Ministry of Higher Education and Scientific Research - Iraq

University of Warith Al-Anbiyaa
College of Engineering
Civil Engineering Department

MODULE DESCRIPTION FORM

Module Information

Module Title	BUILDING CONSTRUCTION	**Module Delivery**	
Module Type	CORE		☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	CIV042		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	**Semester of Delivery**	2
Administering Department	Civil engineering	**College**	Engineering
Module Leader	Abdullah Nassir Jawad	**e-mail**	abdullan97@uowa.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	Ms.C
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	20/10/2024	**Version Number**	1.0

Relation with other Modules

Prerequisite module	Construction Materials	**Semester**	2
Co-requisites module	Engineering Drawing By Auto CAD	**Semester**	1

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Building Construction is an introduction to the techniques, materials, and structural systems used in the construction process of any Building. Building Construction classes will focus on the main components of the building and their connections. The classes of Building Construction course have two parts, the first part is Theoretical class where all the required information for the practical part will be provided, and the second part is Practical class where the students will be asked to design and draw in the Drawing studios what they have learned during the Theoretical class. Topics of this course include Components, Materials and Techniques used in Building Construction process which include (Masonry walls (Brick & Block), Floors and Slabs (Concrete and Reinforced Concrete), Opening (Doors and Windows), Finishing Materials, and Connection Techniques). During the Course the students will be asked to visit material stores and Construction sites to have a clear idea about the available materials and techniques in the Local Market.
Module Learning Outcomes	1. Identify the concepts and principles associated with the building, environment and technology of simple construction and be able to evaluate and interpret them using sketches, drawings or in written form. 2. Describe building elements and components in specific situations; how, when and where they would be favored; and the construction sequence for simple buildings. 3. Evaluate the appropriateness of different approaches, materials and construction in simple construction in accordance with building, environment and technology theories and sustainability. 4. Communicate accurately and reliably on building, environment and technology issues for simple construction, using structured coherent arguments and theory.
Indicative Contents	Indicative content includes the following. The nature and relevance of the module together with communication methods/ drawing/ measurement Introduces the content of the module and describes how communication is carried out on building projects in the written form and through the use of drawings and sketches.[12 hrs] Site works and foundations : Explains the importance of understanding the implications of basic soil conditions on the design of simple foundations for houses, how these soil conditions are investigated and describes how simple foundations are constructed.[8 hrs] The different methods of construction: Looks at the traditional method of

	building houses in the Iraq and compares and contrasts this with a variety of different methods of construction [8 hrs] Details of the above ground structure: Explores typical details of construction for the floors, walls, roof, windows and doors of a simple building and describes the principles and logic that affect the sequence ofbuilding a house. [12 hrs] Materials: Looks at the properties of common building materials, such as concrete, brick and timber and how these materials are used in buildings. Also explores the properties of a wider range of materials, which can be used in simple buildings. [12 hrs] Sustainability of simple buildings : Describes how the energy implications, in terms of operating energy and the embodied energy of the building, can be minimised, and connects this to the provision of more economic buildings which are better places to live. [10 hrs] Building services and finishes : Explains how internal and external building services, such as water, gas, electricity and drainage are built into the fabric of the building and how the finishes to a building are chosen and fitted. [8 hrs]

Learning and Teaching Strategies	
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 involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
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	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #3
	Assignments	2	5% (5)	2 and 12	LO #4
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	13	All
Summative assessment	**Midterm Exam**	2hr	20% (20)	7	LO #1 - #2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	- A general introduction with a review of the curriculum and authorized sources and assistance.- Introduction: - stages of the construction of buildings, types of buildings, the development of the construction of buildings.-
Week 2	Earth works: - earth excavations, equipment types of mechanical drilling, rocks excavation, groundwater discharge
Week 3	Earth filling and compaction of the soil. , Foundations: - Definition of the foundation, the depth of the foundation, the nature of the soil and its relationship with foundations and types of foundations. The foundation wall and other continuous-related: the descent foundations, vibrations and foundations.
Week 4	Piles Works: -kinds of piles, drilling piles and hammer piles, hammer Equipment, Test of piles, details and drawing of piles. Bricks Works: -mud bricks, manufacturing methods, engineering properties, types of bricks
Week 5	Types of connectivity in the bricks, walls and types, suture and types. Details of bricks construction, Iraqi Specifications.
Week 6	Stones Works: - Introduction, geological classification of rocks, engineering properties of stone and stone common specifications, preparation of stone for building, linking when building in stone, other details

Week 7	Mid-term Exam
Week 8	Molds and scaffolds: - types of molds, loads carried by the molds. The failure of the Works of the molds, remove molds, graphics molds. Columns: - Classification columns according to slenderness, ends cases of columns, classified columns
Week 9	Floors and ceilings: -loads kinds, wood floors and types and graphics. jack arching, reinforced concrete floors and floor finishing kinds. beams lintels types.
Week 10	Wooden Beams, Steel Beams, Reinforced Concrete Beams Concrete works: -concrete definition, types and components added to the concrete, formwork, concrete production, cranes ,curing for concrete
Week 11	Painting and plastering , cement and gypsum plastering , types of painting .
Week 12	Arches and upper and lower beams: - Introduction to the terminology used inarches, arches forms, the upper and lower beams.
Week 13	Contraindications humidity: -types of anti-moisture and classify, humidity, and damage others. Stairs: -dimensions of stair an degrades and the design method and drawing Types of stair sand graphics, elevators
Week 14	Doors and windows: -timber, dry timber and timber types and graphics. Doors and types of windows and types.
Week 15	Joints in buildings: -structural joints, extension joints and others. General Review
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1&2	Structural plan of wall foundation Structural plan of load-bearing walls
Week 3&4	Structural plan of continuous foundation Structural plan of single foundation
Week 5&6	Structural plan of pile foundation Structural plan of mat foundation
Week 7&8	Drawing of a wall with German tie, Drawing of a wall with English tie
Week 9&10	Reinforced concrete lintel and typical details of reinforcement and a section of a wooden floor
Week 11&12	Concrete floor with one-way main reinforcement and two-way main reinforcement
Week 13&14	Drawing stairs and methods of moving between levels
Week 15	امتحان

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	كتاب انشاء المباني (زهير ساكو و ارتين ليفون)	Yes
Recommended Texts	جميع كتب انشاء او تركيب المباني	No
Websites	-	

Appendix :

