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

2024-2025

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:

<u>Description of the academic program</u>: 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.

<u>Course Description</u>: 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.

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

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

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

<u>Curriculum structure</u>: 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.

<u>Teaching and learning strategies</u>: 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.

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Academic program description form

University name: Northern Technical University

College/Institute: Engineering Technical College / Mosul

Scientific Department: Geomatics Techniques Engineering Department.

Name of the academic or professional program: Bachelor of Geomatics Techniques Engineering.

Name of final degree: Bachelor's degree in Geomatics Techniques Engineering.

School system: Bologna.

Date of preparing the description: 15/10/2024

Date of form completion: 15 /10/2024

Signature:

Assist Prof. Dr. Mohammed S. Jarjees Dean's Assistant for Scientific Affairs Date: 15/10/2024

Signature: Assist Prof. Dr. Mustafa Ridah Muzaal Head of Department Date: 15/10/2024

The file was audited by the Quality Assurance and University Performance Manager Signature:

Assist. Lecturer Warqaa Hashim Mahmood Date: 15/10/2024

Authentication of the Dean

Signature: Assist Prof. Prof. Dr. Majid Kh. Najim Dean Date: 15/10/2024

، ذالتعليم العال

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1. View the program

The Department of Geomatics Engineering aims to achieve leadership in providing education and research in the fields of geomatics by developing innovative technologies and effective solutions for geographic data analysis. The department seeks to equip students with the knowledge and skills necessary to address contemporary challenges in geographic information systems, land surveying, and remote sensing. It also emphasizes enhancing scientific research and developing strategic partnerships with both the public and private sectors to meet community needs.

2. Program message

The mission of the Department of Geomatics Engineering is to provide high-quality education that focuses on developing students' technical and research skills through comprehensive academic programs and practical applications. The department aims to promote innovation and sustainability in the fields of geographic information systems, land surveying, and remote sensing, offering effective solutions to environmental and social challenges. Additionally, it seeks to prepare graduates who are competitive in the job market and can contribute to the sustainable development of society.

3. Program Goals

- 1- **Skill Development**: Enhance students' abilities in using geospatial tools and technologies such as Geographic Information Systems (GIS) and aerial imaging.
- 2- **Scientific Research**: Encourage students to engage in innovative research in areas like land surveying and geographic data analysis.
- 3- **Practical Application**: Provide opportunities for students to apply theoretical knowledge in practical projects that serve the community.
- 4- **Industry Interaction**: Build partnerships with companies and organizations to enhance employment opportunities and apply modern technologies.
- 5- Environmental Awareness: Promote awareness of the importance of

geomatics in natural resource management and environmental protection.

4. Program accreditation

Program of the Ministry of Higher Education and Scientific Research

5. Other external influences

None

6. Program structure									
Program	Number of	Study Unit	Percentage	Notes*					
Structure	Courses	Study offic	rereentuge	110005					
Enterprise	6	12	24	Secondary course					
requirements	0	12	24	Secondary course					
College	0	0	0	0					
requirements	0	0	0						
Department	18	104	72	Pagio courso					
requirements	10	104	12	Dasic course					
summer	1	0	Λ	Basic course					
training	1	0	4	Dasic 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 hour									
First / First	CEO 101	Dlana surveying	Theoretical	4					
FIISt / FIISt	GEO 101	Plane surveying	Practical	4					
First / First	NTU 100	Human Rights & Democracy	Theoretical	2					
First / First	GEO 102	Computer engineering	Theoretical	2					
	0E0 102	drawing	Practical	4					
First / First	GEO 103	Engineering Mathematics	Theoretical	6					
First / First	CEO 104	Engineering Goology	Theoretical	2					
	GEU 104	Engineering Geology	Practical	1					

First / First	NTU 101	Advanced English skills	Theoretical	2
Eirst / Second	CEO 105	Diono surroving 2	Theoretical	4
Thist / Second OLO 105		Plane surveying 2	Practical	4
			Theoretical	4
First / Second	GEO 107	Engineering mechanics	Practical	4
First / Second	GEO 108	Engineering physics	Theoretical	2
First / Second	GEO 106	Descriptive geometry	Theoretical	1
First / Second	0E0 100	Descriptive geometry	Practical	2
First / Second	NTU 102	Computers principles	Theoretical	1
	N10 102	Computers principles	Practical	2
First / Second	NTU 103	Arabic language	Theoretical	2
Second / First	GEO 201	Plane surveying 3	Theoretical	4
Second / Trist	0E0 201	Thate surveying 5	Practical	4
Second / First	GEO 202	Estimation and quantity	Theoretical	2
Second / Thist	0EO 202	surveying	Practical	2
Second / First	GEO 203	Cartography 1	Theoretical	2
Second / Trist			Practical	2
Second / First	GEO 204	Engineering surveying	Theoretical	2
Second / Thist		Eligineering surveying	Practical	2
Second / First	GEO 205	Photogrammetry 1	Theoretical	2
Second / Trist		Thotogrammetry T	Practical	2
Second / First	GEO 206	Land design	Practical	2
Second / First	NTU 203	AL- Ba,ath crimes	Theoretical	2
	CEO 207		Theoretical	4
Second / Second	GEO 207	Plane surveying 4	Practical	4
Second / Second	GEO 208	Fundamentals and	Theoretical	2
Second / Second	010 200	system	Practical	2
Second / Second	CEO 200	Estimation and quantity	Theoretical	2
Second / Second	GEO 209	surveying 2	Practical	2
Second / Second	CEO 210	Cortography 2	Theoretical	2
Second / Second	0E0 210	Cartography 2	Practical	2
Second / Second	CEO 211	Photogrammatry 2	Theoretical	2
Second / Second	0E0 211	r notogrammetry 2	Practical	2
Second / Second	NTU 200	Advanced English skills 2	Theoretical	2
Second / Second	/ Second NTU 204 Professional ethics		Theoretical	2

8. Expected learning outcomes of the program

Knowledge

A1-Understand basic concepts: Students should be able to understand basic concepts in plane space, such as rectangles, squares, triangles, circles, and other geometric shapes.

A2-Area Calculation: The ability to calculate the area of various geometric shapes, using appropriate mathematical formulas.

A3-Calculating perimeter: The ability to calculate the perimeter of different shapes, such as circles, triangles, and rectangles.

Skills

- B 1-Understand basic concepts: Understand the concepts of space and measurements used in surveying.
- B2- Use of tools and techniques: Distinguish and use different surveying tools such as scales and theodolites.

B3- Identifying the terrain: Learn how to measure and represent terrain and land surfaces.

Value

Expected Learning Outcomes for the Geomatics Engineering Department in Terms of Values

C1 - Professional Values:

Commitment to ethical standards and integrity in the workplace.

Encouragement of teamwork and collaboration in projects.

C2 - Social Values:

Awareness of the importance of geomatics in sustainable development and addressing community issues.

Respect for cultural and social diversity in work environments.

C3 - Environmental Values:

Promotion of environmental sustainability through the use of geomatics technologies to preserve natural resources.

Assessment of the environmental impact of technological projects

9. Teaching and learning strategies

- 1- Explaining the scientific material to students in detail.
- 2- Students' participation in solving mathematical problems
- 3- Discussion and dialogue about vocabulary related to the topic

10. Evaluation methods

Weekly, monthly, daily exams and the end of the year exam.

11. educa	tion instit	ution					
Faculty n	nembers						
Preparing the teaching staff		Special requirements/ skills (if any)		Specia	lization	Scientific rank	
lecturer	Angel			Private	general		
	2			Constructi on materials	Civil Engineering	Mr.	
	1			Constructi on	Civil Engineering	Mr.	
	1			Remote Sensing	Geomatics	Assistant Professor	
	2			Constructi on	Civil Engineering	Assistant Professor	

1	Irrigation	Water resources	Assistant Professor
2	Constructi on	Civil Engineering	Teacher
1	Soil	Civil Engineering	Teacher
1	Constructi on materials	Civil Engineering	Teacher
1	Hydraulic	Water resources	assistant teacher

Professional development

Orienting new faculty members

Teamwork skills.

Computer and Internet skills.

Communication skills such as English and presentation.

Leadership skills and taking responsibility.

Self-education and lifelong learning skills.

Professional development for faculty members

- -Training courses within the institution.
- Training courses outside the institution.
- Scientific research seminars and scientific symposiums.
- Self education.

12. Acceptance standard

- Scientific section
- Professional study
- The grade

13. The most important sources of information about the program

- Methodological books.
- Help resources (Internet).
- Scientific research and its latest developments.

14. Program development plan

- Learn about the experiences of Arab and foreign counterpart universities and colleges and benefit from the development taking place with them.

Program skills chart												
				Le	earning	outcome	es requi	red from	the pr	ogram		
Level / semester	Course	Course Name	Essential Knowledge			Skills			Value	s		
	Code		or optional	A1	A2	A3	B1	B2	B3	C1	C2	C3
First / First	GEO 101	Plane surveying	Basic									
First / First	NTU 100	Human Rights & Democracy	Assistant	\checkmark	\checkmark		\checkmark	\checkmark				\checkmark
First / First	GEO 102	Computer engineering drawing	Basic				\checkmark	\checkmark	\checkmark			\checkmark
First / First	GEO 103	Engineering Mathematics	Basic									
First / First	GEO 104	Engineering Geology	Assistant									
First / First	NTU 101	Advanced English skills	Assistant									
First / Second	GEO 105	Plane surveying 2	Basic		\checkmark							
First / Second	GEO 107	Engineering mechanics	Basic									
First / Second	GEO 108	Engineering physics	Assistant									\checkmark
First / Second	GEO 106	Descriptive geometry	Assistant									
First / Second	NTU 102	Computers principles	Assistant				\checkmark					
First / Second	NTU 103	Arabic language	Assistant									
Second / First	GEO 201	Plane surveying 3	Basic									

Second / First	GEO 202	Estimation and quantity surveying	Basic		\checkmark	\checkmark	\checkmark	\checkmark	 \checkmark		
Second / First	GEO 203	Cartography 1	Basic					\checkmark		\checkmark	\checkmark
Second / First	GEO 204	Engineering surveying	Basic						\checkmark	\checkmark	
Second / First	GEO 205	Photogrammetry 1	Basic	\checkmark							
Second / First	GEO 206	Land design	Basic								
Second / First	NTU 203	AL- Ba,ath crimes	Assistant								
Second / Second	GEO 207	Plane surveying 4	Basic						 		
Second / Second	GEO 208	Fundamentals and geographic information system	Basic		\checkmark	\checkmark	\checkmark				
Second / Second	GEO 209	Estimation and quantity surveying 2	Basic		\checkmark			\checkmark		\checkmark	
Second / Second	GEO 210	Cartography 2	Basic						 		
Second / Second	GEO 211	Photogrammetry 2	Basic								
Second / Second	NTU 200	Advanced English skills 2	Assistant						 		
Second / Second	NTU 204	Professional ethics	Assistant								

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية							
Module Title	Plane Surv	veying 1		Modu	Module Delivery		
Module Type	<u>Core</u>			⊠The	eory		
Module Code	<u>GEO 101</u>			⊠Lec ⊠Lat	⊠Lecture ⊠Lab		
ECTS Credits	TS Credits <u>10</u>			□ Tut □ Pra	□ □ Tutorial □ □ Practical		
SWL (hr/sem)	<u>250</u>			□Sen	□Seminar		
Module Level		1	Semester of	Delivery		1	
Administering Dep	artment	GEO	College	TEMO			
Module Leader	Dr.Mostafa Ridh	a Muzaal	e-mail	Mostafa	Mostafa.redha@ntu.edu.iq		
Module Leader's Acad. Title Ass. Lecturer Modul		Module Lea	ule Leader's Qualification Ph.D.				
Module Tutor	le Tutor e-mail						
Peer Reviewer Name			e-mail	e-mail E-mail			
Scientific Committee Approval Date 14/10/2024			Version Number .02				

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

Module Aims, Learning Outcomes and Indicative Contents					
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية					
Modulo Objectives	•	Understanding how to determine points, distances, and land areas.			
Moune Objectives	•	Familiarity with surveying instruments related to the practical aspect.			

