

Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation device
Department of Quality Assurance and Academic Accreditation
Department Accreditation



Academic program and course description guide

2025-2026

Introduction:

The educational program is considered a coordinated and organized package of academic courses that includes procedures and experiences organized in the form of academic vocabulary, the main purpose of which is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs such as the external examiner program.

The description of the academic program provides a brief summary of the main features of the program and its courses, indicating the skills that students are working to acquire based on the objectives of the academic program. The importance of this description is evident because it represents the cornerstone of obtaining program accreditation, and the teaching staff participates in writing it under the supervision of the scientific committees in the scientific departments.

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the latest developments in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, quarterly), in addition to adopting the description of the academic program circulated according to the book of the Department of Studies 3/2906. On 5/3/2023 with regard to programs that adopt the Bologna Process as a basis for their work.

In this area, we can only emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth conduct of the educational process

Concepts and terminology:

Description of the academic program: The description of the academic program provides a brief summary of its vision, mission, and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a necessary summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be a developed, inspiring, motivating, realistic and applicable program.

The program's mission: It briefly explains the goals and activities necessary to achieve them, and also defines the program's development paths and directions.

Program objectives: These are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum structure: All courses/study subjects included in the academic program according to the approved learning system (semester, annual, Bologna track), whether it is a requirement (ministry, university, college, or scientific department), along with the number of study units.

Learning outcomes: A consistent set of knowledge, skills, and values that the student has acquired after the successful completion of the academic program. The learning outcomes for each course must be determined in a way that achieves the program objectives.

Teaching and learning strategies: They are the strategies used by the faculty member to develop the student's teaching and learning, and they are plans that are followed to reach the learning goals. That is, it describes all curricular and extracurricular activities to achieve the learning outcomes of the programming.

Academic Program Description Form

University Name: Northern Technical University

College: College. Hawija Technology

Scientific Department: Department of Building and Construction Engineering Technology

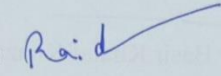
Academic or Professional Program Name: Bachelor of Building and Construction Engineering Technology

Final Certificate Name: Bachelor of Building and Construction Engineering Technology

Curriculum: Bologna Process

Description Preparation Date: 1 / 9 / 2025

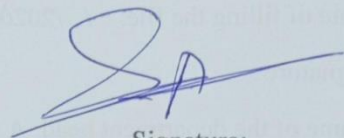
File Fill Date: 1 / 9 / 2025

Signature: 

Scientific Assistant's Name: Asst. Prof.

Raed Waad Allah Dawood

Date : 8 / 9 / 2025

Signature: 

Head of Department:

Lect. Dr. Mohammed Jiyad Laji

Date : 8 / 9 / 2025

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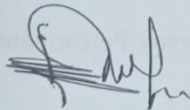
Quality Assurance and Performance Evaluation Division

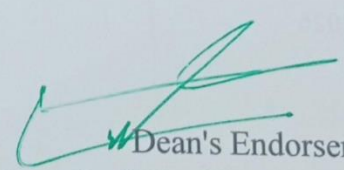
Name of the Director of the Quality Assurance and Performance Evaluation Division

Mohammed Jawad Ahmed

Date : 14 / 9 / 2025

Signature



 Dean's Endorsement

Asst. Prof. Dr. Ahmed Abdullah Danook

Date: 15 / 9 / 2025

1. Vision

The Department of Building and Construction Techniques Engineering strives for excellence and leadership in education and scientific research at the bachelor's level. The department aims to prepare outstanding technical engineers capable of keeping up with and advancing the rapidly evolving technology in the construction sector. It works to enhance scientific research and development through innovative research projects that contribute to the sector's growth. The department also aims to supply the labour market with competencies capable of creating new job opportunities outside the public sector, contributing to self-development and serving the community. It focuses on preparing graduates who are proficient in designing, implementing, and managing engineering projects according to the highest quality standards.

2. Program message

Prepare technologically proficient engineers with the capability to employ modern techniques in designing, implementing, and maintaining diverse engineering projects. Also, equip them to manage and operate specialized production units for manufacturing construction materials and structural systems. Develop their ability to inspect various types of construction materials and structures. Foster a culture of continuous learning, self-improvement, and accessing reliable information sources. Additionally, cultivate and support creativity, innovation, and development among students and graduates, addressing the cultural requirements related to heritage and economic requirements. Facilitate employment opportunities for graduates, minimizing reliance on foreign competencies.

3. Program Goals

The **Building and Construction Techniques Engineering** department aims to:

1. Provide comprehensive academic programs leading to Bachelor's degrees in Building and Construction Techniques Engineering, focusing on developing engineering and technical skills to meet labour market demands.
2. Equip graduates with high-level competencies in designing, executing, and maintaining engineering projects, with the ability to integrate modern technologies and innovative solutions in the field of construction and building.
3. Advance scientific research in Building Technologies and Construction Materials Engineering, with a focus on applied research that addresses engineering challenges and contributes to technological advancements.
4. Offer engineering consultancy and technical services for various projects and enhance collaboration with governmental and private sectors to support sustainable infrastructure development.
5. Strengthen engagement with graduates to monitor their professional growth and utilize their expertise in updating curricula, ensuring alignment with modern advancements in the construction sector.
6. Contribute to community development by providing training courses and professional

development programs for workers in the construction and building sector, aiming to enhance workforce efficiency and improve project quality.

4. Program accreditation

The program has applied for program accreditation from the National Council for Program Accreditation of Technical Engineering Education, which operates under the Scientific Supervision and Evaluation Apparatus.

5. Other external influences

The program is supported by various external and local entities. Notably, the department has collaborated closely with international organizations such as UNESCO, which has played a significant role in supporting curriculum development efforts to align with labor market needs. Additionally, local partners have contributed by offering employment opportunities to graduates, as well as post-graduation training programs designed to prepare students for successful integration into the job market

6. Program structure

Program Structure	Number of Courses	Study Unit	Percentage	Notes*
Enterprise requirements	6	11	14.6	Secondary course
College requirements	6	46	14.6	Basic course
Department requirements	26	183	63.4	Basic course
summer training	2	-	3.2	Basic course
Others	None			

* Notes may include whether the course is core or elective.

7. Program description

Level/Semester	course code	Course or course name	Credit hours	
First / First	NTU101	English Language	Theoretical	2
First / First	NTU100	Democracy & Human Rights	Theoretical	2
First / First	BCE101	Construction Materials	Theoretical	2
			Practical	3

First / First	BCE102	Plain Surveying	Theoretical	2
			Practical	3
First / First	BCE103	Engineering Mechanics (Static)	Theoretical	5
First / First	BCE104	Engineering Drawing and Descriptive Geometry	Practical	6
First / First	BCE105	Engineering Physics	Theoretical	3
First / Second	BCE106	Building Materials	Theoretical	2
			Practical	3
First / Second	BCE107	Surveying-I	Theoretical	2
			Practical	3
First / Second	BCE108	Engineering Geology	Theoretical	2
			Practical	1
First / Second	BCE109	Engineering Mechanics (Dynamic)	Theoretical	4
First / Second	BCE110	Calculus-1	Theoretical	4
First / Second	NTU102	Computer	Practical	2
First / Second	NTU103	Arabic Language	Theoretical	2

8.Expected learning outcomes of the program	
Knowledge	
A 1: Specialized Engineering Knowledge	Demonstrate comprehensive understanding of structural, geotechnical, transportation, and environmental engineering relevant to building and construction technologies.
A 2: Construction Materials and Technologies	Identify and assess traditional and advanced construction materials in terms of properties, applications, durability, sustainability, and environmental impact.
A 3: Engineering Codes and Standards	Understand and apply national and international engineering regulations, codes, and standards in design and execution of construction projects.
A 4: Construction Technology and Innovation	Demonstrate awareness of modern construction technologies including prefabrication, smart materials, and digital engineering tools.
Skills	
B1 – Site Investigation, Surveying and Testing:	Conduct laboratory and field tests (destructive and non-destructive) on materials and soils; analyze results for compliance and structural integrity. Use modern surveying equipment and software for land measurement, leveling, layout, and infrastructure design
B2 – Technical Drawing and Structural analysis:	Prepare and interpret structural and architectural drawings using CAD tools; generate quantity takeoffs, cost estimates, and technical reports. Utilize engineering software to analyze and evaluate structural systems in terms of strength, stability, and safety

B3 – Project Planning, Management, and Site Management	Apply project scheduling and resource management techniques for efficient execution of engineering projects. Manage construction site activities, including equipment logistics, quality control, and adherence to health and safety protocols
B4 – Documentation and Safety management:	Compile technical documentation and reports in line with engineering standards. Implement and monitor health and safety protocols on-site to ensure compliance with regulatory frameworks
Ethics	
C1 – Professional Ethics:	Practice engineering with integrity, accountability, and fairness, adhering to ethical standards and societal responsibility.
C2 – Environmental Responsibility:	Integrate sustainability principles and eco-friendly practices throughout project planning, design, and execution.
C3 – Lifelong Learning:	Commit to continuous personal and professional development by staying current with advancements in construction engineering.
C4 – Leadership and Teamwork:	Demonstrate effective leadership, collaboration, and communication skills within multidisciplinary project teams.

9. Teaching and learning strategies

The teaching and learning strategies for the program are designed to ensure active engagement and skill acquisition through a variety of methods. These include:

1. Interactive lectures and problem-based learning (PBL)
2. Laboratory and field work

3. Design projects and case studies
4. Summer training
5. Group discussions and seminars
6. Use of simulation and engineering software tools
7. Capstone project for integrative learning

10. Evaluation methods

Evaluation is conducted continuously and systematically across the program stages using a combination of methods such as:

- Written exams (midterm and final)
- Quizzes and assignments
- Laboratory and practical reports
- Project presentations and technical documentation
- Oral examinations and peer assessment
- Evaluation of internship performance
- Capstone project defence and rubric-based assessment

11. Education institution

Faculty members

Scientific rank	Specialization		Special requirements/skills (if any)		Preparing the teaching staff	
	General	Private			Permanent staff	lecturer
Prof	Civil	Construction materials			1	-
Assist Prof	Civil	Construction materials/ Structure/ Environment/ Soil Mechanics			5	-
Lecturer	Civil	Construction materials/ Structure/ Environment/ Water resources/ architecture			12	1
Assist Lecturer	Civil/ Water Resources	Construction materials/ Water resources/ Building materials/ Soil mechanics/ architecture			12	5

12. Professional development

Orienting new faculty members

The institution adopts a structured and systematic mentoring process to support new, visiting, full-time, and part-time faculty members in their transition into the academic environment. The process is designed to

foster professional integration, pedagogical competence, and alignment with institutional values and quality standards. The mentoring program includes the following components:

Orientation and Induction Program: All new faculty members attend a mandatory orientation at the beginning of their appointment. This includes an introduction to the institution's mission, academic policies, curriculum framework, teaching and learning strategies, research expectations, and administrative procedures.

