"> • Introduction to course, why construction techniques are important vis a vis building designing. • Site Works and Setting Out. • Clearing of site & building layout. Cement - Manufacturing of cement, Compound composition of Portland Cement, Structure and reactivity of compounds. • Excavation: Requirement for excavation. [8hrs] <p><u>Part B- Foundations and their types</u></p> <ul style="list-style-type: none"> • Types, functions, characteristics. • Selection of foundations, viz. strip, combined, cantilever and raft foundations. • Deep foundation types as per distribution of load and materials for construction. • Types of materials used in construction of piles. [10hrs] <p><u>Part C- Damp Protection</u></p> <ul style="list-style-type: none"> • Sources and cause of dampness, defects of dampness. • Methods of damp proofing, damp proof courses, materials used for damp protections. • Selection of appropriate DPC materials for different parts of building. • Floor Structures.

	<ul style="list-style-type: none"> • Introduction to floors, types and materials of construction. • Ground floors. • Upper floors. • Timber floors • RCC floors. • Floor finishes. [16hrs] <p><u>Part C- Masonry wall</u></p> <ul style="list-style-type: none"> • Introduction to wall types, materials and mortars used. • Stone masonry. • Brick masonry. • Concrete block masonry. [11hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ol style="list-style-type: none"> 1. Lectures will be conducted with the aid of projector, 2. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. 3. Surprise tests/Quizzes will be conducted. 4. Assigning students to prepare reports on a particular subject and thus motivate students to learn the initial principles of scientific research. 5. Field examples are often made and students are encouraged to make field visits
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
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	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	2, 11	LO #1and 2
	Assignments	2	10% (10)	3, 10	LO # 6 ,8 and 10
	Report	1	10% (10)	5	LO # 3,4 and 5
Summative assessment	Midterm Exam	2 hr	15% (15)	8	LO # 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	Overview of Building components
Week 2	Foundation, Types of foundations
Week 3	Stone Masonry
Week 4	Brick masonry
Week 5	Bonds in brick masonry- header bond, stretcher bond, English bond and Flemish bond
Week 6	Scaffolding and types of Scaffolding
Week 7	Definition of Form work, Requirements of Formwork, Materials used in Formwork
Week 8	Mid-term Exam
Week 9	Introduction to floors, types and materials of construction
Week 10	Types of Stairs
Week 11	Settlement of Foundation: Types, Causes and Remedial measures
Week 12	Water Proofing: Necessity and importance, material used for Water Proofing,
Week 13	Beams and Columns
Week 14	Windows: Component of windows, Types of Windows
Week 15	Doors: Components of Doors
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Varghese PC. Building construction. PHI Learning Pvt. Ltd.; 2016 Dec 1. 2. Construction of Buildings (Volumes 1 to 5) by R.Barry 7th edition	NO
Recommended Texts	1. Building Materials And Construction, Sushil Kumar, Bindra, Kamala.	No
Websites	https://ww3.rics.org/uk/en/journals/construction-journal/how-site-experience-supports-student-learning.html	

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	Crimes of the Baath Regime in Iraq	Module Delivery	
Module Type	B	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	CBRI104		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGII		
Administering Department	Civil Engineering	College	College of engineering
Module Leader	Mohammed Abdulsadah Ali	e-mail	mohammed.abd.ali@aliraqia.edu.iq
Module Leader's Acad. Title	Asst. Lect.	Module Leader's Qualification	
Module Tutor	-	e-mail	-
Peer Reviewer Name	Dr. Ammar Mezal	e-mail	ammar.mezal@gmail.com
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 Objectives أهداف المادة الدراسية	ارتكب نظام البعث في العراق إبّان حكمه عدداً كبيراً من الجرائم المختلفة، واختلافها يلزم بيان مفاهيم وتعريف للطالب ليكون على معرفة ودراية بما يمر به مما لها علاقة بمادة المنهاج ، كمفهوم الجريمة وأقسامها، والجرائم الدولية التي حُكم عليها قيادات وأزلام نظام البعث وفق قانون المحكمة الجنائية العراقية العليا لقد تضمن هذا المنهج ما جاء مفاتيح معرفية بيد الطالب الجامعي يقوى بها على كلّ مُرتجّ خبّكت رواية أكذوبته أيادي البعث وإعلامه المزيف ، وباعت ضميرها أنفسُ ترى أنّ تبقى إلى الآن ذليلة أسيرة ، وذليلاً تابعاً.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	بث الوعي بين صفوف ابنائنا الطلبة واطلاعهم على الجرائم التي تم ارتكابها ابان حقبة نظام البعث في العراق
Indicative Contents المحتويات الإرشادية	جرائم نظام البعث في العراق

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Giving theoretical lectures
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1.2
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	20% (20)	5, 10	All
	Assignments	2	10% (10)	3, 12	All
	Report	1	10% (10)	14	All
Summative assessment	Midterm Exam	1hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام ٢٠٠٥ م
Week 2	مفهوم الجرائم وأقسامها
Week 3	جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام ٢٠٠٥ م .
Week 4	الجرائم النفسية والاجتماعية وأثارها، وأبرز انتهاكات النظام البعثي في العراق
Week 5	الجرائم النفسية
Week 6	الجرائم الاجتماعية
Week 7	(Mid-term Exam)
Week 8	تجفيف الأهوار
Week 9	الجرائم البيئية لنظام البعث في العراق
Week 10	التلوث الحربي والإشعاعي وانفجار الالغام
Week 11	تدمير المدن والقرى (سياسة الأرض المحروقة)
Week 12	تجريف بساتين النخيل والأشجار والمزروعات
Week 13	جرائم المقابر الجماعية
Week 14	أحداث مقابر الإبادة الجماعية المرتكبة من النظام البعثي في العراق
Week 15	م ٢٠٠٣ - م ١٩٦٣ للمدة العراقية في الجماعية الإبادة لمقابر الزمني التصنيف
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	منهاج جرائم نظام البعث البائد 2023، وزارة التعليم العالي والبحث العلمي، دائرة الدراسات والتخطيط والمتابعة، 2023	Yes
Recommended Texts		
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.

Course Description Form

1. Course Name:	
Engineering Mathematics I	
2. Course Code:	
CIE 3101	
3. Semester / Year:	
5th / 3rd	
4. Description Preparation Date:	
01/ 09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 /3	
7. Course administrator's name (mention all, if more than one name)	
Name: Reem Siham Tawfeeq Email: engreemsiham86@gmail.com	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Enabling the student to quickly calculate or analyze quantities mathematically • Make the student able to accurately calculate the amount of engineering damage using numerical equations • Predicting the percentage of error that may accompany engineering work and thus calculating the safety coefficient • Preparing the student to deal with any change that may occur in the • statistical works related to the engineering aspect of the work, such as k of quantities or spare orders. • Make the student able to deal with the timetables related to implementation of the engineering paragraphs and their sequence • Enable student to think and analyze engineering phenomena and their applications
9. Teaching and Learning Strategies	

Strategy	<ul style="list-style-type: none"> • Explaining the idea, giving solved examples during the lecture and linking them to practical reality, in addition to giving homework • Mid exam, quiz, homework, classwork, attendance • Class leadership skills, relying on immediate and surprising questions, as well as creating an interactive atmosphere within the class to achieve the goal of understanding the lesson in question and its objectives
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3		Ordinary differential equation	White board	
Week 2	3		Ordinary differential equation	White board	
Week 3	3		Second order differential equation	White board	
Week 4	3		Second order differential equation	White board	
Week 5	3		Higher order differential equation	White board	
Week 6	3		Un damped vibration of beam	White board	
Week 7	3		1st Mid exam		
Week 8	3		Buckling of slender column	White board	
Week 9	3		System of simultaneous diff. equation	White board	
Week 10	3		Un damped vibration of cabled system	White board	
Week 11	3		2nd Mid exam		
Week 12	3		Holiday		
Week 13	3		Un damped vibration of cabled system	White board	
Week 14	3		General Review	White board	
Week 15	3		Multi_ degree of freedom system	White board	

11. Course Evaluation

- Quizzes, homework, attendance and interacts in the class (added marks such as bonus)

- Mid. exam: 20% (two mid exam)
- Final exam: 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Epperson JF. An introduction to numerical methods and analysis. John Wiley & Sons; 2013 Jun 6.
Main references (sources)	Dennis G. Zill and Warren S. Wright, “Advanced Engineering Mathematics”, 2012.
Recommended books and references (scientific journals, reports...)	Numerical Analysis, ninth edition Richard L. Burden. Youngstown State University.
Electronic References, Websites	

Course Description Form

1. Course Name:	
Soil Mechanics I	
2. Course Code:	
CIE 3102	
3. Semester / Year:	
5 th / 3 rd	
4. Description Preparation Date:	
1/9/2024	
5. Available Attendance Forms:	
In class Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
5/4	
7. Course administrator's name (mention all, if more than one name)	
Name: ahmad benwan hassan Email: ahmadbenwan99@gmailcom	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Provide students with a solid foundation in the principles of soil mechanics and their practical applications in civil engineering. • Identify and describe the physical and mechanical properties of different soil types. • Classify soils using standard classification systems and understand their implications for engineering practice. • Apply principles of soil mechanics to analyze soil behavior under various loading conditions. • Conduct laboratory tests to determine key soil properties.
9. Teaching and Learning Strategies	
Strategy	Deliver core concepts, principles, and theories of soil mechanics through well-organized lectures. Use multimedia tools (slides, videos) to illustrate complex concepts and the use of quizzes, in-class exercises, and assignments to gauge understanding throughout the course. Arrange site visits to construction projects, water treatment facilities, or infrastructure projects.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	-	Overview of Soil Mech.	Teacher-based learning	-
2	3	Transformation of rocks into soil	Soil Formation	Class lecture	-
3	3	Solid, air and water relationships in soil	Phase relationships	Class lecture + In-Class Questions and Discussions.	Quiz
4	3	Distribution of particle size and sieve analysis	Soil particle size	Class lecture+ Connection between Theory and Application	Interactive Discussions
5	3	Understanding Liquid and plastic limits	Atterbergs limits	Teacher-based learning	Report
6	3	Textural and AASHTO Classification Systems	Soil classification	Class lecture	Interactive Discussions
7	3	Understand Factors affecting compaction	Soil Compaction	Class lecture + In-Class Questions and Discussions	Assignment
8	3	-	Mid-term exam	-	Mid-term exam
9	3	Permability calculations and its effects, the hydraulic gradient	Permeability	Teacher-based learning	Quiz
10	3	Application of Darcy low and hydraulic conductivity	Seepage	Class lecture	Interactive Discussions
11	3	Understand the flow in soil	Flow in soil	Class lecture+ Connection between Theory and Application	Report
12	3	Pressure, elevation and	one dimensional Soil flow	Class lecture +	Interactive

		velocity head calculations		In-Class Questions and Discussions	Discussions
13	3	Calculate the seepage velocity	flow rates	Teacher-based learning	Assignment
14	3	Calculating of hydraulic uplifting force under a structure	uplift pressure	Class lecture-Connection between Theory and Application	Interactive Discussions
15	3		Course review		

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quizzes	30 min	4%	3,9
Discussions	3 hrs	3%	4,6,10,12,14
Assignment and Reports	1 hr	3%	5,7,11,13
Mid-term exam	2 hrs	20%	8
Laboratory	2 hrs	10%	Through the course
Final exam	3 hrs	60%	16
Total assessment	100 % (100 mark)		

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of Geotechnical Engineering, Textbook by Das,2010
Main references (sources)	Craig's Soil Mechanics Textbook by Craig, 2004
Recommended books and references (scientific journals, reports...)	Advanced Soil Mechanics Textbook by Das, 2019
Electronic References, Websites	www.asce.com