أهداف المادة الدر اسية	• Understanding the fundamentals of obstacles in field.
	• Understanding how to calculate the lengths of traverses.
	• Understanding the mathematical methods for calculations.
	• 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.
Module Learning	• Discuss the errors through the measurement of lengths.
Outcomes	• Describe the environmental effects on errors of measurement.
	• Define the mathematical formula to determine the errors in measurement.
مخرجات التعلم للمادة الدر اسية	• 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 content includes the following.
	Introduction to Surveying – Types of surveying, plane surveying, methods of survey and advantages of surveying. [SSWL=5 hrs]
	Points, Lengths and Angles – Set of points and lines, measurement of lines and angles, types of errors in measurement. [SSWL=20 hrs]
Indicative Contents المحتويات الإرشادية	Obstacles – Types of obstacles, measurement lines through obstacles. [SSWL=10 hrs] Traverses – Types of traverses, interior angles, lines and corrections [SSWL=15 hrs]
	Area Measurement – Area measurement, typical area, area formula, trapezoidal method, Simpson's method [SSWL=15 hrs]
	Area of Traverses – Area of traverse, graphical paper, triangle method [SSWL=10 hrs]
	Total hrs = $75 = SSWL - (Exam hrs) = 79 - 4 = 75 hr$ (Time table hrs x 15 weeks)

Learning and Teaching Strategies							
استر اتيجيات التعلم والتعليم							
	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						
Strategies	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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا			
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	200	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	8
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	50	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	3.5
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل		250	

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

Delivery Plan (Weekly Syllabus)			
المنهاج الأسبوعي النظري			
Week	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		
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 الاسبوعي للمختبر		
Week	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 والتدريس		
	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
	A - Excellent	امتياز	90 - 100	Outstanding Performance
Success	B - Very Good	جيد جدا	80 - 89	Above average with some errors
Group	C - Good	ختر	70 - 79	Sound work with notable errors
(50 - 100)	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	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information

معلومات المادة الدراسية

Module Title	Engineering Geology			Modu	Module Delivery		
Module Type	<u>Support</u>	Support			⊠ Theory		
Module Code	<u>GEO 104</u>			🛛 Leo	☐ ⊠ Lecture		
ECTS Credits	4			□ Tutorial			
				🗆 Pra	octical		
SWL (hr/sem) <u>100</u>				□ Ser	ninar		
Module Level UGx11 1		Semester of Delivery 1		1			
Administering Department GEO		College	ТЕМО				
Module Leader	Dr. Tariq Hassan Mohammed		e-mail	tareqrahal@ntu.edu.iq			
Module Leader's Acad. Title		lecturer	Module Leader's Qualification Ph		Ph.D.		
Module Tutor	Viodule Tutor		e-mail				
Peer Reviewer Name			e-mail				
Scientific Committee Approval Date 16/10/2024		Version Nur	nber	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 الدر اسية	 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 الدر اسية	 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	 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., 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

Learning and Teaching Strategies استر اتيجيات 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 للطالب محسوب لـ ١٥ اسبو عا			
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	60	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	40	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	2.5
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	100		

Module Evaluation						
تقييم المادة الدر اسية						
		Time/Number	Weight (Marks)	Week Due	Relevant Learning	
As			0		Outcome	
	Quizzes	6	10% (10)	5 and 10	LO #1, #2 and #10, #11	
Formative	Assignments	5	10% (10)	2 and 12	LO #3, #4 and #6, #7	
assessment	Projects / Lab.	0	10% (10)	Continuous	All	
	Report	6	10% (10)	13	LO #5, #8 and #10	
Summative	Midterm Exam	1hr	10% (10)	7	LO #1 - #7	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessment			100% (100 Marks)			

Delivery Plan (Weekly Syllabus)				
المنهاج الاسبوعي النظري				
Week	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			
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				
Week	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 والتدريس				
	Text	Available in the Library?		
Required Texts	Engineering book by F. G. Bell	No		
Recommended		No		
Texts	Engineering geology principles and practice by M. H. de Freitas	140		
Websites	https://www.sciencedirect.com/journal/engineering-geology			

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

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information			
	معلومات المادة الدراسية		
Module Title	Engineering drawing	Module Delivery	
Module Type	Core	□Theory	

Module Code			🛛 Leo	eture		
ECTS Credits			🛛 Lal)		
				🗆 Tut	torial	
SWL (hr/sem)		200	200		Practical	
				□ Sen	Seminar	
Module Level	UGx11 1		Semester of	Delivery		1
Administering Dep	Administering Department GEO		College	TEMO		
Module Leader	Fatin Mahmood	Shihab	e-mail	fatin.m.a	llobaid@ntu.edu.ic	l
Module Leader's Acad. Title ASS. Professor		ASS. Professor	Module Lea	der's Qu	alification	Msc.
Module Tutor			e-mail			
Peer Reviewer Name			e-mail			
Scientific Committee Approval Date 15/10/2024		Version Nu	nber	2.0		

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

Module Aims, Learning Outcomes and Indicative Contents						
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية					
Module Objectives	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:					
أهداف المادة الدر اسية						
	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						
	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.						
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 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	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.						
المصريات ، ۾ رساديا	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 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 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.]

Learning and Teaching Strategies						
استر اتيجيات 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 And Iterative Learning Continuous Practice Assessment through Practical Tests 					

Student Workload (SWL)					
الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا					
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	120	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	8		
Unstructured SWL (h/sem) 80 Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبوعيا			4		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	200				

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

assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)							
	المنهاج الاسبوعي النظري						
Week	Material Covered						
Week 1	Limits, grid, object snap, view menu (zoom, pan), Draw menu (line, poly line, polygon, rectangle,						
vveek 1	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						
WEEK 4	angle projection method						
Week 5	Drawing the three projections with the first angle, Drawing the three projections with the third angle projection						
	method						
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						
	11. particular lays of a line, of a plane, iv. Parallelism between two lines, parallelism between						
Week 8	two planes, parallelism between a line and a plane.						
	v. Perpendicularity between a line and a plane. Perpendicular between two coplanar lines.						
Week 9	Perpendicularity between planes, Intersection between two planes (not parallel). Intersection						
	between a plane and a line						
Wook 10	Perpendicularity between planes, Intersection between two planes (not parallel). Intersection						
Week 10	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 الاسبوعي للمختبر			
Week	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 والتدريس					
	Text	Available in the Library?				
	• Geometric and Engineering Drawing by K.					
Required Texts	 Morling Fundamentals of Engineering Drawing by Thomas E. French 	Yes				
Recommended Texts	No					
Websites						

Grading Scheme						
	مخطط الدرجات					
Group	Grade	التقدير	Marks %	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
~ ~	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
Success Group (50 - 100)	C - Good	ختر	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	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded		
	F – Fail	راسب	(0-44)	Considerable amount of work required		

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية						
Module Title Engineering Mathematics			Module Delivery			
Module Type	Core			□ theory □ □ Lecture	□ theory	
Module Code GEO 103						
ECTS Credits	ECTS Credits 4			🛛 Tutorial		
SWL (hr/sem)	WL (hr/sem) <u>100</u>			□Practical ⊠ Seminar		
Module LevelUGx11 1Semester			Semester of	Delivery	1	
Administering Department GEO Colleg			College	TEMO		

Module Leader	Haitham Hazim S	Saeed	e-mail HaithamSaeed@ntu.edu.iq			
Module Leader's Acad. Title Professor		Module Leader's Qualification Master		Master		
Module Tutor			e-mail			
Peer Reviewer Name		Name	e-mail			
Scientific Committee Approval Date		16/10/2024	Version Nu	nber	2.0	

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

Module Aims, Learning Outcomes and Indicative Contents						
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية					
Module Objectives أهداف المادة الدر اسية	 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. 					

	ſ				
	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 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				
Indicative Contents	acceleration				
المحتويات الإرشادية	• 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.

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
	Explanation using various modern presentation tools.			
	Lecture method and use of interactive whiteboard.			
Strategies	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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) 90 Structured SWL (h/w) 6 الحمل الدر اسي المنتظم للطالب أسبوعيا الحمل الدر اسي المنتظم للطالب خلال الفصل 6				
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	10	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	الـ			

Module Evaluation						
		السيه	تقبيم المادة الدر			
		Time/Number	Weight (Marks) Week Due	Relevant Learning		
As			((organ (1(1)))		Outcome	
	Quizzes	4	10% (10)	5 and 10	LO #1, #2 and #10, #11	
Formative	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7	
assessment	Projects / Lab.	0	10% (10)	Continuous	All	
	Report	0	10% (10)	13	LO #5, #8 and #10	
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessmen	t	•	100% (100 Marks)			

Delivery Plan (Weekly Syllabus)		
المنهاج الأسبوعي النظري		
Week	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				
Text Available in the Library?				
Required Texts	Calculus I, Paul Dawkins, 2007	Yes		
Recommended Texts		No		
Websites				

Grading Scheme مخطط الدر جات					
Group	و Grade التقدير Marks % Definition		Definition		
	A – Excellent	امتياز	90 - 100	Outstanding Performance	
Success Group	B - Very Good	جيد جدا	80 - 89	Above average with some errors	
	C – Good	ختر	70 - 79	Sound work with notable errors	
(50 - 100)	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	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded	
	F – Fail	راسب	(0-44)	Considerable amount of work required	
HUMAN RIGHTS and DEMOCRACY

