



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Building Materials		Module Delivery	
Module Type	C		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CIV12015			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	UGI	Semester of Delivery	2	
Administering Department	CIV	College	ENG	
Module Leader	Khaleel hussien bahath		e-mail	Khaleel.bahath@kus.edu.iq
Module Leader's Acad. Title	Lecturer dr.	Module Leader's Qualification	Surveying eng.	
Module Tutor	Asst. Lec. Ali Hasan Hadi		e-mail	ali.h.hadi@kus.edu.iq
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	2026/4/5	Version Number	1.0	



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Constraction design	Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	- To introduce the fundamental concepts of building materials and materials technology in civil engineering. - To develop understanding of the physical, mechanical, and engineering properties of construction materials. - To provide knowledge of bonding materials (such as cement, lime, and gypsum), their properties, and basic laboratory tests. - To study different types of masonry units including bricks and tiles, their manufacturing processes, properties, and applications. - To introduce the behavior of materials under load through the stress–strain relationship. - To provide an overview of different types of metals used in construction and their engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Demonstrate knowledge of the physical, mechanical, and engineering properties of common construction materials. - Explain the stress–strain behavior of materials and interpret basic stress–strain diagrams. - Identify the main types of bonding materials (cement, lime, gypsum), their properties, advantages, and practical uses. - Describe the raw materials, manufacturing processes, and properties of gypsum and cement-based materials. - Classify different types of bricks and tiles, including their raw materials, manufacturing methods, properties, and engineering uses. - Evaluate materials based on relevant specifications and standard tests. - Recognize different types of metals, their properties, and their applications in civil engineering. - Select appropriate construction materials for specific engineering applications based on performance requirements. - Interpret laboratory test results and relate them to material behavior in real

	engineering situations. 10. Propose suitable solutions and alternatives when selecting materials for different construction cases.
Indicative Contents المحتويات الإرشادية	<u>Building Materials and Materials Properties</u> Introduction, Properties of Materials, Mechanical properties, Thermal Strains and stresses, Tensile Stress –Strain curve, Elasticity and stiffness, Yield strength, Ductility and Brittleness, Toughness, Creep, Fatigue. [10hr] <u>Brick</u> Classification of brick according to constituent raw materials, Raw Materials, Composition of good clay brick Harmful Ingredients in clay brick, Manufacture of clay brick, Sand - Lime brick, Raw materials, mix proportion, Manufacture, Properties of sand- lime brick, Concrete brick, Uses, Properties of concrete brick. [18hr] <u>Bonding Materials</u> Gypsum plaster, Manufacture of gypsum plaster, Raw materials (Gypsum rocks), Process of manufacture, Gypsum products, Plaster of Paris, Uses, Chemical requirements in according with Iraqi standard No. 28 1985, Physical requirements in according with Iraqi standard No. 28 -1985, Ordinary (mechanical) plaster, Uses, Chemical requirements, Physical requirements, Technical plaster, Uses, Chemical requirements, Physical requirements, Anhydrous plaster, used, Keen cement, Properties, Uses, Properties of Gypsum plasters, Lime, Definition and classification, Quick lime, Hydrate lime, Manufacturing of lime, Raw materials, Uses of quick lime, Properties of quick lime, Hydrate lime, Process of manufacture, Uses, Properties. [20hr] <u>Metals</u> Classification of metals Classification of metals, Ferrous metals, Cast Iron, Properties: Uses, Wrought Iron, Composition, Properties, Uses, Steel, Composition, Low carbon steel (Mild steel), Properties, Uses, High carbon steel, Properties, Factors affecting physical properties of steel, Nonferrous metals, Properties, Refractory metals. [12hr]



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



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 types of simple experiments (lab.) involving some sampling activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	63	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	37	Unstructured SWL (h/w)	2.5
Total SWL (h/sem)	100		



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Properties of Materials, Mechanical properties, Thermal Strains and stresses
Week 2	Tensile Stress –Strain curve, Elasticity and stiffness, Yield strength
Week 3	Ductility and Brittleness, Toughness, Creep, Fatigue.
Week 4	Bricks, Classification of brick according to constituent raw materials, Raw Materials, Composition of good clay brick
Week 5	Harmful Ingredients in clay brick Manufacture of clay brick,
Week 6	Sand - Lime brick, Raw materials, mix proportion, Manufacture
Week 7	Properties of sand- lime brick, Concrete brick, Uses, Properties of concrete brick
Week 8	Bonding Materials, Gypsum plaster, Manufacture of gypsum plaster, Raw materials (Gypsum rocks), Process of manufacture.
Week 9	Gypsum products Plaster of Paris, Uses, Chemical requirements in according with Iraqi standard No. 28 1985, Physical requirements in according with Iraqi standard No. 28 -1985, Ordinary (mechanical) plaster, Uses, Chemical requirements, Physical requirements,