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa.... civil Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	CONCRETE TECHNOLOGY I			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CIV034				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	2		**Semester of Delivery**	3	
Administering Department	CIV		**College**	ENG	
Module Leader	Asst. Lect. Abdulrasool Th. Abdulrasool+ Asst. Lect. Ghadeer Haitham Hasan		**e-mail**	abdulrasool.th@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	MS.D	
Module Tutor	Name (if available)		**e-mail**		
Peer Reviewer Name	Asst. Lect. Ghadeer Haitham Hasan		**e-mail**	ghadeer.haitham@uowa.edu.iq.	
Review Committee Approval	2024/9/23		**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	
Module Aims أهداف المادة الدراسية	1. The course aims to introduce students to the ability to deal with concrete as a construction material. 2. Graduates of the department should have a comprehensive knowledge of concrete and the raw materials that make it up. 3. Graduate engineers who have the ability to design concrete mixes. 4. Gradate engineers who have sufficient knowledge to make all the tests of fresh and hardened concrete. 5. Students should know about all the Iraqi and international standards, and evaluate the results of laboratory tests.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. The student will be familiar with the most important methods used in the cement industry. 2. The student will be familiar with the factors that affect the properties of the different types of cement and all the details of cement. 3. The student will be familiar with the types of aggregates involved in the production of concrete and its properties. 4. The student will be familiar with the methods of concrete mix design. 5. The student will know the properties of concrete in fresh and hardened states. 6. The student will be familiar with the tests of cement, aggregate, fresh and hardened concrete
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Definition of Cement: Portland cement is the name given to a cement obtained by intimately mixing together calcareous and argillaceous, or other silica-, alumina-, and iron oxide bearing materials, burning them at a clinkering temperature, and grinding the resulting clinker. Manufacture of Portland cement: •Calcareous material – such as limestone or chalk, as a source of lime (Cao).

	• Clayey material – such as clay or shale (soft clayey stones), as a source of silica and alumina. Methods of cement manufacturing: 1 - Wet process: grinding and mixing of the raw materials in the existence of water. 2 - Dry process: grinding and mixing of the raw materials in their dry state. Chemical Composition of Cement: The silicates, C3S and C2S, are the most important compounds, which are responsible for the strength of hydrated cement paste. Hydration of cement: It is the reaction (series of chemical reactions) of cement with water to form the binding material. In other words, in the presence of water, the silicates (C3S and C2S) and aluminates (C3A and C4AF) form products of hydration which in time produce a firm and hard mass. Types of Cement: •Ordinary Portland cement - Type I • Modified cement - Type II • Rapid-hardening Portland cement - Type III • Low heat Portland cement - Type IV • Sulfate-resisting Portland cement - Type V Aggregate: **Coarse aggregate**: Aggregates predominately retained on a No. 4 (4.75 mm) sieve with percent of (95-100%), are classified as coarse aggregate. **Fine aggregate** (sand): Aggregates passing through a No. 4 (4.75 mm) sieve with percent of (95-100%), and predominately retained on a No. 200 (75 µ m) sieve are classified as fine aggregate. .
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The student acquires the skill of differentiating between the different types of cement, as well as the different types of aggregates involved in the production of concrete. The student acquires the skill of identifying the methods of producing concrete, methods of dealing with it on the site, and the problems facing concrete in hot weather. Also, the student will Know the skill of concrete mix design.

Student Workload (SWL)

الحمل الدراسي للطالب			
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	62	**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	5% (5)	5 and 10	LO #1, #2 and #3, #4
	Assignments	2	5% (5)	2 and 12	LO #5, and #6
	Projects / Lab.	1	15% (10)	Continuous	All
	Report	1	5% (5)	13	LO #1, #2 and #3, #4
Summative assessment	**Midterm Exam**	2hr	20% (20)	7	LO #1 - #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	PORTLAND CEMENT
Week 2	Chemical Composition of Cement
Week 3	Hydration of cement
Week 4	Soundness of cement
Week 5	Test of Fineness
Week 6	Structure of hydrated cement , Types of Cement
Week 7	MID TERM EXAM
Week 8	Pozzolanic Cement Production
Week 9	AGGREGATE
Week 10	Classification of aggregates
Week 11	Mechanical Properties of Aggregate

Week 12	Bulking of Aggregate
Week 13	Admixtures: admixtures, types, necessity and benefit Mineral Admixture, Chemical admixtures - Accelerator, retarder, water reducing elements, plasticizer and
Week 14	super-plasticizer, their functions and dosage.
Week 15	Admixtures: Mineral admixture - Fly ash, silica fume, blast furnace slag, and other pozzolanic materials.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Test Of Cement: Test Method for Consistency of the Cement
Week 2	Test Of Cement: Test Method for Setting Time of the Cement
Week 3	Test Of Cement: Compressive Strength of Cement Mortars
Week 4	Test Of Coarse Aggregate: Quartering Dividing Method for Aggregate
Week 5	Test Of Coarse Aggregate: Riffling Dividing Method for Aggregate
Week 6	Test Of Coarse Aggregate: Sieve Analysis for Fine Aggregate
Week 7	Test Of Coarse Aggregate: Sieve Analysis for Coarse Aggregate
Week 8	Test Of Coarse Aggregate: Clay and Fine Materials Content

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1- Required textbooks (curricular books, if any) NEVILLE, A. M. 2005 "PROPERTIES OF CONCRETE (5TH EDITION)" 2- Main references (sources) NEVILLE, A. M. 2005 "PROPERTIES OF CONCRETE (5TH EDITION)"	YES
Recommended Texts	Recommended books and references (scientific journals, reports...) Mehta, P. K. & Monteiro, P. J. M. 2006. Concrete: Microstructure, properties and materials, McGraw-Hill.	YES

Websites	Electronic References, Websites	American Concrete Institute (ACI)

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.

Ministry of Higher Education and Scientific Research - Iraq

University of Warith Al-Anbiyaa
College of Engineering
Civil Engineering Department

MODULE DESCRIPTION FORM

Module Information

Module Title	CONCRETE TECHNOLOGY II	**Module Delivery**	
Module Type	CORE		☒ **Theory** ☒ **Lecture** ☒ **Lab**
Module Code	CIV044		
ECTS Credits	7		
SWL (hr/sem)	175		

Module Level	2	**Semester of Delivery**	2
Administering Department	Civil engineering	**College**	Engineering
Module Leader	Abdulrasool Thamer Abdulrasool	**e-mail**	abdulrasool.th@uowa.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	Ms.C
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	20/10/2024	**Version Number**	1.0

Relation with other Modules

Prerequisite module	CONCRETE TECHNOLOGY I	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. The course aims to introduce students to the ability to deal with concrete as a construction material. 2. Graduates of the department should have a comprehensive knowledge of concrete and the raw materials that make it up. 3. Graduate engineers who have the ability to design concrete mixes. 4. Gradate engineers who have sufficient knowledge to make all the tests of fresh and hardened concrete. 5. Students should know about all the Iraqi and international standards, and evaluate the results of laboratory tests.
Module Learning Outcomes	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. The student will be familiar with the most important methods used in the cement industry. 2. The student will be familiar with the factors that affect the properties of the different types of cement and all the details of cement. 3. The student will be familiar with the types of aggregates involved in the production of concrete and its properties. 4. The student will be familiar with the methods of concrete mix design. 5. The student will know the properties of concrete in fresh and hardened states. 6. The student will be familiar with the tests of cement, aggregate, fresh and hardened concrete
Indicative Contents	Indicative content includes the following. <u>Fresh Concrete:</u> Methods of mixing, transporting and placing of concrete. Workability – Definition and requirement, factors affecting workability, various tests as IQ Standard. Segregation and bleeding, stiffening, re-tempering. Curing: necessity and various methods, micro-cracking. <u>Strength of Concrete:</u>