Teaching Support and Peer Observation: New faculty are encouraged to participate in peer observation cycles, where they attend and are observed during classroom sessions. Constructive feedback is provided to help them improve their teaching practices. Participation in workshops on instructional design, outcome-based education (OBE), and technology-enhanced learning is also supported.

Regular Review Meetings: Monthly review sessions are held between the Head of department and the new faculty to track progress, discuss challenges, and ensure integration into academic and research activities. These meetings are documented and reported to the scientific committee to monitor mentoring effectiveness.

Professional Development Plan: Each new faculty member develops an individualized professional development plan. This plan outlines short-term and long-term goals for teaching, research, and service.

Professional development for faculty members

The institution implements a continuous professional development plan that includes training in modern teaching and learning strategies, assessment of learning outcomes, use of digital tools and simulation software, and participation in national and international conferences. Faculty are also encouraged to engage in research and community service to enhance their academic profiles.

13. Acceptance standard

Admission to the Building and Construction Techniques Engineering program is primarily granted through centralized admission for graduates of the scientific branch of secondary education, in accordance with the annual requirements and minimum grade thresholds set by the Ministry of Higher Education. Additionally, a limited percentage of top-ranking graduates from technical institutes, as well as a defined percentage of graduates from the industrial branch of vocational secondary schools, may be accepted through direct admission as determined by the Ministry. These candidates must fulfill the academic and administrative requirements stipulated by the institution and relevant regulatory authorities.

14. The most important sources of information about the program

1. The college's official website
2. Program handbook and curriculum guide
3. Academic advisors and department office
4. Ministry of Higher Education portal
5. Orientation sessions and brochures

15. Program development plan

The program is reviewed periodically through feedback gathered from key stakeholders, including

faculty members, students, alumni, and industry partners. The review process incorporates benchmarking with national and international engineering programs, analysis of graduate performance and employability, as well as continuous updates based on technological advancements. In line with this process, the department is also committed to the development of educational laboratories and field training facilities, aiming to enhance the practical and applied aspects of the curriculum and ensure a modern learning environment that aligns with contemporary engineering education standards.

All such initiatives and activities are documented in the department's strategic plan, which was formally approved by the Department Council and the College Deanery at the beginning of the current academic year, reflecting the department's commitment to academic quality and sustainable development.

Program skills chart															
				Learning outcomes required from the program											
Level / semester	Course Code	Course Name	Essential or optional	Knowledge				Skills				Values			
				1A	2A	3A	4A	B1	B2	B3	B4	C1	C2	C3	C4
First / First	NTU100	Democracy and Human Rights	Basic								√				√
First / First	NTU101	English Language	Basic								√			√	
First / First	BCE101	Construction Materials	Core		√			√					√		
First / First	BCE102	Plain Surveying	Core	√				√						√	
First / First	BCE103	Engineering Mechanics (Static)	Core	√					√			√			
First / First	BCE104	Engineering Drawing and Descriptive Geometry	Core	√					√					√	
First / First	BCE105	Engineering Physics	Support	√										√	
First / Second	BCE106	Building Materials	Core		√			√					√		
First / Second	BCE107	Surveying-I	Core	√					√					√	
First / Second	BCE108	Engineering Geology	Support	√				√				√			
First / Second	BCE109	Engineering Mechanics (Dynamic)	Core	√					√			√			
First / Second	BCE110	Calculus-1	Core	√							√			√	
First / Second	NTU102	Computer	Core				√		√						√

First / Second	NTU103	Arabic Language	Basic								√				√
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Fourth / Second	BCE 410	Safety in Construction	Support	√						√		√			
Fourth / Second	BCE 411	Computer Aided Design of Structure	Core	√					√			√			
Fourth / Second	BCE 412	Repairs & Rehabilitation of Structures	Core	√					√					√	
Fourth / Second	BEC 413	Sustainable Construction Materials	Core				√	√						√	
Fourth / Second	BEC 414	Innovative Project-II	Core	√					√						√



MODULE DESCRIPTION

وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Construction Materials		Module Delivery		
Module Type	Core		☐ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar		
Module Code	BCE 101				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		1			Semester of Delivery
Administering Department		BCE	College	HTC	
Module Leader	Tahreer ahmed ibrahim		e-mail	tahreer_hwj@ntu.edu.iq	
Module Leader's Acad. Title		Assistant Lecturer	Module Leader's Qualification		Master degree
Module Tutor			e-mail	E-mail	
Peer Reviewer Name			e-mail	E-mail	
Scientific Committee Approval Date		03/08/2025	Version Number		2.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course provides full knowledge about the construction materials properties, standards and laboratory tests.



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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Understanding the characteristics of different construction materials. - The ability of utilizing the proper construction material according to the type of structure. - Understanding the installation methods of construction materials. - Understanding the standards specification of construction materials.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Enable students to identify the physical and mechanical properties of the common construction materials. - Improving the student ability of selecting the suitable material that qualifies the requirements of the desired work. - Enabling the students to work as a laboratory field tester. - Improving the students' skills enabling the establishment of a career based on the academic knowledge.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Lecture method using a whiteboard and a data show. - Forming working groups during the laboratory sessions to conduct the desired tests. - Preparation of seminars by students under the supervision of their lecturer. - Giving students assignments (H.W) to evaluate the students benefit from the lesson. - Conducting a scientific technical visit to an under construction visit - Forming groups to conduct a project during the course. - Attending online (web-based) sessions.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 أسبوعاً			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	83	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		



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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	- Demonstrates knowledge of the Physical properties & standard specification for construction materials. - Ability to identify types of metallic materials, nonmetallic materials.
Week 2	- Demonstrates knowledge of the Physical properties & standard specification for construction materials - Ability to identify types of metallic materials, nonmetallic materials.
Week 3	Demonstrates Advantages & disadvantages of clay bricks
Week 4	- Identifying clay brick types of defects, Standard specification. - Correctly implement Continuity equation.
Week 5	Demonstrates knowledge of the Sand-lime brick: Properties.



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	Conducts the Standard tests & monitor the specification.
Week 6	- Demonstrates knowledge of the Glass bricks, Concrete bricks: Properties. - Conducts the Standard tests & monitor the specification.
Week 7	- Recognition of laboratory Steady flow in pressure conduits; laminar and turbulent flow; critical flow. - Correctly execute general equation for conduit friction; friction for laminar flow; friction for turbulent flow; pipe roughness.
Week 8	- Ability to identify the Cellular concrete blocks: Properties. - Monitoring and conducting Standard tests & specification.
Week 9	Demonstrates knowledge and Definition of the Building stone
Week 10	Demonstrates the classification of the building stones.
Week 11	Demonstrates the uses and properties of the building stones.
Week 12	Ability to identify the Bonding materials: Classification, Chemical composition, properties & uses of common bonding materials.
Week 13	Monitoring and conducting Standard tests & specification (Cement mortar, Cement lime mortar, Gypsum)
Week 14	Demonstrates knowledge of the Types, Properties of flooring materials (Tiles & concrete flags)
Week 15	Demonstrates knowledge standards tests & specification of flooring materials.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Recognition of laboratory, Using of balances.
Week 2	Able to conduct and identify the Clay brick tests: Density , Dimension , Absorption , Compressive strength , Efflorescence , Analysis of soluble salts , Porosity
Week 3	Able to conduct and identify the Sand-lime brick tests: (Density, Absorption, Compressive strength).
Week 4	Able to conduct and identify the Concrete bricks & block tests: (Density, Absorption, Compressive strength).



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Week 5	Able to conduct and identify the Cellular concrete block tests: (Density, Absorption, Compressive strength).
Week 6	Able to conduct and identify the Bonding materials (gypsum) tests: Fineness, Standard consistency, Time of setting of gypsum, Compressive strength, Tensile strength of gypsum.
Week 7	Able to conduct and identify Tile tests: (Dimension, Total absorption, Face absorption, Modulus of rupture).

Learning and Teaching Resources

مصادر التعلم و التدريس

	Text	Available in the Library?
Required Texts	Construction materials reference book by John M. Cimbala.	No
Recommended Texts	Construction materials their nature and behavior	No
Websites	www.buildforless.co.uk	



Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				



Module Information					
معلومات المادة الدراسية					
Module Title	Plane Surveying		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	BCE 102				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		1			Semester of Delivery
Administering Department		BCE	College	HTC	
Module Leader	Asal Mahmood Hamad		e-mail	asalmahmood_hwj@ntu.edu.iq	
Module Leader's Acad. Title			Module Leader's Qualification		
Module Tutor			e-mail	mbasher@ntu.edu.iq	
Peer Reviewer Name			e-mail	E-mail	
Scientific Committee Approval Date		03/08/2025	Version Number		2.0

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

Module Aims, Learning Outcomes and Indicative Contents	
اهداف المادة الدراسية ونتائج التعلم و المحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	- Understanding how to determine points, distances, and land areas. - Familiarity with surveying instruments related to the practical aspect. - Understanding the fundamentals of obstacles in field. - Understanding how to calculate the lengths of traverses. - Understanding the mathematical methods for calculations.



Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Recognize how to use tools in measurement of lengths and angles. • List the various method in measurement. • Summarize what is obstacles and how to avoid it in lengths measurement. • Discuss the errors through the measurement of lengths. • Describe the environmental effects on errors of measurement. • Define the mathematical formula to determine the errors in measurement. • Discuss the theory of fixing traverses in field. • Discuss the various errors in lengths and angles in traverses. • Explain the mathematical formula to determine the area of traverse. • Identify the methods to determine the regular and irregular areas.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to Surveying – Types of surveying, plane surveying, methods of survey and advantages of surveying. Points, Lengths and Angles – Set of points and lines, measurement of lines and angles, types of errors in measurement. Obstacles – Types of obstacles, measurement lines through obstacles. Traverses – Types of traverses, interior angles, lines and corrections Area Measurement – Area measurement, typical area, area formula, trapezoidal method, Simpson's method Area of Traverses – Area of traverse, graphical paper, triangle method

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



	experiments involving some sampling activities that are interesting to the students.		
Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب له 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	83	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب اسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب اسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Introduction to surveying
Week 2	Set of points and straight lines
Week 3	Set of angles and curves
Week 4	Measurement of lines and angles
Week 5	Measurement of curves and errors in tape



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Week 6	General view of obstacles
Week 7	Measurement of lines through obstacles
Week 8	Types of traverses
Week 9	Interior angles and lines in traverses
Week 10	Angle correction in traverses
Week 11	Area measurement
Week 12	Mathematical formula of area measurement
Week 13	Trapezoidal and Simpson's methods in area measurement
Week 14	Graphical paper and triangle methods in area measurement
Week 15	Examples on area measurement
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to survey
Week 2	Lab 2: Tools of measurement
Week 3	Lab 3: Obstacles
Week 4	Lab 4: Errors in measurement
Week 5	Lab 5: Fix in field: points, lines and angles
Week 6	Lab 6: Fix of traverse
Week 7	Lab 7: Area of traverse

Learning and Teaching Resources مصادر التعلم و التدريس		
	Text	Available in the Library?
Required Texts	N N Basak (2014). Surveying and Levelling. McGraw Hill Education. p. 542. ISBN 9789332901537	No
Recommended Texts	Brinker, Russell C; Minnick, Roy, eds. (1995). The Surveying Handbook. ISBN 978-1-4613-5858-9	No
Websites	https://www.youtube.com/watch?v=qgwBOVUFDAQ	



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Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				



Module Information					
معلومات المادة الدراسية					
Module Title	ENGINEERING MECHANICS (STATIC)		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar		
Module Code	BCE103				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		1	Semester of Delivery		1
Administering Department		BCE	College	HTC	
Module Leader	Dr.Abdulrazaq Khudhur Abdulwahd		e-mail	abdulrazak_hwj@ntu.edu.iq	
Module Leader’s Acad. Title		Lecturer	Module Leader’s Qualification		Ph.D.
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		03/08/2025	Version Number	2.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
اهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	To give basic information about force vector, moment and vector algebra. To teach the basic principles of particle and rigid cismen balance in the plane and in space. To give basic information about the stability of ties and conveyor systems. To teach the calculation of bond forces, cages, frames and internal forces in cables.
Module Learning Outcomes	Introduction and Main Principles, Vectors and Forces, Static of Material Points, Rigid Bodies, Equivalent Force Systems, Center of Gravity, Equilibrium of Rigid Bodies, Internal Forces in Plane Rod Elements, Cross-Section Effects, Plane and Space Lattice



مخرجات التعلم للمادة الدراسية	Systems, Cables, Moment of Inertia, Potential Energy, Stable.
Indicative Contents المحتويات الإرشادية	Guideline Contents for Engineering Mechanics 1. Introduction and Basic Principles • Definition of engineering mechanics and its importance in engineering applications. • Fundamental concepts of forces, moments, and equivalent force systems. 2. Vectors and Forces • Introduction to vectors and basic operations (addition, subtraction, dot product, and cross product). • Force analysis in two and three dimensions. 3. Statics of Material Points • Equilibrium of particles in planes and space. • Practical applications of force equilibrium. 4. Rigid Bodies and Equivalent Force Systems • Definition and properties of rigid bodies. • Reduction of force systems to an equivalent force and moment. 5. Center of Gravity and Equilibrium of Rigid Bodies • Determination of the center of gravity and centroid. • Conditions and equations for rigid body equilibrium in two and three dimensions. 6. Internal Forces in Structural Elements • Analysis of internal forces in beams, trusses, and frames. • Determination of axial forces, shear forces, and bending moments. 7. Cross-Section Effects and Structural Stability • Effects of internal forces on structural members. • Stability analysis of supports and structural connections. 8. Plane and Space Lattice Systems • Analysis of planar and spatial truss systems. • Calculation of forces in truss members using the method of joints and sections. 9. Cables and Suspension Systems • Equilibrium analysis of cables and tension members.



	- Applications in suspension bridges and cable-supported structures. 10. Moment of Inertia and Structural Response - Calculation of moment of inertia for different cross-sections. - Application in beam bending and rotational motion. 11. Potential Energy and Stability - Concepts of potential energy in mechanical systems. - Stability criteria for mechanical structures and equilibrium conditions.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lecture & In-Class Activities, Preliminary & Further Study, Assignment (Homework), Final Exam, Mid-Term Exam and short Exam.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب له 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	91	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب اسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	59	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب اسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Quizzes	8			



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Formative assessment	Assignments	8			
Summative assessment	Midterm Exam	2hr		7	
	Final Exam	3hr		16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Weeks 1&2	- Demonstrates knowledge about the Introduction to mechanics, Force systems, Scalar & vector quantities, - Able to identify and apply the Parallelogram law, Triangle law, Forces & components.
Weeks 3&4	Able to identify and apply the Moment of a force , Varignon's theorem, and their Applications
Weeks 5&6	- Demonstrates knowledge of the Couples, - Able to identify Resolution of a force into a force & a couple.
Weeks 7&8	Demonstrates knowledge and correctly compute the Resultant of force systems, Resultant of concurrent force system, Resultant of parallel force system, Resultant of non-concurrent force system.
Weeks 9&10 &11	Demonstrates knowledge, identify and correctly compute Equilibrium of force system, Free body diagram, Equilibrium of concurrent force system, Equilibrium of parallel force system, Equilibrium of non-concurrent force system.
Week 12	Demonstrates knowledge of the Types of beams, Supports, and loads, Equilibrium of beams.
Weeks 13&14 ,15	- Demonstrates knowledge of the Trusses - Able to analyses the trusses, method of Joint, method of section.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
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Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Vector Mechanics for Engineers: Statics" by F.P. Beer, E.R. Johnston, and D.F. Mazurek. "Engineering Mechanics: Statics & Dynamics" by R.C. Hibbeler.	NO
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

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Module Information					
معلومات المادة الدراسية					
Module Title	Engineering drawing and descriptive geometry		Module Delivery		
Module Type	Core		☐ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	BCE104				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		1 1	Semester of Delivery		1
Administering Department		BCE	College	HTC	
Module Leader	Hussein Mohammed Issa		e-mail	husseinaysa_hwj@ntu.edu.iq	
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		Ph.D.
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		03/08/2025	Version Number	2.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	statics and Strength of Materials		Semester
Co-requisites module	Fluid Mechanics and Thermodynamics		Semester

Module Aims, Learning Outcomes and Indicative Contents	
اهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	The Module Objectives of an engineering drawing course define the aims or goals that guide the overall structure and content of the module. These objectives outline what the course intends to accomplish and what students



	should be able to do by the end of the module. Below are typical module objectives for an engineering drawing course: • To Introduce Fundamental Concepts of Engineering Drawing • To Develop Proficiency in 2D and 3D Drawing Techniques • To Teach the Use of Engineering Standards and Conventions • To Enable Students to Apply Dimensioning and Tolerancing • To Introduce Sectional and Auxiliary Views for Complex Features • To Develop Skills in Computer-Aided Design (CAD). • To Train Students in Creating Assembly and Detailed Drawings • To Introduce Welding Symbols and Surface Finish Notations • To Teach the Concepts of Limits, Fits, and Tolerances • To Develop the Ability to Read and Interpret Engineering Drawings • To Foster Visualization and Spatial Awareness Skills • To Emphasize Ethical and Professional Responsibility in Engineering Drawing • To Encourage Problem-Solving and Critical Thinking in Drawing • To Introduce the Application of Drawing in Various Engineering Fields
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. The Module Learning Outcomes (MLOs) for an engineering drawing course define what students are expected to achieve by the end of the module. These outcomes focus on both the theoretical understanding and practical application of engineering drawing techniques. Below are typical learning outcomes for a course in engineering drawing. ▪ Understand and Apply Engineering Drawing Standards ▪ Create Accurate 2D Orthographic and Isometric Projections ▪ Dimension and Annotate Drawings Correctly ▪ Interpret and Create Sectional and Auxiliary Views ▪ Develop Assembly and Detail Drawings ▪ Apply Computer-Aided Design (CAD) Tools ▪ Interpret and Create Technical Drawings for Manufacturing ▪ Create Development Drawings for Fabrication ▪ Communicate Engineering Concepts Visually ▪ Understand Ethical and Professional Responsibilities in Engineering Drawing ▪ Develop Problem-Solving Skills in Technical Drawing