HUMAN RIGHTS and DEMOCRACY حقوق الانسان والديمقر اطية					
Module Title	Human Rights and Democracy		eracy	Module Delivery	
Module Type	Basic			⊠ Theory	
Module Code	NTU 102			☐ Lecture	
ECTS Credits	2			□ Lab □ Tutorial	
SWL (hr/sem)		50		□ Practical ⊠ Seminar	
Module Level		1	Semester	of Deliver	2
Administering I	Department	GEO	College	TEMO	
Module Leader	Abdulkareem	Zuhair	e-mail Abdzuhair93@uomosul.edu.iq		omosul.edu.iq
Module Leader'	s Acad. Title	Assist Lecturer	Module Leader's Qualification Master		tion Master
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		15/10/2024	Version N	Tumber 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 الدر اسية ونتائج التعلم والمحتويات الإرشادية				
	- زيادة معرفة الطالب بالجانب المفاهيمي النظري والتطور التاريخي لمادة حقوق الانسان والديمقر اطية - تنمية مهار ات الطالب التحليلية والنقدية فيما يتعلق بواقع ومستقبل حقوق الانسان والديمقر اطية				
Module Objectives أهداف المادة الدر اسية	- تدريب الطالب على أهمية المشاركة الفاعلة في جوانب الحياة العامة كتعزيز احترام مبادئ حقوق الإنسان العامة والمشاركة الفاعلة في الحياة السياسية والثقافية.				
	- تمكين الطلاب من فهم أهمية التعليم ودوره في نشر ثقافة حقوق الإنسان والديمقر اطية في بناء مجتمع حضاري يقوم على أساس الحكم الصالح الذي من أهم مقوماته الإيمان بحقوق الإنسان والتربية عليها والمشاركة الفاعلة في الحكم عبر الانتخابات الحرة والعادلة				
Module Learning Outcomes	 حقوق الإنسان ، تعريفها ، أهدافها حقوق الإنسان في التاريخ المعاصر والحديث الاعتراف الإقليمي بحقوق الإنسان 				
مخرجات التعلم للمادة الدر اسية	 حقوق الإنسان الحديثة ضمانات احترام وحماية حقوق الإنسان على الصعيد الوطني مصطلح الديمقر اطية. 				

	• حقوق الانسان ، تعريفها ، أهدافها
	حقوق الإنسان في الحضار ات القديمة وخصوصا حضارة وادي الرافدين
	ضمانات واحترام وحماية حقوق الإنسان على الصعيد الدولي :
	 دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات
	 دور المنظمات الإقليمية (الجامعة العربية ، الاتحاد الأوروبي ، الاتحاد الافريقي ، منظمة الدول
	الأمريكية ، منظمة آسيان) . [15 hrs]
	دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان
	• مصطلح الديمة اطبة ، نشأته، دلالته، تاريخ الديمة اطبة
Indicative Contents	الأنظمة الديمقر اطبة في العالم/الديمقر اطبة في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول
المحتويات الإرشادية	الديمقر اطي . [15 hrs] الديمقر اطي .

Learning and Teaching Strategies استر اتيجيات 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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) 35 Structured SWL (h/w) 2 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 2				
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	15	15 Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل		50		

Module Evaluation تقييم المادة الدر اسية					
		Time/Numbe	Weight (Marks)	Week Due	Relevant Learning
As		r	weight (warks)		Outcome
	Quizzes	2	20% (20)	5 and 10	LO #1, #2, and #5, #6
Formative assessment	Assignments	2	10% (10)	6 and 12	LO#3 and #4
	Projects / Lab.	0	0% (0)		
	Report	1	10% (10)	14	LO #5
Summative	Midterm	2hr	10% (10)	7	LO #1 - #3
assessment	Exam	2111	10/0 (10)	,	
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100		
			Marks)		

Delivery Plan (Weekly Syllabus)				
المنهاج الاسبوعي النظري				
Week	Material Covered			
Week 1	حقوق الإنسان ، تعريفها ، أهدافها حقوق الإنسان في الحضار ات القديمة وخصوصا حضارة وادي الرافدين			
Week 2	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الاسلام			
Week 3	حقوق الإنسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الإنسان منذ الحرب العالمية الأولى و عصبة الامم المتحدة			
Week 4	الاعتراف الإقليمي بحقوق الإنسان : الاتفاقية الاوربية لحقوق الانسان 1950 ، الاتفاقية الامريكية لحقوق الانسان 1969 ، الميثاق الافريقي لحقوق الانسان 1981 ، الميثاق العربي لحقوق الانسان 1981 ، الميثاق العربي لحقوق الانسان 1994			
Week 5	حقوق الإنسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين حقوق الانسان ، المنظمات الوطنية لحقوق الانسان)			
Week 6	حقوق الإنسان في الدساتير العراقية بين النظرية والواقع			
Week 7	Mid-term Exam+ حقوق الإنسان الاقتصادية والاجتماعية والثقافية وحقوق الانسان المدنية والسياسية			
Week 8	حقوق الإنسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين			
Week 9	ضمانات احتر ام 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
	ضمانات واحترام وحماية حقوق الإنسان على الصعيد الدولي :
	 دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات
Week 10	 دور المنظمات الإقليمية (الجامعة العربية ، الاتحاد الأوروبي ، الاتحاد الافريقي ، منظمة الدول الأمريكية ، منظمة
	آسیان)
	دور المنظمات الدولية الإقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الإنسان
Week 11	مصطلح الديمقر اطية ، نشأته، دلالته، تاريخ الديمقر اطية .
Week 12	الإسلام والديمقر اطية ومساوئ الحكم الاستبدادي .
Week 13	الانتقادات الموجهة للديمقر اطية، ومحاسن النظام الديمقر اطي .
Week 14	الأنظمة الديمقر اطية في العالم/الديمقر اطية في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول الديمقر اطي
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources					
مصادر التعلم والتدريس					
	Tart Availab				
	Iext	Library?			
Required Texts	حقوق الإنسان والديمقر اطية للدكتور محمد عابدالجابري 2006	Yes			
Recommended	حقوق الإنسان والديمقر اطية اعداد أم.د. غسان كريم مجذاب و أ.م. امجد	No			
Texts	زين العابدين طعمة للعام 2018	NO			
Wabaitaa	ن" ، منشور على شبكة المعلومات الدولية (الانترنت) على الموقع الالكتروني	'' طرق وتعليم وثقافة حقوق الانسار			
http://ghrorg-learning.blogspot.com					

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

Code	Course/Module Title	ECTS	Semester		
NTU 100	Human Rights & Democracy	2	1		
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)		
1	1 0 32		15		
Description					
مادة حقوق الإنسان والديمقر اطية تقدم فهمًا شاملاً للمفاهيم والمبادئ الأساسية لحقوق الإنسان والنظم الديمقر اطية. تركز المادة على در اسة القيم والمبادئ التي تحكم حقوق الإنسان وحمايتها، بالإضافة إلى فهم أهمية الديمقر اطية في تنظيم الحكم وضمان مشاركة المواطنين في صنع					
القرارات. يتناول المقرر مواضيع مثل المساواة، وحرية التعبير، وحقوق المرأة والطفل، وحقوق الأقليات، وحقوق العمال واللاجئين، وأسس					

ومؤسسات الديمقراطية. تهدف المادة إلى تعزيز الوعي القانوني والأخلاقي بين الطلاب، وتمكينهم من فهم أهمية حقوق الإنسان والمشاركة الديمقراطية في بناء مجتمع عادل ومتقدم.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية							
Module Title	English language	Module Delivery					
Module Type	Basic	⊠Theory					
Module Code	1 NTU 10	□ Lecture					
ECTS Credits	2	🗆 Lab					

SWL (hr/sem)		☐ Tutorial ☐ Practical ⊠ Seminar				
Module Level		1	Semester of Deliver 1		1	
Administering I	Department	РМ	College	ТЕМО		
Module Leader	Sundus Falah	Mohammed	e-mail sundus.falah@ntu.edu.iq		iq	
Module Leader's Acad. Title		Assist. Lecturer	Module L	eader's Qualification M. Linguisti and English Language Teaching		M. Linguistics and English Language Teaching
Module Tutor	Name (if avail	able)	e-mail E-mail			
Peer Reviewer Name		Name	e-mail	E-mail		
Scientific Committee Approval Date		/10/202415	Version N	umber .02		

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 الدر أسية وتتابج التعلم والمحتويات الإرسادية				
Module Objectives أهداف المادة الدر اسية	 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. 				
	• 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				
Module Learning	using affirmative, negative and interrogative sentences.				
Outcomes	• 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				
مخرجات التعلم للمادة	define the articles.				
الدراسية	• 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.
	An introduction to the importance of English language learning and the role it
	• All 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.
Indicative Contents	• Demonstrating many main concepts including (offers, requests, future plants,
المحتويات الإرشادية	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.
	1. The second seco

Learning and Teaching Strategies استر اتيجيات التعلم و التعليم				
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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	2	
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	1	
Total SWL (h/sem) 50 الحمل الدر اسي الكلي للطالب خلال الفصل				

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

Delivery Plan (Weekly Syllabus)				
المنهاج الاسبوعي النظري				
Week	Material Covered			
	Unit one: Hello			
Week 1	Am/are/is. my/your			
	This is with practice in work			
Week 2	Unit two: Your world			

	He/she/they, his/her
	Questions
Wook 3	Unit three: All about you
Week 5	Personal information/ social expressions
	Unit four: Family and friends
Week 4	Possessive adjectives/ possessive 's
	Have/has, adjective + noun
	Unit five: The way i live
Week 5	Present simple l/we/you/they
	An/a, adjective + noun
	Unit six: Every day
Week 6	Present simple he/she
	Negatives and questions, adverbs of frequency
Week 7	Unit seven: My favorites
WEEK /	Question words, pronouns, this/that
Week 8	Unit eight: Where I live
WEEK 0	There is/ are, prepositions
Week 9	Unit nine: Times past
WEEK J	Was/ were born, past simple and irregular verbs
	Unit ten: We had a great time
Week 10	Past simple, regular and irregular
	Questions, negatives, ago
Week 11	Unit eleven: l can do that!
	Can/can't, adverbs, requests
	Unit twelve: Please and thank you
Week 12	I'd like, some and any
	Like and would like
	Unit thirteen: Here and now
Week 13	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 النعلم والدريس Available in the Library?				
Required Texts	John and liz Soar. (New Headway Beginner) 4th edition. Oxford: Oxford University Press.	Yes		
Recommended Texts		No		
Websites				

Grading Scheme						
مخطط الدرجات						
Group	Grade	التقدير	Marks %	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
Success	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
Success Group (50 - 100)	C - Good	ختز	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		

Module 1 **Course/Module Title ECTS** Code Semester **NTU 100 English Language** 2 1 Lect/Lab./Prac./Tutor USWL (hr/sem) Class (hr/w) SSWL (hr/sem) 2 0 32 18 Description

This module will be used to develop problem solving skills mainly speaking, reading, writing and listening skills and to understand English language as a foreign language through the application of many techniques. It is also important to understand the general principles of English language. This course deals with the basic concepts of learning the main rules of English grammar and English vocabularies. It is mainly the basic subject for writing and speaking English well. The module is to understand how to build a correct English sentence. It contains various grammatical rules and different vocabularies with using typical examples to explain the structure and the meaning of any word or expression. The module is valid and reliable to deal with many recognizable situations and how to use English in different contexts associating with life experiences.