	The compressive strength of concrete is one of the most important and useful properties of concrete. In most structural applications concrete is employed primarily to resist compressive stresses. Elasticity, Creep and Shrinkage: Volume change is one of the most detrimental properties of concrete, which affects the long-term strength and durability. Durability and permeability of concrete: Definitions, causes, carbonation, cracking, Concrete in aggressive environment: Alkali – aggregate reaction, sulphate attack, chloride attack, acid attack, effect of sea water, special coating for water proofing, sulphate chloride and acid attack, concrete for hot liquids. Special Concrete: Review of behavior and characteristics of high strength concrete, high performance concrete, fiber reinforced concrete, mass concrete, light weight and heavy weight concrete, Precast concrete. Special concreting techniques: Pumped concrete, concrete, underwater concrete, pre-placed concrete, vacuum dewatered concrete, hot and cold weather concreting, Ready mixed concrete. Concrete Mix Design under ACI code: Mix design is the proportioning of the various constituents of concrete to produce the desired properties in both the fresh and hardened states.

Learning and Teaching Strategies	
Strategies	The student acquires the skill of differentiating between the different types of cement, as well as the different types of aggregates involved in the production of concrete. The student acquires the skill of identifying the methods of producing concrete, methods of dealing with it on the site, and the problems facing concrete

	in hot weather. Also, the student will Know the skill of concrete mix design.

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	5% (5)	3, 6 and8, 10	LO #1, #2 and #3, #4
	Assignments	2	5% (5)	2 and 12	LO #5, and #6
	Projects / Lab.	1	15% (10)	Continuous	All
	Report	1	5% (5)	13	LO #1, #2 and #3, #4
Summative assessment	**Midterm Exam**	2hr	20% (20)	7	LO #1 - #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Fresh concrete : Methods of mixing, transporting and placing of concrete.
Week 2	Fresh concrete: Workability – Definition and requirement, factors affecting workability, various tests, Segregation and bleeding, stiffening, re-tempering. Curing: necessity and various methods, micro-cracking.

Week 3	Hardened concrete: Compressive and tensile strength and their relationship, various tests, Factors affecting strength – water cement ratio, gel space ratio, aggregate cement ratio, properties of ingredients, effect of age, maturity, aggregate cement-paste inter-face, various finishes of concrete.
Week 4	Hardened concrete: Introduction to aspects of elasticity, shrinkage and creep. Tests for strength of concrete: Destructive, semi destructive and nondestructive tests with their limitations, test methods
Week 5	Hardened concrete: Durability and permeability of concrete: Definitions, causes, carbonation, cracking
Week 6	, Concrete in aggressive environment: Alkali – aggregate reaction, sulphate attack, chloride attack, acid attack, effect of sea water, special coating for water proofing, sulphate chloride and acid attack, concrete for hot liquids.
Week 7	Mid-term exam
Week 8, 9	Special Concrete: Review of behavior and characteristics of high strength concrete, high performance concrete, fiber reinforced concrete, mass concrete, light weight and heavy weight concrete, Precast concrete.
Week 10, 11, 12	Special concreting techniques: Pumped concrete, concrete, underwater concrete, pre-placed concrete, vacuum dewatered concrete, hot and cold weather concreting, Ready mixed concrete.
Week 13 , 14	Concrete mix design: Principles of mix proportioning, probabilistic parameters, factors governing selection of mix. British and ACI method of concrete mix design,
Week 15	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Test on Design concrete- fresh concrete : workability of concrete
Week 2	Test on Design concrete- fresh concrete : compacting factors
Week 3	Test on Design concrete- fresh concrete : VEE-BEE time test
Week 4	Test on Design concrete- fresh concrete Kelly ball test also called as a ball penetration test.
Week 5	Test On Designed Concrete, Hardened Concrete, Compressive Strength of Concrete Cubes Test
Week 6	Test On Designed Concrete , Hardened Concrete, Compressive Strength of Concrete Cylinder Test
Week 7	Test On Designed Concrete , Hardened Concrete, Splitting Tensile Strength Test Method
Week 8	Test On Designed Concrete , Hardened Concrete, Flexural Test

Week 9	Test On Designed Concrete , Hardened Concrete, Rebound Hammer Test
Week 10	Test On Designed Concrete , Hardened Concrete, Rebound Hammer Test
Week 11, 12	Trail mixes for normal concrete .
Week 13, 14	Trail mixes for Special kind concrete .
Week 15	Lab exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Concrete Technology	Yes
Recommended Texts	Properties of concrete by A.M. Neville. Concrete technology by A.M. Neville and Brook J.J 2nd Edition.	No
Websites	https://www.cement.org/learn/concrete-technology	

Appendix

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
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Ministry of Higher Education and Scientific Research - Iraq

University of Warith Al-Anbiyaa
College of Engineering
Civil Engineering Department

MODULE DESCRIPTION FORM

Module Information					
Module Title	ENGINEERING DRAWING BY AUTOCAD			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CIV046				
ECTS Credits	3				
SWL (hr/sem)	75				
Module Level		2	**Semester of Delivery**		2
Administering Department		Civil engineering	**College**		Engineering
Module Leader	Hibatallah abd alameer		**e-mail**	Hiba.allah@uowa.edu.iq	
Module Leader's Acad. Title		Assistant Lecturer	**Module Leader's Qualification**		Ms.C
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		20/10/2024	**Version Number**		1.0

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. Develop proficiency in using AutoCAD software for creating accurate and precise engineering drawings in civil engineering projects. 2. Familiarize students with the fundamental principles and standards of engineering drawing and their application in civil engineering design and construction. 3. Enhance students' understanding of different types of civil engineering drawings, including architectural plans, structural drawings, site plans, and details, and enable them to create these drawings using AutoCAD. 4. Enable students to interpret and analyze engineering drawings, including dimensioning, scaling, and annotation, to accurately convey design and construction information. 5. Develop students' ability to collaborate effectively with other professionals, such as architects and structural engineers, through the exchange of engineering drawings in a standardized format using AutoCAD.
Module Learning Outcomes	1. Demonstrate proficiency in using AutoCAD software to create accurate and precise engineering drawings in civil engineering projects. 2. Apply the fundamental principles and standards of engineering drawing to produce high-quality civil engineering drawings using AutoCAD. 3. Interpret and analyze engineering drawings, including dimensioning, scaling, and annotation, to accurately convey design and construction information. 4. Create different types of civil engineering drawings, such as architectural plans, structural drawings, site plans, and details, using AutoCAD. 5. Collaborate effectively with other professionals, such as architects and structural engineers, by exchanging engineering drawings in a standardized format using AutoCAD.
Indicative Contents	Introduction to AutoCAD: Overview of AutoCAD software and its applications in civil engineering User interface and basic commands in AutoCAD File management and project organization in AutoCAD Engineering Drawing Principles and Standards:

	Introduction to engineering drawing principles and standards Drawing conventions, line types, and line weights Standard symbols and notations used in civil engineering drawings Creating 2D Civil Engineering Drawings: Creating and editing basic geometric shapes in AutoCAD Drawing techniques for architectural plans, structural drawings, and site plans Incorporating dimensions, scales, and annotations in engineering drawings Advanced Drawing Techniques: Working with layers and layer management in AutoCAD Advanced editing tools and techniques for modifying drawings Creating and managing blocks and attributes for efficient drawing production Civil Engineering Drawing Types: Detailed exploration of architectural plans, including floor plans, elevations, and sections Structural drawings, including foundation plans, framing plans, and reinforcement details Site plans and land development drawings, including grading plans and utility layouts Dimensioning and Scaling: Dimensioning techniques and best practices in civil engineering drawings Scaling and plotting drawings to various scales for printing and presentation purposes Using dimension styles and annotation tools for consistent and clear communication Collaboration and Standards: Understanding engineering drawing standards and practices Importing and exporting drawings between different software and file formats Collaborating with other professionals through the exchange of standardized engineering drawings Practical Applications and Case Studies: Applying AutoCAD and engineering drawing skills to real-world civil engineering projects Analyzing and interpreting existing engineering drawings for design modifications or construction purposes

	Case studies highlighting the importance of accurate and precise engineering drawings in civil engineering projects Project Work: Applying the acquired skills and knowledge to a comprehensive engineering drawing project Creating a set of civil engineering drawings using AutoCAD, following the appropriate standards and practices Presenting the project work and discussing the rationale behind design decisions

Learning and Teaching Strategies	
Strategies	The module employs a range of strategies to facilitate effective learning and teaching of engineering drawing using AutoCAD in the civil engineering department. These strategies include engaging lectures and demonstrations, hands-on practice sessions, group discussions and peer learning, practical workshops and tutorials, industry guest lectures and site visits, utilization of online resources and virtual learning, assessments with timely feedback, and promoting continuous learning and updates. By integrating these strategies, the module aims to provide students with a comprehensive understanding of AutoCAD and its application in creating accurate and precise engineering drawings, while fostering collaboration, critical thinking, and practical skills development in the civil engineering context.

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured USWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	3, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	2	10% (10)	Continuous	All
	Report	0	0% (0)	none	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1- 7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to program (Start Program; Interface; Command Enter; Start New Draw& Save File, Model & Layout, Command Window, Mouse Options, Keyboard, Helpers, Select object, Status Bar Enhancements, Workspace)
Week 2	Draw Command **part-one** (Line, Circle, Line & Circle **Practice**)
Week 3	Modifying on drawing **part-one** (Erase, Ray, Move, Copy, **Practice**)
Week 4	Draw Command **part-two** (Arc, Construction Line, Rectangle, Polyline, Polygon, Donut, Spline, **practice**)
Week 5	Modifying on drawing **part-two** (Rotate, Trim, Offset, Extend, **practice**)
Week 6	Draw Command **part-three** (Multiline, Point, Revcloud, Ellipse, **practice**)
Week 7	Modifying on drawing **part-three** (Fillet, Chamfer, Mirror, **practice)**
Week 8	Draw Command **part-four** (Hatch, **practice)**
Week 9	Modifying on drawing **part-four** (Array, Stretch, Scale, **practice)**
Week 10	Table, Text Command
Week 11	Block characteristics, Annotation

Week 12	Drawings properties
Week 13	Layers principles
Week 14	Annotation formation and editing
Week 15	Output properties and print options (Model & Layout)

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Lab 1: General Principles and draw commend
Week 2,3	Lab 2: Draw option and modify options (part one)
Week 4,5	Lab 3: Draw option and modify options (part-two)
Week 6,7	Lab 4: Draw option and modify options (part-three)
Week 8,9	Lab 5: Draw option and modify options (part-four)
Week 10,11	Lab 6: Table, Text Command, Block characteristics, Annotation
Week 12,13	Lab 7: Drawings properties, Layers principles
Week 14,15	Lab 8: Annotation formation and editing ,Output properties and print options

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts		No
Recommended Texts		No
Websites	https://www.autodesk.com/training	

Appendix

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

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTOR FORM

Module Information

Module Title	ENGINEERING SURVEY I	**Module Delivery**	
Module Type	CORE		**Theory** **lab** **Tutorial**
Module Code	CIV035		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	**Semester of Delivery**	1
Administering Department	Civil engineering	**College**	Engineering
Module Leader	Thaer Taher Atshan	**e-mail**	thaertahir@uowa.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	2024/9/26	**Version Number**	2024

Relation With Other Modules

Prerequisite module	None	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. Defining the basics of surveying and how to use measuring tools and avoid measurement obstacles. 2.Defining surveying devices and their uses such as level and theodolite. 3.Measuring and determining levels and determining heights for buildings and land uses. 4. Learning how to record readings in the surveyor's notebook. 5.Learning how to correct levelling errors. 6. Drawing longitudinal and transverse sections and calculating the areas and volumes of regular and irregular shapes. 7.Introducing the student to contour maps and types of surveying and linking them to contemporary technology. 8.Teaching the student to calculate areas and volumes from contour maps.
Module Learning Outcomes	1.Know the details and methods of surveying and leveling and the steps followed for each type. 2.The learner will be able to project maps on the ground or transfer the image to a natural location on the map. 3.Determine the heights of the land above sea level and link them to the height of neighboring buildings. 4.The learner will be able to calculate areas, quantities and volumes for civil works of projects. 5.Enabling the student to use surveying and measuring devices. 6.Increase the ability and engineering sense and speed of decision-making.
Indicative Contents	1.Definition of surveying, its importance, measuring tools, units and errors in measuring distances and sources of errors (5 hours) 2.Leveling and sources of errors in leveling, identifying the level, its components and types, the staff and its types and how to read them (7 hours) 3.The method of rising and falling and the method of raising the device in recording staff readings in the surveyor's notebook and reading the revised staff and balancing obstacles (10 hours) 4.The method of two pegs to correct the line of sight in the leveling device / applications on leveling (3 hours) 5.Longitudinal and transverse sections and drawing them, finding the depth of excavation and burial and calculation methods (8 hours) 6.Topographic surveying and contour lines and their properties and methods of fixing them and how to number them and calculate quantities from them (7 hours) Areas and how to calculate them for regular and irregular shapes (8 hours)
Learning and Teaching Strategies	
Strategies	1. Explain the lectures and discussions in the classroom to deliver the

	scientific information to the student. 2. Directing questions and inquiries that are distinguished by accuracy. 3. Developing self-learning by deducing solutions to the problems. 4. Extracurricular assignments and solving classroom examples. 5. Field exercises within the university to apply measuring dimensions and levels. 6. Performing the tests specified for the subject at the times specified for them. 7. Reviewing the books and references indicated by the subject teacher.