Course Description Form

1. Course Name:	
Theory of Structures	
2. Course Code:	
CIE 3103	
3. Semester / Year:	
5th /3rd	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Zainab Adel Mohammed Email: ezainab05@gmail .com	
8. Course Objectives	
Course Objectives	<p>The student will learn the basic and applied concepts of Civil Engineering with the following fundamentals:</p> <ul style="list-style-type: none"> • The basic steps required for successful Software Engineering, Ways in which civil engineering differs from other kinds of Engineering. • Apply theoretical concepts to practical examples and real-world engineering problems in order to enhance problem-solving skills. • Develop a comprehensive understanding of structural analysis techniques and their role in designing safe and efficient structures. • Enhance critical thinking and analytical skills through the application of different structural analysis methods. • Foster an appreciation for the importance of accurate structural analysis in ensuring structural integrity and safety. • Gain the necessary foundation for further studies or professional work in the field of structural engineering.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> • Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (tradition

lecture)

- Student-based learning: Students will be asked to prepare presentation OR poster and react to the interaction among students.
- research-based learning: the instructor will give students published paper to be discussed in class (open discussion class).
- The instructor could give realistic cases or exercises in class and post-class and ask students to solve these cases to enhance their critical thinking skills and improve the ability of students to do calculations.
- Invite a guest lecturer to update the students on the Analysis of structures in real life.
Site visit to enhance the knowledge of students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	-	Subject details presentations overview	-	Nil
2	4	virtual work method	Deflections by virtual work method: Trusses	Teacher-based learning	Nil
3	4	virtual work method	Deflections by virtual work method: Beams	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions
4	4	virtual work method	Deflections by virtual work method: Frames	Assessing Skill in Synthesis and Creative Thinking	Mcq quiz
5	4	-	Mid Exam 1	-	Mid Exam 1
6	4	force method	Analysis of statically indeterminate structures by the force method: Trusses	Student-based learning(flipped learning)	Midterm 1
7	4	force method	Analysis of statically indeterminate structures by	Teacher-based learning	Students' activities + direct questions

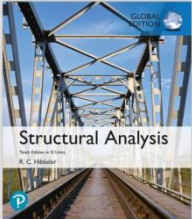
			the force method: Beams		
8	4	force method	Analysis of statically indeterminate structures by the force method: Frames	Students based learning (flipped learning)-presentation	Quiz
9	4	Slope deflection method	Analysis of statically indeterminate structures by the slope deflection method: Beams	Teacher-based learning (traditional method)	Open discussion
10	4			-	Mid Exam II
11	4	Slope deflection method	Analysis of statically indeterminate structures by the slope deflection method: Braced frame	Student-based learning	Quiz
12	4	Slope deflection method	continued	-	report
13	4	moment distribution method	Analysis of statically indeterminate structures by the moment distribution method: Introduction Beams	Teacher-based learning and Flip learning methods	Students' activities + direct questions
14	4	moment distribution method	Analysis of statically indeterminate structures by the moment distribution method: Braced frames	Skill in Application and Performance	Open discussion
15	4	-	recap	-	Nil

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11

Open discussion and activity	3 hrs	2% (2)	9 and 14
Report	1 hr	3% (3)	6
Midterm Exam	2hrs	30% (30)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of Structural Analysis (Fifth Edition) by Kenneth M. Leet et al 2018
Main references (sources)	STRUCTURAL ANALYSIS TENTH EDITION IN SI UNITS R. C. HIBBELER 
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	https://www.udemy.com/course/structural-analysis-i/

Course Description Form

1. Course Name:	
Reinforced Concrete Design I	
2. Course Code:	
CIE 3104	
3. Semester / Year:	
5th /3rd	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Zainab Adel Mohammed Email: ezainab05@gmail .com	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> The module aims to know design of reinforced concrete elements. Enhance student understanding of the health and safety aspects associated with designing and constructing reinforced concrete structures. Provide students with the ability to use the methods of analysis and design of reinforced concrete building elements by ACI 318-19. Provide an understanding of the overall stability requirements of reinforced concrete buildings by ACI 318-19. Provide an understanding of the serviceability requirements of Concrete buildings to improve durability and sustainability aspects.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: Students will be asked to prepare a presentation OR poster and react to the interaction among students. research-based learning: the instructor will give students a published paper to be discussed in class (open discussion class). The instructor could give realistic cases or exercises in class and post-class and ask students to solve these cases to enhance their critical thinking skills and improve the ability of students to do calculations. Invite a guest lecturer to update the students on the modern materials that used in structure industry and design. Site visit to enhance the knowledge of students.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Satisfy the Materials properties	Subject details presentations overview	-	Nil
2	4	Working Stress Design Method	Design of working stress method	Teacher-based learning	Nil
3	4	Working Stress Design Method	Design of working stress method	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions
4	4	Satisfy the design and analysis of Beams	Design and analysis of Beams	Assessing Skill in Synthesis and Creative Thinking	Quiz
5	4	-	Mid Exam 1	-	Mid Exam I
6	4	Ultimate Strength Method	Design of Ultimate Strength Method	Student-based learning (flipped learning)	Midterm 1
7	4	Students will be able to design Singly Reinforced Sections	Design of Singly Reinforced Sections	Teacher-based learning	Students' activities + direct questions
8	4	Students will be able to design Doubly Reinforced Sections	Design of Doubly Reinforced Sections	Students based learning (flipped learning)- presentation	Quiz
9	4	Students will be able to design T-Section and Irregular Section	design T-Section and Irregular Section	Teacher-based learning (traditional method)	Open discussion
10	4	-	Mid Exam II	-	Mid Exam II
11	4	One Way Slab	design One Way Slab	Student-based learning	Quiz
12	4	Students will be able to design One Way Slab	Continue		report
13	4	Students will be able to know the Requirements of Serviceability and Deflection	Requirements of Serviceability and Deflection	Teacher-based learning and Flipped learning methods	Students' activities + direct questions
14	4	Students will be able to know the Requirements of Serviceability and Deflection	continued	Assessing Skill in Application and Performance	Open discussion
15	4	-	recap	-	Nil

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11
Open discussion and activity	3 hrs	2% (2)	9 and 14
Report	1 hr	3% (3)	6
Midterm Exam	2hrs	30% (30)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<ol style="list-style-type: none"> 1. Nilson A.H., Darwin D., and Dolan C.W., Design of Concrete Structures, 13thEdition, McGraw Hill, 2004. 2. Darwin D., Dolan C.W., and Nilson A.H., Design of Concrete Structures, 15thEdition, McGraw Hill, 2016. 3. ACI 318, Building Code Requirements for Structural Concrete, USA, 2019.
Main references (sources)	<ol style="list-style-type: none"> 1. McCormac J.C. and Brown R.H., Design of Reinforced Concrete, 10 th Edition, Wiley, 2015. 2. Design of Reinforced Concrete by J.C. McCormac and R.H. Brown, Eighth Edition, John Wiley & Sons.
Recommended books and references (scientific journals, reports...)	<ol style="list-style-type: none"> 1. Nawy E.G., Reinforced Concrete: A Fundamental Approach, 6thEdition, Pearson 2008. 2. Wang C.-K., Salmon C.G. and Pincheira J., Parra-Montesinos G.J. Reinforced Concrete Design, 8thEdition, Oxford University Press, 2017.
Electronic References, Websites	https://www.thebuildingacademy.com/publisher/64/The_Concrete_Centre

Course Description Form

1. Course Name:	
Sanitary Engineering I	
2. Course Code:	
CIE 3105	
3. Semester / Year:	
5 th /3 rd	
4. Description Preparation Date:	
1/9/2024	
5. Available Attendance Forms:	
In class Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
5/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst.Prof.Dr. Ibtihaj Abdulwahhab Abdulrazzak Email: ibtihaj.abdulwahhab@aliraqia.ed.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none">• Introduce basic definitions and introductory concepts of Sanitary Engineering and water treatment.• Introduce water quantities required for municipal, commercial and industrial uses and water consumption rates.• Define water impurities and treatment methods depending on these impurities.• Understanding water distribution systems with different network apparatus.• Understanding water treatment steps and techniques.• Population growth rate.• Water consumption per capita and for firefighting.
9. Teaching and Learning Strategies	
Strategy	Deliver core concepts, principles, and theories of sanitary through well-organized lectures. Use multimedia tools (slides, videos) to illustrate complex concepts and the use of quizzes, in-class exercises, and assignments to gauge understanding throughout the course. Arrange site visits to construction projects, water treatment facilities, or infrastructure projects.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	-	Introduction, water consumption,	Teacher-based learning	-
2	3	Calculate future water demand	Forecasting population, fire demand	Class lecture	-
3	3	Learn common impurities in water, water treatment	Water quality	Class lecture + In-Class Questions and Discussions.	Quiz
4	3	Understand the distribution system layout	Water distribution systems layouts and components	Class lecture+ Connection between Theory and Application	Interactive Discussions
5	3	Pipe sizing and distribution	Pipes, valves, flow in pipes analysis and design	Teacher-based learning	Report
6	3	Calculate the required pump power and head	Water pumps	Class lecture	Interactive Discussions
7	3	Understand the treatment process	introduction to water treatment plant design	Class lecture + In-Class Questions and Discussions	Assignment
8	3		Mid-term exam	-	Mid-term exam
9	3	Calculate screen spacing and headloss through screen	Intake design	Teacher-based learning	Quiz
10	3	Calculate the settling velocity and the sedimentation tank dimensions	Sedimentation theory and sedimentation tank design	Class lecture	Interactive Discussions
11	3	Calculate the required mixing power and tank volume	Rapid mixing tank design, jar test	Class lecture+ Connection between Theory and Application	Report
12	3	Learn the coagulants dose calculations	Coagulation process	Class lecture + In-Class Questions and Discussions	Interactive Discussions
13	3	Calculate the mixing power and tank dimensions	Flocculation, flocculation tank design	Teacher-based learning	Assignment
14	3	Calculate	Disinfection process, type of	Class lecture+	Interactive

		disinfectant dose and tertiary water treatment processes	disinfectants, water softening	Connection between Theory and Application	Discussions
15	3		Course review		

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quizzes	30 min	4%	3,9
Discussions	3 hrs	3%	4,6,10,12,14
Assignment and Reports	1 hr	3%	5,7,11,13
Mid-term exam	2 hrs	20%	8
Laboratory	2 hrs	10%	Through the course
Final exam	3 hrs	60%	16
Total assessment	100 % (100 mark)		

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Water Supply and Sewerage, 5 th edition by E.W. Steel and T.J. McGhee
Main references (sources)	Water Supply Engineering by P.N. Modi
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://archive.org/details/watertreatmentha0002uns