Module Information معلومات المادة الدر اسية						
Module Title	Plane Surv	Plane Surveying 2			le Delivery	
Module Type	Core			🛛 The	⊠ Theory	
Module Code	<u>GEO 105</u>			🛛 Leo	ture	
ECTS Credits	<u>10</u>			🛛 Lal)	
				🗆 Tut	torial	
SWL (hr/sem)	<u>250</u>			🗆 Pra	octical	
		-		□ Sen	ninar	
Module Level		UGx11 1	Semester of Delivery 2		2	
Administering Dep	artment	GEO	College	TEMO		
Module Leader	Dr.Mostafa Ridh	a Muzaal	e-mail	Mostafa	.redha@ntu.edu.iq	
Module Leader's Acad. Title Ass. Lecturer		Module Lea	der's Qu	alification	Ph.D.	
Module Tutor	Module Tutor		e-mail			
Peer Reviewer Name			e-mail	E-mail		
Scientific Committee Approval Date 14/10/2024		14/10/2024	Version Nu	nber	.02	

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

Module	e Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
	• Understanding how to determine level of points, horizontal distances, and elevations of points.
Module Objectives	• Familiarity with surveying instruments related to the practical aspect.
أهداف المادة الدر اسية	• 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.
	• 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.
Madala Lananina	• Discuss the errors through the leveling.
Outcomes	• Describe the environmental effects on leveling.
·····	• Define the method to draw contour lines.
مخرجات التعلم للمادة الدراسية	• 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 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]
Indicative Contents	Leveling skills in field – Error adjustment, obstacles in field, leveling of slopes, close leveling. [SSWL=10 hrs]
المحتويات الإرشادية	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 sectionss [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]

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
	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			
Strategies	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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	200	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	8	
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	50	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	3.5	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل		250		

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري			
XX7 1			
Week	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 الاسبوعي للمختبر			
Week	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			
	Text	Available in the Library?	
Paguirad Taxts	N N Basak (2014). Surveying and Levelling. McGraw Hill Education.	No	
Keyun cu Texts	p. 542. ISBN 9789332901537	110	

Recommended	Brinker, Russell C; Minnick, Roy, eds. (1995). The Surveying	No
Texts	Handbook. ISBN 978-1-4613-5858-9	INO
Websites	https://www.youtube.com/watch?v=qgwBOVUFDAQ	

Grading Scheme مخطط الدرجات					
Group	Grade	التقدير	Marks %	Definition	
	A - Excellent	امتياز	90 - 100	Outstanding Performance	
Success	B - Very Good	جيد جدا	80 - 89	Above average with some errors	
Group (50 - 100)	C - Good	ختر	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	FX – Fail	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded	
(0 - 49)	F – Fail	راسب	(0-44)	Considerable amount of work required	

Module Information					
معلومات المادة الدر اسية					
Module Title	ENGINEERING MECHANICS	Module Delivery			

	(STATIC)					
Module Type		Core		X Theory	⊠Theory	
Module Code	GEO 107			☑ Lecture		
ECTS Credits		8		□ Lab		
				🛛 Tutorial		
SWL (hr/sem)		200		Practical		
				□ Seminar		
Module Level UGx11 1		Semester of	Delivery	2		
Administering Department GEO		College	ТЕМО			
Module Leader	Dr. Mutanna Ade	el Najim	e-mail	abbu@ntu.edu.iq		
Module Leader's A	Module Leader's Acad. Title Ass. Professor		Module Lea	der's Qualification	Ph.D.	
Module Tutor			e-mail			
Peer Reviewer Name			e-mail			
Scientific Committee Approval Date 15/10/2024		Version Nur	nber 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 الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Objectives أهداف المادة الدر اسية	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 مخرجات التعلم للمادة الدراسية	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 Systems, Cables, Moment of Inertia, Potential Energy, Stable.				
Indicative Contents المحتويات الإرشادية					

Learning and Teaching Strategies				
owork)				
ewonk)				
Exam.				
ew Ex				

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ أسبو عا				
Structured SWL (h/sem) 120 Structured SWL (h/w) 8 الحمل الدر اسي المنتظم للطالب أسبوعيا الحمل الدر اسي المنتظم للطالب خلال الفصل 8				
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	80	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	5	
Total SWL (h/sem) 200 الحمل الدر اسي الكلي للطالب خلال الفصل				

Module Evaluation تقييم المادة الدر اسية						
As Time/Number			Weight (Marks)	Week Due	Relevant Learning Outcome	
Formative	Quizzes	8				
assessment	Assignments	8				
Summative	Midterm Exam	2hr		7		
assessment	Final Exam	3hr		16		
Total assessment			100% (100 Marks)			

Delivery Plan (Weekly Syllabus)					
المنهاج الأسبوعي النظري					
Week	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,	
weeks 5&0	• Able to identify Resolution of a force into a force & a couple.	
Wooks 788	• Demonstrates knowledge and correctly compute the Resultant of force systems, Resultant of concurrent	
WEEKS 7000	force system, Resultant of parallel force system, Resultant of non-concurrent force system.	
Wooks	• Demonstrates knowledge, identify and correctly compute Equilibrium of force system, Free body	
9&10&11	diagram, Equilibrium of concurrent force system, Equilibrium of parallel force system, Equilibrium of non-	
Jaroan	concurrent force system.	
Week 12	• Demonstrates knowledge of the Types of beams, Supports, and loads, Equilibrium of beams.	
Weeks	Demonstrates knowledge of the Trusses	
13&14,15	• Able to analyses the trusses, method of Joint, method of section.	

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

Learning and Teaching Resources				
	مصادر التعلم والتدريس			
	Text	Available in the Library?		
Required Texts		Yes		
Recommended				
Texts				
Websites				

Grading Scheme					
		الدرجات	مخطط		
Group	P Grade التقدير Marks % Definition				
	A – Excellent	امتياز	90 - 100	Outstanding Performance	
<i>a a</i>	B - Very Good	جيد جدا	80 - 89	Above average with some errors	
Success Group (50 - 100)	C – Good	ختر	70 – 79	Sound work with notable errors	
(50 - 100)	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 (قبد المعالجة)	(45-49)	More work required but credit awarded	
	F – Fail	راسب	(0-44)	Considerable amount of work required	

Module Information معلومات المادة الدر اسية							
Module Title	Er	ngineering Physics	5	Modu	odule Delivery		
Module Type		Support		🛛 Tut	🛛 Tutorial		
Module Code		GEO 108		🗆 Le	□ Lecture		
ECTS Credits		4		🛛 Lal	🛛 Lab		
				□ Theory			
SWL (hr/sem)		100	□ Practical				
		-		□ Sen	🗆 Seminar		
Module Level		UGx11 1	Semester of	of Delivery		2	
Administering Dep	artment	GEO	College	TEMO	TEMO		
Module Leader	Dhuha Abdulmu	nem Mohammed	e-mail	Dhuha.abdulmunem@ntu.edu.iq		.edu.iq	
Module Leader's A	dule Leader's Acad. Title Ass. Lecturer		Module Lea	der's Qu	ler's Qualification M. Cs.		
Module Tutor	r		e-mail				
Peer Reviewer Name			e-mail				
Scientific Committee Approval Date		15/10/2024	Version Nu	nber	ber 2.0		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإر شادية				
Module Objectives أهداف المادة الدر اسية	1.			
Module Learning Outcomes	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1			
Indicative Contents المحتويات الإرشادية	Indicative content includes the following.			

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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا						
Structured SWL (h/sem)	50	Structured SWL (h/w)	2			
الحمل الدر اسي المنتظم للطالب خلال الفصل	50	الحمل الدر اسي المنتظم للطالب أسبو عيا	2			
Unstructured SWL (h/sem)	50	Unstructured SWL (h/w) 2				
الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	الحمل الدراسي غير المنتظم للطالب أسبو عيا	2			
Total SWL (h/sem)		100				
الحمل الدر اسي الكلي للطالب خلال الفصل	100					

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

Delivery Plan (Weekly Syllabus)					
	المنهاج الأسبوعي النظري				
Week	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 والتدريس				
	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/elec	trical-engineering

Grading Scheme مخطط الدرجات						
Group	Grade	التقدير	Marks %	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
Success Group (50 - 100)	C – Good	ختر	70 - 79	Sound work with notable errors		
(20 100)	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		

MODULE DESCRIPTION FORM

نموذج وصف المادة الدر اسية

Module Information							
	معلومات المادة الدر اسية						
Module Title	DESCRIP	FIVE GEOMET	<u>RY</u>	Modu	odule Delivery		
Module Type	<u>Core</u>			🗆 Th	eory		
Module Code	Module Code <u>GEO 109</u>			⊠ Lee ⊠ La	⊠ Lecture ⊠ Lab		
ECTS Credits	4			∐Tut ⊠Pra	∐Tutorial ⊠ Practical		
SWL (hr/sem)	<u>100</u>	<u>100</u>			🛛 Seminar		
Module Level		UGx11 1	Semester of Delivery		2		
Administering Dep	artment	GEO	College	ТЕМО			
Module Leader	Mustafa R. Meza	al	e-mail	Mostafa.redha@ntu.edu.iq			
Module Leader's Acad. Title Assist. Prof.		Assist. Prof.	Module Lea	der's Qua	ler's Qualification Ph.D.		
Module Tutor	dule Tutor Ekhlas N. Alansari			ekhlasm	ekhlasmohammed@ntu.edu.iq		
Peer Reviewer Name Yasin Mohammad		e-mail	Mohammad1974yasin@ntu.edu.iq		u.edu.iq		
Scientific Committee Approval Date 13 /10 /2024		Version Nu	nber 1.0				