Student Workload (SWL)

Structured SWL (h/sem)	77	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)	48	**Unstructured SWL (h/w)**	3
Total SWL (h/sem)	125		

Module Evaluation

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	5	5 % (5)	3,5, 6,10,14	LO #3, 4 and 5
	Assignments	5	5 % (5)	2, 12	LO # 3, 4, 5,6 and 7
	Projects / Lab.	10	20 % (20)	Continuous	All
	Report	10	10 % (10)	Continuous	All
Summative assessment	**Midterm Exam**	2 hr	10 % (10)	7	LO # 1-5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Definition of surveying, its importance, measuring tools, units and errors in measuring distances and sources of errors
Week 2	Identifying the level, its components, types, staff, types of staffs, and how to read them
Week 3	The rising and falling method of recording staff readings in the surveyor's notebook
Week 4	How to use the level to record staff readings in the surveyor's notebook
Week 5	Errors in direct differential levelling and correction of closure error
Week 6	Obstacles in levelling and how to avoid them and read the revised staff
Week 7	The two-peg method for correcting the line of sight in the leveling device (level)

Week 8	Applications on levelling
Week 9	Longitudinal sections, drawing them, finding the depth of excavation, filling height and calculation methods
Week 10	Cross sections and calculation methods
Week 11	Topographic survey, contour lines and their properties
Week 12	How to make contour lines, how to install them and how to number them
Week 13	Areas and how to calculate them for regular and irregular shapes
Week 14	Volumes How to calculate the volume of works for roads, rivers and sewers
Week 15	Square grid method for calculating areas and volumes
Week 16	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Tools used in surveying, adjusting direction in measurement, calculating flat and inclined distances, and correcting measurements
Week 2	Lab 2: Learn about level, its types and accessories / types of adjustment/ reading the staff
Week 3	Lab 3: Levelling by rising and falling method
Week 4	Lab 4: Levelling by height of instrument
Week 5	Lab 5: Inverted levelling and checking the level of the building ceiling
Week 6	Lab 6: The wedge method for correcting the line of sight
Week 7	Lab 7: Setting the levels for a school yard, 11 cm thick
Week 8	Lab 8: Methods of erecting and setting columns
Week 9	Lab 9: Setting boundaries and dropping a building using tape only
Week 10	Lab 10: Tape Measure Obstacles, Barriers and Barriers

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	1.المساحة الهندسية-ياسين عبيد -عبيد احمد- كلية الهندسة – جامعة البصرة – 1990 وزارة التعليم العالي العراقية.	Yes
Recommended Texts	2. هندسة المساحة – للدكتور عباس زيدان – قسم البناء واالنشاءات – الجامعه التكنولوجية – الطبعة الاولى – 2009 A text Book of Surveying and Leveling, R. Agor, -3 Delhi,2012	2-No 3- Yes

Websites	

APPENDIX:

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

Note:

NB 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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTION FORM

Module Information					
Module Title	ENGINEERING SURVEY II			**Module Delivery**	
Module Type	CORE			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	CIV045				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		2	**Semester of Delivery**		2
Administering Department		Civil engineering	**College**		Engineering
Module Leader	Thaer Taher Atshan		**e-mail**		thaertahir@uowa.edu.iq
Module Leader's Acad. Title		Assistant Lecturer	**Module Leader's Qualification**		Ms.C
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		20/10/2024	**Version Number**		1.0

Relation with other Modules			
Prerequisite module	Engineering Survey I	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. Definition of directions, calculation of coordinates, shading, angles of deviation, map orientation and types of north 2. Definition of the theodolite in engineering projects and its types and how to use it 3. In methods and their types and Definition of horizontal curves in determining and projecting it 4. Learning how to avoid measurement and orientation obstacles 5. Teaching the student the methods of projection and signature of horizontal curves 6. In methods and their determination and projection Definition of vertical curves and their types in 7. Teaching the student the methods of projection and signature of vertical curves 8. Definition of indirect surveying And calculating building heights 9. Introducing the student to the total station device and how to use it in work
Module Learning Outcomes	1. The learner will be able to determine directions and orient maps 2. The learner will be able to calculate coordinates of points and angles of deviation of polygons. 3. The learner will be able to use all types of theodolite. 4. The learner will be able to project and sign it on the ground The horizontal Calculate the lengths of the elements of the curve 5. The learner will be able to use alternatives to the projection Avoid the obstacles of projecting the curve 6. The learner will be able to project and sign it on the ground Calculate the lengths of the elements of the curve 7. The learner will be able to calculate the heights of buildings directly and in an unusually high way 8. The learner will be able to use the total station device 9. Increase the ability and sense of geometry and the speed and accuracy of decision-making.
Indicative Contents	The instructional contents include: • Types of north, directions, coordinates, ribbing and angles of deviation (6 hours) • Theodolite, its components, use, teaching erection and its porosity (6 hours)

	• Theorem, its elements, how to project it and projection methods Theorem Curves (12 hours) • Theorem, its equation, types, elements and projection methods Curves (10 hours) • Theorem and beams Tachometer surveying, surveying methods and calculating heights for buildings (8 hours) • Total station and its use (6 hours)

Learning and Teaching Strategies	
Strategies	1. Giving lectures in person and in the classroom to discuss the scientific material for the student. 2. Asking questions and inquiries that are characterized by depth and accuracy. 3. Developing the learning process by deducing solutions to the problems raised. 4. Extracurricular assignments and solving classroom examples. 5. Field exercises inside the university to apply measuring dimensions and levels. 6. At the times specified for them. Performing the tests specified for the subject in 7. As directed by the subject teacher. Reviewing books and other resources 8. Following the subject teacher's YouTube channel to view the electronic lectures.