Course Description Form

1. Course Name:					
Transportation Engineering II					
2. Course Code:					
CIE 4202					
3. Semester / Year:					
8th /4th					
4. Description Preparation Date:					
01/09/2024					
5. Available Attendance Forms:					
-					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60/4					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Mohammed Hadi Email: mohammed.h.nahi@aliraqia.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • To enable students to analyses road pavement structures, • To differentiate between the different types of materials used. • To design road pavements, the design concepts, material properties and performance criteria are used together with vehicle loading criteria to demonstrate to the students how they are combined to design and construct road pavements. • To distil the principles of geometric design, both vertical and horizontal. • To give the students the satisfaction of producing for themselves a full road pavement design, they are taken through one of the available methods and they perform examples so they can see how the principles and their application come together in a design. 			
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> • Teacher-based learning: teacher explain lectures pre-class (lecture notes and videos) and in-class (traditional lecture) • Student-based learning: student will be asked to prepare presentation OR poster and react the interactive among students. • Instructor could give realistic cases or exercises in-class and post-class and ask student to solve these cases in order to enhance the critical thinking skills and improve the ability of students to do calculations. • Invite guest lecturer to update the students with modern traffic control strategies. 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	Select the appropriate materials for use in different road layers Evaluate the quality and performance of unbound and bound road materials	Introduction to transportation engineering.	-	Nil
2	4	Select the appropriate materials for use in different road layers	Unbound Flexible Pavement Materials – Capping and subbase materials	Teacher-based learning	Nil
3	4	Evaluate the quality and performance of unbound and bound road materials	Continued	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions
4	4	Perform road pavement design and analysis	Bitumen properties.	Assessing Skill in Synthesis and Creative Thinking	Quiz
5	4	Perform road pavement design and analysis	Bitumen's laboratory tests for property characterization.	-	Mid Exam I
6	4	Perform road pavement design and analysis	Continued	Student-based learning (flipped learning)	Midterm 1
7	4	Develop an appropriate road monitoring and maintenance programme	Bituminous Materials – Open textured macadam, hot rolled asphalt, mastic asphalt and dense bituminous macadam	Teacher-based learning	Students' activities + direct questions
8	4	Develop an appropriate road monitoring and maintenance programme	Bituminous Materials – hot rolled asphalt, mastic asphalt and dense bituminous macadam	Students based learning (flipped learning)-presentation	Quiz
9	4	Develop an appropriate road monitoring and maintenance programme Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on	Continued	Teacher-based learning (traditional method)	Open discussion

		horizontal and vertical alignment			
10	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment	Flexible Pavement Design – Principles of design.	-	Mid Exam II
11	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment	Flexible Pavement - design method and examples	Student-based learning	Quiz
12	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment	Continued		report
13	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment Design a road alignment.	Rigid Pavements – Properties of concrete, rigid pavement design and construction	Teacher-based learning and Flipped learning methods	Students' activities + direct questions
14	4	Design a road alignment.	Geometric Design – Fundamentals of forces on vehicles travelling on curved sections of road,	Assessing Skill in Application and Performance	Open discussion
15	4	Design a road alignment.	Geometric Design – horizontal and vertical alignment, designed on the basis of safety and driver comfort	-	Nil

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11
Open discussion and activity	3 hrs	5% (5)	9 and 14
Lab Reports	1 hr	10% (10)	3, 5,7,9,12
Midterm Exam	2hrs	20% (20)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Materials for Civil and Construction Engineers 2e, MICHAELS . MAML OUKJOHNP. ZANIEWSKI, 2006
Main references (sources)	Pavement analysis and desing Book yang-h-huang-2nd-edition, 2004
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	

Course Description Form

1. Course Name:	
Hydraulics	
2. Course Code:	
CIE 3207	
3. Semester / Year:	
6th /3rd	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Natiq Abbas Fadhil Email: natiq.a.fadhil@aliraqia.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> The module aims to develop the ability for student fluids and fluid flow. Enhance student understanding of the flow in pipe, connected and the design pipes for network. Provide students with the ability to use the methods of analysis and design of types of connect (parallel, series and compound). Provide students with the ability to use the methods of analysis and design of types open channel. Provide an understanding of Calculating flows and energy losses in pipes and open channels (rivers, canals, etc.).
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: Students will be asked to prepare a presentation OR poster and react to the interaction among students. The instructor could give realistic cases or exercises in class and post-class and ask students to solve these cases to enhance their critical thinking skills and improve the ability of students to do calculations. Invite a guest lecturer to update the students on the modern steel structure industry. Site visit to enhance the knowledge of students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Satisfy the hydraulics	Review about fluid mechanics and Introduction of Hydraulics	-	Nil
2	3	-	Flow in pipes	Teacher-based learning	Nil
3	3	Hydraulics	Head losses (major and minor losses)	Teacher-based learning	Students' activities + direct questions
4	3	-	Network of pipes (series and parallel)	Teacher-based learning and Assessing Skill in Synthesis	quiz
5	3	-	Network of pipes (Branch connected)	Teacher-based learning	Nil
6	3	-	Monthly Exam	-	Mid Exam I
7	3	Type of hydraulics	Open channel	Teacher-based learning	Nil
8	3	-	Regulator and Hydraulic Design	Teacher-based learning	Nil
9	3	Students will be able to design type of channel	Open channels	Teacher-based learning (traditional method)	Open discussion
10	3	-	Hydraulic jumps	Teacher-based learning	Nil
11	3	-	The spillway	Student-based learning	Quiz and Open discussion
12	3	-	Mid Exam II	-	Mid Exam II
13	3	Students will be able to design the spillway	Types of Spillways	Teacher-based learning and learning methods	Students' activities + direct questions
14	3	-	A culvert	Teacher-based learning	Nil
15	3	-	Presentations	-	Report

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3 and 10
Open discussion and activity	3 hrs	2% (2)	9 and 11

Report	1 hr	3% (3)	15
Midterm Exam	2hrs	30% (30)	6 and 12
Final Exam	3hrs	60% (60)	16
Total assessment	100% (100 Marks)		

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<ol style="list-style-type: none"> 1. Hydraulics & Fluid Mechanics including Hydraulics Machines, Dr. P.N Modi Dr. S.M Seth ,Twenty First Edition,2017
Main references (sources)	<ol style="list-style-type: none"> 1. Fluid mechanics and hydraulic machines design, K Subramanya, Tata McGraw Hill Education. 2. Hydraulic design handbook, H. Wayne Coleman C. Y. Wei James E. Lindell, McGraw Hill Education.
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	<p>Hera's a summary of important URL related to this book:</p> <ul style="list-style-type: none"> • www.EasyEngineering.net <p>www.studocu.com/row/document/arba-minch-university/ pipe-flow-lecture-notes-</p>

Course Description Form

1. Course Name:	
Traffic engineering	
2. Course Code:	
CIE 3108	
3. Semester / Year:	
1st semester / 3rd year	
4. Description Preparation Date:	
13/9/2024	
Available Attendance Forms:	
Class	
Number of Credit Hours (Total) / Number of Units (Total)	
45/2	
5. Course administrator's name (mention all, if more than one name)	
Name: NL. Ishraq Hameed Naser Email: ishraqhameed0@gmail.com	
6. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> To enable students to formulate the fundamental principles of traffic flow, traffic characteristic measurements and their interpretation for infrastructure changes or development. To enable students to understand the design of traffic signal timing with a number of worked examples along with urban traffic control. To evaluate the road safety and driver behavior and its importance in accident prevention. Rolling Resistance, The Effect of Grade on Required Tractive Effort, The Effect of Grade on Required Tractive Effort, Coefficient of Traction, Drawbar Perform the traffic studies necessary before making changes to or designing new road infrastructure Exposing them to interdisciplinary approaches in solving engineering problems
7. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: Students will be asked to prepare a presentation OR poster and react to the interaction among students. research-based learning: the instructor will give students a published paper to be

discussed in class (open discussion class).

The instructor could give realistic cases or exercises in class and post-class and ask student solve these cases to enhance their critical thinking skills and improve the ability of student do calculations.

8. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	-	Subject details presentations overview	-	Nil
2	3	Understand the general information about Traffic Engineering.	Traffic element	Teacher-based learning	Nil
3	3	apply traffic flow theories and models to interpret measurement data.	Methods for measuring traffic flow: speed, density	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions and H.W
4	3	Equip students with a comprehensive understanding of traffic flow measurement.	Capacity, Level of Service, traffic studies, accidents,	Assessing Skill in Synthesis and Creative Thinking	Quiz
5	3	-	Mid Exam I	-	Midterm II
6	3	Recognize the connections between travel time, parking studies, and broader urban planning and transportation system	Travel time & Parking Studies	Teacher-based learning	Students' activities + direct questions and H.W
7	3	understanding the improve traffic flow and reduce the risk of accidents.	Road Characteristic - Sight distance Passing sight distance	Teacher-based learning	Students' activities + direct questions
8	3	understanding the improve traffic flow and reduce the risk of accidents	Road Characteristic -Decision Sight distance -Intersection sight distance	Teacher-based learning	Students' activities + direct questions
9	3	Learn to identify potential bottlenecks and areas in need of improvement	Level of service analysis	Teacher-based learning	Students' activities + direct questions and H.W
10	3	-	Continue	Teacher-based learning	

11	3	-	Mid Exam II	Teacher-based learning	Mid Exam II
12	3	Equip individuals with the knowledge and skills necessary for effective intersection design, ensuring safety, efficiency, and accessibility for all road user	Intersection Design and planning	Teacher-based learning	Students' activities + direct questions
13	3	Students will be able to design traffic signal	Traffic Signal Timing and optimum cycle time	Teacher-based learning	Quiz
14	3	Students will be able to design traffic signal	Continue	Teacher-based learning	Quiz
15	3	Understanding the distribution of headways allows for the analysis of patterns in traffic flow, which can be used to optimize schedules and improve service.	Headway time and Headway distribution	Teacher-based learning	Teacher & Students' activities + direct questions

9. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11
Open discussion and activity and H.W	3 hrs	2% (2)	9 and 14
Report	1 hr	3% (3)	12
Midterm Exam	2hrs	30% (30)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

10. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Highway Engineering, M. Rogers, Blackwell Publishing
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	<ol style="list-style-type: none"> 2. Highway Engineering, CA O’Flaherty, Edward Arnold 3. Highway Traffic Analysis and Design, RJ Salter and NB Hounsell, Macmillan
Main references (sources)	<ol style="list-style-type: none"> 1. Principles of Highway Engineering and Traffic Analysis, FL Mannering and WP Kilare Wiley 2. "Traffic Engineering" by Roger P. Roess, El S. Prassas, and William R. McShane 3. "Principles of Highway Engineering and Traffic Analysis" by Fred L. Mannering and Scot Washburn 4. "Traffic Flow Theory: Characteristic Experimental Methods, and Numerical Techniques" by Daiheng Ni 5. "Traffic Engineering Handbook" by (Institute of Transportation Engineers) 6. "Highway Capacity Manual" by Transportation Research Board (TRB)
Recommended books and references (scientific journals, reports...)	<p><u>Journals</u></p> <ol style="list-style-type: none"> 1. Transportation Research Part A: Policy and Practice 2. Transportation Research Part B: Methodological 3. Journal of Transportation Engineering Journal of Advanced Transportation
Electronic References, Websites	<ol style="list-style-type: none"> 1. Institute of Transportation Engineers (ITE) 2. https://www.ite.org/ 3. Federal Highway Administration (FHWA) 4. https://www.fhwa.dot.gov/ 5. Transportation Research Board (TRB) 6. https://www.trb.org/

Course Description Form

1. Course Name:	
Engineering Mathematics II	
2. Course Code:	
CIE 3201	
3. Semester / Year:	
6th / 3rd	
4. Description Preparation Date:	
01/09/ 2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Reem Siham Tawfeeq Email: engreemsiham86@gmail.com	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Enabling the student to quickly calculate or analyze quantities mathematically • Make the student able to accurately calculate the amount of engineering damage using numerical equations • Predicting the percentage of error that may accompany engineering work and thus calculating the safety coefficient • Preparing the student to deal with any change that may occur in the • statistical works related to the engineering aspect of the work, such as budget of quantities or spare orders. • Make the student able to deal with the timetables related to implementation of the engineering paragraphs and their sequence • Enable student to think and analyze engineering phenomena and their applications
9. Teaching and Learning Strategies	