	▪ Demonstrate Proficiency in Reading Complex Engineering Drawings
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. The indicative content of an engineering drawing course typically outlines the topics and skills that students will need to master in order to effectively communicate technical ideas through precise drawings. Below is a breakdown of the key areas typically covered in an engineering drawing curriculum, including both traditional manual drawing and computer-aided design (CAD) skills. • Introduction to Engineering Drawing • Limits, grid, object snap, view menu (zoom, pan). • Draw menu (line, poly line, polygon, rectangle, arc, circle, point, text). [8 hrs.]. • Introduction to Engineering Drawing, modify menu, erase, copy, mirror offset, move, rotate, trim, extend, explode, perspective. [8 hrs.]. • Orthographic projection: Types of Projections • Fundamentals of orthographic projection. • First-Angle vs. Third-Angle Projections: Understanding the difference between these projection methods. • Creation of front, top, and side views (multi-view drawings). [10 hrs]. • Draw the projection, Draw the projection with the first angle projection, method Draw the projection with the third angle projection method. [10 hrs]. • Drawing the three projections, Drawing the three projections with the first angle, Drawing the three projections with the third angle projection method. [10 hrs.] • Configuration of a printing layout and the print, configuration and scale of printing. [8 hrs.] • 7. Orthogonal projection: I. representation of a point, line, plane, solid ▪ ii. belonging of a point to a line, of a point/line to a plane [8 hrs.] • particular lays of a line, of a plane. particular lays of a line, of a plane particular lays of a line, of a plane.[8 hrs.] • Perpendicularity between a line and a plane. v. Perpendicularity ▪ between a line and a plane. Perpendicular between two coplanar lines. Perpendicularity between planes Intersection between two



	planes (not parallel). Intersection between a plane and a line [8 hrs.] - Sections Perpendicularity between planes - Intersection between two planes (not parallel). Intersection between a plane and a line, Sections plane-plane. [8 hrs.] - Intersections among solids, solids/plane, - Intersections among solids/line [8 hrs.] - Axonometric, Orthogonal axonometry [8 hrs.] - Oblique axonometry [8 hrs.] - Representation of point, line, plane, solids [8 hrs.]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Engineering drawing is a vital communication tool used by engineers and designers to convey design ideas, measurements, and technical information. Given the precision and complexity required, learning and teaching this subject effectively requires a combination of theoretical understanding and practical application. Here are strategies for both learners and educators to enhance the teaching and learning process. - Understanding Fundamentals First - Incremental Learning: Start Simple, Build Complexity - Use CAD Tools Early in Learning - Visualization and Spatial Awareness - Problem-Based Learning (PBL) - Feedback and Iterative Learning - Hands-on Projects and Workshops - Continuous Practice - Assessment through Practical Tests

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	95	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6



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Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	30	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Limits, grid, object snap, view menu (zoom, pan), Draw menu (line, poly line, polygon, rectangle, arc, circle, point, text)
Week 2	erase, copy, mirror offset, move, rotate, trim, extend, explode, perspective
Week 3	First and third angle projection method
Week 4	Draw the projection with the first angle projection method, Draw the projection with the third angle projection method
Week 5	Drawing the three projections with the first angle, Drawing the three projections with the third angle projection method



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Week 6	Configuration of a printing layout and the print, configuration and scale of printing
Week 7	Mid-term Exam + I. representation of a point, line, plane, solid, ii. belonging of a point to a line, of a point/line to a plane
Week 8	iii. particular lays of a line, of a plane, iv. Parallelism between two lines, parallelism between two planes, parallelism between a line and a plane.
Week 9	v. Perpendicularity between a line and a plane. Perpendicular between two coplanar lines. Perpendicularity between planes, Intersection between two planes (not parallel). Intersection between a plane and a line
Week 10	Perpendicularity between planes, Intersection between two planes (not parallel). Intersection between a plane and a line, Sections plane-plane
Week 11	Intersections among solids, solids/plane, Intersections among solids/line
Week 12	Orthogonal axonometry
Week 13+14	Oblique axonometry
Week 15	Representation of point, line, plane, solids
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE
Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources مصادر التعلم و التدريس
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	Text	Available in the Library?
Required Texts	- Geometric and Engineering Drawing by K. Morling - Fundamentals of Engineering Drawing by Thomas E. French ليوسف نيقولا الهندسة الوصفية	Yes
Recommended Texts	A Text -Book of Engineering Drawing and Design by Sidney H. Wells	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				



Module Information					
معلومات المادة الدراسية					
Module Title	Engineering Physics		Module Delivery		
Module Type	Support		☒ Tutorial ☐ Lecture ☒ Lab ☐ Theory ☐ Practical ☐ Seminar		
Module Code	BCE105				
ECTS Credits	3				
SWL (hr/sem)					
Module Level		1	Semester of Delivery		1
Administering Department		BEC	College	HTC	
Module Leader	Mohammed Chyad liejy		e-mail	Mohammedchead_hwj@ntu.edu.iq	
Module Leader’s Acad. Title		Lecturer	Module Leader’s Qualification		Ph.D.
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		03/08/2025	Version Number	2.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
اهداف المادة الدراسية ونتائج التعلم و المحتويات الارشادية	
Module Objectives اهداف المادة الدراسية	The objectives of this module are to provide students with a comprehensive understanding of fundamental concepts in physics, emphasizing the following key areas: 1. Understand the basic principles of physics and the importance of units and measurements.



	2. Apply concepts of linear and rotational motion to analyze physical phenomena. 3. Utilize Newton's laws to solve problems involving forces and motion. 4. Develop skills in calculating work, kinetic energy, potential energy, momentum, impulse, and collisions. 5. Understand the principles of conservation of energy and momentum. 6. Prepare students for examinations through review and problem-solving sessions. 7.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students will be able to: 1. Identify and convert between different units of measurement and understand the significance of uncertainty and significant figures. 2. Analyze and compute two-dimensional and three-dimensional motion using appropriate equations. 3. Apply Newton's laws to real-world scenarios and solve related problems. 4. Calculate work, kinetic energy, potential energy, and demonstrate an understanding of energy conservation. 5. Compute momentum, impulse, and analyze collisions in one and two dimensions. 6. Describe and calculate rotational motion in rigid bodies, including rotational kinematics and dynamics. 7. Review and consolidate knowledge in preparation for final examinations, demonstrating problem-solving skills.
Indicative Contents المحتويات الإرشادية	• Scope of Physics I: Overview of physics and its applications. • Units and Conversions: Fundamental and derived units, unit conversions, and the importance of significant figures. • Uncertainty and Significant Figures: Understanding measurement uncertainties and how to represent them in calculations. • Linear Motion: Concepts of displacement, velocity, acceleration, and the equations of motion. • 2-D and 3-D Motion: Analyzing motion in two and three dimensions using vector components. • Newton's Laws: Introduction to Newton's laws of motion and their applications. • Applications of Newton's Laws: Problem-solving involving forces, friction, tension, and other applications of Newton's laws. • Work and Kinetic Energy: Definition and calculations of work done by forces, kinetic energy, and the work-energy theorem. • Potential Energy and Conservation of Energy: Calculating gravitational potential energy and understanding energy conservation principles. • Momentum, Impulse, and Collisions: Understanding momentum, impulse, and analyzing elastic and inelastic collisions.



	• Rotational Motion of Rigid Bodies: Calculations involving angular displacement, angular velocity, angular acceleration, and rotational dynamics. • Rotational Kinematics: Concepts and equations governing the motion of rotating objects. • Preparatory Week Before the Final Exam: Review sessions and problem-solving workshops to prepare for final assessments.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Interactive Lectures Hands-on Experiments and Simulations Problem-Based Learning (PBL) Exercises and Group Discussions Homework Review and Feedback Technology-Enhanced Learning Assessment and Reflection

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	50	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب اسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	25	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب اسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #5, #6



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Formative assessment	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #5, #6
	Projects / Lab.	1	10% (10)	Continuou s	All
	Report	1	10% (10)	13	LO #3, #5
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO#1,7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Scope of Physics I, Units, Physical Quantities and Vectors
Week 2	Units and conversions, Uncertainty and Significant Figures
Week 3	Linear Motion
Week 4	compute 2-D and 3-D Motion
Week 5	Newton's Law
Week 6	Applications of Newton's Law
Week 7	Review and solutions of the homework
Week 8	Work and Kinetic Energy
Week 9	Work and Kinetic Energy
Week 10	calculation of the Potential Energy and Conservation of Energy
Week 11	calculation of the Momentum, Impulse and Collisions
Week 12	calculation of the Rotational motion of Rigid Bodies
Week 13	calculation of the Rotational motion of Rigid Bodies
Week 14	calculation of the Rotational Kinematics
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم و التدريس



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	Text	Available in the Library?
Required Texts	"Conceptual Physics" by Paul G. Hewitt.	Yes
Recommended Texts	"University Physics" by Young and Freedman.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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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.				



DEMOCRACY & HUMAN RIGHTS حقوق الانسان و الديمقراطية					
Module Title	Democracy and Human Rights		Module Delivery		
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar		
Module Code	NTU 102				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level		1	Semester of Deliver		2
Administering Department		BEC	College	HTC	
Module Leader	Flaah Haseen Kanoosk		e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		Master
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		03/08/2025	Version Number		2.0

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



Module Aims, Learning Outcomes and Indicative Contents اهداف المادة الدراسية ونتائج التعلم و المحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	• Increase the student's knowledge of the theoretical conceptual aspect and the historical development of human rights and democracy. • Develop the student's analytical and critical skills regarding the reality and future of human rights and democracy. • Train the student on the importance of active participation in public life, such as promoting respect for the principles of human rights and actively participating in political and cultural life. • Enable students to understand the importance of education and its role in spreading the culture of human rights and democracy in building a civilized society based on good governance, which is fundamentally characterized by faith in human rights, education on them, and active participation in governance through free and fair elections.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Human rights: Definition and objectives. • Human rights in contemporary and modern history. • Regional recognition of human rights. • Modern human rights. • Guarantees for respecting and protecting human rights at the national level. • The term democracy.
Indicative Contents المحتويات الإرشادية	• Human rights: Definition and objectives. • Human rights in ancient civilizations, especially the civilization of Mesopotamia. • Guarantees for respecting and protecting human rights at the international level: • The role of the United Nations and its specialized agencies in providing guarantees. • The role of regional organizations (Arab League, European Union, African Union, Organization of American States, ASEAN). [15 hrs] • The role of international and regional non-governmental organizations and public opinion in respecting and protecting human rights. • The term democracy: Its origin, significance, and history. • Democratic systems in the world / Democracy in the Third World / The challenges facing Arab countries in democratic transition. [15 hrs]