Week 10	Gypsum products technical plaster, Uses, Chemical requirements, Physical requirements, Anhydrous plaster, used, Anhydrous plaster, used, Keen cement, Properties, Uses.
Week 11	Lime, Definition and classification, Quick lime, Hydrate lime, Manufacturing of lime, Raw materials.
Week 12	Uses of quick lime, Properties of quick lime, Hydrate lime, Process of manufacture, Uses, Properties
Week 13	Metals, Classification of metals Classification of metals, Ferrous metals, Cast Iron, Properties: Uses, Wrought Iron, Composition, Properties, Uses.
Week 14	Steel, Composition, Low carbon steel (Mild steel), Properties, Uses, High carbon steel, Properties, Factors affecting physical properties of steel
Week 15	Nonferrous metals, Properties, Refractory metals.
Week 16	Preparatory week before the final Exam



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Brick test, tolerance and efflorescence
Week 2	Lab 2: Brick test, water absorption and compressive strength
Week 3	Lab 3: gypsum tests, finesse test
Week 4	Lab 4: gypsum tests, standard consistency
Week 5	Lab 5: gypsum tests, setting time and compressive strength
Week 6	Lab 6: mosaic tile test, shape and dimension
Week 6	Lab 7: mosaic tile test, face and total water absorption
Week 8	Lab 8: mosaic tile test, modulus of rupture



جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) - 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Building construction, ZoiharSako ,Baghdad university ,1984 Iraqi Standard Specifications British specifications المواد الإنشائية جلال بشير سرسم، سعيد عبد العالي	Yes
Recommended Texts	- English for engineers and technologists - Cambridge Professional English in Use	No
Websites	http://www.cement.org/for-concrete-books-learning/concrete-technology	

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.



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Engineering Drawing II		Module Delivery
Module Type	C		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CIV12009		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	2
Administering Department	CIV	College	ENG
Module Leader	Basim Mahde Mozin	e-mail	basimmozan@kus.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD in Interior Design
Module Tutor	1- Suhail Faisal Mohammed 2- Lina Oday Hatem Attrah	e-mail	Suhail.faisal@kus.edu.iq attrah.lina@gmail.com
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2026/4/5	Version Number	1.0



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Engineering Drawing	Semester	1
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	- To develop problem-solving skills and an understanding of the basics of engineering drawings. - Develop the student's ability to deal with engineering drawing programs. - Enhancing the student's abilities to imagine geometric shapes and drawings and combine them with problems. - Develop students' abilities to imagine engineering problems and the possibility of representing and simulating them in two- and three-dimensional drawing formats.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Explain the fundamental principles of engineering drawing and its importance in representing civil engineering projects such as roads, buildings, and infrastructure. - Use the AutoCAD interface and basic drawing commands to create accurate two-dimensional engineering drawings. - Apply modification commands to improve engineering drawings and efficiently correct errors. - Organize drawings using layers and dimension styles in accordance with recognized engineering standards in civil projects. - Prepare and draw basic architectural and structural elements such as stairs, walls, doors, and windows in line with civil engineering design requirements. - Utilize hatch and block tools, as well as furnishing techniques, to produce clear and executable drawings. - Design and implement a comprehensive engineering project using AutoCAD, covering all stages from drafting to final output. - Prepare and produce professional engineering drawings using Layout, Page Setup Manager, and appropriate drawing scales to meet printing standards.

Indicative Contents المحتويات الإرشادية	<u>Indicative content includes the following:</u> Part A – Drawings Fundamentals: Sketching basics: This includes the use of basic geometric shapes and lines, understanding scale and proportion, and freehand sketching techniques [4 hrs] orthographic projection: This involves creating two-dimensional drawings that depict the three-dimensional object from different views using techniques like first angle projection and third angle projection [6 hrs] Dimensioning and tolerancing: This is the process of specifying the exact size, shape, and location of features on a part or assembly, and the allowable variation that is acceptable during manufacture. [3 hrs] Section views: This involves creating drawings that show an internal part feature that is otherwise hidden from the external view. [3 hrs] Revision problem classes [4 hrs] Part B – computer-aided design (CAD) software Learning (Fundamentals): Drawing Area: The drawing area is the workspace where create the designs. On an area represented by a rectangular grid with coordinate values. [1hrs] Identifying the command Line: and how to use a text-based interface where the student can enter commands to perform various tasks in AutoCAD. [4 hrs] Layers are like transparent sheets that students can draw on. They help organize the drawing by separating different elements of the design. [6 hrs]. Drawing Tools: AutoCAD has a wide range of drawing tools for the student should learn, including lines, circles, arcs, polygons, and ellipses. [6 hr] Modify Tools: These tools allow to edit and modifying the drawings. By moving, rotating, scaling, stretching, mirroring, and trimming objects using the modified tools.[10]. Dimensioning Tools: the student will recognize the tools that allow adding dimensions to the drawing. Such as adding linear dimensions, angular dimensions, and radial dimensions. [4 hr] Text Tools: Text tools allow to students to add annotations and labels to their drawings. By adding single-line text, multiline text, and text with special characters. [4 hr] Blocks: Blocks are reusable objects that maintain the students to create and insert into the drawing. They can be made up of multiple objects and can scale and rotate them as a single unit.[4 hr] Viewport: Students can make A viewport window into their drawing that they can use to display different parts of their design at different scales. [1 hr]
---	---