Strategy	<ul style="list-style-type: none"> • Explaining the idea, giving solved examples during the lecture and linking them to practical reality, in addition to giving homework • Mid exam, quiz, homework, classwork, attendance • Class leadership skills, relying on immediate and surprising questions, as well as creating an interactive atmosphere within the class to achieve the goal of understanding the lesson in question and its objectives
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3		Fourier Series	White board	
Week 2	3		Even Periodic function	White board	
Week 3	3		Odd Periodic function	White board	
Week 4	3		Application in Mechanical Vibration;	White board	
Week 5	3		Partial differential Equations and Boundary value Problems	White board	
Week 6	3		One Dimensional wave equation	White board	
Week 7	3		1st Mid exam		
Week 8	3		Two dimensional wave equation	White board	
Week 9	3		Solutions of one dimensional wave equation;	White board	
Week 10	3		Solutions of one dimensional heat equation	White board	
Week 11	3		Power Series Solutions of differential Equations	White board	
Week 12	3		Torsion Vibration of circular shaft	White board	
Week 13	3		2nd Mid exam		

Week 14	3		Boundary value Problems	White board	
Week 15	3		Three dimensional heat equation	White board	
11. Course Evaluation					
<ul style="list-style-type: none"> • Quizzes, homework, attendance and interacts in the class (added marks such as bonus) • Mid. exam: 20% (two mid exam) • Final exam: 60% 					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			Epperson JF. An introduction to numerical methods and analysis. John Wiley & Sons; 2013 Jun 6.		
Main references (sources)			Dennis G. Zill and Warren S. Wright, "Advanced Engineering Mathematics", 2012.		
Recommended books and references (scientific journals, reports...)			Numerical Analysis, ninth edition Richard L. Burden. Youngstown State University.		
Electronic References, Websites					

Course Description Form

1. Course Name:	
Soil Mechanics II	
2. Course Code:	
CIE 3202	
3. Semester / Year:	
6 th /3 rd	
4. Description Preparation Date:	
1/9/2024	
5. Available Attendance Forms:	
In class Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
5/4	
7. Course administrator's name (mention all, if more than one name)	
Name: ahmad benwan hassan Email: ahmadbenwan99@gmailcom	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> • Acquire the background knowledge needed to complete more advanced courses in geotechnical engineering (Foundation Eng., Advance soil mechanics and modeling). • Provide a strong physical and analytical understanding of soil mechanics in order to function in the capacity of civil engineer in an engineering company dealing with soil investigation and civil works. • Provide a background to higher level courses involving soil mechanics, seepage and soil testing. • Conduct laboratory tests to determine key soil properties.
9. Teaching and Learning Strategies	

Strategy	Deliver core concepts, principles, and theories of soil mechanics through well-organized lectures. Use multimedia tools (slides, videos) to illustrate complex concepts and the use of quizzes, in-class exercises, and assignments to gauge understanding throughout the course. Arrange site visits to construction projects, water treatment facilities, or infrastructure projects.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Learn the settlement principles	Settlement	Teacher-based learning	-
2	3	Calculate the elastic settlement	Elastic Settlement	Class lecture	-
3	3	Solving the one dimensional consolidation theory	Consolidation Theory	Class lecture + In-Class Questions and Discussions.	Quiz
4	3	Calculate primary consolidation settlement and secondary consolidation settlement.	One-Dimensional consolidation	Class lecture+ Connection between Theory and Application	Interactive Discussions
5	3	Understand the consolidation in clay soils	Over consolidated Clay	Teacher-based learning	Report
6	3	analyze the stresses variation in soil	Stress in soil	Class lecture	Interactive Discussions
7	3	Understand the void ratio curve	Void Ratio Curve	Class lecture + In-Class Questions and Discussions	Assignment
8	3	-	Mid-term exam	-	Mid-term exam
9	3	Comprehensive knowledge in consolidation	Secondary Consolidation Settlement	Teacher-based learning	Quiz
10	3	Calculate the Coefficient of Consolidation	Coefficient of Consolidation	Class lecture	Interactive Discussions

11	3	Learn the relationship between the structure and the soil	Settlement under a Foundation	Class lecture+ Connection between Theory and Application	Report
12	3	Calculate Shear Strength and Direct shear	Shear Strength and Direct shear	Class lecture + In-Class Questions and Discussions	Interactive Discussions
13	3	Understand and Calculate Triaxial Shear	Triaxial Shear	Teacher-based learning	Assignment
14	3	Calculate the consolidation	Consolidated-Undrained & Unconsolidated-Undrained Triaxial	Class lecture+ Connection between Theory and Application	Interactive Discussions
15	3		Course review		

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quizzes	30 min	4%	3,9
Discussions	3 hrs	3%	4,6,10,12,14
Assignment and Reports	1 hr	3%	5,7,11,13
Mid-term exam	2 hrs	20%	8
Laboratory	2 hrs	10%	Through the course
Final exam	3 hrs	60%	16
Total assessment	100 % (100 mark)		

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of Geotechnical Engineering, Textbook by Das,2010
Main references (sources)	Craig's Soil Mechanics Textbook by Craig, 2004
Recommended books and references (scientific journals, reports...)	Advanced Soil Mechanics Textbook by Das, 2019
Electronic References, Websites	www.asce.com

Course Description Form

1. Course Name:	
Engineering Statistics	
2. Course Code:	
CIE 3208	
3. Semester / Year:	
6th / 3rd	
4. Description Preparation Date:	
01/9/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30/2	
7. Course administrator's name (mention all, if more than one name)	
Name: ishraq Hameed Naser Email: ishraqhameed0@gmail.com	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> To provide students with a solid foundation in statistical methods and techniques that are commonly used in engineering applications. To enable students to understand and apply statistical tools for analyzing data, making decisions, and solving engineering problems. To familiarize students with probability theory and its applications in engineering contexts. To develop students' skills in using statistical software for data analysis and interpretation. To cultivate critical thinking and problem-solving abilities through the application of statistical principles in engineering scenarios. To prepare students for real-world engineering challenges by equipping them with the necessary statistical knowledge and tools.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: Students will be asked to prepare a presentation OR poster and react to the interaction among students. research-based learning: the instructor will give students a published paper to be discussed in class (open discussion class). <p style="text-align: center;">The instructor could give realistic cases or exercises in class and post-class and ask student</p>

solve these cases to enhance their critical thinking skills and improve the ability of student do calculations.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understand basic statistical concepts and methods commonly used in engineering applications.	Introduction to Engineering Statistics - Basic principles of data collection and analysis		Nil
2	2	-	Continued		Nil
3	2	Apply statistical tools for data analysis, decision-making, and problem-solving in engineering scenarios.	Descriptive Statistics - Measures of central tendency - Frequency distributions and graphical representation of data - Data summarization and interpretation		Students' activities + direct questions
4	2	-	Continued		Quiz
5	2	Apply probability theory to analyze uncertainties and risks in engineering decision-making.	Probability Theory - Basic concepts of probability - Probability distributions (e.g., normal, binomial, Poisson, student - "t") Probability calculations and applications in engineering		Students' activities + direct questions
6	2	-	Continued		Students' activities + direct questions
7	2	Interpret and communicate statistical results effectively in engineering contexts.	Regression Analysis - Simple linear regression - Multiple regression analysis - Model building and i - Least square method interpretation	In Class	Teacher & Students' activities + direct questions
8		-	Continued	In Class	Quiz & H.W
9		-	1 st Mid term	In Class	Mid Term
10		Apply statistical tools for data analysis, decision-	Design of Experiments	In Class	In class Activities

		making, and problem-solving in engineering scenarios			
11			continued	In Class	H.w
12		Apply statistical tools for data analysis, decision-making, and problem-solving in engineering scenarios	Factorial designs and analysis	In Class	Quiz 2
13		-	Continue .	In Class	Teacher & Students' activities + direct questions
14		-	Midterm II		Midterm
15		Apply statistical tools for data analysis, decision-making, and problem-solving in engineering scenarios	ANOVA (Analysis of Variance) technique		Teacher & Students' activities + direct questions

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11
Open discussion and activity	3 hrs	2% (2)	9 and 14
Report	1 hr	3% (3)	6
Midterm Exam	2hrs	30% (30)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)

- "Engineering Statistics" by Douglas C. Montgomery, George C. Runger, and Norma F. Hubele.
- "Statistics for Engineers and Scientists" by William Navidi.
- "Probability and Statistics for Engineering and the Sciences" by Jay L. Devore.
- Applied Statistics and Probability for Engineers" by Douglas C. Montgomery and George C. Runge

Main references (sources)	-
Recommended books and references (scientific journals, reports...)	<ul style="list-style-type: none"> • Journal of Quality Technology • Journal of Statistical Software • Journal of Engineering Statistics • Quality and Reliability Engineering International • International Journal of Reliability, Quality and Safety Engineering
Electronic References, Websites	<ul style="list-style-type: none"> • National Institute of Standards and Technology (NIST) Engineering Statistics Handbook: Website: https://www.itl.nist.gov/div898/handbook/ • American Society for Quality (ASQ): ASQ offers a variety of resources, articles, and tools related to quality and statistics in engineering. Website: https://asq.org/quality-resources/statistics • Engineering Statistics Tutorial at Penn State University: An online tutorial that covers basic statistical concepts and their application in engineering. Website: https://online.stat.psu.edu/stat414/ • StatSoft Electronic Statistics Textbook: An online textbook that provides information on statistical concepts, methods, and applications in various fields including engineering. Website: https://www.statsoft.com/textbook/ • Engineering Statistics Resources at MIT OpenCourseWare: Provides access to course materials, lecture notes, and resources related to engineering statistics courses at MIT. Website: https://ocw.mit.edu/courses/engineering-systems-division/esd-36j-engineering-systems-analysis-for-design-spring-2008/lecture-notes/

Course Description Form

1. Course Name:					
Reinforced Concrete Design II					
2. Course Code:					
CIE 3104					
3. Semester / Year:					
6th /3rd					
4. Description Preparation Date:					
14/09/2024					
5. Available Attendance Forms:					
-					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60/3					
7. Course administrator's name (mention all, if more than one name)					
Name: Zainab Adel Mohammed Email: ezainab05@gmail .com					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> The module aims to know design of reinforced concrete elements. Enhance student understanding of the health and safety aspects associated with designing and constructing reinforced concrete structures. Provide students with the ability to use the methods of analysis and design of reinforced concrete building elements by ACI 318-19. Provide an understanding of the overall stability requirements of reinforced concrete buildings by ACI 318-19. Provide an understanding of the serviceability requirements of Concrete buildings to improve durability and sustainability aspects. 			
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: Students will be asked to prepare a presentation OR poster and react to the interaction among students. research-based learning: the instructor will give students a published paper to be discussed in class (open discussion class). The instructor could give realistic cases or exercises in class and post-class and ask students to solve these cases to enhance their critical thinking skills and improve the ability of students to do calculations. Invite a guest lecturer to update the students on the modern materials that used in structure industry and design. Site visit to enhance the knowledge of students. 			
10. Course Structure					
Week	Hours	Required	Unit or subject name	Learning	Evaluation

		Learning Outcomes		method	method
1	4	-	Subject details presentations overview	-	Nil
2	4	Satisfy the design of Shear in Beams	Design of Shear in Beams	Teacher-based learning	Nil
3	4	Satisfy the design of Shear in Beams	Design of Shear in Beams	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions
4	4	Satisfy the design of Torsion	Design of Torsion	Assessing Skill in Synthesis and Creative Thinking	Quiz
5	4	-	Mid Exam 1	-	Mid Exam I
6	4	Students will be able to design Reinforced Concrete Continuous Beams	Design of Reinforced Concrete Continuous Beams	Student-based learning (flipped learning)	Midterm 1
7	4	Students will be able to design Reinforced Concrete Continuous Beams	Continue	Teacher-based learning	Students' activities + direct questions
8	4	Students will be able to design Compression Members	Design of Compression Members	Students based learning (flipped learning)-presentation	Quiz
9	4		Design T-Section and Irregular Section	Teacher-based learning (traditional method)	Open discussion
10	4	-	Mid Exam II	-	Mid Exam II
11	4	Students will be able to design Short Columns with axial Load	Design Short Columns with axial Load	Student-based learning	Quiz
12	4	Students will be able to design Short Columns with axial Load	Continue		report
13	4	Students will be able to design Short Columns with uni-axial Load	Design Short Columns with uni-axial Load	Teacher-based learning and Flipped learning methods	Students' activities + direct questions
14	4	Students will be able to to design	Design Long Columns	Assessing Skill in Application and	Open discussion