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

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	35	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب اسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	15	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب اسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	5 and 10	LO #1, #2, and #5, #6
	Assignments	2	10% (10)	6 and 12	LO#3 and #4
	Projects / Lab.	0	0% (0)		
	Report	1	10% (10)	14	LO #5
Summative assessment	Midterm Exam	2hr	10% (10)	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	حقوق الإنسان ، تعريفها ، أهدافها حقوق الإنسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين
Week 2	حقوق الإنسان في الشرائع السماوية مع التركيز على حقوق الإنسان في الاسلام
Week 3	حقوق الإنسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الإنسان منذ الحرب العالمية الأولى وعصبة الأمم المتحدة
Week 4	الاعتراف الإقليمي بحقوق الإنسان : الاتفاقية الأوروبية لحقوق الإنسان 1950 ، الاتفاقية الأمريكية لحقوق الإنسان 1969 ، الميثاق الأفريقي لحقوق الإنسان 1981 ، الميثاق العربي لحقوق الإنسان 1994
Week 5	حقوق الإنسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين حقوق الإنسان ، المنظمات الوطنية لحقوق الإنسان)
Week 6	حقوق الإنسان في الدساتير العراقية بين النظرية والواقع
Week 7	Mid-term Exam + حقوق الإنسان الاقتصادية والاجتماعية والثقافية وحقوق الإنسان المدنية والسياسية
Week 8	حقوق الإنسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين
Week 9	ضمانات احترام وحماية حقوق الإنسان على الصعيد الوطني ، الضمانات في الدستور والقوانين الضمانات في الرقابة الدستورية ، الضمانات في حرية الصحافة والرأي العام ، دور المنظمات غير الحكومية في احترام وحماية حقوق الإنسان
Week 10	ضمانات واحترام وحماية حقوق الإنسان على الصعيد الدولي : • دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات • دور المنظمات الإقليمية (الجامعة العربية ، الاتحاد الأوروبي ، الاتحاد الأفريقي ، منظمة الدول الأمريكية ، منظمة أسيان) دور المنظمات الدولية الإقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الإنسان
Week 11	مصطلح الديمقراطية ، نشأته ، دلالته ، تاريخ الديمقراطية.
Week 12	الإسلام والديمقراطية ومساوئ الحكم الاستبدادي .
Week 13	الانتقادات الموجهة للديمقراطية، ومحاسن النظام الديمقراطي .
Week 14	الأنظمة الديمقراطية في العالم/الديمقراطية في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول الديمقراطي
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	حقوق الإنسان والديمقراطية للدكتور محمد عابد الجابري 2006	Yes
Recommended Texts	حقوق الإنسان والديمقراطية اعداد أ.م.د. غسان كريم مجذاب و أ.م. امجد زين العابدين طعمة للعام 2018	No



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Websites	” طرق وتعليم وثقافة حقوق الإنسان ” ، منشور على شبكة المعلومات الدولية (الانترنت) على الموقع الالكتروني <u>http://ghrorg-learning.blogspot.com</u>
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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.



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Module Information					
معلومات المادة الدراسية					
Module Title	English language		Module Delivery		
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar		
Module Code	NTU 101				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level		1	Semester of Deliver		1
Administering Department		PM	College	HTC	
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		M. Linguistics and English Language Teaching
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name		Name	e-mail	E-mail	
Scientific Committee Approval Date		03/08/2025	Version Number	2.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	To develop problem solving skills mainly speaking, reading, writing and listening skills and to understand the English language as a foreign language through the application of many techniques.



	• To understand the general principles of the English language. • This course deals with the basic concepts of learning the main rules of English grammar and English vocabularies. • This is the basic subject for writing and speaking English well. • To understand how to build a correct English sentence.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• To recognize how to use the main and auxiliary verbs in addition to the possessive pronouns.. • To list the various words associated with questions and many subject pronouns. • To talk about social expressions and personal information mainly about jobs by using affirmative, negative and interrogative sentences. • To discuss how to use adjectives and their positions in the sentence. • To construct the simple present sentence by using I/ we/ you and they and to define the articles. • To describe the present simple tense with using he/ she and to discuss adverbs of frequency. • To identify the basic question words and demonstrative pronouns and their applications. • To discuss the use of there is/ are and many prepositions. • To discuss the structure of simple past sentences and various irregular verbs. • To explain the negative and interrogative structure of the simple past tense sentence in addition to the adverbs of the past tense. • To identify the use of many adverbs and the use of can/ can't in the sentence and to explain requests and offers. • To elaborate the use of like and would you like and the use of some and any in many expressions. • To discuss the use of the present continuous and the difference between present simple and present continuous sentences. • To explain the structures that are used to refer to future plants.
Indicative Contents المحتويات الإرشادية	• An introduction to the importance of English language learning and the role it plays in social communication. • An application of various tenses like present and past tenses. • Demonstrating many main concepts including (offers, requests, future plants, personal expressions and tenses).



	Using many skills to learn English like listening, reading, writing and speaking skills, moreover; presenting different examples to elaborate any concept or structure.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in this module is associated with the communicative approach which will be applied to develop students' skills to learn English and to enable students to use English in communication, therefore, using authentic materials in the class is so necessary. This approach is important to encourage students' participation in the class and to highlight their motivation in learning English, while at the same time refining and expanding their interactions and skills to achieve at least more success.

Student Workload (SWL) الحمل الدراسي للطالب ل 15 أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب اسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب اسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		



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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Unit one: Hello Am/are/is. my/your This is with practice in work
Week 2	Unit two: Your world He/she/they, his/her Questions
Week 3	Unit three: All about you Personal information/ social expressions
Week 4	Unit four: Family and friends Possessive adjectives/ possessive 's Have/has , adjective + noun
Week 5	Unit five: The way i live Present simple I/we/you/they An/a , adjective + noun



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Week 6	Unit six: Every day Present simple he/she Negatives and questions, adverbs of frequency
Week 7	Unit seven: My favorites Question words, pronouns, this/that
Week 8	Unit eight: Where I live There is/ are, prepositions
Week 9	Unit nine: Times past Was/ were born, past simple and irregular verbs
Week 10	Unit ten: We had a great time Past simple, regular and irregular Questions, negatives, ago
Week 11	Unit eleven: I can do that! Can/can't, adverbs, requests
Week 12	Unit twelve: Please and thank you I'd like, some and any Like and would like
Week 13	Unit thirteen: Here and now Present continuous Present simple and present continuous
Week 14	Unit fourteen: It's time to go! Future plans, writing email and information letter
Week 15	Revision
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم و التدريس		
	Text	Available in the Library?
Required Texts	John and liz Soar. (New Headway Beginner) 4th edition. Oxford: Oxford University Press.	Yes



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Recommended Texts		No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				



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Module Information					
معلومات المادة الدراسية					
Module Title	Building Materials		Module Delivery		
Module Type	Core		☐ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar		
Module Code	BCE 106				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		1 1	Semester of Delivery		2
Administering Department		BCE	College	HTC	
Module Leader	Threer Ahmed Ibraheem		e-mail		
Module Leader's Acad. Title		Assistant Lecturer	Module Leader's Qualification		Master degree
Module Tutor			e-mail	E-mail	
Peer Reviewer Name		Name	e-mail	E-mail	
Scientific Committee Approval Date		03/08/2025	Version Number	2.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives أهداف المادة الدراسية	The course provides teaching students the properties of construction materials, their standard specifications, & their related standard tests.



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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Understanding the characteristics of different building materials. - The ability of utilizing the proper building material according to the type of structure. - Understanding the installation methods of building materials. - Understanding the standards specification of building materials.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Enable students to identify the physical and mechanical properties of the common building materials. - Improving the student ability of selecting the suitable material that qualifies the requirements of the desired work. - Enabling the students to work as a laboratory field tester. - Improving the students' skills enabling the establishment of a career based on the academic knowledge. Total Hours = 149 (Time table hrs x 15 weeks)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Lecture method using a whiteboard and a data show. - Forming working groups during the laboratory sessions to conduct the desired tests. - Preparation of seminars by students under the supervision of their lecturer. - Giving students assignments (H.W) to evaluate the students benefit from the lesson. - Conducting a scientific technical visit to an under construction visit - Forming groups to conduct a project during the course. - Attending online (web-based) sessions.

Student Workload (SWL) الحمل الدراسي محسوبا (15) اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	83	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب اسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب اسبوعيا	4



Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	10% (10)	2 and 13	LO #1 - #2, LO #3 - #4,
	Assignments	6	10% (10)	2 and 13	LO #1 - #2, LO #3 - #4,
	Seminar	3	10% (10)	2 and 13	LO #2 - #3, LO #4 -
	Report	4	10% (10)	2 and 13	LO #1 - #3, LO #4 -
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Demonstrates knowledge of the Water proofing materials:
Week 2	Classification, (Liquid, Rigid & semi-rigid water proofing materials), Types & uses.
Week 3	Demonstrates knowledge of the Polymers: Definition, Classification, Chemical composition, Uses.
Week 4	Demonstrates knowledge of the Epoxy: Definition, Properties, Types & uses.
Week 5	Demonstrates knowledge of the Steel: Composition & classification, Properties, Uses & standard tests.
Week 6	Demonstrates knowledge of the Metallic materials (nonferrous): Classification & use.



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Week 7	• Demonstrates knowledge of the Timber (wood): Classification, Properties, Seasoning, Types of defect • Conducts Standard tests
Week 8	• Demonstrates knowledge of the Insulating materials: Types, Properties.
Week 9	• Demonstrates knowledge of the Acoustical materials: Types, Properties.
Week 10	• Demonstrates knowledge of the Protective coating (paints): Composition, Types
Week 11	• Demonstrates knowledge of the Glass: Classification, Properties, and Uses.
Week 12	Demonstrates knowledge of the Bituminous materials
Week 13	• (Asphalt): Sources & type, Chemical composition, Properties, Uses & conducts tests.
Week 14	• Demonstrates knowledge of the Types, Properties of flooring materials (Tiles & concrete flags)
Week 15	• Demonstrates knowledge of the Plastics: Properties & classification.
Week 16	• Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي المختبري

	Material Covered
Week 1	Identifies and reads Standard specification for glass.
Week 2	Carries out Bituminous materials (Asphalt) tests: Softening point
Week 3	Bituminous materials (Asphalt) tests: Penetration
Week 4	Bituminous materials (Asphalt) tests: Flash point
Week 5	Bituminous materials (Asphalt) tests: RTFO
Week 6	Bituminous materials (Asphalt) tests: Ductility
Week 7	Asphalt mix tests: ITS

Learning and Teaching Resources

مصادر التعلم و التدريس

	Text	Available in the Library?
Required Texts	• Construction materials their nature and behavior	No
Recommended Texts	A textbook of building construction	No



Websites	www.buildforless.co.uk
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Grading Scheme				
تصنيف الدرجات				
Group	Grade	التعليق	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module Information					
معلومات مادة دراسية					
Module Title	Surveying 1		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	BCE 107				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		1 1		Semester of Delivery	2
Administering Department		BCE	College	HTC	
Module Leader			e-mail	E-mail	



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Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Assal hmed mhmoood	e-mail	
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	03/08/2025	Version Number	2.0

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

Module Aims, Learning Outcomes and Indicative Contents اهداف المادة لدراسية ونتائج التعلم و المتويات الارشادية	
Module Objectives الاهداف	- Understanding how to determine level of points, horizontal distances, and elevations of points. - Familiarity with surveying instruments related to the practical aspect. - Understanding how to draw contour map. - Understanding how to sketch cross sections and profiles of construction. - Understanding the mathematical methods of cut and fill volumes.
Module Learning Outcomes مخرجات تعلم المادة	- Recognize how to use tools in measurement of leveling. - List the various method in measurement. - Summarize what is slope areas and how to level that area. - Discuss the errors through the leveling. - Describe the environmental effects on leveling. - Define the method to draw contour lines. - Discuss the theory of fixing traverses using contour maps. - Define profiles and cross sections of construction. - Explain the mathematical formula to determine volumes using contour maps. - Identify the methods to determine volumes of cut and fill.