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The primary approach for teaching this module would be to promote active involvement of students in practice sessions, while simultaneously enhancing them ability to think critically. This would entail conducting classes, interactive tutorials, and incorporating straightforward exercises that involve fascinating drawing submittals to engage students.
------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	63	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	62	Unstructured SWL (h/w)	4.1
Total SWL (h/sem)	125		



جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) - 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



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 to #3 and #5 to #9
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #13, #14
	Lab	1	10% (10)	Continuous	LO All
	Projects	1	10% (10)	14 and 15	LO All
Summative assessment	Midterm Exam	2 hr	10% 10	7	LO #1 to #6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – why we need to Learn Engineering Drawing Meaning, History of Development, and Importance of AutoCAD
Week 2	AutoCAD Interface and drawing commands
Week 3	Modify Commands in AutoCAD
Week 4	Layers in AutoCAD
Week 5	Dimension Style in AutoCAD
Week 6	Drawing Stairs
Week 7	Midterm Exam
Week 8	Methods of painting walls, windows, and doors
Week 9	Hatch and Blocks
Week 10	Furnishing the plan
Week 11	Page setup manager

Week 12	Adjusting the drawing scale in Layout
Week 13	Explanation of the Layout interface program for outputting 2D plans
Week 14	A complete applied project
Week 15	A complete applied project
Week 16	Final Exam



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to installing AutoCAD and Preparation Drawing Windows
Week 2	Lab 2: Introduction to AutoCAD And Auto CAD interface
Week 3	Lab 3: Applications Drawing Area
Week4	Lab 4: Application Modify Tools
Week 5	Lab 5: Applications Drawing Tools
Week 6	Lab 6: Applications Layers
Week 7	Lab 7: Application Dimensioning Tools
Week 8	Lab 8: Hatch and Blocks
Week 9	Lab 9: Furnishing the plan
Week 10	Lab10: Furnishing the plan
Week11	Lab 11: Page setup manager
Week 12	Lab 12: Preparing the boards for printing
Week 13	Lab 13 Preparatory week before the final Exam
Week 14	Lab 14: A complete applied project
Week 15	Lab 15: A complete applied project
Week 16	Lab 16: Final Exam



جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) - 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	كتاب الرسم الهندسي لعبد الرسول الخفاف	Yes
Recommended Texts	Learn about AutoCAD: An Introduction to AutoCAD for Beginners	No
Websites	https://images-na.ssl-images-amazon.com/images/I/C1BxaOC0-IS.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.



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Mechanics II		Module Delivery
Module Type	B		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	CIV12014		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	2
Administering Department	CIV	College	ENG
Module Leader	Dr. Haider Maithem Hekmet	e-mail	Maithem.haider1988@gmail.com
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Asst.Lec. Noor aldeen Natheer	e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2026/4/5	Version Number	1.0



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Engineering Mechanics I	Semester	1
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	Graduation of civil engineers qualified to work in their various fields of specialization: 1- Utilize mathematical, scientific, and engineering knowledge. 2- Serve on inter-professional teams. 3- Identify, formulate, and solve engineering problems. 4- Employ the techniques, abilities, and contemporary engineering instruments 5- Required for engineering practice. 6- Communicate successfully.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the basic concepts of trusses and frame structures. 2. Analyze trusses using joints and sections methods. 3. Analyze simple frame structures using equilibrium equations. 4. Solve engineering problems involving dry friction. 5. Calculate radius of gyration and related section properties. 6. Apply particle kinematics to straight and curved motion. 7. Use Newton's Second Law to solve motion problems. 8. Solve equations of motion in rectangular coordinates.
	Indicative content includes the following: FRICION FORCE Explain what dry friction is and how to examine the equilibrium of rigid bodies when they encounter it. [12 hrs.] CENTER OF MASS AND CENTROID OF AREAS

Indicative Contents

المحتويات الإرشادية

Explain the difference between the center of mass, the centroid, and the center of gravity. In addition, it illustrates how to pinpoint a body's centroid and center of gravity when dealing with complex geometries or several constituent pieces. [12 hrs.]