Relation with other Modules					
العلاقة مع المواد الدر اسية 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 الدر اسية	 Understanding the basics of projection: Students learn the different types of projections (orthogonal, oblique, etc.) and how to use them to represent shapes and objects. Representing geometric shapes: Students practice representing points, lines, planes, and other geometric shapes on a drawing plane. Solving geometric problems: Students learn to solve geometric problems related to measuring lengths, angles, areas, and volumes. Analyzing geometric shapes: Students learn to analyze complex geometric shapes and understand their spatial relationships. Applying descriptive geometry in different fields: Students learn about the applications of descriptive geometry in architecture, mechanical engineering, industrial design, and others.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 The student will be able to: Use engineering design aids program. Apply descriptive geometry concepts in various engineering fields. Learn the four even angles and project points and lines into even angles. Calculate dimensions, lengths and areas. Imagine geometric shapes in three dimensions. Express his/her geometric ideas clearly and effectively.
Indicative Contents المحتويات الإر شادية	Indicative content includes the following. Part A - Theory of Projection Theory of Projection / Central of Projection, Orthographic, Horizontal and vertical projection planes, Auxiliary Plane. Projection of the point Projection of Straight Line, Inclination of Straight Line to any plane Inclination Angles , True length. Rabatment on the H. P., Rabatment on the V. P. Projection of Straight Line, Inclination of Straight Line to any plane Inclination Angles , True length. Rabatment on the H. P., Rabatment on the V. P. Projection of Straight Line, Inclination of Straight Line to any plane Inclination Angles , True length. Rabatment on the H. P., Rabatment on the V. P. Projection of Straight Line, Inclination of Straight Line to any plane Inclination Angles , True length. Rabatment on the H. P., Rabatment on the V. P. Projection of Straight Line, Inclination of Straight Line, frontal plane Inclination Angles , True length. Rabatment on the H. P., Rabatment on the V. P. Projection of Straight Line, Inclination of Straight Line, frontal plane Projection of Straight Line, Inclination of Straight Line, frontal plane Projection of Straight Line, Inclination of Straight Line to any plane / frontal line, frontal plane Projection of Straight Line, Inclination of Straight Line to any plane / frontal and vertical planes Projection of point, straight line and plane to auxiliary planes Projection of solid to auxiliary planes Projection of solid to auxiliary planes Projection of solid to auxiliary planes Conic sections / Ellipse / Parabola / Hyperbola Solid Sections and Section Shape Cases of Section planes/ Parallel to the horizontal plane/ Parallel to the vertical planes Solid Sections and Section Shape Cases of Section planes / Perpendicular to the vertical plane and inclined at an angle to the

horizontal plane/ Perpendicular to the horizontal plane and inclined at an angle to the vertical
plane

Learning and Teaching Strategies				
	استر اتيجيات التعلم والتعليم			
Strategies	 Interactive lectures: Interactive lectures are a good way to encourage active student participation. Asking questions and encouraging discussions will help enhance students' understanding of theoretical concepts. Practical exercises: Practical exercises are essential to apply theoretical concepts to real-world engineering problems. Providing opportunities for practical application will help students better understand concepts and develop their practical skills. Graphs: Using graphs and illustrations is a valuable tool to illustrate complex engineering concepts. Project-based learning: Dividing students into groups and assigning them engineering projects will help develop teamwork skills and practical application of concepts. Use of computer-aided design (CAD) software: Training students in the use of CAD software will help them develop their engineering drawing and 3D modeling skills. Allocating time to solve exercises: Allocating a specific time to solve exercises in class will help students get the necessary support and assistance. Cooperative learning: Encouraging teamwork will help students exchange ideas and learn more from each other. Continuous assessment: Using a variety of assessment tools will help evaluate students' progress comprehensively. 			

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) 60 Structured SWL (h/w) 3 الحمل الدر اسي المنتظم للطالب أسبو عيا				
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	40	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	2	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	100			

Module Evaluation							
تقييم المادة الدر اسية							
As Time/Number Weight (Marks) Week Due Relevant Learning Outcome					Relevant Learning Outcome		
Formative	Quizzes	6	10% (10)	5 and 10	LO #1, #2 and #10, #11		
assessment	Assignments	8	10% (10)	Continuous	All		

	Class work	2	10% (10)	Continuous	All
	Seminar	1	10% (10)	13	LO #5, #8 and #10
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
assessment Final Exam		3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

	Delivery Plan (Weekly Syllabus)				
	المنهاج الأسبوعي النظري				
Week	Material Covered				
Week 1-2	Theory of Projection / Central of Projection, Orthographic, Horizontal and vertical projection planes, Auxiliary Plane. Projection of the point				
Week 3	Projection of Straight Line, Inclination of Straight Line to any plane				
Week 4	Inclination Angles , True length. Rabatment on the H. P., Rabatment on the V. P.				
Week 5-6	Projection of Straight Line, Inclination of Straight Line to any plane / frontal line, frontal plane				
Week 7	The Plane Surface/ Auxiliary plane cases in space to horizontal and vertical planes				
Week 8-9	Projection of point, straight line and plane to auxiliary planes				
Week 10-11	Projection of solid to auxiliary planes				
Week 12	Conic sections / Ellipse / Parabola / Hyperbola				
Week 13	Solid Sections and Section Shape				
Week 14 -	Cases of Section planes/ Parallel to the horizontal plane/ Parallel to the vertical plane/ Perpendicular to the				
15	norizontal and vertical planes				
Week 16	Preparatory week before the final Exam				

Delivery Plan (Weekly Lab. Syllabus)					
	المنهاج الاسبوعي للمختبر				
Week	Material Covered				
Week 1-2	Theory of Projection / Central of Projection, Orthographic, Horizontal and vertical projection planes, Auxiliary Plane. Projection of the point				
Week 3	Projection of Straight Line, Inclination of Straight Line to any plane				
Week 4	Inclination Angles , True length. Rabatment on the H. P., Rabatment on the V. P.				
Week 5-6	Projection of Straight Line, Inclination of Straight Line to any plane / frontal line, frontal plane				
Week 7	The Plane Surface/ Auxiliary plane cases in space to horizontal and vertical planes				
Week 8-9	Projection of point, straight line and plane to auxiliary planes				
Week 10-11	Projection of solid to auxiliary planes				
Week 12	Conic sections / Ellipse / Parabola / Hyperbola				
Week 13	Solid Sections and Section Shape				
Week 14 -	Cases of Section planes/ Parallel to the horizontal plane/ Parallel to the vertical plane/ Perpendicular to the horizontal and vertical planes				

15	
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources					
	مصادر التعلم والتدريس				
	Text	Available in the Library?			
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O	Yes			
	Sadiku, McGraw-Hill Education				
Recommended	DC Electrical Circuit Analysis: A Practical Approach	No			
Texts	Copyright Year: 2020, dissidents.	INO			
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering				

Grading Scheme مخطط الدرجات						
Group	Grade	التقدير	Marks %	Definition		
Success Group	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		
(50 - 100)	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	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded		
	F – Fail	راسب	(0-44)	Considerable amount of work required		

Module Information معلومات المادة الدراسية							
Module Title	Computer	Computer Principles			Module Delivery		
Module Type	Core			□ Theory			
Module Code	<u>NTU 102</u>		⊠ Lecture				
ECTS Credits	2		☐ ⊠ Lab				
SWL (hr/sem)	<u>50</u>			 ☑ Tutorial ☑ Practical ☑ Seminar 			
Module Level		UGx11 1	Semester of	Delivery	2		
Administering DepartmentGEOC			College	ТЕМО			
Module Leader	Ekhlas N. Alansari e-mail						
Module Leader's Acad. Title Assist. Lecturer			Module Leader's Qualification Master		Master		
Module Tutor	e-mail			ekhlasmohammed@ntu.ed	lu.iq		

Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	12/10/2024	Version Nur	nber	1.0

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

Module Aims, Learning Outcomes and Indicative Contents					
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Objectives أهداف المادة الدر اسية	 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	 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. 				
مخرجات التعلم للمادة الدراسية	 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</u> -Microsoft Word 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

Learning and Teaching Strategies استر اتيجيات التعلم و التعليم			
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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	39	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	2	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	11	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	1	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	50			

Module Evaluation تقييم المادة الدر اسية						
As Time/Number Weight (Marks) Week Due Relevant Learning Outcome						
	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11	
Formative	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7	
assessment	Class work	8	10% (10)	Continuous	All	
	seminar	2	10% (10)	6 and 11	All	
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessmen	ıt		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)				
المنهاج الاسبوعي النظري والعملي				
Week	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			
Week 5	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 الأسبوعي للمختبر				
Week	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

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				
	Microsoft Learn: •			
	https://www.google.com/url?sa=E&source=gmail&q=https://learn.microsoft.com/			
Websites	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				
		الدرجات	مخطط	
Group	Grade	التقدير	Marks %	Definition
	A - Excellent	امتياز	90 - 100	Outstanding Performance
<i>a a</i>	B - Very Good	جيد جدا	80 - 89	Above average with some errors
Success Group (50 - 100)	C - Good	ختر	70 - 79	Sound work with notable errors
(20 100)	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	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
MODULE DESCRIPTION FORM نموذج وصف المادة الدراسية

Module Information					
Module Title	Arabic Language		Module Delivery		
Module Type	<u>Basic</u>			⊠ Theory	
Module Code	NTU 103				
ECTS Credits	2			□ □ Practical	
SWL (hr/sem)		50		□ Seminar	
Module Level		1	Semester of	ter of Deliver 2	
Administering I	Department	GEO	College	TEMO	
Module Leader	Saja Moaeed Ahmed		e-mail	Saja.moaeed@ntu.ed	lu.iq
Module Leader'	's Acad. Title	Assist Lect.	Module Leader's Qualification M.Sc.		M.Sc.
Module Tutor		e-mail			
Peer Reviewer Name		e-mail			
Scientific Committee 01/06/2023		Version N	umber 1.0		

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

Мо	dule 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)					
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	35	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	2		
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	15	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	1		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	50				

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

Delivery Plan (Weekly Syllabus)			
Week	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 والظاء	• Verbs: Understanding verb conjugation and the different verb forms in Arabic.	
Week 8	العدد	• 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 ـ	• 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:	

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		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 th	ne final Exam

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 مرجعًا قيمًا في دراسة اللغة العربية. 	No		
Websites				

Grading Scheme مخطط الدرجات					
Group	Grade	التقدير	Marks %	Definition	
	A - Excellent	امتياز	90 - 100	Outstanding Performance	
Success	B - Very Good	جيد جدا	80 - 89	Above average with some errors	
Group	C - Good	ختر	70 - 79	Sound work with notable errors	
(50 - 100)	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	

Module 1					
Code	Course/Module Title	ECTS	Semester		
NTU 201	Arabic language	2	4		
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/sem)		
2	0	32	18		
Description					
The description for the Δ rabic language is:					

M. J.-. 1

The description for the Arabic language is: Arabic is a rich and diverse language spoken by millions of people around the world. It is the official language of over 20 countries and holds great cultural and historical significance. With its unique alphabet, intricate grammar, and beautiful calligraphy, Arabic offers a fascinating linguistic journey. Whether you are interested in exploring the language for academic, professional, or personal reasons, learning Arabic opens doors to understanding Arab culture, literature, and society. From basic greetings to advanced conversational skills, mastering Arabic provides opportunities for communication, travel, and career prospects. Embrace the beauty of Arabic as you embark on a journey of language discovery and cultural immersion.