Indicative Contents 	Indicative content includes the following. Introduction to leveling – Local and global levels, leveling tools. [SSWL=5 hrs] Leveling skills in field – Types of Benchmarks, length Measure by level, procedure of Leveling, leveling Table. [SSWL=10 hrs] Leveling skills in field – Error adjustment, obstacles in field, leveling of slopes, close leveling. [SSWL=10 hrs] Contour maps – Contour lines, traverse fixing on contour maps, volume using contour maps. [SSWL=10 hrs] Profiles and cross sections – Types of profiles and cross sections, drawing of profiles and cross sections, leveling in profiles and cross sections [SSWL=15 hrs] Cut and fill calculation – Cut and fill on level, engineering application of cut and fill, cut and fill using contour maps, volume formula [SSWL=15 hrs] Volumes of cut and fill – End area method, Prismoidal Method [SSWL=10 hrs] Total hrs = 75 = SSWL - (Exam hrs) = 79 - 4 = 75 hr (Time table hrs x 15 weeks)
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Learning and Teaching Strategies

ستراتيجيات التعلم والتعليم



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Strategies	Teaching and Learning Strategies: • Active Learning: Hands-on field exercises and group problem-solving. • Experiential Learning: Real-life site visits and case studies. • Problem-Based Learning: Real-world engineering problems and solution development. • Technology-Enhanced Learning: Use of software and virtual simulations. • Collaborative Learning: Team-based projects and peer discussions. • Inquiry-Based Learning: Encouraging questions, hypothesis testing, and experiments.
	• Assessment and Feedback: Quizzes, presentations, and constructive feedback on practical work.

Student Workload (SWL)			
لحامل ا دراسي للطالب محسوب ١٥ بوسعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	83	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب اسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب اسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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Module Evaluation					
تقييم المادة دراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
				Continuou	



Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to leveling
Week 2	Types of benchmarks
Week 3	Measurement of horizontal distance by level
Week 4	Error adjustment of level
Week 5	Leveling in slope area
Week 6	Contour lines
Week 7	Area of traverse using contour map
Week 8	Profiles of construction
Week 9	Cross sections of construction
Week 10	Area of cross section
Week 11	Cut and fill on level
Week 12	Cut and fill using contour maps
Week 13	Volume of cut and fill
Week 14	End area method
Week 15	Prismoidal Method
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبرات

	Material Covered
Week 1	Lab 1: Introduction to leveling
Week 2	Lab 2: Fix the leveling instrument
Week 3	Lab 3: Leveling in field
Week 4	Lab 4: Contour lines
Week 5	Lab 5: Contour maps
Week 6	Lab 6: Profiles and cross sections
Week 7	Lab 7: Volume of cut and fill

Learning and Teaching Resources

مصادر التعلم والتدريس



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	Text	Available in the Library?
Required Texts	N N Basak (2014). Surveying and Levelling. McGraw Hill Education. p. 542. ISBN 9789332901537	No
Recommended Texts	Brinker, Russell C; Minnick, Roy, eds. (1995). The Surveying Handbook. ISBN 978-1-4613-5858-9	No
Websites	https://www.youtube.com/watch?v=qgwBOVUFDAQ	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module Information

معلوما المادة الدراسية



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Module Title	Engineering Geology			Module Delivery	
Module Type	Support			☒ Theory ☒ Lecture ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	BCE108				
ECTS Credits	3				
SWL (hr/sem)	75				
Module Level		1 1	Semester of Delivery		2
Administering Department		BCE	College	HTC	
Module Leader	Mohammed Chyad Liejy		e-mail	E-mail	
Module Leader's Acad. Title		Assistant lecturer	Module Leader's Qualification		Msc.
Module Tutor	Name Enas Hisham Mohammed		e-mail	E-mail:mohammedthead_hwj@ntu.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		03/08/2025	Version Number		2.0

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

Module Aims, Learning Outcomes and Indicative Contents	
اهداف المادة لدراسية ونتائج التعلم و المتويات الارشاية	
Module Objectives	اهداف المادة الدراسية - Understanding geological phenomena: providing students with a comprehensive knowledge of various geological processes that affect the environment, such as erosion, weathering, earthquakes, landslides, and others. - Geological risk assessment: enabling students to identify and evaluate potential geological hazards at engineering project sites, such as landslides, groundwater seepage, and earthquake effects. - Selection of suitable sites: help students to choose the most suitable sites for engineering projects, taking into account geological factors that may affect the performance of these projects.



	Design of engineering facilities: provide students with the necessary knowledge to design engineering facilities so that they are able to withstand changing geological conditions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Geological processes: understanding the various geological processes that shape the Earth's surface and affect infrastructure, such as erosion, weathering, earthquakes, and landslides. - Properties of soils and rocks: knowledge of the physical and mechanical properties of soils and rocks, and how these properties affect the behavior of soils and rocks under loads. - Geotechnical hydrology: understanding the behavior of groundwater in soils and rocks, and its impact on the stability of engineering facilities. - Geological maps: the ability to read and analyze geological maps and extract geological information from them. - Geotechnical investigations: understand the different methods used in geotechnical investigations, such as drilling, Soundar, and soil tests.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Geological Processes: - Weathering and erosion - Mass movements (landslides, rockfalls) - Earthquakes and seismic hazards - Volcanic activity - Fluvial and coastal processes Geotechnical Properties of Soils and Rocks: - Soil classification (e.g., Unified Soil Classification System) - Soil properties (e.g., permeability, compressibility, shear strength) - Rock properties (e.g., strength, durability, weathering susceptibility) - In-situ testing (e.g., standard penetration test, cone penetration test) - Laboratory testing (e.g., particle size analysis, Atterberg limits) Groundwater: - Hydrogeology (occurrence, movement, and quality of groundwater) - Well drilling and testing - Groundwater contamination and remediation - Groundwater-related hazards (e.g., subsidence, liquefaction) Site Investigation and Exploration: - Geological mapping and remote sensing - Geophysical surveys (e.g., seismic, electrical resistivity) - Drilling and sampling techniques - Borehole logging and interpretation Foundation Engineering: - Shallow foundations (e.g., footings, slabs) - Deep foundations (e.g., piles, caissons)



	• Settlement analysis • Bearing capacity evaluation • Slope Stability: • Stability analysis (e.g., limit equilibrium methods) • Slope stabilization techniques (e.g., retaining walls, buttresses) • Landslide hazard assessment and mitigation • Geotechnical Hazards and Risk Assessment: • Earthquake engineering • Liquefaction • Slope instability • Subsidence • Karst hazards • Coastal erosion • Environmental Geotechnics: • Contaminated sites • Waste disposal • Remediation techniques • Sustainability in geotechnical engineering • Computational Geotechnics: • Numerical modeling (e.g., finite element analysis, finite difference method) • Computer-aided design and analysis
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Learning and Teaching Strategies استراتيجيات التعلم و التعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.



Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	54	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	21	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	5	10% (10)	2 and 12	LO #3, #4
	Projects / Lab.	0	10% (10)	Continuou s	All
	Report	6	10% (10)	13	LO #1, #3
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1 - #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج لاسبوعي النظري	
	Material Covered
Week 1	Geological processes of internal and external origin.
Week 2	Absolute and relative age of rocks
Week 3	Geological activities of wind and Eolian deposits
Week 4	Sheet erosion, Gullies and Geological work of rivers
Week 5	Glaciers, Glacial till and fluvioglacial



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Week 6	limbo glacial deposits
Week 7	Determination of the coefficient of permeability
Week 8	Man-made geological process
Week 9	Fluvioglacial ,marine erosion and faulting
Week 10	Inflow to foundation pits ,limbo glacial deposits
Week 11	Water aggressiveness and Groundwater regime
Week 12	Aquicludes, Groundwater ,capillary fringe and perched water
Week 13	Origin of subsurface water
Week 14	Swamps, Peat depositions
Week 15	marine erosion ,Longshore drift
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	There is no practical material
Week 2	There is no practical material
Week 3	There is no practical material
Week 4	There is no practical material
Week 5	There is no practical material
Week 6	There is no practical material
Week 7	There is no practical material

Learning and Teaching Resources

مصادر التعلم و التريس

	Text	Available in the Library?
Required Texts	Engineering book by F. G. Bell	No
Recommended Texts	Engineering geology principles and practice by M. H. de Freitas	No
Websites	https://www.sciencedirect.com/journal/engineering-geology	



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

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

Module Information معلومات المادة الدراسية		
Module Title	ENGINEERING MECHANICS (DYNAMICS)	Module Delivery



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Module Type	Core	☒ Theory
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Module Code	BCE 109		☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar		
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		1 1	Semester of Delivery		2
Administering Department		BCE	College	HTC	
Module Leader	Abdurazaq Khudhur Abdulwahed		e-mail	abdulrazak_hwj@ntu.edu.iq	
Module Leader’s Acad. Title		Lecturer	Module Leader’s Qualification		Ph.D.
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		03/08/2025	Version Number		2.0

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

Module Aims, Learning Outcomes and Indicative Contents اهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	- Understanding Kinematics of Particles and Rigid Bodies: - Analyze the motion of particles and rigid bodies in various coordinate systems (rectilinear, curvilinear, polar, etc.). - Solve problems involving velocity and acceleration in different dimensions. - Applying Newton's Second Law of Motion: - Develop the ability to apply Newton's second law to analyze forces and motion in dynamic systems. - Understand the relationship between forces and acceleration in different mechanical systems.