		Long Columns		Performance	
15	4	-	recap	-	Nil

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11
Open discussion and activity	3 hrs	2% (2)	9 and 14
Report	1 hr	3% (3)	6
Midterm Exam	2hrs	30% (30)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<ol style="list-style-type: none"> 1. Nilson A.H., Darwin D., and Dolan C.W., Design of Concrete Structures, 13thEdition, McGraw Hill, 2004. 2. Darwin D., Dolan C.W., and Nilson A.H., Design of Concrete Structures, 15thEdition, McGraw Hill, 2016. 3. ACI 318, Building Code Requirements for Structural Concrete, USA, 2019.
Main references (sources)	<ol style="list-style-type: none"> 1. McCormac J.C. and Brown R.H., Design of Reinforced Concrete, 10 th Edition, Wiley, 2015. 2. Design of Reinforced Concrete by J.C. McCormac and R.H. Brown, Eighth Edition, John Wiley & Sons.
Recommended books and references (scientific journals, reports...)	<ol style="list-style-type: none"> 1. Nawy E.G., Reinforced Concrete: A Fundamental Approach, 6thEdition, Pearson 2008. 2. Wang C.-K., Salmon C.G. and Pincheira J., Parra-Montesinos G.J. Reinforced Concrete Design, 8thEdition, Oxford University Press, 2017.
Electronic References, Websites	https://www.thebuildingacademy.com/publisher/64/The_Concrete_Centre

Course Description Form

1. Course Name:	
Construction Methods	
2. Course Code:	
CIE 3206	
3. Semester / Year:	
2 nd / 2024-2025	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
In Class	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Saja Hadi Raheem Email: saja.h.raheem@aliraqia.edu.iq	
8. Course Objectives	
<p>Course Objectives</p>	<ol style="list-style-type: none"> 1. Introduce Project Planning and Management (General Information, Construction activities, construction project cash flow, Job Layout, Project Control during Construction: 2. Introduce Factors Affecting the Selection Construction Equipment (General Information, Stand Types of Equipment, Special Equipment, Replacem Parts, The Cost of Owning and Operating Construct Equipment, Economical Life of Construct Equipment, Sources of Construction Equipment. 3. Introduce Engineering Fundamental of Moving Ear General Information, Rolling Resistance, The Effect of Grade on Required Tractive Effort, The Effect of Gr on Required Tractive Effort, Coefficient of Tract Drawbar Pull, Rim Pull). 4. Study Tractors and Related Equipment (Tractor U Types of Tractors, Gradeability, Bulldozers, Front-Loaders). 5. Study Excavation Equipment (introduction of Po Shovels, The Size of Power Shovels, The Basic Parts Operation of a Shovel, Selecting the Type and Siz Power Shovels, Optimum Depth of Cut, The Output Power Shovels). 6. Introduce Soil Stabilization Compaction (Properties of Soils, Soil Stabilizat Specifications for Compacting Soils, Types Compacting Equipment, Pressure Bulb Theory of L Distribution).

- 7. Enable the student to analyze and estimating of potential cost of equipment.
- 8. Enable the student to use the chart production different types of construction equipment.
- 9. Provide a strong physical and analytical understand of the suitable procedure of estimating cost production procedures.
- 10. Provide a background to higher-level cou involving equipment and plant management.

9. Teaching and Learning Strategies

Strategy

- Homework and Assignments.
- In-Class Questions and Discussions.
- Seminars.
- Reports.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understand the general information about Project Planning Management.	Project Planning and Management	In Class	Nil
2	3	Be familiar with Construction Equipment (planning equipment utilization, and Safety).	Factors Affecting the Selection of Construction Equipment.		Direct Questions
3	3	Define and Calculate the Cost of Capital, Evaluating Investment Alternatives, Elements of Ownership Cost, Operating Cost, Replacement Decisions, Rent & Lease Considerations.	Factors Affecting the Selection of Construction Equipment		Quiz
4	3	Define Mobile Equipment Power Requirements and Calculate Required Power (Rolling Resistance- Grade resistance), Available Power (Rim pull-Drawbar Pull), Usable Power (Coefficient of Traction-Altitude Effect), and performance Charts.	Factors Affecting the Selection of Construction Equipment		Direct Questions
5	3	Know the type of tractors , Tractor Uses, Types of Tractors, Gradeability, Bulldozers, Front-End Loader.	Tractors and Related Equipment		Nil
6	3		Mid- Exam I		Mid-Exam1
7	3	Know the type of tractors , Tractor Uses, Types of Tractors, Gradeability, Bulldozers, Front-End Loader.	Tractors and Related Equipment		Student's activities +Direct questions

8		Know the type of tractors , Tractor Uses, Types of Tractors, Gradeability, Bulldozers, Front-End Loader.	Tractors and Related Equipment		Student's activities +Direct questions
9	3	Define and be familiar with the operating specifications, Basic Parts & Calculating Production of the hydraulic excavators.	Excavation Equipment		Quiz2
10	3	Define and be familiar with the operating specifications, Basic Parts & Calculating Production of the hydraulic excavators.	Excavation Equipment		Student's activities +Direct questions
11	3	Identify, formulate and solve engineering construction methods problems.	Soil Stabilization and Compaction		Student's activities +Direct questions
12	3	Identify, formulate and solve engineering construction methods problems.	Soil Stabilization and Compaction		Student's activities +Direct questions
13			Mid- Exam II		Mid-ExamII
14	3		Course Homework's solutions.		
15	3		Preparatory week before the final Exam.		

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hr.	10% (10)	3,9
Homework		2% (2)	2,8
Attendance	45	3% (3)	15 weeks
Midterm Exam	2hrs	25% (25)	7,13
Final Exam	3hrs	60% (60)	
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<p>1. Different models of There are various equipment models with movies and pictures in the (computer Lab).</p> <p>2. The websites related to the subject are available.</p> <p>3. Extracurricular activities.</p> <p>4. Construction Equipment Management for Engineers, Estimators, and Owners) Douglas Gransberg, 2006.</p>
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Sanitary Engineering II	
2. Course Code:	
CIE 3205	
3. Semester / Year:	
6 th /3 rd	
4. Description Preparation Date:	
1/9/2024	
5. Available Attendance Forms:	
In class Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
5/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Asst.Prof.Dr. Ibtihaj Abdulwahhab Abdulrazzak Email: ibtihaj.abdulwahhab@aliraqia.ed.iq	
8. Course Objectives	
Course Objectives	<ol style="list-style-type: none"> 1. Introduce basic definitions and introductory concepts of wastewater. 2. Introduce wastewater properties and quantities for different uses and consumptions. 3. Explain wastewater impurities and treatment methods. 4. Understanding wastewater flow in sewer systems. 5. Explain waste water treatment methods. 6. Environmental strategies to avoid sewage pollution. 7. Provide a background to higher level courses involving water and waste water treatment. 8. Understanding de- oxygenation rate. 9. Introduces dry weather flow and storm water quantity. 10. Sewer system layout and components. 11. Understanding self-purification in natural systems.
9. Teaching and Learning Strategies	
Strategy	Deliver core concepts, principles, and theories of sanitary through well-organized lectures. Use multimedia tools (slides, videos) to illustrate complex concepts and the

use of quizzes, in-class exercises, and assignments to gauge understanding throughout the course. Arrange site visits to construction projects, water treatment facilities, or infrastructure projects.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	-	Introduction to Sanitary wastewater	Teacher-based learning	-
2	3	Calculating the BOD and dissolved oxygen	Biochemical oxygen demand	Class lecture	-
3	3	Calculate the wastewater amount generated	Dry weather flow, storm water quantity	Class lecture + In-Class Questions and Discussions.	Quiz
4	3	Different sewer apparatus and their uses and locations	Sewer system components	Class lecture+ Connection between Theory and Application	Interactive Discussions
5	3	Calculating the diameters and slopes of the	Hydraulic design of sewers	Teacher-based learning	Report
6	3	Calculate the elevation of the sewer and slope	Invert level for sewer pipes	Class lecture	Interactive Discussions
7	3	Study the ability of the river to deal with the contaminants	Self-purification of Natural Streams	Class lecture + In-Class Questions and Discussions	Assignment
8	3		Mid-term exam	-	Mid-term exam
9	3	Learn the units of the treatment plant and purpose of each one	Introduction to design of wastewater treatment plant units	Teacher-based learning	Quiz
10	3	Design the aeration tank and amount of air required	Aeration tanks	Class lecture	Interactive Discussions
11	3	Learn the principles of this process in removing organic materials	Activated sludge process	Class lecture+ Connection between Theory and Application	Report
12	3	Calculate F/M ratio, sludge age and all other factors	Activated sludge design	Class lecture + In-Class Questions and Discussions	Interactive Discussions

		controlling the process			
13	3	Calculate the tank dimensions	Trickling filter	Teacher-based learning	Assignment
14	3	Calculate the sludge amounts and disposal techniques	Sludge Treatment and disposal	Class lecture+ Connection between Theory and Application	Interactive Discussions
15	3		Course review		

11.Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quizzes	30 min	4%	3,9
Discussions	3 hrs	3%	4,6,10,12,14
Assignment and Reports	1 hr	3%	5,7,11,13
Mid-term exam	2 hrs	20%	8
Laboratory	2 hrs	10%	Through the course
Final exam	3 hrs	60%	16
Total assessment	100 % (100 mark)		

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Water Supply and Sewerage, 5 th edition by E.W. Steel and T.J. McGhee
Main references (sources)	Metcalf & Eddy - Wastewater Engineering - Treatment and Reuse (4th edition) (2004)
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.researchgate.net/publication/30876209 Waste_Water_Treatment

Course Description Form

1. Course Name:	
Hydraulics	
2. Course Code:	
CIE 3207	
3. Semester / Year:	
6th /3rd	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Natiq Abbas Fadhil Email: natiq.a.fadhil@aliraqia.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> The module aims to develop the ability for student fluids and fluid flow. Enhance student understanding of the flow in pipe, connected and the design pipes for network. Provide students with the ability to use the methods of analysis and design of types of connect (parallel, series and compound). Provide students with the ability to use the methods of analysis and design of types open channel. Provide an understanding of Calculating flows and energy losses in pipes and open channels (rivers, canals, etc.).
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: Students will be asked to prepare a presentation OR poster and react to the interaction among students. The instructor could give realistic cases or exercises in class and post-class and ask students to solve these cases to enhance their critical thinking skills and improve the ability of students to do calculations. Invite a guest lecturer to update the students on the modern steel structure industry. Site visit to enhance the knowledge of students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Satisfy the hydraulics	Review about fluid mechanics and Introduction of Hydraulics	-	Nil
2	3	-	Flow in pipes	Teacher-based learning	Nil
3	3	Hydraulics	Head losses (major and minor losses)	Teacher-based learning	Students' activities + direct questions
4	3	-	Network of pipes (series and parallel)	Teacher-based learning and Assessing Skill in Synthesis	quiz
5	3	-	Network of pipes (Branch connected)	Teacher-based learning	Nil
6	3	-	Monthly Exam	-	Mid Exam I
7	3	Type of hydraulics	Open channel	Teacher-based learning	Nil
8	3	-	Regulator and Hydraulic Design	Teacher-based learning	Nil
9	3	Students will be able to design type of channel	Open channels	Teacher-based learning (traditional method)	Open discussion
10	3	-	Hydraulic jumps	Teacher-based learning	Nil
11	3	-	The spillway	Student-based learning	Quiz and Open discussion
12	3	-	Mid Exam II	-	Mid Exam II
13	3	Students will be able to design the spillway	Types of Spillways	Teacher-based learning and learning methods	Students' activities + direct questions
14	3	-	A culvert	Teacher-based learning	Nil
15	3	-	Presentations	-	Report