MODULE DESCRIPTION FORM نموذج و صف المادة الدر اسبة

Module Information معلومات المادة الدر اسية						
Module Title	PLANE SURVEYING-III			Modu	Module Delivery	
Module Type	Core			⊠The	⊠Theory	
Module Code	<u>GEO 201</u>			⊠Lec ⊠Lab	ture	
ECTS Credits	<u>8</u>	8			□Tutorial □Practical □Seminar	
SWL (hr/sem)	<u>200</u>	<u>200</u>				
Module Level		UGx11 2	Semester of Delivery 1		1	
Administering Dep	artment	GEO	College	College TEMO		
Module Leader	Dr. Mostafa Ridh	a Muzaal	e-mail Mostafa.redha@ntu.edu.iq			
Module Leader's A	cad. Title	Ass. Professor	Module Leader's Qualification Ph.D.		Ph.D.	
Module Tutor	Mostafa Ismat Abdulrahman		e-mail	e-mail Mustafa.ismat@ntu.edu.iq		
Peer Reviewer Name Name			e-mail	E-mail		
Scientific Committee Approval Date 01/06/2023			Version Number 1.0			

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدر اسية	 The objective is to provide knowledge and skills related to the practical application of surveying techniques and methods in various engineering and construction projects. It aims to equip individuals with the necessary tools and techniques to accurately measure, map, and analyze land and other physical features. The objective of studying applied surveying is to provide individuals with the knowledge, skills, and techniques required to carry out accurate and reliable measurements, mapping, and analysis in engineering and construction projects. It enables individuals to effectively contribute to land development, infrastructure projects, resource management, and spatial data analysis in various industries.
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Understanding Fundamental Concepts: Demonstrate a clear understanding of the basic principles and concepts of plane surveying, including types of surveys and common surveying instruments. Instrument Proficiency: Operate surveying instruments such as theodolites, total stations, and levels, effectively and safely, ensuring accurate measurements. Measurement Techniques: Apply techniques for measuring distances, angles, and elevations, and understand how to minimize errors in these measurements. Data Collection and Analysis: Collect, record, and analyze field data using appropriate surveying methods, ensuring accuracy and precision. Mapping Skills: Produce accurate maps and plans based on collected data, utilizing software tools and manual drafting techniques. Error Analysis: Identify and correct systematic and random errors in surveying measurements and calculations, applying statistical methods as necessary. Legal and Ethical Considerations: Understand the legal implications of surveying practices, including land ownership, boundaries, and ethical considerations in the field. Project Management: Plan and execute a surveying project, including budgeting, scheduling, and resource allocation. Team Collaboration: Work effectively as part of a team, demonstrating communication skills and collaborative problem-solving in a surveying context. Application of Technology: Utilize modern surveying technologies and software applications to enhance data collection and analysis processes.
Indicative Contents	Indicative content includes the following. 1. Introduction to Surveying Definition and importance of surveying Types of surveys: plane vs. geodetic Applications of surveying in various fields Surveying Instruments Overview of common surveying tools Theodolites Levels

المحتويات الإرشادية	Total stations
	 Tape measures and EDMs (Electronic Distance Measurement)
	Instrument calibration and maintenance
	3. Measurement Techniques
	• Distance measurement techniques (chain, tape, EDM)
	 Angle measurement methods (horizontal and vertical angles)
	Elevation measurement techniques (leveling)
	4. Field Procedures
	 Setting up the survey: site preparation and layout
	 Conducting field surveys: procedures and best practices
	Field data recording methods
	5. Error Theory and Adjustment
	• Types of errors: systematic, random, and blunders
	Error propagation and analysis
	 Methods of adjustment (e.g., least squares)
	6. Data Processing and Analysis
	Data organization and management
	Calculation of coordinates and reduced levels
	• Use of software for data processing (e.g., CAD, GIS)
	7. Mapping and Representation
	Principles of map design and cartography
	Preparing topographic maps and plans
	Understanding scales and projections
	8. Legal Aspects of Surveying
	Land ownership and property boundaries
	Legal descriptions and land surveys
	Ethical considerations in surveying practices
	9. Special Topics in Surveying
	Photogrammetry and remote sensing
	GPS and its applications in surveying
	Geographic Information Systems (GIS)
	10. Project Work
	 Planning and executing a small surveying project
	Teamwork and collaboration in fieldwork
	Presentation of results and findings
	I have some outline provides a comprehensive overview of the topics typically covered in a Plane Surveying course, ensuring students gain both theoretical knowledge and practical skills
	i fane our forme course, ensuring students gain both incorcitear knowledge and practical skills.

Learning and Teaching Strategies

	استراتيجيات التعلم والتعليم
Strategies	 Measurement Techniques Use of Techniques: Apply appropriate measurement techniques (tape, EDM, leveling) based on the survey requirements. Double-Check Measurements: Re-measure critical points to verify accuracy. Data Collection Consistent Recording: Maintain accurate and consistent data recording practices, using digital methods where possible. Field Notes: Take detailed field notes, including conditions, instrument setups, and any anomalies. Error Management Error Identification: Regularly check for systematic and random errors during measurements. Adjustment Techniques: Use error adjustment methods (like least squares) to improve data accuracy. Data Processing Organize Data: Systematically organize collected data for analysis. Software Utilization: Leverage software tools (CAD, GIS) for processing and visualizing survey data. Quality Control Field Checks: Conduct regular field checks to ensure data integrity. Cross-Verification: Validate results with independent measurements or alternate methods.

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا		
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	91	91 Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل		200		

Module Evaluation					
	تقييم المادة الدر اسية				
		Time/Number	Weight (Marks)	Week Due	Relevant Learning
As					Outcome
Formative	Quizzes	10	10% (10)	5 and 10	LO #1, #2 and #10, #11

assessment	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	0	10% (10)	Continuous	All
	Report	5	10% (10)	13	LO #5, #8 and #10
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)			
	المنهاج الأسبوعي النظري		
Week	Material Covered		
Wook 1	Demonstrates knowledge of the General basics of surveying, fundamentals of surveying, units of measurements,		
WCCK I	Plotting scale.		
Week 2	Demonstrates knowledge of the General basics of surveying, fundamentals of surveying, units of measurements,		
WCCK 2	Plotting scale.		
Week 3	Conducts Linear measurements. Means for measuring distances, Direct method of horizontal distances		
Week 5	measurement, Target survey, Details, Electronic distance measuring instruments.		
Week 4	Conducts Linear measurements. Means for measuring distances, Direct method of horizontal distances		
	measurement, Target survey, Details, Electronic distance measuring instruments.		
Week 5	Demonstrates awareness of the Errors in surveying. Types of errors, Accuracy and precision, Principles of errors		
	scattering theory.		
Week 6	Demonstrates knowledge and awareness of the Obstacles to measuring.		
Week 7	Demonstrates knowledge and awareness of the Obstacles to measuring.		
Week 8	Sinusoidal Forcing, Complex Forcing, Phasors, and Complex Impedance, Sinusoidal Steady State Response		
Week 9	Implement the calculation of Traversing.		
Week 10	Identify the Types of traverses,		
Week 11	Conducts Coordinates measurement, Traverse adjustment.		
Week 12	Uses correctly Leveling equipment.		
Week 13	Demonstrates knowledge of the Types of leveling, leveling instrumentation, Leveling by taping, Trigonometric		
	leveling		
Week 14	Demonstrates knowledge of the Types of leveling, leveling instrumentation, Leveling by taping, Trigonometric		
	leveling		
Week 15	Identify the Sources of errors in leveling (vertical, horizontal).		
Week 16	Preparatory week before the final Exam		

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1: Demonstrates knowledge of the Basic fundamentals of surveying.
Week 2	Lab 2: Able to Use tape and chain in the linear measurement and perpendicular construction.
Week 3	Lab 3: Demonstrates knowledge of the Details survey by measuring tape and obstacles to measuring.
Week 4	Lab 4: Demonstrates knowledge of the Traversing, types of traverses.
Week 5	Lab 5: Conducts training how to use leveling instrument.
Week 6	Lab 6: Carries out Height difference between two points from one station of level.
Week 7	Lab 7: Uses correctly Trigonometric leveling.

Learning and Teaching Resources				
	مصادر التعلم والتدريس			
	Text	Available in the Library?		
Required Texts	• Surveying for Construction'' fot William Irvine	Yes		
	و Finlay Maclennan: و			
Recommended Texts	 "Elementary Surveying: An Introduction to Paul R. Wolf: و. Charles D. Ghilani للمؤلفين Geomatics" مساحة الأراضي والمسطحات) "مراجع عربية متوفرة في الجامعات): 	No		

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

Websites

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information						
معلومات المادة الدراسية						
Module Title	<u>Cartography 1</u>			Module Delivery		
Module Type	<u>Core</u>			⊠Theory	⊠Theory	
Module Code	<u>GEO 203</u>	<u>GEO 203</u>				
ECTS Credits	<u>4</u>	4			□ Tutorial □ Practical	
SWL (hr/sem)	<u>100</u>			□Seminar		
Module Level		UGx11 2	Semester of	ster of Delivery 1		
Administering Department		GEO	College	ТЕМО		
Module Leader Dr. Mostafa Ridha Muzaal		e-mail	Mostafa.redha@ntu.edu.iq			
Module Leader's Acad. Title		Ass. Professor	Module Leader's Qualification Ph.		Ph.D.	
Module Tutor Mostafa Ismat Abdulrahman e-m			e-mail	Mustafa.ismat@ntu.edu.iq		

Peer Reviewer Name Name			e-mail	E-mail	nail		
Scientific Committee Approval	l Date	01/06/2023	Version Nu	nber	ber 1.0		
Relation with other Modules							
	العلاقة مع المواد الدر أسية الآخري						
Prerequisite module None Semester							
Co-requisites module None						Semester	

Module Aims, Learning Outcomes and Indicative Contents			
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية		
Module Objectives أهداف المادة الدر اسية	 The objective of studying "Cartography" topics is to provide individuals with the knowledge and skills necessary to create accurate, visually appealing, and informative maps. Cartography is the art and science of map-making, and its objective is to effectively represent spatial information and geographic phenomena. the objective of studying cartography is to equip individuals with the knowledge and skills to create accurate, visually appealing, and informative maps. It involves understanding map design principles, geographic data representation, map projection, and symbology. Cartography also includes the application of spatial analysis techniques and the use of modern mapping technologies. By mastering cartographic skills, individuals can effectively communicate spatial information, support decision-making processes, and contribute to various fields such as geography, urban planning, environmental studies, and transportation. 		
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Understanding Cartographic Principles: Demonstrate a comprehensive understanding of the fundamental principles of cartography, including scale, projection, and map design. Map Interpretation: Analyze and interpret various types of maps, understanding their purpose, features, and the information they convey. Map Design and Creation: Design and create maps that effectively communicate spatial information, using appropriate symbols, colors, and layouts. Cartographic Techniques: Apply various cartographic techniques, including thematic mapping, contouring, and the use of GIS tools for map production. Projection Knowledge: Understand different map projections and their implications for representing spatial data accurately. Data Visualization: Use data visualization techniques to represent geographical data effectively on maps, enhancing user comprehension. 		
	 Geographic Information Systems (GIS): Utilize GIS software to analyze spatial data and produce high-quality cartographic outputs. Ethical Considerations: Recognize and address ethical considerations in cartography, including data representation, bias, and user impact. Collaborative Skills: Work effectively in teams to create maps, demonstrating strong communication and collaborative problem-solving skills. 		