MOMENT OF INERTIA

Figure out how to calculate the moment of inertia of a region. [12 hrs.]

KINEMATICS OF PARTICLES

Explain where things are, how far they moved, how fast they were going, and how fast they were going. Investigate the linear velocity of particles and depict it visually. Tracking particle movement in many coordinate systems over a curved route. [12 hrs.]

KINETICS OF PARTICLES

Explain what mass and weight are and then state Newton's second law of motion. This exercise will use the equation of motion in several coordinate systems to analyze the accelerated motion of a particle. [12 hrs.]



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The primary strategy for delivering this module will be to encourage student Participation in the tasks, while also honing and enhancing their critical thinking skills. This will be accomplished through courses and student-oriented interactive tutorials. The primary objective of studying engineering mechanics is to develop the ability to predict the effects of force and motion while performing engineering's creative design functions.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	63	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	62	Unstructured SWL (h/w)	4.1
Total SWL (h/sem)	125		



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



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, 3 and #5, 6, 7
	Online Assignments	2	10% (10)	3 and 6	LO # 3, 4 and 7, 8
	Onsite assign.	1	5% (5)	Continuous	LO # 5, 6
	Report	1	5% (5)	9	LO # All
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO #1 to 5
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to truss structure
Week 2	Analysis of trusses using joints method
Week 3	Analysis of trusses using sections method
Week 4	Introduction to frames structure
Week 5	Analysis of frames
Week 6	Introduce the friction forces
Week 7	concept of dry friction
Week 8	Equations of Equilibrium and Friction
Week 9	Radius of Gyration of an Area
Week 10	Discuss location, motion, speed, and acceleration relationships
Week 11	Visualize straight-line particle movement
Week 12	Particle migration along a curved trajectory in multiple coordinate systems

Week 13	Newton's Second Law of Motion in addition to defining mass and weight
Week 14	System of Particles' Kinematic Equation
Week 15	Equations of Motion: Rectangular Coordinates
Week 16	Preparatory week before the final Exam



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Engineering Mechanics Statics and Dynamic, by Higdon. - Engineering Mechanics Statics and Dynamic, by Meriam.	Yes
Recommended Texts	Mechanics for Engineers-Statics and Dynamic, by Ferdinand P. Beer, E. Russell.	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.



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English Language		Module Delivery
Module Type	S		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	KUS12011		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	2
Administering Department	CIV	College	ENG
Module Leader	Huda S. Munshid	e-mail	Huda.salih@kus.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	Master
Module Tutor	Huda S. Munshid	e-mail	Huda.salih@kus.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2026/4/5	Version Number	1.0



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The prescribed textbook for first-year students in non-English departments has been designed for beginner learners of English. After studying it, students are expected to gain knowledge of the basic level and its language skills. In each unit of the book, the instructor directs students' attention to four main aspects: 1. English grammar. 2. Basic English vocabulary. 3. Development of the four language skills: reading, writing, listening, and speaking. 4. Familiarity with commonly used English expressions in the daily life of native speakers.
---	--

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this course, students will be able to: 1. Understand simple English texts (from the beginner textbook and external passages) and identify the main idea and key information. 2. Use basic general vocabulary along with simple engineering terms in short and clear sentences. 3. Apply basic English grammar rules (such as simple tenses, pronouns, and connectors) in writing and speaking. 4. Write short paragraphs and simple reports related to general or basic engineering topics. 5. Communicate in simple and clear English in academic and basic engineering situations (e.g., describing a device or a simple problem). 6. Listen to and understand simple instructions and conversations related to study or basic engineering contexts
Indicative Contents المحتويات الإرشادية	These materials have been chosen for their importance to user interaction. They consolidate learning from the pre-requisites and lay the foundations for further study, particularly specialized English for all engineering fields. The English Language specification offers a common core of analytical methods, topics and skills that have proven value, set within a flexible program that allows colleges to shape learning and teaching in ways appropriate to their contexts, and constituencies. It has the additional benefit of being co-teachable with our associate professors even when they are not specialized in teaching English, thus widening options for faculty and students, ensuring that we are able to deliver a program of study that is coherent and manageable.