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3 and 10
Open discussion and activity	3 hrs	2% (2)	9 and 11

Report	1 hr	3% (3)	15
Midterm Exam	2hrs	30% (30)	6 and 12
Final Exam	3hrs	60% (60)	16
Total assessment	100% (100 Marks)		

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<ol style="list-style-type: none"> 1. Hydraulics & Fluid Mechanics including Hydraulics Machines, Dr. P.N Modi Dr. S.M Seth ,Twenty First Edition,2017
Main references (sources)	<ol style="list-style-type: none"> 1. Fluid mechanics and hydraulic machines design, K Subramanya, Tata McGraw Hill Education. 2. Hydraulic design handbook, H. Wayne Coleman C. Y. Wei James E. Lindell, McGraw Hill Education.
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	<p>Hera's a summary of important URL related to this book:</p> <ul style="list-style-type: none"> • www.EasyEngineering.net <p>www.studocu.com/row/document/arba-minch-university/ pipe-flow-lecture-notes-</p>

Course Description Form

1. Course Name:	
Computer Application in Civil Engineering	
2. Course Code:	
CIE-4105	
3. Semester / Year:	
7th /4th	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Lect. Yasir Wisam Abduljaleel Email: yasir.wisam@aliraqia.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> ▪ To master the SAP2000 interface and tools, enabling students to effectively navigate and utilize its core features for structural modeling and analysis. ▪ To understand the behavior of structural elements, including beams, columns, and trusses, and apply structural design principles in civil engineering projects. ▪ To apply various loads and boundary conditions, such as dead, live, wind, and seismic loads, while understanding their influence on structural behavior. ▪ To perform structural analysis using different methods, including linear static, dynamic, and nonlinear analysis, and to interpret results ensuring structural integrity and safety. ▪ To design structures in compliance with engineering codes like AISC, ACI, and Eurocode, ensuring adherence to safety standards and best practices in civil engineering. ▪ To utilize advanced modeling and simulation techniques within SAP2000 to simulate complex structures and anticipate potential design issues. ▪ To develop project-based learning skills, working on real-world civil engineering projects from start to finish, fostering teamwork and practical problem-solving. ▪ To integrate SAP2000 with other software tools, such as AutoCAD and Revit, exploring workflows for multidisciplinary design and analysis. ▪ To cultivate troubleshooting and problem-solving skills, equipping students to address challenges in structural design and analysis effectively.

- To promote professional and ethical development, emphasizing the importance of public safety, ethical considerations, and ongoing learning for a successful career in civil engineering.

9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> ➤ Theoretical lectures on structural analysis and SAP2000 features. ➤ Practical laboratory sessions for hands-on experience with SAP2000. ➤ Group discussions and brainstorming to encourage collaboration and problem-solving. ➤ Case studies to apply SAP2000 in real-world civil engineering scenarios.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Understanding the principles of structural analysis and design.	Introduction to SAP2000, structural analysis basics, overview of civil engineering applications.	-	Quizzes, homework, class participation
2	3	Learning the various features of SAP2000 for modeling and analysis.	Modeling techniques in SAP2000 for simple structures, creating basic models.	Teacher-based learning	Quizzes, homework, practical exercises
3	3	Gaining proficiency in creating models and running simulations.	Structural analysis in SAP2000, load cases, and structural elements.	Assessing Skills in Analysis and Critical Thinking	Quizzes, homework, group projects
4	3	Developing skills for designing and analyzing civil engineering structures	Structural design in SAP2000, basic design principles and applying codes.	Assessing Skill in Synthesis and Creative Thinking	Quizzes, homework, practical exercises
5	3	Fostering collaborative skills through group projects.	SAP2000 for building structures, design and analysis of beams and columns.	Assessing Skill in Synthesis and Creative Thinking	Group projects, class discussions
6	3	Strengthening the ability to interpret simulation results.	SAP2000 for bridge structures, design and analysis of trusses and frames.	Student-based learning (flipped learning)	Quizzes, homework, reports

7	3	Building confidence in using computer software for civil engineering projects.	Advanced modeling techniques in SAP2000, working with complex geometries.	Teacher-based learning	Group projects, practical exercises
8	3	Increasing students' proficiency in using SAP2000	Mid-term exam, reviewing key concepts and practical skills learned so far.	Students based learning (flipped learning)-presentation	Written exam
9	3	Building confidence in using computer software for civil engineering projects.	Analyzing results and interpreting data, stress analysis, and load distribution.	Teacher-based learning (traditional method)	Quizzes, homework, reports
10	3	Promoting creativity and innovation in civil engineering design	SAP2000 for specialized civil engineering projects, such as retaining walls and foundations.	-	Group projects, class discussions
11	3	Understanding the application of SAP2000 for different civil engineering projects (e.g., buildings, bridges).	Collaborative project work in SAP2000, focusing on teamwork and communication.	Student-based learning	Group projects, reports
12	3	Encouraging teamwork and collaboration in solving engineering problems.	Final project preparation, focusing on project planning and execution.	Teacher-based learning and Flipped learning methods	Group projects, presentations
13	3	Building report writing skills for structural analysis projects.	Report writing and documentation, preparing project reports and presentations.	Teacher-based learning and Flipped learning methods	Reports, presentations
14	3	Building report writing skills for structural analysis projects.	Final project presentations, showcasing student work and project outcomes.	Assessing Skill in Application and Performance	Project presentations, feedback

15	3	-	Final exam, assessing comprehensive knowledge of course concepts.	-	Written exam, course feedback
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11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	10% (10)	3, 8 and 11
Open discussion and activity	3 hrs	5% (5)	1 to 13
Report	1 hr	5% (5)	12 to 14
Midterm Exam	2hrs	20% (20)	8
Final Exam	3hrs	60% (60)	15
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of Structural Analysis" by Kenneth Leet, Chia-Ming Uang, and Joel Lanning
Main references (sources)	"Structural Analysis and Design with SAP2000" by Ken W. Snyder
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	<ul style="list-style-type: none"> • SAP2000 Forum on CSI Website • CSI Knowledge Base

Course Description Form

1. Course Name:	
GIS and Remote Sensing	
2. Course Code:	
CIE 4206	
3. Semester / Year:	
8th/4th	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/2	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Salam J. Bash AlMaliki Email: salambash2000@yahoo.com	
8. Course Objectives	
Course Objectives	<p>The course supplies the students with:</p> <ul style="list-style-type: none">• The course aims to introduce the students to remote sensing (RS) and Geographical Information Systems (GIS), and to learn how remote sensing systems are used to acquire data, how these data may be analyzed, and how the information is used in studies of the natural and human environments.• At the end of the course, the students should have an introductory knowledge of the different types of remote sensing imagery that are available and the analysis procedures used for

	studying specific environmental problems.
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9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> • Homework and Quizzes. Homework that are collected during a week after the assignment date. In addition, TWO 30-minute quizzes and/or homework. • Grading. Some partial credit are given for the proper solution method. Answers with incorrect units, with incorrect significant figures, that are illegible, or without the necessary calculation steps will not get full credit. • Projects. In groups of three (maximum), you will complete ONE projects. These will include significant analyses and written reports. • Individual effort assessment. At the end of the semester, team members are asked to evaluate themselves and other members of the team confidentially. A student's individual grade for the projects are raised or lowered from the group grade based on these evaluations.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Nature of Geographic Information, Data Representation,	Class discussions	Oral
2	3			Class discussions	
3	6		Remote sensing & GIS,	Class discussions	
5	3		Introduction to spatial data models,		
6	3		Recap +problem solving	Q/A session	
7	3		1 st . month exam	---	
8	3			Class discussions	

9	3		Vector Models, Data		Class discussions	Oral
10	3		Linking attribute data with spatial data,			
11	3		GIS Database Creation and Maintenance,		Class discussions+ video presentation	
12	3		Statistical Operations & Point Pattern Analysis,		Class discussions	
13	3		2 nd . Month exam		Q/A session	Written exam
14+15	3		Some applications of GIS in Civil Engineering.		Class discussions	

11. Course Evaluation

Homework	15%	
Quizzes	5%	
Semester`s final exams	15 %	
Project:	5%	
Final Exam	60%	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	----
Main references (sources)	
Recommended books and references (scientific journals, reports...)	ULRIK MÅRTENSSON, 2011. Introduction to Remote Sensing and Geographical Information Systems. UNIVERSITY OF LUND SWEDEN.
Electronic References, Websites	A variety of modern websites

Course Description Form

1. Course Name:	
Airport Transportation	
2. Course Code:	
CIE 4107	
3. Semester / Year:	
8 th /4 th	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Assist lec. Huda Qasim Email: hudamuat@gmail.com	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> The module aims to develop the ability to conduct General ,Transportation systems, Typical air trip, The air age, World civil air transport, Geographic distribution of world air transport, General aviation, Air ports. Enhance student understanding of Airport Classification (Community size and airport types, Airport classification according to types of services, Functional classification of airports, airport classification for the purpose of stipulating geometric standards). Provide students with the ability to use the methods of analysis and geometric design (Element of an airport, runway and taxi way width, Runway profile and runway length, Runway orientation). Provide an understanding of Airport capacity (Ultimate and Practical runway capacity, Runway arrangement factors effecting runway capacity, Practical annual capacity and practical hourly capacity). Provide an understanding of Airfield Pavements (Highway and airfield Pavements compared, Design of rigid airport pavements, Methods of rigid airport pavement, Junction of flexible and rigid pavements, Application, Design of Flexible airport pavement).
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> Teacher-based learning: teacher explains lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: Students will be asked to prepare a presentation OR poster and react to the interaction among students. research-based learning: the instructor will give students a published paper to be discussed in class (open discussion class). The instructor could give realistic cases or exercises in class and post-class and

- ask students to solve these cases to enhance their critical thinking skills and improve the ability of students to do calculations.
- Invite a guest lecturer to update the students on the modern steel structure industry.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	-	Topic Details Presentations Overview	-	Nil
2	3	Transportation System	Typical Air Trip	Teacher-based learning	Nil
3	3	Airport Classification	Airport Classification According to Type of Services ,Functional of airport, community size and airport types	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions
4	3	Airport Characterizes	Related to Airport Design Characterizes of principle transport aircrafts	Assessing Skill in Synthesis and Creative Thinking	Quiz
5	4	-	Mid Exam 1	-	Mid Exam I
6	4	Gear Configuration	Static weight on main gear, nose gear, Turning Radii	Student-based learning (flipped learning)	Midterm 1
7	4	Airport Planning	Size and Type of airport	Teacher-based learning	Students' activities + direct questions
8	4	Analytical methods	Air Travel demand for casting	Students based learning (flipped learning)-presentation	Quiz
9	4	Students will be able to Geometric design	Element of an airport , runway and taxi way width	Teacher-based learning (traditional method)	Open discussion
10	4	-	Mid Exam II	-	Mid Exam II
11	4	Runway Profile	Runway length and Orientation	Student-based learning	Quiz
12	4	Airport Capacity	Ultimate and Practical runway capacity		report
13	4	Students will be able to Airfield Pavements	Highway and airfield Pavements compared	Teacher-based learning and Flipped	Students' activities + direct

				learning methods	questions
14	4	Students will be able to design of rigid airport pavements	Continued	Assessing Skill in Application and Performance	Open discussion
15	4	Design of Flexible airport pavement	Application	Teacher-based learning	Nil

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11
Open discussion and activity	3 hrs	2% (2)	9 and 14
Report	1 hr	3% (3)	6
Midterm Exam	2hrs	30% (30)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<ol style="list-style-type: none"> 1) Yoder , E. J. & Wi czek , M. W. " Principles of Pavement Design " 2nd edition-1975. 2) Huang, Y.H., "Pavement Analysis and Design", Prenc e Hall, New Jersey, 1993. 3) Horonjeff, R. and Mc-Kelvey , X." Planning and Design of Airports" , 4th edi on ,McGrew Hill, 1994. 4) Richard H., "Standard Handbook for Civil Engineers" ,sec on 18, McGrew Hill, 2004 5) <i>Alexander T. Wells, & Seth B. Young</i> "Airport planning and Management" 5ed , McGrew Hill, 2004
Main references (sources)	<ol style="list-style-type: none"> 1) AASHTO, "AASHTO Guide for Design of Pavement Structures", 1993. 2) Ashford, N., and P. H. Wright. 1992. <i>Airport Engineering</i>, 3rd ed. New York: John Wiley & Sons. 3)International Civil Aviation Organization (ICAO). International Standards and Recommended Practices, Aerodromes, Annex 14 to the Convention on International Civil Aviation, Volume 1 Aerodrome Design and Operations, 3rd edition, Interna-tional Civil Aviation Organization, 2004.