	10. Critical Thinking: Evaluate the effectiveness of different cartographic			
	methods and approaches, applying critical thinking to improve map design and utility.			
	These outcomes can be tailored based on the specific focus and goals of the course but			
	generally encompass the essential skills and knowledge needed in cartography.			
	To discuss the discussion of t			
	Indicative content includes the following.			
	1. Introduction to Cartography			
	Definition and importance of cartography			
	Historical development of cartography			
	• Types of maps and their uses			
	2. Map Design Principles			
	Basic design elements: symbols, colors, and typography			
	• Layout and composition: visual hierarchy and balance			
	Effective map communication: clarity and aesthetics			
	3. Map Projections			
	 Understanding map projections: definitions and purposes 			
	• Types of projections: cylindrical, conic, and azimuthal			
	• Distortions and trade-offs in different projections			
	4. Thematic Mapping			
	• Types of thematic maps: choropleth, dot density, and graduated symbol			
	maps			
	• Data classification methods: equal intervals, quantiles, and natural breaks			
	 Visualizing qualitative and quantitative data 			
	5. Geographic Information Systems (GIS)			
	Introduction to GIS and its role in cartography			
	Data collection and management in GIS			
	 Spatial analysis techniques and map production using GIS software 			
	6. Cartographic Techniques and Tools			
Indicative Contents	 Traditional cartographic methods: hand-drawing and engraving 			
المحتويات الإرشادية	 Digital mapping techniques: software tools and applications 			
	Using remote sensing data in cartography			
	7. Cartographic Symbols and Standards			
	Development and use of cartographic symbols			
	 National and international cartographic standards (e.g., ISO, OGC) 			
	 Symbolization for different themes and audiences 			
	8. Map Interpretation and Use			
	Skills for reading and interpreting maps			
	• Understanding scale, orientation, and legends			
	 Practical applications of maps in decision-making and analysis 			
	9. Ethical Considerations in Cartography			
	Issues of accuracy and representation			
	 Addressing bias and ensuring inclusivity in map design 			

•	The impact of maps on society and policy
10. Pro	ject Work
•	Designing and creating a comprehensive map or series of maps
•	Incorporating feedback from peers and instructors
•	Presenting and defending the final cartographic project

Learning and Teaching Strategies				
	استراتيجيات التعلم والتعليم			
Strategies	 Lectures and Presentations Use engaging lectures to introduce key concepts and theories. Incorporate multimedia presentations to illustrate cartographic examples and techniques. Hands-On Workshops Conduct practical workshops where students can apply cartographic principles using software (e.g., GIS, mapping tools). Provide guided sessions for creating maps, focusing on design and analysis. Field Exercises Organize field trips to collect spatial data and understand real-world mapping challenges. Encourage students to practice observational skills and gather information for their projects. Aosign group projects that promote teamwork and collaborative map-making. Encourage peer feedback and discussion to enhance learning and creativity. Case Studies Analyze real-world case studies that highlight effective and innovative cartographic practices. Discuss the implications of map design decisions in various contexts. Problem-Based Learning (PBL) Present students with real-world cartographic problems to solve, encouraging critical thinking and application of knowledge. Facilitate discussions that explore multiple solutions and perspectives. Use of Technology Integrate GIS software and other digital mapping tools into the curriculum for hands-on experience. Provide access to online resources, tutorials, and databases for research and project development. Guest Lectures and Expert Talks Invite professionals from the field of cartography and GIS to share their insights and experiences. 			

• Encou	Encourage students to ask questions and engage with guest speakers.					
St	Student Workload (SWL)					
اسبوعا	الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا					
Structured SWL (h/sem) 109 Structured SWL (h/w) 7 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 7						
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	6			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل		100				

Module Evaluation تقبيم المادة الدر إسبية							
As Time/Number Weight (Marks) Week Due Relevant Learning Outcome							
	Quizzes	10	10% (10)	5 and 10	LO #1, #2 and #10, #11		
Formative	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7		
assessment	Projects / Lab.	2	10% (10)	Continuous	All		
	Report	0	10% (10)	13	LO #5, #8 and #10		
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessmen	t	•	100% (100 Marks)				

Delivery Plan (Weekly Syllabus)					
المنهاج الأسبوعي النظري					
Week	Material Covered				
Week 1	Introduction				
Week 2	Map scale				
Week 3	Map scale				
Week 4	Grid coordinate system				
Week 5	Grid coordinate system				
Week 6	Geographic coordinate system				
Week 7	Relation between Grid & Geographic coordinate system				
Week 8	Relation between Grid & Geographic coordinate system				
Week 9	Relation between Grid & Geographic coordinate system				
Week 10	Map projection				

Week 11	Cylindrical projection
Week 12	Mercator projection
Week 13	Mercator projection
Week 14	Lambert projection
Week 15	Conical projection
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر				
Week	Material Covered			
Week 1	Lab 1: Compute map scale			
Week 2	Lab 2: Changing map scale			
Week 3	Lab 3: Ex. for Grid coordinate system			
Week 4	Lab 4: Ex. for Geographic coordinate system			
Week 5	Lab 5: Ex. for Relation between Grid & Geographic coordinate system			
Week 6	Lab 6: Construction of map projection			
Week 7	Lab 7: Construction of cylindrical & Mercator & lambert projection			

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Arthur H. المؤلفين Elements of Cartography" . وللمؤلفين Arthur H. Robinson و Joel L. Morrison هذا الكتاب يُعتبر من الكتب الكلاسيكية والمهمة في مجال رسم الخرائط، ويغطي الأساسيات والاعتبارات الفنية في تصميم الخرائط.	Yes		
Recommended Texts	• "Thematic Cartography and Geovisualization" للمؤلفين Terry A. Slocum و Robert B. McMasterيغطي تقنيات تصميم الخرائط المواضيعية ويشرح كيفية تحليل البيانات الجغرافية و عرضها.	No		
Websites				

Grading Scheme					
مخطط الدرجات					
Group	Grade	التقدير	Marks %	Definition	
Success Group	\mathbf{A} – Excellent	امتياز	90 - 100	Outstanding Performance	

(50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	ختر	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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

MODULE DESCRIPTION FORM نموذج و صف المادة الدر اسبة

Module Information معلومات المادة الدر اسية						
Module Title	Engineerin	ng Surveying		Modu	Module Delivery	
Module Type	<u>Core</u>			⊠The	eory	
Module Code	<u>GEO 204</u>			⊠Lec ⊠Lat	ture)	
ECTS Credits	<u>6</u>			□ Tut □ Pra	☐ □Tutorial □ □Practical	
SWL (hr/sem)	<u>150</u>	<u>150</u>				
Module Level		UGx11 2	Semester of Delivery		1	
Administering Dep	artment	GEO	College	ТЕМО		
Module Leader	Dr. Mostafa Ridł	na Muzaal	e-mail Mostafa.redha@ntu.edu.iq			
Module Leader's Acad. Title Ass. Professor		Ass. Professor	Module Leader's Qualification Ph.		Ph.D.	
Module Tutor	or Mostafa Ismat Abdulrahman		e-mail	e-mail Mustafa.ismat@ntu.edu.iq		
Peer Reviewer Name Name			e-mail	E-mail		
Scientific Committee Approval Date 01/06/2023			Version Number 1.0			

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

Module	e Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية
Module Objectives أهداف المادة الدر اسية	 The main objectives to be achieved after the completion of this course are summarized below: 1. To introduce students to the principles, techniques, and equipment used in surveying for engineering projects. 2. To provide students with an understanding of the basic concepts of geodesy, coordinate systems, and map projections. 3. To develop students' skills in measuring distances, angles, and elevations using various surveying equipment and techniques. 4. To teach students how to interpret survey data, and prepare plans, maps, and cross-sections for engineering projects. 5. To provide students with knowledge of surveying safety practices and protocols. 6. To help students understand how to apply surveying principles and techniques in the design, construction, and maintenance of engineering projects. 7. To develop students' skills in communication, teamwork, and problemsolving, which are critical for successful engineering surveying. 8. To introduce students to the latest technological advancements in surveying, such as GPS, GIS, and remote sensing, and how these technologies can be used in engineering projects.
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Understanding the fundamental principles and concepts of surveying techniques and their applications in engineering projects. Knowledge of various types of surveying instruments and equipment, including their accuracy, limitations, and proper use. Ability to collect, process, and analyze surveying data using appropriate mathematical and statistical techniques. Ability to perform fieldwork, including planning and organizing surveying projects, measuring and recording data, and setting up control points. Knowledge of safety practices and procedures in surveying, including the use of personal protective equipment and safety guidelines for working in hazardous conditions. Understanding the impact of surveying on the environment and the importance of sustainability in surveying practices. Ability to communicate effectively with stakeholders, including clients,

	contractors, and other members of the engineering team, about surveying results
	and their implications for the project.
	8. Understanding the legal and ethical responsibilities of surveyors and their
	role in ensuring compliance with relevant laws and regulations.
	9. Ability to use computer software and technology for data processing,
	mapping, and presentation.
	10. Knowledge of the professional standards and codes of conduct that govern
	surveying practice and their role in maintaining high-quality standards in engineering
	surveying.
	Indicative content includes the following.
	 Basic concepts of surveying (2 hrs)
	Distance measurement (6 hrs)
Indicative Contents	• Earthworks (4hrs)
المحتويات الإرشادية	• Vertical control (6 hrs)
	Angle measurement (6 hrs)
	• Curves: Circular (2 hrs)
	• Underground surveying (4 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم				
Strategies	This course is to introduce environmental engineering students with the basic knowledge of land measurement and surveying techniques. The overall course is designed to make the students able to learn and understand the theory and field procedure by applying suitable surveying methods to produce map.			
Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem سي المنتظم للطالب خلال الفصل	Structured SWL (h/sem) 109 Structured SWL (h/w) 7 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 7			7
Unstructured SWL (h/sem) 91 Unstructured SWL (h/w) 6 الحمل الدر اسي غير المنتظم للطالب أسبوعيا			6	
Total SWL (h/sem) 150 الحمل الدر اسي الكلي للطالب خلال الفصل				

Module Evaluation تقييم المادة الدر اسية							
As	As Time/Number Weight (Marks) Week Due Relevant Learning Outcome						
	Quizzes	10	10% (10)	5 and 10	LO #1, #2 and #10, #11		
Formative	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7		
assessment	Projects / Lab.	2	10% (10)	Continuous	All		
	Report	0	10% (10)	13	LO #5, #8 and #10		
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessmen	t		100% (100 Marks)				