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	33	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w)	1.1
Total SWL (h/sem)	50		



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	7,10	LO#1-3
	Assignments	4	20% (20)	3,6,14	LO # 2- 4
	Report	1	10% (10)	8	All
Summative assessment	Midterm Exam	2 hr	10% (10)	9	LO # 1- 4
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – reading texts - understanding texts and quotes - identifying key information & keywords - summary writing
Week 2	Unit 1 & 2 selections – Headway for beginners - Unit 1: Hello\ - Unit 2: Your World - grammar, vocabulary, language skills practice, and everyday English expressions - Exercises and paragraphs about the engineering field
Week 3	Unit 3 selections – Headway (beginners) ("All about you") - Past tenses (simple, continuous, & perfect) - Passive voice for past tenses - Exercises and paragraphs about the engineering field - Paragraph: engineering identity

	Assignment 1
Week 4	• Unit 4 ("family and friends") • grammar, vocabulary, language skills practice • Exercises and paragraphs about the engineering field
Week 5	• Unit 5 : lifestyle • grammar, vocabulary, language skills practice, and everyday English expressions • Exercises and paragraphs about the engineering field • Assignment2 Paragraph: engineering projects
Week 6	Quiz Unit 6
Week 7	Unit 6: "every day" Paragraph : engineering resources Future tense
Week 8	Unit 7: "my favorite " Skills describing specific materials, categorizing materials, specify and describing properties, discussing quality issues Reading: passage on engineering resources
Week 9	MID EXAM
Week 10	Unit 8: "where I live" • Skills: grammar, vocabulary, language skills practice, and everyday English expressions • Exercises and paragraphs about the engineering field • Paragraph: engineering fields
Week 11	Unit 9: " past times" Paragraph: Engineering design Past tense structure Assignment 3
Week 12	Quiz

Week 13	Unit 10: " we had a great time" phrases for referring to issues, quality, and extent. Phrases for suggesting Solutions and alternatives. it idioms to describe feasibility and redesigning grammar: can, can't , present continuous
Week 14	Review of Unit 10 Assignment 4
Week 15	Students' report presentations
Week 16	Preparatory week before the final Exam



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Engineering English Handout (A course handout prepared and compiled by Asst.Lect. Huda S. Munshid, including basic engineering concepts, general terminology, selected reading passages, and essential grammar rules) • New Headway Plus (Beginner Student's Book) by John and Lz Soars,	Yes
Recommended Texts	• English for engineers and technologists • Cambridge Professional English in Use	No
Websites	https://www.ets.org/toefl.html https://www.bbc.co.uk/learningenglish/	

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.				



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Geology		Module Delivery
Module Type	C		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☒ Seminar
Module Code	CIV12012		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGI	Semester of Delivery	2
Administering Department	CIV	College	ENG
Module Leader	Ammar w. Saeed	e-mail	ammar.waleed@kus.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Wasan wadhah jabber	e-mail	wasan.wadhah@kus.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2026/4/5	Version Number	1.0



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	Graduation of civil engineers qualified to work in their various fields of specialization: 1- Providing the student with skills to deal with developments and progress in the field of specialization. 2- Providing the student with higher ability to understand principles of science. 3- Instilling the spirit of diligence and perseverance and encouraging them to create and innovate.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain basic geology concepts and Earth structure. 2. Identify minerals and rocks relevant to civil engineering. 3. Analyze geological maps and cross-sections. 4. Evaluate soil and rock engineering properties. 5. Apply geology in civil engineering projects. 6. Prepare technical geological reports. 7. Conduct field and geological investigations.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - Identify Geology Introduction, geology as a term and science and the branches of geology. [3 hrs] - Engineering Geology Explanation of Engineering geology and the connection with Civil engineers by Geotechnical engineering. [8hrs] - Earth Profile

	Brief description for earth profile, then identifying its components. [3 hrs] • Minerals Definition, classification and properties, [16 hr] • Rocks Definitions, Types and common kinds [16 hrs]
--	---



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Introduce students to science of geology • Self-regulated learning (i.e., Identifying, classification and evaluation). • Practice testing (short question answers and exams). • Self-explanation (i.e., explaining to oneself how new information is related to old information or explain steps taken when solving a problem or a task).
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem)	63	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	62	Unstructured SWL (h/w)	4.1
Total SWL (h/sem)	125		



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



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, and 5
	Assignments	2	10% (10)	2, 7, 12	LO # All
	Seminar	2	10% (10)	6	LO # 1,5,7
	Report	1	10% (10)	13	LO # All
Summative assessment	Midterm Exam	2 hr	10% (10)	10	LO # 1-6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – Geology Science
Week 2	Continue- Branches of Geology
Week 3	Engineering Geology
Week 4	Earth Profile
Week 5	Minerals
Week 6	Minerals Properties
Week 7	Earth profile
Week 8	Rocks
Week 9	Igneous Rocks
Week 10	Common Igneous rocks
Week 11	Sedimentary Rocks

Week 12	Formation processes and common rocks
Week 13	Metamorphic rocks
Week 14	Common rockes
Week 15	Folds
Week 16	Preparatory week before the final Exam



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	BANGAR K.M (1995) "Geology ; General and Engineering	Available online
Recommended Texts	Lutgens, F.K & Tarbuck, E.J (2009) "Essentials of Geology"	No
others	Notebook prepared by the instructor of the course	

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.