Course Description Form

1. Course Name:	
GIS and Remote Sensing	
2. Course Code:	
CIE 4206	
3. Semester / Year:	
8th/4th	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/2	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof. Dr. Salam J. Bash AlMaliki Email: salambash2000@yahoo.com	
8. Course Objectives	
Course Objectives	<p>The course supplies the students with:</p> <ul style="list-style-type: none">• The course aims to introduce the students to remote sensing (RS) and Geographical Information Systems (GIS), and to learn how remote sensing systems are used to acquire data, how these data may be analyzed, and how the information is used in studies of the natural and human environments.• At the end of the course, the students should have an introductory knowledge of the different types of remote sensing imagery that are available and the analysis procedures used for

	studying specific environmental problems.
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9. Teaching and Learning Strategies

Strategy	<ul style="list-style-type: none"> • Homework and Quizzes. Homework that are collected during a week after the assignment date. In addition, TWO 30-minute quizzes and/or homework. • Grading. Some partial credit are given for the proper solution method. Answers with incorrect units, with incorrect significant figures, that are illegible, or without the necessary calculation steps will not get full credit. • Projects. In groups of three (maximum), you will complete ONE projects. These will include significant analyses and written reports. • Individual effort assessment. At the end of the semester, team members are asked to evaluate themselves and other members of the team confidentially. A student's individual grade for the projects are raised or lowered from the group grade based on these evaluations.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		Nature of Geographic Information, Data Representation,	Class discussions	Oral
2	3			Class discussions	
3	6		Remote sensing & GIS,	Class discussions	
5	3		Introduction to spatial data models,		
6	3		Recap +problem solving	Q/A session	
7	3		1 st . month exam	---	
8	3			Class discussions	

9	3		Vector Models, Data		Class discussions	Oral
10	3		Linking attribute data with spatial data,			
11	3		GIS Database Creation and Maintenance,		Class discussions+ video presentation	
12	3		Statistical Operations & Point Pattern Analysis,		Class discussions	
13	3		2 nd . Month exam		Q/A session	Written exam
14+15	3		Some applications of GIS in Civil Engineering.		Class discussions	

11. Course Evaluation

Homework	15%	
Quizzes	5%	
Semester`s final exams	15 %	
Project:	5%	
Final Exam	60%	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	----
Main references (sources)	
Recommended books and references (scientific journals, reports...)	ULRIK MÅRTENSSON, 2011. Introduction to Remote Sensing and Geographical Information Systems. UNIVERSITY OF LUND SWEDEN.
Electronic References, Websites	A variety of modern websites

Course Description Form

1. Course Name:	
Numerical Analysis	
2. Course Code:	
CIE 4205	
3. Semester / Year:	
8th/4th	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
-	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Saja Hadi Raheem Email: saja.h.raheem@aliraqia.edu.iq	
8. Course Objectives	
<p>Course Objectives</p>	<ol style="list-style-type: none"> 1. Deriving appropriate numerical methods to solve algebraic and transcendental equations. 2. Developing appropriate numerical methods to approximate a function. 3. Developing appropriate numerical methods to solve a differential equation. 4. Deriving appropriate numerical methods to evaluate a derivative at a value. 5. Deriving appropriate numerical methods to solve a linear system of equations. 6. Performing an error analysis for various numerical methods. 7. Proving results for various numerical finding methods. 8. Deriving appropriate numerical methods calculate a definite integral
9. Teaching and Learning Strategies	
<p>Strategy</p>	<ul style="list-style-type: none"> • Homework and Assignments. • In-Class Questions and Discussions. • Seminars. • Reports.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Be familiar with Gauss elimination, gauss Jordan, gauss seidel method and L&U method.	Metrics; solutions of ordinary differential equations.	In Class	Nil
2	3	Be familiar with Gauss elimination, gauss Jordan, gauss seidel method and L&U method.	Metrics; solutions of ordinary differential equations.		Nil
3	3	Be familiar with numerical methods.	Introduction to numerical methods; difference table		Quiz
4	3	Be familiar with numerical methods.	Introduction to numerical methods; difference and divided table.		Direct Questions
5	3	Be familiar with numerical interpolation	Linear interpolation.		Student's activities +Direct questions
6	3		Mid- Exam I		Mid-Exam1
7	3	Be familiar with numerical interpolation	Linear interpolation.		
8	3	Be familiar with numerical integration and differentiation.	Numerical integration.		
9	3	Be familiar with numerical integration and differentiation.	Numerical integration.		Quiz1
10	3	Be familiar with numerical solution of non linear equations.	Solution of non linear equations.		Student's activities +Direct questions
11	3	Be familiar with numerical solution of non linear equations	Solution of non linear equations.		Student's activities +Direct questions
12			Mid- Exam II		Mid-ExamII
13	3	Be familiar with calculation and interpretation of errors in numerical methods.	Numerical solutions of ordinary differential equations.		Quiz2
14	3	Be familiar with calculation and interpretation of errors in numerical methods.	Numerical solutions of ordinary differential equations.		activities +Direct questions
15	3		Preparatory week before the final Exam.		

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hr.	10% (10)	3,9
Homework		2% (2)	2,8

Attendance	45	3% (3)	15 weeks
Midterm Exam	2hrs	25% (25)	6,12
Final Exam	3hrs	60% (60)	
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	- Chapra, Steven C, and Canale, Raymond P. (2009)"Numerical Methods for Engineers", Mc Graw-Hill, New York.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:					
Quantity Survey					
2. Course Code:					
UICE803					
3. Semester / Year:					
7th/ 4th					
4. Description Preparation Date:					
01/09/2024					
5. Available Attendance Forms:					
-					
6. Number of Credit Hours (Total) / Number of Units (Total)					
45/3					
7. Course administrator's name (mention all, if more than one name)					
Name: Saja Hadi Raheem Email: saja.h.raheem@aliraqia.edu.iq					
8. Course Objectives					
Course Objectives				<ul style="list-style-type: none"> Students must have got good knowledge to prepare an estimated cost of work. In addition, the student should have knowledge computing the amount of construction work and quantity and specifications of the construction materials. 	
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> Homework and Assignments. In-Class Questions and Discussions. Seminars. Reports. 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Recognize the theories and methods used in the quantity survey and contract management.	Introduction to quantity surveying, roles, and tasks of quantity surveying engineer.	In Class	Nil

		Learn how to use the theories methods used in quantity surveying and contract management			
2	3	Recognize the theories and methods used in the quantity survey and contract management. Learn how to use the theories methods used in quantity surveying and contract management	Introduction to quantity surveying, roles, and tasks of quantity surveying engineer.		Student's activities + Direct questions
3	3	1. Preparing an Approximate estimate. 2. Preparing an earthwork Estimate. 3. Preparing an estimated cost of work. 4. Preparing the bill for the quantity of the project. 5. Type of contract. 6. Knowledge about Contract bid documents. 7. Recognize the theories and methods used in the quantity survey and contract management Learn how to use the theories and methods used in quantity survey and contract management.	Approximate Estimate		Quiz
4	3	=	Approximate Estimate		Student's activities + Direct questions
5	3	=.	Approximate Estimate		Student's activities + Direct questions
6	3	=	Detailed estimate.		Nil
7	3	=	Mid-Term Exam		Mid I
8	3	=	Detailed estimate.		Student's activities + Direct questions
9	3	=	Detailed estimate.		Quiz 2
10	3	=	Detailed estimate.		Student's activities + Direct questions
11	3	=.	Detailed estimate.		Student's activities + Direct questions
12	3	=	Detailed estimate.		Student's activities

					+Direct Questions
13	3	=	Mid -Exam		Mid II
14	3	=	Detailed estimate.		Student's activities +Direct questions
15	3	=	Detailed estimate.		Student's activities +Direct questions
16	3		Preparatory week before the final Exam.		

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hr.	10% (10)	3,9
Homework		2% (2)	2,8
Attendance	45	3% (3)	15 weeks
Midterm Exam	2hrs	25% (25)	7,13
Final Exam	3hrs	60% (60)	
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Elements of Quantity Surveying)) Br: A.J Willis and C.J Willis, London (7th ed.) 2- Quantity Surveying for Buildings and Civil eng. Works.) By: P.L Bhasin and S. Chand, New Delhi 1975. 3-Civil Estimating, Costing and Valuation)) By: Amarjit Aggarwal S.Kumar, New Delhi 19997. 4- Quantity Surveying and Costing 1& 2)) By G.C Malhotra, Khanna Publishers 1986.
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Steel Design I	
2. Course Code:	
CIE 4104	
3. Semester / Year:	
7th/ 4th	
4. Description Preparation Date:	
01/09/2024	
5. Available Attendance Forms:	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Omar Riyadh Khaleel Email: omar.r.khaleel@aliraqia.edu.iq	
8. Course Objectives	
Course Objectives	<ul style="list-style-type: none"> To enhance the knowledge of civil engineering students in sustainable structural steel design of steel structures including materials properties. To provide the student with realization of the importance of selection the proper methods of design. To educate the student in dealing with design problems and selecting the proper methods of solutions. To use the current design practice in the industry of civil engineering. To focus on sustainability aspect in design. To use recent aspects of design with considering health and safety factors.
9. Teaching and Learning Strategies	
Strategy	<ul style="list-style-type: none"> Teacher-based learning: teacher explain lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: student will be asked to prepare presentation OR poster and react the interactive among students. research-based learning: instructor will give students published paper to be discussed in class (open discussion class). Instructor could give realistic cases or exercises in-class and post-class and ask student to solve these cases in order to enhance the critical thinking skills and improve the ability of students to do calculations. Invite guest lecturer to update the students with modern steel structure industry. Site visit to enhance the knowledge of students.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	-	Module details presentation + Review of Pre-requisite modules		Nil
2	4	Student will be able to know the properties of steel and types of steel sections and uses.	Chapter 1: Steel Buildings and Design Criteria (Introduction, steel types, Types of Steel Buildings, Building Codes and Design Criteria (ASTM)).	Teacher-based learning	Nil
3	4	Students will be able to know the behaviour of steel structures under different actions	Chapter 2: Mechanical Properties of Structural Steel (Variation of material properties, Characteristic strength, Design strength, other design values for steel, Corrosion and durability of steelwork, Brittle fracture, Residual stresses, Fatigue, Stress concentrations, Failure criteria for steel	Flipped learning	Quiz
4	4	Students will be able to evaluate the applied actions on steel structures	Chapter 3: Design Actions (Dead Loads, Live Load, Combined Dead and Live Load, Snow Loads, Soil Lateral Load, Flood Load, Rain Load, Wind Load, Seismic Load, Load Combinations, Service criteria)	Research based learning	Quiz