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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Comprehend and Analyze Kinematics of Particles and Rigid Bodies: - Demonstrate an understanding of the kinematics of particles and rigid bodies in various coordinate systems (rectilinear, curvilinear, etc.). - Accurately calculate displacement, velocity, and acceleration in both 2D and 3D motion. - Apply Newton's Laws to Dynamic Systems: - Effectively apply Newton's second law to analyze forces, accelerations, and motion in both translational and rotational systems. - Solve problems involving the dynamic equilibrium of particles and rigid bodies under the influence of external forces.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lecture & In-Class Activities, Preliminary & Further Study, Assignment (Homework) group Work, Final Exam, Mid-Term Exam and short Exam.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	76	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	74	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Quizzes	8		5 and 10	LO #1- #4



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Formative assessment	Assignments	8		2 and 12	LO #2, #3
Summative assessment	Midterm Exam	2hr		7	LO #2, #3
	Final Exam	3hr		16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الأسبوعي النظري

	Material Covered
1,2,3	Demonstrates knowledge and conducts the frames Analysis (method of members)
4,5	- Demonstrates knowledge Friction, Theory of friction, Types of friction, Wedges, Applications - Computes Angle of friction
6,7,8	Computes Centroids of areas & lines, Centroids by integration, Centroids of composite areas, Applications.
9	Computes Moment of inertia , Polar moment of inertia , Radius of gyration , Transfer formula for moment of inertia , Moment of inertia for composite areas , Product of inertia , Moment of inertia with respect to inclined axes , Mohr` circle for moment of inertia .
10,11	- Demonstrates knowledge of the Principles of dynamics, Kinematics & kinetics, Motion of a particle, - Able to apply Fundamental Equations of kinetics for a particle, Effective force on a particle.
12,13	Demonstrates knowledge of the Rectilinear translation, Rectilinear motion with constant acceleration, Free falling bodies.
14,15	Demonstrates knowledge of the Kinetics of rectilinear translation (Analysis as a particle), Dynamic Equilibrium in translation (Analysis as a rigid body).

Delivery Plan (Weekly Lab. Syllabus)

المناهج الأسبوعي للمختبرات

	Material Covered
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Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		Yes



Recommended Texts		
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C - Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				



Module Information					
معلومات المادة الدراسية					
Module Title	Calculus1			Module Delivery	
Module Type	Core			☐ theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☒ Seminar	
Module Code	BCE110				
ECTS Credits	6				
SWL (hr/sem)					
Module Level		1 1	Semester of Delivery		2
Administering Department		BCE	College	HTC	
Module Leader	Satam Ajbory		e-mail		
Module Leader’s Acad. Title		Assist. Lecturer	Module Leader’s Qualification		Master
Module Tutor			e-mail		
Peer Reviewer Name		Name	e-mail		
Scientific Committee Approval Date		03/08/2025	Version Number	2.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
اهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	Enhance students' ability to think logically and solve mathematical problems methodically, and apply these skills to engineering problems.



	• Provide a strong foundation in basic mathematical concepts such as calculus, algebra, and analytical geometry, helping in understanding other engineering courses. • Enable students to use mathematical tools to analyze and solve engineering problems, including structural system design and material calculations. • Improve students' ability to use mathematics for drafting engineering diagrams and analyzing geometric shapes.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. • A Cognitive objectives: • Understanding basic mathematical concepts. • Analyze mathematical and engineering problems. • Apply mathematics in practical contexts. • Understand mathematical and engineering relationships. • Develop logical thinking. • Recognize advanced mathematical applications. • Understand the role of mathematics in improving engineering designs. • Ability to interpret engineering data.. • B. Skills-Based Objectives: • Apply mathematical skills to solve engineering problems. • Use mathematical and engineering software. • Perform accurate engineering calculations. • Critical and analytical thinking. • Practical application of algebra and geometry concepts.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. The course covers a broad range of mathematical topics essential for engineering students, focusing on developing their mathematical reasoning, problem-solving skills, and the application of these concepts to engineering problems. Below is a breakdown of the main topics: • Limits and Continuity (4 hours) • Understanding the concept of limits • Evaluating limits algebraically • Continuity and discontinuities in functions • Real-world applications of limits in engineering • Differentiation (4 hours) • Concept of differentiation and rates of change • Basic rules of differentiation (product rule, quotient rule, chain rule)



- Applications of differentiation in engineering, including velocity and acceleration
- **Derivatives of Functions (4 hours)**
 - Differentiation of polynomial, trigonometric, exponential, and logarithmic functions
 - Higher-order derivatives
 - Engineering applications of derivatives, including optimization problems
- **Integration (4 hours)**
 - Fundamental theorem of calculus
 - Indefinite and definite integrals
 - Basic techniques of integration (substitution, integration by parts)
 - Applications of integration in calculating areas and volumes
- **Integration of Trigonometric Functions (4 hours)**
 - Integrating sine, cosine, tangent functions
 - Applications of trigonometric integrals in wave motion and electrical engineering
- **Integration of Inverse Trigonometric Functions (4 hours)**
 - Derivation and integration of inverse trigonometric functions
 - Solving problems involving inverse trigonometric functions
- **Integration of Exponential and Logarithmic Functions (4 hours)**
 - Integration of exponential and logarithmic functions
 - Applications of these integrals in growth models and decay processes
- **Applications of Integration (4 hours)**
 - Using integrals to compute areas, volumes, and lengths of curves
 - Engineering applications, including fluid mechanics and material science
- **Basic Integration Formulas (2 hours)**
 - Review of key integration formulas
 - Practice problems to solidify understanding
- **Operations on Matrices (2 hours)**
 - Matrix addition, subtraction, and multiplication
 - Practical applications in solving linear equations
- **Matrices and Determinants (4 hours)**
 - Properties of matrices and determinants
 - Solving linear systems using matrices
- **Solving Linear Systems Using the Inverse of a Matrix and Cramer's Rule (4 hours)**
 - Solving linear systems of equations using matrix inverses
 - Application of Cramer's rule in engineering problems
- **Eigenvalues and Eigenvectors (8 hours)**
 - Finding eigenvalues and eigenvectors
 - Applications in structural analysis and mechanical systems



	Throughout the course, emphasis is placed on practical applications of the mathematical concepts in real-world engineering scenarios. The course also includes frequent problem-solving exercises, practical examples, and theoretical discussions to help students understand the significance of these mathematical tools in engineering contexts.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Explanation using various modern presentation tools. Lecture method and use of interactive whiteboard. Forming discussion groups during lectures. Thinking questions such as what, how, when, and why. Homework assignments that require self-explanations in causal ways.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	0	10% (10)	Continuou s	All
	Report	0	10% (10)	13	LO #5, #8 and #10



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Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	limit and Continuity
Week 2	Differentiation
Week 3	Derivatives of Functions
Week 4	Derivatives of all Functions
Week 5	Integration
Week 6	Integration of Trigonometric Functions
Week 7	Integration of Inverse Trigonometric Functions
Week 8	Integration of Exponential and Logarithmic Functions
Week 9	Applications of Integration
Week 10	Basic Integration Formulas
Week 11	Operations on Matrices
Week 12	Matrices
Week 13	Solving Linear Systems Using the Inverse of a Matrix and Cramer's Rule
Week 14	Eigenvalues and Eigenvectors
Week 15	Eigenvalues and Eigenvectors
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Northern Technical University
Al- Hawija Technical College
Building & Construction Techniques Engineering



Required Texts	Calculus I, Paul Dawkins, 2007	Yes
Recommended Texts	.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module Information معلومات المادة الدراسية
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Northern Technical University
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Module Title	Computer			Module Delivery				
Module Type	Core			☐ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☒ Seminar				
Module Code	NTU 102							
ECTS Credits	3							
SWL (hr/sem)	50							
Module Level			1			1	Semester of Delivery	2
Administering Department			BCE		College	HTC		
Module Leader		Huseen Mohammed Essa			e-mail			
Module Leader’s Acad. Title			Assist. Lecturer		Module Leader’s Qualification			Master
Module Tutor					e-mail			
Peer Reviewer Name					e-mail			
Scientific Committee Approval Date			03/08/2025		Version Number		1.0	

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

Module Aims, Learning Outcomes and Indicative Contents اهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	Teaching computer principles in civil engineering equips students with the ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics



	• Computer principles aid in applying engineering design to produce solutions that meet specified needs with consideration of various factors such as public health, safety, welfare, and environmental impacts. • Learning computer principles helps students effectively communicate with diverse audiences, a vital skill for successful engineering professionals. • Teaching computer principles encourages graduates to engage in lifelong learning through professional training, independent inquiry, and acquiring new knowledge as needed to meet career goals and contribute creative ideas to their profession • Computer education in civil engineering emphasizes recognizing ethical and professional responsibilities in engineering situations, fostering informed judgments considering global, economic,.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Understanding computer hardware components and their functions. • Windows: Proficiency in using the Windows operating system • The student will be able to use the word program such as creating tables in and inserting images into diagrams • The student will be able to use the EXCEL program such as writing functions, preparing tables and inserting charts The student will be able to create a presentation that includes a number of Slides, using images, tables, diagrams, changing colors Influences • The student will get acquainted with the global network (the internet) and deal with it ,Search and create email
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Computer fundamentals</u> Definition of computer- Parts of computer- Devices related to computer, Software and hardware, Windows- Able to use the following items: Start menu, desktop, taskbar , mouse applications, My computer , My documents , drivers , folders , files , cut , copy <u>Part B -Microsoft Word</u> Introduction to Microsoft Word and the Interface, Text Formatting and Tables , Page Layout and References <u>Part C- Excel Microsoft</u> Excel Fundamentals and Data Entry, Formulas and Functions, Charts and Data Analysis <u>Part D -PowerPoint Microsoft</u> Introduction to PowerPoint and Basic Features, Enhancing Your Presentations , Advanced Techniques and Best Practices <u>Part E –Internet</u>