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mathematics II		Module Delivery	
Module Type	C		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	CIV12008			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	UGI	Semester of Delivery		2
Administering Department	CIV	College	ENG	
Module Leader	Assist. Professor Dr. : Hayder Hussein		e-mail	dr.hayder_75@kus.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification		
Module Tutor		e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	2026/4/5	Version Number	1.0	



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Mathematics I	Semester	1
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The aims of a mathematics module are to provide students with an understanding of mathematical concepts, skills, and techniques that can be applied to a range of real-world problems. This course aims to introduce the concepts of calculus, complex numbers, vectors, and linear algebra. Additionally, the module aims to prepare students for future academic and professional pursuits that require mathematical proficiency.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module the student should be able to: 1. Understand what an inverse function is and how to find it. Know when a function has an inverse (one-to-one / horizontal line test), and Apply inverse derivatives in problem-solving contexts. 2. Understand the definition and properties of the natural logarithm. Apply logarithmic differentiation to complex functions and Understand exponential growth and decay models. 3. Solve integrals involving products of functions. Apply repeated integration by parts when needed. 4. Evaluate integrals involving powers of sine, cosine, tangent, etc. Handle cases depending on whether powers are odd or even and Simplify integrals using trigonometric identities before integrating. 5. Decompose rational functions into simpler fractions. Integrate rational expressions after decomposition and Solve algebraic systems to find constants. 6. Evaluate improper integrals using limits. Determine convergence or divergence and Apply comparison tests for convergence when needed. 7. Compute the area between two or more curves using definite integrals. Set up integrals correctly with respect to x or y, and Determine intersection points of curves. 8. Find volumes using different methods: Disk Method, Washer Method and Shell Method. 9. Set up integrals for solids of revolution. Choose the most efficient method depending on the axis of rotation. 10. Compute the length of a curve. Handle both explicit and parametric forms (if included) and Apply approximation when exact solutions are difficult. 11. Find the surface area of a surface generated by rotation. Set up correct integrals based on the axis of rotation and Understand the geometric interpretation of surface area. 12. Understand what matrices are and how they are structured (rows, columns, dimensions). Perform basic operations like Addition and subtraction and so on. 13. Determine whether a matrix is invertible (non-zero determinant). 14. Solve systems of linear equations using: Gaussian elimination and other methods. 15. Understand the 3D Cartesian coordinate system (x,y,z). Plot and interpret points in space. 16. Solve quadratic equations with real and complex roots.

Indicative Contents المحتويات الإرشادية	The Indicative Contents of a Mathematics module will depend on the level and scope of the course. However, some common topics that may be covered in a mathematics module include: 1. Arithmetic: Basic mathematical operations such as addition, subtraction, multiplication, and division. 2. Algebra: The study of mathematical symbols and the rules for manipulating these symbols to solve equations and represent real-world situations. 3. Geometry: The study of shapes, sizes, positions, and measurements of objects in space. 4. Calculus: The study of mathematical concepts such as limits, derivatives, and integrals. Overall, the Indicative Contents of a Mathematics module aims to provide students with a comprehensive understanding of mathematical concepts and their applications in various fields of study.
---	---



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



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

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



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, 3,7,8 and 9
	Assignments	2	10% (10)	2, 12	LO # 4, 5, 10 and 11
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 12-16
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-10
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1 Week 2 Week 3	Transcendental Functions: Inverse Functions and Their Derivatives, Natural Logarithms, Exponential Functions, Indeterminate Forms and L'Hôpital's Rule, Inverse Trigonometric Functions, Hyperbolic Functions and their inverse.
Week 4 Week 5	Integration Techniques: Integration by Parts, Trigonometric Integrals, Trigonometric Substitutions, Partial Fractions, Improper Integrals.
Week 6	Application of definite integrals : Area between curves, volumes of solids, length of curves and surface area of solids.
Week 7 Week 8 Week 9	Matrices and Determinants: Definitions, Properties and operations, Determinant, Inverse of a matrix, Solution of linear system equations, Eigenvalues and Eigenvectors.
Week 10 Week 11 Week 12	Vector Theory: Three-Dimensional Coordinate Systems, Representation of vectors in space, unit vectors, Scalar Product, Vector Product, Lines and Planes in Space, Vector Function.