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured USWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	48	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	6 % (6)	4, 10,11,13	LO # 2, 4, 6 and 7
	Assignments	4	4 % (4)	2, 12	LO # 2, 4, 5,6 and 7
	Projects / Lab.	10	20 % (20)	Continuous	All
	Report	0	0% (0)	none	
Summative assessment	**Midterm Exam**	2 hr	30 % (20)	7	LO # 1-4
	Final Exam	3hr	40% (40)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Geographic North and Magnetic North S and Declinations 1 Bearing and Azimuth
Week 2	Types of polygons Traversing and its types
Week 3	Calculate directions, deflection angle and coordinates
Week 4	Theodolite, its types, composition, and how to install and use it
Week 5	Reading horizontal and vertical angles with theodolite
Week 6	Definition of horizontal curves and their types
Week 7	How to drop the curve and calculation methods
Week 8	Methods of projecting the curve on the ground 8 thousand riyals
Week 9	obstacles to the horizontal curve projection
Week 10	Definition of vertical curves and their types
Week 11	Exercises on the calculations of projecting the vertical curve onto the ground
Week 12	Tachymetric surveying, its methods and uses
Week 13	Exercises on calculating building heights using quick surveying
Week 14	TOTAL STATION device

Week 15	Using the total station in horizontal curve projection
Week 16	Preparing week before the exam

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Lab 1: Learn about the theodolite, its parts, accessories and types of adjustment
Week 2	Lab 2: Reading horizontal angles by repetition
Week 3	Lab 3: Reading vertical angles
Week 4	Lab 4: Find the height of the theodolite building and the bar.
Week 5	Lab 5: Theodolite and strip plot boundary setting and closure error correction
Week 6	Lab 6: Determine the sides of a road by knowing the center line of the road.
Week 7	Lab 7: Projecting a curve using only a tape measure
Week 8	Lab 8: Projecting a horizontal curve using a measuring rod and theodolite
Week 9	Lab 9: Tachymetric surveying, stadia hair method, finding elevations and levels
Week 10	Lab 10: Get to know the total station device

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	وزارة التعليم العالي العراقية. 1990 – جامعة البصرة – كلية الهندسة -ياسين عبيد -عبيد احمد-المساحة الهندسية	نعم
Recommended Texts	2- هندسة المساحة – للدكتور عباس زيدان – قسم البناء والانشاءات – الجامعه التكنولوجية – الطبعة الاولى – 2009 3- A text Book of Surveying and Leveling, R. Agor, 2012,Delhi	1- كلا 2- نعم
Websites	https://www.autodesk.com/training	

Appendix

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

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTOR FORM

Module Information

Module Title	ENGLISH LANGUAGE II		**Module Delivery**	
Module Type	CORE		**Theory** **lecture** **practical**	
Module Code	UoW031			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	3	**Semester of Delivery**	1	
Administering Department	Civil engineering	**College**	Engineering	
Module Leader	Sally Muwafaq Talib	**e-mail**	Sallay.muwafaq@uowa.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	M.Sc.	
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Review Committee Approval	2024/9/26	**Version Number**	1	

Relation With Other Modules

Prerequisite module	Academic English I	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	• **To review essential grammar of the language.** • **To develop writing skills in engineering topics with focus on enhancing students' abilities to deliver ideas clearly according to academic writing structure, including introduction paragraph, body paragraphs and a conclusion.** • **To improve students' reading and comprehension skills in engineering topics.** • **To enhance students' vocabulary in engineering topics, through reading and listening activities.** • **To improve students' ability to listen effectively to different listening materials in engineering topics, understand the basic ideas, and summarize key points.** • **To improve students' ability to speak and present ideas in front of the class.** **To enhance students' ability to engage and participate in classes through group reading or discussion.**
Module Learning Outcomes	1. Punctuality. 2. Pay attention to the lecturer during class and write down the information provided. 3. To be calm and respectful during classes and answer questions in a scientific manner. To understand the importance of fluid mechanics and the impact of the subject on his future career in this field.
Indicative Contents	

Learning and Teaching Strategies	
Strategies	•Strategies that are used in delivering this module is to train the students on reading, listening and writing, and that is achieved through class exercises and assignments to improve those skills. • Communicative strategy: Encourage students to engage in authentic language use through pair and group work, discussions, role-plays, and real-life engineering scenarios. • Multimodal Instruction: Utilize a variety of teaching resources and materials, including audiovisual materials, interactive online platforms. Incorporate visual aids, diagrams, and multimedia tools to enhance comprehension and engage visual and auditory learners. .

Student Workload (SWL)			
Structured SWL (h/sem)	32	**Structured SWL (h/w)**	6.0
Unstructured SWL (h/sem)	30	**Unstructured SWL (h/w)**	4

Total SWL (h/sem)	62

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	It's a wonderful world! Grammar: Auxiliary verbs, naming tenses, questions and negative. Vocabulary: Social expressions, sport and Leisure. Reading: Wonders of the modern world. Writing: Topic sentences. Listening: My wonders exercise.
Week 2-3	Get happy! Grammar: Present tenses, simple and continuous, and present passive. Vocabulary: Numbers and dates, money and fractions Reading: The clown doctor. Writing: Developing paragraphs with descriptive details. Listening: Sports exercise
Week 4-6	Doing the right thing Grammar: Modal verbs – obligation and permission. Reading: A world guide to good manners. Vocabulary: Nationality words, countries and adjectives. Writing: Review of descriptive vocabulary. Listening: Come round to my place exercise.
Week 7- 8	Types of loads

Week 9-12	Roads
Week 13-14	Pavement Design
Week 15-16	Thesis writing

Delivery Plan (Weekly Lab. Syllabus)

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

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	New Headway Plus Intermediate Student Book, Liz and Hohn Soars, 2006, Oxford University Press. Writing in Paragraphs, Dorothy E Zemach and Calos Islam, 2010, Macmillan.	yes
Recommended Texts	…	
Websites	News – Biomedical Engineering at the University of Michigan (umich.edu) TED-Ed - YouTube BBC Learning English - 6 Minute English	

APPENDIX:

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

Note:

NB 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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTOR FORM

Module Information

Module Title	FLUID MECHANICS	**Module Delivery**	
Module Type	BASIC	**Theory lecture**	
Module Code	CIV036		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	3	**Semester of Delivery**	1
Administering Department	Civil Engineering	**College**	Engineering
Module Leader	Wurood Husieen Qhban	**e-mail**	wurood.hussien@uowa.ed.iq
Module Leader's Acad. Title	Assist Lecturer	**Module Leader's Qualification**	Master
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	15/09/2024	**Version Number**	1.0

Relation With Other Modules

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. To review essential grammar of the language. 2. To develop writing skills in engineering topics with focus on enhancing students' abilities to deliver ideas clearly according to academic writing structure, including introduction paragraph, body paragraphs and a conclusion. To improve students' reading and comprehension skills in engineering topics, especially in prosthetics and orthotics engineering, and help them extract relevant information and summarize key points accurately. 4. To enhance students' vocabulary in engineering topics, through reading and listening activities. 5. To improve students' ability to listen effectively to different listening materials in engineering topics, understand the basic ideas, and summarize key points. 6. To improve students' ability to speak and present ideas in front of the class. 7. To enhance students' ability to engage and participate in classes through group reading or discussion.
Module Learning Outcomes	1. Knowledge of the properties of fluid . 2. Knowledge of methods of measuring and calculating atmospheric and absolute pressure, and laboratory pressure. 3. Calculating the hydrostatic forces generated by the fluid at rest 4. Calculating the hydraulic forces generated by the fluid in the flow. 5. Determine the type of the flow. 6. Calculating major and secondary losses. Knowledge of open channel flow and the major equation.
Indicative Contents	Indicative content includes the following. 1- <u>Fluid Properties and Type of Fluid</u> This part will explain • Weight Density. • Mass Density. • Specific gravity. • Viscosity.