5	4	Students will be able to analyze and design tension members	Chapter 4: Design of Steel Members (Tension Members): Concentrically loaded tension members; Eccentrically and locally connected tension members; Stress concentrations;	Teacher-based learning	Quiz
6	4	Students will be able to analyze and design tension members	Chapter 4: Design of Steel Members (Tension Members): Concentrically loaded tension members; Eccentrically and locally connected tension members; Stress concentrations;	Students based learning (flipped learning)	Midterm 1
7	4	Students will be able to analyze and design compression members	Chapter 5: Design of Steel Members (compression Members): Concentrically loaded tension members; Eccentrically and locally connected compression members; Stress concentrations;	Teacher-based learning	Quiz
8	4	Students will be able to analyze and design compression members	Chapter 5: Design of Steel Members (compression Members): Concentrically loaded tension members; Eccentrically and locally connected compression members; Stress concentrations;	Students based learning (flipped learning)-presentation	Quiz

9	4	Students will be able to analyze and design flexural members	Chapter 6: Design of Steel Members (Flexural Members): Design of Beams; and symmetrical Bending;	Teacher-based learning (traditional method)	Open discussion
10	4	Students will be able to analyze and design flexural members	Chapter 6: Design of Steel Members (Flexural Members): Design of Beams; and Unsymmetrical Bending;		Quiz
11	4	Students will be able to analyze and design flexural members	Chapter 4: Design of Steel Members (Flexural Members): Design of Beams; and Unsymmetrical Bending;	Student based learning with Industry visitor class	Quiz
12	4	Students will be able to analyze and design steel beams for shear and torsion	Chapter 5: Design of Steel Beams for Shear and Torsion		report
13	4	Students will be able to analyze and design steel beams for shear and torsion	Chapter 6: Design of Steel Members (Combined Axial and Flexural Members)	Teacher-based learning and Flipped learning method	Midterm 2
14	4		continued	Site visit	
15	4		recap		

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hr	10% (15)	3- 13
Open discussion and activity	3 hr	5% (15)	6 and 13
Report	1 hr	5% (10)	6
Midterm Exam	2hr	20% (10)	9
Final Exam	3hr	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Steel Structures Design, Alan Williams; Copyright © 2011 by McGraw-Hill Companies.
Main references (sources)	<ul style="list-style-type: none"> • Structural Design of Steelwork to EN 1993 and EN 1994, Third edition. L.H. Martin Bsc, PhD, CEng FICE J.A. Purkiss Bsc (Eng), PhD, Copyright © 2008, L.H. Martin and J.A. Purkiss. All rights reserved. • Steel Designers' Handbook. BRANKO GORENC, RON TINYOU & ARUN SYAM. ©B.E. Gorenc, R. Tinyou and A.A. Syam 2005. • Steel Structures: Practical design studies. Second edition. T.J.MacGinley • Arya, C. (2009), Design of Structural Elements (3rd ed), Taylor & Francis. Sustainable Steel Buildings A Practical Guide for Structures and Envelopes. This edition first published 2016 © 2016 John Wiley & Sons, Ltd.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.ideastatica.com/

Course Description Form

1. Course Name:					
Transportation Engineering I					
2. Course Code:					
CIE 4102					
3. Semester / Year:					
7th /4th					
4. Description Preparation Date:					
01/09/2024					
5. Available Attendance Forms:					
-					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60/4					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Mohammed Hadi Email: mohammed.h.nahi@aliraqia.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> To enable students to formulate the fundamental principles of traffic flow, traffic characteristic measurements and their interpretation for infrastructure changes or development. To enable students to understand the design of traffic signal timing with several worked examples along with urban traffic control. To evaluate the road safety and driver behaviour and its importance in accident prevention. 			
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> Teacher-based learning: teacher explain lectures pre-class (lecture notes and videos) and in-class (traditional lecture) Student-based learning: student will be asked to prepare presentation OR poster and react the interactive among students. Instructor could give realistic cases or exercises in-class and post-class and ask student to solve these cases in order to enhance the critical thinking skills and improve the ability of students to do calculations. Invite guest lecturer to update the students with modern traffic control strategies. 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understand the design of traffic signal timing	Methods for measuring traffic flow	-	Nil

		programmes for junctions. Perform the traffic studies necessary before making changes to or designing new road infrastructure			
2	4	Understand the design of traffic signal timing programmes for junctions.	Speed and other characteristics of traffic, capacity, Level of Service, traffic studies, accidents, impacts of new infrastructure.	Teacher-based learning	Nil
3	4	Perform the traffic studies necessary before making changes to or designing new road infrastructure	Continued	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions
4	4	Exposing them to interdisciplinary approaches in solving engineering problems Exposing them to interdisciplinary approaches in solving engineering problems	Traffic Signal Timing Calculations, Saturation flow, optimum cycle time.	Assessing Skill in Synthesis and Creative Thinking	Quiz
5	4	Exposing them to interdisciplinary approaches in solving engineering problems	Effective green period and dealing with right turning traffic.	-	Mid Exam I
6	4	Exposing them to interdisciplinary approaches in solving engineering problems	Continued	Student-based learning (flipped learning)	Midterm 1

7	4	Assess and conceptualize driver behaviour when developing engineering solutions to improve road safety	Urban Traffic Control	Teacher-based learning	Students' activities + direct questions
8	4	Assess and conceptualize driver behaviour when developing engineering solutions to improve road safety	Continued	Students based learning (flipped learning)-presentation	Quiz
9	4	Assess and conceptualize driver behaviour when developing engineering solutions to improve road safety Appreciate the need for input from other disciplines to formulate policies for dealing with urban traffic congestion problems	Driver Behavior and Safety: Psychology of drivers.	Teacher-based learning (traditional method)	Open discussion
10	4	Appreciate the need for input from other disciplines to formulate policies for dealing with urban traffic congestion problems	How drivers react in different situations.	-	Mid Exam II
11	4	Appreciate the need for input from other disciplines to	How to use knowledge of driver behavior in designing engineering solutions.	Student-based learning	Quiz

		formulate policies for dealing with urban traffic congestion problems			
12	4	Appreciate the need for input from other disciplines to formulate policies for dealing with urban traffic congestion problems Discuss and debate solutions to urban congestion	Urban Congestion and Solutions: Public transport,		report
13	4	Appreciate the need for input from other disciplines to formulate policies for dealing with urban traffic congestion problems Discuss and debate solutions to urban congestion	Demand management, promotion of non-car modes.	Teacher-based learning and Flipped learning methods	Students' activities + direct questions
14	4	Discuss and debate solutions to urban congestion	Continued	Assessing Skill in Application and Performance	Open discussion
15	4	Discuss and debate solutions to urban congestion	Integrated transport policies and freight management.	-	Nil

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11

Open discussion and activity	3 hrs	5% (5)	9 and 14
Lab Reports	1 hr	10% (10)	3, 5,7,9,12
Midterm Exam	2hrs	20% (20)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	<ul style="list-style-type: none"> 1- Highway Engineering, M. Rogers, 2003. 2- Highway Engineering, CA O'Flaherty, Edward Arnold, 1988.
Main references (sources)	<ul style="list-style-type: none"> 1. Highway Traffic Analysis and Design, RJ Salter, 1996.
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	

Course Description Form

1. Course Name:					
Transportation Engineering II					
2. Course Code:					
CIE 4202					
3. Semester / Year:					
8th /4th					
4. Description Preparation Date:					
01/09/2024					
5. Available Attendance Forms:					
-					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60/4					
7. Course administrator's name (mention all, if more than one name)					
Name: Dr. Mohammed Hadi Email: mohammed.h.nahi@aliraqia.edu.iq					
8. Course Objectives					
Course Objectives		<ul style="list-style-type: none"> • To enable students to analyses road pavement structures, • To differentiate between the different types of materials used. • To design road pavements, the design concepts, material properties and performance criteria are used together with vehicle loading criteria to demonstrate to the students how they are combined to design and construct road pavements. • To distil the principles of geometric design, both vertical and horizontal. • To give the students the satisfaction of producing for themselves a full road pavement design, they are taken through one of the available methods and they perform examples so they can see how the principles and their application come together in a design. 			
9. Teaching and Learning Strategies					
Strategy		<ul style="list-style-type: none"> • Teacher-based learning: teacher explain lectures pre-class (lecture notes and videos) and in-class (traditional lecture) • Student-based learning: student will be asked to prepare presentation OR poster and react the interactive among students. • Instructor could give realistic cases or exercises in-class and post-class and ask student to solve these cases in order to enhance the critical thinking skills and improve the ability of students to do calculations. • Invite guest lecturer to update the students with modern traffic control strategies. 			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	Select the appropriate materials for use in different road layers Evaluate the quality and performance of unbound and bound road materials	Introduction to transportation engineering.	-	Nil
2	4	Select the appropriate materials for use in different road layers	Unbound Flexible Pavement Materials – Capping and subbase materials	Teacher-based learning	Nil
3	4	Evaluate the quality and performance of unbound and bound road materials	Continued	Assessing Skills in Analysis and Critical Thinking	Students' activities + direct questions
4	4	Perform road pavement design and analysis	Bitumen properties.	Assessing Skill in Synthesis and Creative Thinking	Quiz
5	4	Perform road pavement design and analysis	Bitumen's laboratory tests for property characterization.	-	Mid Exam I
6	4	Perform road pavement design and analysis	Continued	Student-based learning (flipped learning)	Midterm 1
7	4	Develop an appropriate road monitoring and maintenance programme	Bituminous Materials – Open textured macadam, hot rolled asphalt, mastic asphalt and dense bituminous macadam	Teacher-based learning	Students' activities + direct questions
8	4	Develop an appropriate road monitoring and maintenance programme	Bituminous Materials – hot rolled asphalt, mastic asphalt and dense bituminous macadam	Students based learning (flipped learning)-presentation	Quiz
9	4	Develop an appropriate road monitoring and maintenance programme Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on	Continued	Teacher-based learning (traditional method)	Open discussion

		horizontal and vertical alignment			
10	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment	Flexible Pavement Design – Principles of design.	-	Mid Exam II
11	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment	Flexible Pavement - design method and examples	Student-based learning	Quiz
12	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment	Continued		report
13	4	Interpret geometric design fundamentals, in relation to safety and driver comfort, focusing on horizontal and vertical alignment Design a road alignment.	Rigid Pavements – Properties of concrete, rigid pavement design and construction	Teacher-based learning and Flipped learning methods	Students' activities + direct questions
14	4	Design a road alignment.	Geometric Design – Fundamentals of forces on vehicles travelling on curved sections of road,	Assessing Skill in Application and Performance	Open discussion
15	4	Design a road alignment.	Geometric Design – horizontal and vertical alignment, designed on the basis of safety and driver comfort	-	Nil

11. Course Evaluation

	Time/Number	Weight (Marks)	Week Due
Quiz	1 hrs	5% (5)	3, 8 and 11
Open discussion and activity	3 hrs	5% (5)	9 and 14
Lab Reports	1 hr	10% (10)	3, 5,7,9,12
Midterm Exam	2hrs	20% (20)	9
Final Exam	3hrs	60% (60)	16
Total assessment		100% (100 Marks)	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Materials for Civil and Construction Engineers 2e, MICHAELS . MAML OUKJOHNP. ZANIEWSKI, 2006
Main references (sources)	Pavement analysis and desing Book yang-h-huang-2nd-edition, 2004
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	