Week 13	Complex Numbers: Complex numbers and operations, Solution of quadratic equations, The argand diagram, Polar form of a complex number, Demoiver's theorem.
Week 14	
Week 15	
Week 16	Preparatory week before the final Exam



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	George B. Thomas Jr., "CALCULUS", 14 th Ed	Yes
Recommended Texts	1. Erwin Kreyszig, "Advanced Engineering Mathematics", 10th Ed. 2. Schaum's Outline of College Mathematics, Fourth Edition. 3. Mary Attenborough, "Mathematics for Electrical Engineering and Computing", 1st Ed.	No
Websites	Topics in a Calculus -Wolfram Mathworld.	

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.



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
ربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Workshop		Module Delivery
Module Type	S		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	WORK120		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UG1	Semester of Delivery	2
Administering Department	CIV	College	ENG
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2026/4/5	Version Number	1.0



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	Provide students with the fundamental technical knowledge and skills in workshop to recognize, analyze and solve problems, and to apply these abilities to the generation of new knowledge, ideas or products in industry.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Apply occupational safety principles in workshops and laboratories, ensuring compliance with standard safety procedures. 2. Perform basic welding operations using different techniques and identify common welding defects and their causes. 3. Use fitting workshop tools and equipment accurately to carry out measuring, cutting, and manual finishing tasks. 4. Carry out basic carpentry tasks in the Carpentry Workshop, including cutting, assembling, and finishing wooden elements. 5. Execute reinforced concrete steel works (cutting, bending, and tying reinforcement bars) in the Rebar Workshop according to engineering drawings. 6. Operate basic turning machines in the Turning Workshop to produce simple mechanical components with acceptable accuracy. 7. Understand and apply basic electrical practices in the Electricity Workshop safely. 8. Select appropriate tools and equipment for different workshop activities. 9. Interpret simple engineering drawings and apply them in practical workshop tasks. 10. Demonstrate teamwork, manual skills, and quality awareness in completing workshop activities.

Indicative Contents

المحتويات الإرشادية

1. Introducing the student to the basics of the art of welding, the installation and assembly of metals, the types of welding machines, the skills of dealing with them, the types of welding, and the methods of measurement and standardization
2. Introducing the student to the basics of the art of blacksmithing, cold and hot forming of metals, the method of hardening them, and the skills of dealing with hand tools, forming machines, and heating furnaces
3. Introducing the student to the basics of the art of filing and manual operation of metals with the help of manual, electrical, and mechanical tools, the skills of dealing with them, and the methods of measurement and standardization
4. Introducing the student to the basics of the art of turning and milling, types of cold working machines, the skill of dealing with them, choosing metals, operational tools, and methods of measurement and standardization
5. Introducing the student to the basics of the art of carpentry and woodworking with the help of manual, electrical, and mechanical tools, the skills of dealing with them, and methods of measurement and standardization
6. Introducing students to the basics of household and industrial electrical appliances, the skill of using tools, and designing electrical circuits and control panels



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



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 للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	48	Structured SWL (h/w)	3
Unstructured SWL (h/sem)	27	Unstructured SWL (h/w)	2
Total SWL (h/sem)	75		



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5, 10, and 12	All
	Assignments	1	5% (5)	6	All
	Projects / Lab.	1	5% (5)	11	All
	Report	5	15% (15)	3, 5, 7, 10 and 12	All
Summative assessment	Midterm Exam	2 hr	10% (10)	7 and 15	All
	Final Exam				
Total assessment			50% (50 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Principles of safety in workshop and laboratories
Week 2	Welding workshop
Week 3	Welding workshop
Week 4	Fitting Workshop
Week 5	Fitting Workshop
Week 6	Carpentry Workshop
Week 7	Carpentry Workshop
Week 8	Mid 1 Examine
Week 9	Reinforced blacksmith workshop
Week 10	Reinforced blacksmith workshop
Week 11	Turning Workshop
Week 12	Turning Workshop

Week 13	Electricity Workshop
Week 14	Electricity Workshop
Week 15	Electricity Workshop
Week 16	Preparatory week before the final Exam



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Workshop technology and measurements, Ahmed Salem Al-Sabbagh	
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.



جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
لربع سنوات (ثمانية فصول دراسية) - 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Arabic Language		Module Delivery
Module Type	S		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	KUS12010		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	2
Administering Department	CIV	College	ENG
Module Leader	م. د. مروان عبد الكريم نايف	e-mail	marwan.abdul.kareem@kus.edu.iq
Module Leader's Acad. Title	مدرس	Module Leader's Qualification	
Module Tutor	م.م. غفران سعدي جاسم	e-mail	ghufran.s.jasim@kus.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2026/4/5	Version Number	1.0