	• Surface Tension. • Vapor pressure. 2- Pressure and its Measurements includes following concepts • Fluid Pressure at Point. • Pressure Variation in a Fluid at a Rest. • Absolut, Gauge, Atmospheric and Vacuum Pressure. • Piezometer. 3- Hydrostatic Forces on Surface • Vertical and Horizontal Plan Surface Submerge in Liquid. • Inclined Plan Surface Submerge in Liquid. • Curved Surface Submerge in Liquid. 4- Dimensional Analysis and Similarity • The Principle of Dimensional Homogeneity. • The Pi Theorem 5- Real Fluid Flow in Pipe • Flow Classification. • Head Loss—The Friction Factor. • Major Losses. • Mainor Losses. 6- Flow in Open Channel • Chezy Equation. • Manning Equation. • Hydraulic Jump.

Learning and Teaching Strategies	
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)			
Structured SWL (h/sem)	122	**Structured SWL (h/w)**	8
Unstructured SWL (h/sem)	53	**Unstructured SWL (h/w)**	3.5
Total SWL (h/sem)	175		

Module Evaluation

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10% (10)	5 , 9 and 13	LO #3, 5 and 6
	Assignments	2	10% (10)	2, 12	LO # 3,4,6, and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10%(10)	-	-
Summative assessment	Midterm Exam	2 hr	20% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100%(100)		

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Fluid Properties.
Week 2	Pressure variation in static fluid.
Week 3	Forces on plane surfaces.
Week 4	Forces on curved surfaces.
Week 5	Continuity equation.
Week 6	Energy equation (Ideal fluid).
Week 7	Mid-term Exam + Application of Energy equation.
Week 8	Application of Energy equation.
Week 9	Momentum equation.
Week 10	Flow of real fluid.
Week 11	Dimensional analysis
Week 12	Fluid flow in pipes: Friction losses
Week 13	Fluid flow in pipes: Minor losses.
Week 14	Flow in open channels
Week 15	Flow in open channels
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab 1: (Viscosity), Capillary property measurement (Capillary)
Week 2	Lab 2: Determination the Centre of Pressure for a Plane Surface
Week 3	Lab 3: (Bernoulli's Equation)
Week 4	Lab 4: (Impact of jet)
Week 5	Lab 5: (Bernoulli's Equation)
Week 6	Lab 6: (Orifice)
Week 7	Lab 7: (Reynolds)

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Elementary fluid mechanics" by Johan K. Vennard,Robert L. Street.	Yes
Recommended Texts	Fluid Mechanics and Hydraulics", by Shaum Series.	No
Websites	https://library.uoh.edu.iq/admin/ebooks/53960-fluid-mechanics-4th-ed---f.-white.pdf	

APPENDIX:

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

NB 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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTOR FORM

Module Information

Module Title	MATHEMATICS I I I		**Module Delivery**	
Module Type	BASIC		**Theory** **lecture** **practical**	
Module Code	ENG032			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	3	**Semester of Delivery**	1	
Administering Department	Civil engineering	**College**	Engineering	
Module Leader	Noor Ul-Huda Kadhim Hussein	**e-mail**	nooralhuda@uowa.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	M.Sc.	
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Review Committee Approval	2024/9/26	**Version Number**	1	

Relation With Other Modules

Prerequisite module	mathematics I I	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	The module aims to provide students with a solid understanding of the fundamental concepts and techniques of linear algebra. This includes the study of linear equations. Students will also learn how to apply these concepts to solve real-world problems in various fields such as engineering, physics, economics, and computer science. By the end of the module, students should be able to manipulate and analyze mathematical models using linear algebraic tools and communicate their findings effectively.
Module Learning Outcomes	On completion of this module, students are expected to be able to: 1. Differentiate functions using the chain rule, product rule, quotient rule, and differentiation formula. 2. Formulate and solve first, second and higher order differential equations by algebraic methods. 3. Apply Fourier series to solving ordinary differential equations. 4. Test a given series for convergence, Determine whether a given sequence converges or not. 5. Differential Equations: Ordinary differential equations (ODEs) and partial differential equations (PDEs) are extensively used to describe dynamic systems and phenomena in engineering. They play a crucial role in fields such as fluid mechanics, heat transfer, structural analysis, and electrical circuits. 6. Apply methods of general and particular solutions to ordinary differential equations. 7. Formulation of a mathematical problem, mathematical formulation and use of mathematical methods in solving. 8. Find the Laplace transform of a function from the definition of a Laplace transform. 9. Find the Laplace transform of derivatives and integrals.
Indicative Contents	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. 5. Number theory: The study of properties of numbers and their relationships with each other. Overall, the Indicative Contents of a Mathematics module aims to provide students with a comprehensive

	understanding of mathematical concepts and their applications 3 in various fields of study.

Learning and Teaching Strategies

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)

Structured SWL (h/sem)	78	**Structured SWL (h/w)**	6.0
Unstructured SWL (h/sem)	72	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	150		

Module Evaluation تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Ordinary differential Equations: First order (variables separable, homogeneous, linear, Bernoulli and exact). Second order (Homogeneous and non-homogeneous). Higher order differential equations
Week 2	
Week 3	
Week 4	
Week 5	Partial Differentiation: Function of two or more variables, Partial derivatives, Directional derivative, Gradient, divergence, curl, Tangent plane and normal line, Maxima, minima & saddle point.
Week 6	
Week 7	

Week 8	Laplace Transform: Unit step function, Gamma function, Definition of L.T. and Properties, Inverse Laplace Transform, partial fractions, solution of differential equations using Laplace transform.
Week 9	
Week 10	
Week 11	Sequences and series: Sequences, convergence, Series, geometric series, nth partial sum, test of convergence, alternating series, Power and Taylor's series.
Week 12	
Week 13	Fourier Series: Periodic functions, Fourier series, Even and odd functions, Half -Range expansions, Complex notation for Fourier series
Week 14	
Week 15	
Week 16	

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week7	

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Erwin Kreyszig, "Advanced Engineering Mathematics", 10th Ed.	yes
Recommended Texts	1. George B. Thomas Jr., "CALCULUS", 14th 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	

APPENDIX:

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

Note:

NB 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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTOR FORM

Module Information			
Module Title	STRENGTH OF MATERIALS I	**Module Delivery**	
Module Type	Core	**Theory**	
Module Code	CIV033	**Lecture**	
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	**Semester of Delivery**	1
Administering Department	Civil Engineering	**College**	Engineering
Module Leader	Wail Asim Mohammad	**e-mail**	wael.essam@uowa.edu.iq
Module Leader's Acad. Title	Asst. Prof.	**Module Leader's Qualification**	PHD
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	2024/9/26	**Version Number**	1