	Introduction to the World of the Internet, Search Engines, Create an email account
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lecture: Introduce new concepts and demonstrate techniques. Hands-on Activities: Provide guided practice for students to apply what they've learned. Group Work: Encourage collaboration and problem-solving through group activities. Q&A: Facilitate discussion and address student questions

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	39	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	11	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #6
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6
	Class work	8	10% (10)	Continuou s	All
	seminar	2	10% (10)	6 and 11	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All



Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري والعملي	
	Material Covered
Week 1	Computer fundamentals / Definition of computer- Parts of computer- Devices related to computer
Week 2	Computer fundamentals/ Software and hardware
Week 3	Computer fundamentals/ Windows- Able to use the following items: Start menu, desktop, taskbar , mouse applications, My computer , My documents , drivers , folders , files , cut , copy ,.
Week 4	Microsoft Word / Introduction to Microsoft Word and the Interface
Week 5	Microsoft Word/ Text Formatting and Tables
Week 6	Microsoft Word/ Page Layout and References
Week 7	Excel Microsoft / Excel Fundamentals and Data Entry
Week 8	Excel Microsoft / Formulas and Functions
Week 9	Excel Microsoft/ Charts and Data Analysis
Week 10	PowerPoint Microsoft / Introduction to PowerPoint and Basic Features
Week 11	PowerPoint Microsoft /Enhancing Your Presentations
Week 12	PowerPoint Microsoft / Advanced Techniques and Best Practices
Week 13	Internet/Introduction to the World of the Internet
Week 14	Internet/ Search Engines
Week 15	Internet/ Create an email account
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Computer fundamentals / Definition of computer- Parts of computer- Devices related to computer
Week 2	Computer fundamentals/ Software and hardware



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Week 3	Computer fundamentals/ Windows- Able to use the following items: Start menu, desktop, taskbar , mouse applications, My computer , My documents , drivers , folders , files , cut , copy ,.
Week 4	Microsoft Word / Introduction to Microsoft Word and the Interface
Week 5	Microsoft Word/ Text Formatting and Tables
Week 6	Microsoft Word/ Page Layout and References
Week 7	Excel Microsoft / Excel Fundamentals and Data Entry
Week 8	Excel Microsoft / Formulas and Functions
Week 9	Excel Microsoft/ Charts and Data Analysis
Week 10	PowerPoint Microsoft / Introduction to PowerPoint and Basic Features
Week 11	PowerPoint Microsoft /Enhancing Your Presentations
Week 12	PowerPoint Microsoft / Advanced Techniques and Best Practices
Week 13	Internet/Introduction to the World of the Internet
Week 14	Internet/ Search Engines
Week 15	Internet/ Create an email account
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Principles of Computer Security, Fourth Edition 4th Edition	Yes
Recommended Texts		
Websites	- Microsoft Learn: https://www.google.com/url?sa=E&source=gmail&q=https://learn.microsoft.com/ - Office Support: https://www.google.com/url?sa=E&source=gmail&q=https://support.microsoft.com/office - Official Microsoft Channel https://www.youtube.com/microsoft	



Grading Scheme				
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Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
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Fail Group (0 – 49)	FX – Fail	راسب قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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Module Information					
Module Title	Arabic Language			Module Delivery	
Module Type	Basic			☒ Theory ☐ Lecture ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	NTU 103				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level		1	Semester of Deliver		2
Administering Department		BCE	College	HTC	
Module Leader	Flah hassan Kanosh		e-mail		
Module Leader's Acad. Title		Assist Lect.	Module Leader's Qualification		M.Sc.
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		03/08/2025	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 Objectives	• Enhancing effective communication: Teaching Arabic aims to enable students to communicate effectively in the Arab environment, both in daily life and in academic and professional contexts. • Understanding Arab culture: Learning Arabic is a key to understanding Arab culture and its values, helping students to explore the rich Arab heritage and comprehend the cultural diversity within the Arab world. • Enhancing research and academic skills: Learning Arabic contributes to developing research and academic writing skills for students, enabling them to actively participate in academic discussions and contribute to knowledge production. • Providing job opportunities: Proficiency in Arabic is a valuable skill in the job market, allowing students to
Module Learning Outcomes	• Effective communication skills: Students acquire listening, speaking, reading, and writing skills in Arabic, enabling them to communicate fluently and understand content accurately. • Understanding texts and culture: Students learn to read and comprehend literary and cultural texts in Arabic, enhancing their understanding of Arab heritage and developing critical analysis of literary works. • Research and academic writing abilities: Students learn how to conduct research and engage in academic writing in Arabic, enabling them to present research papers and academic reports effectively. • Cultural and social interaction: Students are able to actively participate in the Arab community, gaining a deeper understanding of local traditions, values, and customs, fostering cultural understanding and peaceful coexistence.
Indicative Contents	• Introduction to Indicative Contents: Defining indicative contents and understanding their significance in various fields and disciplines. • Types and Formats of Indicative Contents: Exploring different types and formats of indicative contents, such as tables, charts, bullet points, and summaries. • Creating Indicative Contents: Techniques and strategies for effectively creating indicative contents, including selecting key information, simplifying complex concepts, and organizing content for easy comprehension. • Visual Representation of Indicative Contents: Utilizing visual aids, such as infographics, diagrams, and illustrations, to present indicative contents in an engaging and informative manner. • Examples and Case Studies: Analyzing real-life examples and case studies to understand how indicative contents are used in various contexts, such as research reports, marketing materials, and educational resources.



Learning and Teaching Strategies	
Strategies	• Interactive Language Activities: Engaging students in interactive activities such as role-plays, group discussions, and language games to practice and reinforce language skills. • Communicative Approach: Emphasizing real-life communication and providing opportunities for students to actively engage in speaking, listening, reading, and writing tasks to develop their language proficiency. • Authentic Materials: Incorporating authentic materials such as newspaper articles, songs, videos, and literature to expose students to real-world language usage and cultural contexts

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	35	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	15	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	30% (30)	3,6,10 and 14	LO #1, #2 , #3, and #4
	Assignments	2	10% (10)	4 and 12	LO #1and #4
	Projects / Lab.		0% (0)	0	0
	Report		0% (0)	0	0
Summative assessment	Midterm Exam	1hr.	10% (10)	7	LO #1 - #2
	Final Exam	2hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		



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Delivery Plan (Weekly Syllabus)		
	Material Covered	
Week 1	مقدمة عن الأخطاء اللغوية	Introduction to Language Errors:
Week 2	التاء المربوطة والتاء المفتوحة	Taa Marbuta and Taa Marbuta (Bound and Open Taa): Understanding the rules and usage of the Taa Marbuta and Open Taa in Arabic language.
Week 3	همزة الوصل والقطع	Hamzat Al-Wasl and Al-Qat' (Hamza of Connection and Hamza of Disconnection): Differentiating between Hamzat Al-Wasl and Al-Qat' and their respective roles in pronunciation.
Week 4	الهمزة المتوسطة والمتطرفة	Alif Al-Maddooda and Alif Al-Muqassara Writing Rules: Exploring the rules for writing Alif Al-Maddooda (elongated Alif) and Alif Al-Muqassara (shortened Alif).
Week 5	قواعد كتابة الالف الممدودة والمقصورة -	Solar and Lunar Letters: Identifying the distinction between solar and lunar letters in Arabic pronunciation.
Week 6	الحروف الشمسية والقمرية	Adad (Numbers): Learning about the numerical system in Arabic and its usage.
Week 7	الضاد والطاء	Verbs: Understanding verb conjugation and the different verb forms in Arabic.
Week 8	العسدد	Parts of Speech: Exploring the different parts of speech, including nouns, verbs, adjectives, adverbs, etc.
Week 9	المفاعيل	Meanings of Prepositions: Examining the meanings and usage of prepositions in Arabic.
Week 10	أقسام الكلام	Common Language Errors: Analyzing common language errors and their applications in practical contexts.
Week 11	معاني حروف الجر	Noon and Tanween: Understanding the usage and pronunciation of Noon and Tanween in Arabic.
Week 12	تطبيقات الأخطاء اللغوية الشائعة	Taa Marbuta and Taa Marbuta (Bound and Open Taa): Understanding the rules and usage of the Taa Marbuta and Open Taa in Arabic language.
Week 13	النون والتنوين -	Hamzat Al-Wasl and Al-Qat' (Hamza of Connection and Hamza of Disconnection): Differentiating between Hamzat Al-Wasl and Al-Qat' and their respective roles in pronunciation.
Week 14	مقدمة عن الأخطاء اللغوية	Alif Al-Maddooda and Alif Al-Muqassara Writing Rules: Exploring the rules for writing Alif Al-Maddooda (elongated Alif) and Alif Al-Muqassara (shortened Alif).
Week 15	الأخطاء اللغوية	Solar and Lunar Letters: Identifying the distinction between solar and lunar letters in Arabic pronunciation.
Week 16	Preparatory week before the final Exam	



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Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	• "الكافية" للكندي: يعتبر من أهم الكتب في علم النحو، حيث يشرح القواعد والتراكيب النحوية بأسلوب مبسط وشامل. • "الصرف" لابن مالك: كتاب مشهور يتناول قواعد تصريف الأفعال والأسماء في اللغة العربية، ويعد من أعمال النحو الكلاسيكية. • "المفصل في علم العربية" لابن جني: كتاب شامل يغطي مجموعة واسعة من موضوعات النحو والصرف والبلاغة والأدب.	Yes
Recommended Texts	• "الألفية" لابن مالك: كتاب مشهور في علم النحو والصرف، يعتبر من أهم المراجع الكلاسيكية في دراسة اللغة العربية. • "المستطرف في كل فن مستظرف" لابن الأنباري: كتاب يشمل العديد من الألفاظ والتعابير العربية المستخدمة في الأدب والشعر. • "البيان والتبيين" لابن حجر العسقلاني: كتاب يتناول موضوعات النحو والصرف والبلاغة، ويعتبر مرجعاً قيماً في دراسة اللغة العربية.	No
Websites		

Grading Scheme				
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