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
ربيع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	• معرفة اساسيات ومنشأ اللغة العربية • تنمية المهارات الفكرية للطلاب لتمكنه من معرفة مرحلة التطور اللغوي وأهم القواعد الاملائية • بناء طلبة قادرين على التنافس مع التخصصات الأخرى من حيث السلامة اللغوية • حث الطالب على إتقان الكتابة الصحيحة التي تفيده في الخطابات الرسمية
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• يوظف الطلبة قواعد الكتابة العربية في التعبير السليم، بما في ذلك العدد والمعدود، وعلامات الترقيم في الكتابة الرسمية. • يميز الطلبة أنواع الجمل في اللغة العربية ويستنتج دلالاتها في السياق. • يحلل الطلبة نصوصاً مختارة تحليلاً لغوياً وأسلوبياً مبسطاً. • يطبق الطلبة قواعد الإملاء العربي تطبيقاً صحيحاً، بما يشمل كتابة الهمزة، والتاء بأنواعها، والتمييز بين الضاد والطاء • يبين الطلبة مفهوم الإعجاز القرآني، ويتعرف العصور الأدبية وأغراضها، وأنواع النثر. • يعرف الطلبة نشأة اللغة العربية وأهم الظواهر اللغوية المرتبطة بها، ويستوعب أقسام الكلام الأساسية. • يفسر الطلبة معاني الأبنية الصرفية، ويحدد أصل حروف العلة ووظائفها.

Indicative Contents المحتويات الإرشادية	• تعريف مهم لأهمية اللغة العربية ونشأتها • شرح علوم اللغة العربية المتعددة • تزويد الطلاب بمهارة تعريف متغيرات العلوم اللغوية والأساليب الكتابية والاملائية في الدراسة الجامعية • شرح مهارة الكتابة الاملائية وأهم الحيل اللغوية التي يمكن أن يتبعها الطالب للتخلص من المأزق الكتابي • تزويد الطالب بمهارات استخدام المترادفات اللغوية في الخطابات الرسمية
---	--



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربع سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. الكتاب المنهجي والمحاضرات. 2. المكتبة. 3. وسائل العرض المرئية 4. تعليمية في الشبكة الدولية. 5. يتم مشاركة الطلبة خلال المحاضرة بحل بعض المشاكل اللغوية 6. يقوم التدريسي بإلقاء محاضرات تفصيلية نظرية. 7. يقوم التدريسي بعرض امثلة تفصيلية تشمل كل جوانب المفاهيم اللغوية المطروقة
------------	--

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	33	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w)	1
Total SWL (h/sem)	50		



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
لربح سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	اختبارات يومية	2	10% (10)	5, 10	LO #1, 2, 4 and 5
	مفاجئة				
	تقارير	2	10% (10)	6, 11	LO # 2, 4, 5 and 7
	تفاعل الطالب العلمي داخل الصف الدراسي.	1	10% (10)	Continuous	All
	الحضور الدائم للطلاب	1	10% (10)	0	All
Summative assessment	Midterm Exam	2 hr	10% (10)	13	LO # 1, 4,5 and 6
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	مقدمة عن نشأة اللغة العربية وأهم الظواهر اللغوية
Week 2	اقسام الكلام
Week 3	الاعجاز القرآني
Week 4	العصور الأدبية وأهم أغراضها
Week 5	النثر وأنواعه
Week 6	الجملة وأنواعها وما تحمله من دلالات
Week 7	اختبار
Week 8	معاني الأبنية في لغة العرب
Week 9	نماذج من الدراسات الأسلوبية في بعض الآيات القرآنية الكريمة
Week 10	الكتابة الإملائية الضاد والطاء

Week 11	معرفة أصل حروف العلة
Week 12	كتابة العدد والمعدود وطرق استعمالها
Week 13	توظيف علامات الترقيم في الخطابات الرسمية
Week 14	طريقة كتابة الناء المفتوحة والهاء المربوطة والهاء المربوطة
Week 15	طريقة كتابة الهمزة في اللغة العربية بأنواعها وحالاتها كافة
Week 16	الاختبار النهائي



جمهورية العراق – وزارة التعليم العالي والبحث العلمي
جامعة الكرخ للعلوم
بكالوريوس في الهندسة المدنية (الدورة الاولى)
اربعة سنوات (ثمانية فصول دراسية) – 240 وحدة اوروبية
كل وحدة اوروبية = 25 ساعة



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- أسس علم اللغة ، ماريو باي ، ترجمة احمد مختار - تاريخ الأدب العربي شوقي ضيف - معاني النحو د. فاضل صالح السامرائي - معاني الأبنية في العربية د. فاضل صالح السامرائي - فقه اللغة واسرار العربية ، أبو منصور الثعالبي ، تحقيق : مهدي عبد الرزاق / دار احياء التراث العربي	نعم
Recommended Texts	جميع الكتب اللغوية الرصينة التي لها علاقة باللغة العربية و علومها	نعم
Websites	متابعة المواقع الالكترونية العلمية والفيديوات التعليمية على مواقع الانترنت	

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.