Relation With Other Modules			
Prerequisite module	Engineering Mechanics	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. To develop problem solving skills and understanding of materials theory through the application of techniques. 2. To understand the relation between the forces and the stresses. 3. This course deals with the basic concept of stresses and strains. 4. This is the basic subject for all types of determinate structures. 5. To understand the methods of solving stresses, strains, and deflections problems.
Module Learning Outcomes	1. Recognize how determinate structures works under various types of loading. 2. List the various loading associated with determinate structures. 3. Summarize what is meant by a stresses and strains. 4. Describe the stress, the strains and the deflection. 5. Define Hook's law. 6. Identify the basic structural elements and their applications. 7. Discuss the various properties of beams, columns.
Indicative Contents	Indicative content includes the following Fundamental Principles of Mechanic: - Concept of force, units of force (SI units), Moment of force, conditions of equilibrium - Forces and Moments: Differential equilibrium relationship, Shear force and bending moment diagrams. Stresses. - Concept of stresses, Stresses due to axial stress, Average shearing stress. Stresses in beams. - Bending stresses, Shearing stresses, Compound stresses Strains. - Definition, Hook,s Low, Poisson,s ratio, Thermal strain, Stress-strain diagram, Linear relation between E,G and V. Transformation of stress and strain. - Equation for the transportation of plane stress, Principal stress, Mohr, s Circle of stress, Equations for transportation of plane strain Mohr,s Circle of stress. Torsion. - The torsion formula for solid circular shaft, Design of circular members in torsion, Angle of twist of circular members in torsion, Thin- walled hollow members, Solid non circular sections. Deflection of Beams.

	- Governing differential equation for deflection of elastic beam, Double Integration method, Moment area method. Columns. - Natural of the beam column problem, Euler buckling load

Learning and Teaching Strategies	
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 that are interesting to the students.

Student Workload (SWL)			
Structured SWL (hr/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (hr/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	125		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 , 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2 , 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	All	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% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Fundamental principles of mechanic: - Concept of force, units of force (SI units).
Week 2	Fundamental principles of mechanic: - Moment of force, conditions of equilibrium.
Week 3	Forces and moments: - Differential equilibrium relationship.
Week 4	Forces and moments: Shear force and bending moment diagrams
Week 5	Forces and moments: Shear force and bending moment diagrams
Week 6	Forces and moments: Shear force and bending moment diagrams
Week 7	Torsion: - The torsion formula for solid circular shaft, Design of circular members in torsion
Week 8	Torsion: - Angle of twist of circular members in torsion.
Week 9	Torsion: - Thin- walled hollow members, Solid non-circular
Week 10	Stresses: - Concept of stresses, Stresses due to axial stress.
Week 11	Stresses: - Stresses due to axial stress.
Week 12	Stresses: - Average shearing stress, Thin-walled pressure vessels.
Week 13	Stresses in beam: - Bending stresses
Week 14	Stresses in beam: - Shearing stresses.
Week 15	Stresses in beam: - Compound stresses.
Week 16	Preparatory week before the final Exam

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

Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Strength of Materials, by: Singer.	Yes
Recommended Texts	1- Introduction to Mechanics of Solid, by: E. Popov. 2- Elements of Strength of Materials, by: Timoshenko 3- Mechanics of Materials by: Russell C. Hibbeler. 3- Mechanics of materials by: Ferdinand Beer et al. 4- Mechanics of Materials by: Manua Gere. 6- Strength of Materials, J. P. Den Hartog	yes
Websites		

Appendix :

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

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.

	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTION FORM

Module Information			
Module Title	STRENGTH OF MATERIALS II	**Module Delivery**	
Module Type	CORE		☒ **Theory**
Module Code	CIV043		☒ **Lecture**
ECTS Credits	5		☐ **Lab**
SWL (hr/sem)	125		☒ **Tutorial**
Module Level	2	**Semester of Delivery**	2
Administering Department	Civil engineering	**College**	Engineering
Module Leader	Wail Asim Mohammad	**e-mail**	wael.essam@uowa.edu.iq
Module Leader's Acad. Title	Assist.prof.doctor	**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	20/10/2024	**Version Number**	1.0

Relation with other Modules			
Prerequisite module	Strength of Materials I	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. To develop problem solving skills and understanding of materials theory through the application of techniques. 2. To understand the relation between the forces and the stresses. 3. This course deals with the basic concept of stresses and strains. 4. This is the basic subject for all types of determinate structures. 5. To understand the methods of solving stresses, strains, and deflections problems.
Module Learning Outcomes	1. Recognize how determinate structures works under various types of loading. 2. List the various loading associated with determinate structures. 3. Summarize what is meant by a stresses and strains. 4. Describe the stress, the strains and the deflection. 5. Define Hook's law. 6. Identify the basic structural elements and their applications. 7. Discuss the operations of sinusoid and phasors in an electric circuit. 8. Discuss the various properties of beams, columns.
Indicative Contents	Indicative content includes the following. **Strains**: - Definition, Hook's Low, Poisson's ratio, Thermal strain, Stress-strain diagram, Linear relation between E,G and V. **Transformation of stress and strain**: - Equation for the transportation of plane stress, Principal stress, Mohr' s Circle of stress, Equations for transportation of plane strain Mohr's Circle of stress. **Deflection of Beams**: - Governing differential equation for deflection of elastic beam, Double Integration method, Moment area method. **Columns:** - Natural of the beam column problem, Euler buckling load

Learning and Teaching Strategies	
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 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
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	132		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	-	-	-	-
	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	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	**Strain**: - Definition, Hook's Low, Poisson ' s ratio.
Week 2	**Strain**: - Thermal strain.
Week 3	**Strain**: - Stress-strain diagram.
Week 4	**Strain**: - Linear relation between E,G and V
Week 5	**Transformation of stress and strain**: -Equation for the transportation of plane stress.
Week 6	**Transformation of stress and strain**: -Principal stress, Mohr' s Circle of stress.
Week 7	**Transformation of stress and strain**: -Equations for transportation of plane strain Mohr ' s Circle of stress
Week 8	**Transformation of stress and strain**: -Equations for transportation of plane strain Mohr ' s Circle of stress
Week 9	**Deflection of beams**: - Governing differential equation for deflection of elastic beam.
Week 10	**Deflection of beams**: - Double Integration method, Multiple Equation Methods.
Week 11	**Deflection of beams**: - Double Integration method, General Equation Method.
Week 12	**Deflection of beams**: - Moment area method
Week 13	**Columns:** -Natural of the beam column problem, Euler buckling load
Week 14	**Columns:** -Natural of the beam column problem, Euler buckling load
Week 15	**Columns:** -Natural of the beam column problem, Euler buckling load
Week 16	**Preparatory week before the final Exam**

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

Week 7	

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Strength of Materials, by: Singer.	Yes
Recommended Texts	Introduction to Mechanics of Solid, by: E. Popov. Elements of Strength of Materials, by: Timoshenko Mechanics of Materials by: Russell C. Hibbeler. Mechanics of materials by: Ferdinand Beer et al. Mechanics of Materials by: Manua Gere. Strength of Materials, J. P. Den Hartog	yes
Websites		

Appendix :

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 works with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
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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.