Delivery Plan (Weekly Syllabus)					
المنهاج الاسبوعي النظري					
Week	Material Covered				
Week 1	Basic concepts of surveying: Definition – Principles – Basic measurements – Control networks – Locating				
	position – Plotting detail				
Week 2	Basic concepts of surveying: Definition - Principles - Basic measurements - Control networks - Locating				
	position – Plotting detail				
Week 3	Basic concepts of surveying: Definition - Principles - Basic measurements - Control networks - Locating				
() cen e	position – Plotting detail				
Week 4	Basic concepts of surveying: Definition – Principles – Basic measurements – Control networks – Locating				
Week 4	position – Plotting detail				
	Distance measurement: Tapes – Field work – Distance adjustment – Errors in taping – Accuracies –				
Wook 5	Electromagnetic distance measurement (EDM) - Measuring principles - Meteorological corrections -				
WEEK J	Geometrical reductions - Errors, checking and calibration - Other error sources - Instrument specifications -				
	Developments in EDM				
	Distance measurement: Tapes – Field work – Distance adjustment – Errors in taping – Accuracies –				
Wook 6	Electromagnetic distance measurement (EDM) - Measuring principles - Meteorological corrections -				
WEEK U	Geometrical reductions - Errors, checking and calibration - Other error sources - Instrument specifications -				
	Developments in EDM				
	Distance measurement: Tapes - Field work - Distance adjustment - Errors in taping - Accuracies -				
Week 7	Electromagnetic distance measurement (EDM) - Measuring principles - Meteorological corrections -				
WEEK /	Geometrical reductions - Errors, checking and calibration - Other error sources - Instrument specifications -				
	Developments in EDM				
Week 8	Distance measurement: Tapes – Field work – Distance adjustment – Errors in taping – Accuracies –				

	Electromagnetic distance measurement (EDM) – Measuring principles – Meteorological corrections –
	Geometrical reductions – Errors, checking and calibration – Other error sources – Instrument specifications –
	Developments in EDM
Week 9	Presentation
Week 10-15	Earthworks: Areas – Partition of land – Cross-sections – Dip and strike – Volumes – Mass-haul diagrams
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)					
	المنهاج الأسبوعي للمختبر				
Week	Material Covered				
Wook 1	Identification Surveying Equipment + Distance Measurement By Tape + Horizontal Angle Measurement By				
WCCK I	Таре				
Week 2	Setting and Stakeout a column by Rule 2,3,4				
Week 3	Stakeout a map on the ground using a tape measure				
Week 4	Identification Leveling and Using Equipment				
Week 5	Two Page Test				
Week 6	Reciprocal Leveling				
Week 7	Final Exam				

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	N.N. BASAK. Surveying and leveling, ISBN: 9780074603994, 9780074603994	No		
Recommended Texts	SURVEYING VOL. I&2 BY DR. B. C. PUNMIA, ER. ASHOK KR. : 978-8170088837, JAIN, DR. ARUN KUMAR JAIN ISBN-13 ISBN-13: 9788189401238)	No		
Websites				

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

(0 - 49)				awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

MODULE DESCRIPTION FORM نموذج و صف المادة الدر اسبة

Module Information معلومات المادة الدر اسية									
Module Title	Photogrammetry 1			Modu	Module Delivery				
Module Type	<u>Core</u>				⊠The	X Theory			
Module Code	GEO	<u>205</u>			⊠Leo ⊠Lal	⊠ Lecture ⊠Lab			
ECTS Credits	4				□ Tut □ Pra	☐ □Tutorial □ □Practical			
SWL (hr/sem)	100 Seminar								
Module Level			UGx11 2	Semester of	Delivery	Delivery 1			
Administering Department GEO			GEO	College	TEMO				
Module Leader	Module Leader Dr. Mostafa Ridha Muzaal			e-mail	Mostafa.redha@ntu.edu.iq				
Module Leader's Acad. Title Ass. Profes			Ass. Professor	Module Lea	ler's Qualification Ph.D.				
Module Tutor Mostafa Ismat Abdulrahman			e-mail	mustafa	mustafa.ismat@ntu.edu.iq				
Peer Reviewer Name Name			Name	e-mail	E-mail				
Scientific Committee Approval Date 01/06/2023			Version Number 1.0						
Relation with other Modules									
العلاقة مع المواد الدراسية الأخرى									
Prerequisite module None Semester									

Co requisites moutie

Module Aims, Learning Outcomes and Indicative Contents					
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Objectives أهداف المادة الدر اسية	 The objective of studying photogrammetry is to provide individuals with the necessary skills to accurately capture, process, and analyze imagery to create reliable and precise spatial information. This knowledge enables them to generate accurate measurements, models, and maps that are vital in various fields, including surveying, mapping, engineering, environmental monitoring, and cultural heritage preservation. the objective of studying photogrammetry is to equip individuals with the knowledge and skills to capture, process, analyze, and derive valuable information from photographs or imagery. Photogrammetry enables the creation of accurate maps, 3D models, and digital elevation data for a wide range of applications. It plays a significant role in surveying, mapping, and spatial analysis and is an essential tool for professionals in geomatics, civil engineering, environmental science, and related fields. 				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Understanding Photogrammetric Principles: Demonstrate a comprehensive understanding of the fundamental principles of photogrammetry, including the geometric and physical concepts involved in image capture and interpretation. Image Acquisition Techniques: Identify and utilize appropriate techniques for capturing aerial and terrestrial images, including the use of drones, cameras, and sensors. Camera Calibration and Setup: Explain the importance of camera calibration and demonstrate the ability to set up and calibrate photogrammetric equipment for accurate data collection. 3D Model Creation: Apply photogrammetric methods to create accurate 3D models from images, utilizing software tools for processing and modeling. Data Processing and Analysis: Analyze and process photogrammetric data, including point cloud generation, orthophoto creation, and surface modeling. Measurement Techniques: Conduct measurements using photogrammetric data, including distance, area, and volume calculations, ensuring accuracy and precision. Error Analysis: Identify potential sources of error in photogrammetric processes and apply methods to minimize and correct these errors. GIS Integration: Integrate photogrammetric outputs with Geographic Information Systems (GIS) for enhanced spatial analysis and visualization. Ethical and Legal Considerations: Understand and address the ethical and legal implications of photogrammetric practice, including issues of privacy, data ownership, and professional standards. Project Management Skills: Plan and execute a photogrammetric project, including budget considerations, time management, and resource allocation. 				

Learning and Teaching Strategies							
استر اتيجيات التعلم والتعليم							
	1. Interactive Lec	tures					
	Deliver engaging lectures that introduce key concepts, supported by visuals and examples						
	• Use real-world case studies to illustrate the applications of photogrammetry						
	• Use rea	I-WORIO Case st rkshops	tudies to illustrate the applications of photog	rammetry.			
	Conduct	t practical sess	sions where students can use cameras and dr	ones for			
	image acquisitio	on.					
	 Provide 	guided works	hops on photogrammetric software for data	processing			
	and model crea	tion.					
	3. Field Exercises	5					
	 Organiz 	e field trips fo	r students to collect data using photogramm	etric			
	techniques.						
	Teach s	tudents how to	o set up ground control points (GCPs) and pla	an aerial			
Strategies	Surveys.	Loorning					
	• Assign r	projects where	students apply photogrammetry techniques	to solve			
	Assign projects where students apply photogrammetry techniques to solve real-world problems						
	Encourage creativity and innovation in project design and implementation.						
5. Collaborative		Learning					
	• Promot	e teamwork through group projects, allowing students to share					
	responsibilities and learn from each other.						
	Facilitate peer reviews where students critique each other's work and						
	provide feedback.						
	6. Use of Technology						
	• Integra	te GIS and pho	togrammetry software into the curriculum to	or practical			
	• Utilize	online nlatfo	rms and resources for supplementary le	arning and			
	research.	onnie platio					
	Stu	dent Work	kload (SWL)				
الحمل الدراسي للطالب محسوب لـ ١٥ اسبو عا							
Structured SWL (h/sem)		109	Structured SWL (h/w)	7			
سي المنتظم للطالب خلال الفصل	الحمل الدر ا	107	الحمل الدر اسي المنتظم للطالب أسبو عيا	,			
Unstructured SWL (h/s	em)	91	Unstructured SWL (h/w)	6			
غير المنتظم للطالب خلال الفصل	الحمل الدر اسي .	71	الحمل الدراسي غير المنتظم للطالب أسبو عيا	0			
Total SWL (h/sem)			100				
راسي الكلي للطالب خلال الفصل	الحمل الدر	100					

Module Evaluation تقييم المادة الدر اسية							
As Time/Number Weight (Marks) Week Due Relevant Learning Outcome							
	Quizzes	10	10% (10)	5 and 10	LO #1, #2 and #10, #11		
Formative	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7		
assessment	Projects / Lab.	2	10% (10)	Continuous	All		
	Report	0	10% (10)	13	LO #5, #8 and #10		
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessmen	t		100% (100 Marks)				

Delivery Plan (Weekly Syllabus)					
المنهاج الاسبوعي النظري					
Week	Material Covered				
Week 1	Introduction				
Week 2	Image coordinate system				
Week 3	Refinement of image coordinates				
Week 4	Refinement of image coordinates				
Week 5	2D conformal transformation				
Week 6	2D conformal transformation				
Week 7	2D affine Transformation				
Week 8	2D affine Transformation				
Week 9	Model coordinate system				
Week 10	3D conformal Transformation				
Week 11	3D conformal Transformation				
Week 12	Rotation matrix				
Week 13	Collinearity condition equation				
Week 14	Collinearity condition equation				
Week 15	Linearized collinearity condition equation				
Week 16	Preparatory week before the final Exam				

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

Week 1	Introduction
Week 2	Ex. For Image coordinate system
Week 3	Ex. For 2D conformal transformation
Week 4	Ex. For 2D affine Transformation
Week 5	Ex. For Model coordinate system
Week 6	Ex. For 3D conformal Transformation
Week 7	Ex. for Collinearity & Linearized collinearity condition equation

Learning and Teaching Resources					
مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Photogrammetry: Geometry from Images and يُعتبر هذا الكتاب مرجعًا أكاديميًا Karl Kraus: يُعتبر هذا الكتاب مرجعًا أكاديميًا مهمًا يغطي المبادئ الأساسية للمسح التصويري وتحليل الصور. "Manual of Photogrammetry" فيعتبر من الكتب المرجعية الشاملة حول التقنيات الحديثة في المسح التصويري.	Yes			
Recommended Texts		No			
Websites					

Grading Scheme								
مخطط الدرجات								
Group	Grade	التقدير	Marks %	Definition				
	\mathbf{A} – Excellent	امتياز	90 - 100	Outstanding Performance				
~ ~	B - Very Good	جيد جدا	80 - 89	Above average with some errors				
Success Group	C – Good	ختر	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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded				
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية									
Module Title	LAND DESIGN			Modu	Module Delivery				
Module Type	<u>Core</u>				⊠The	⊠Theory			
Module Code	<u>GEO</u>	<u>206</u>			⊠Lec ⊠Lab	☐ ⊠Lecture ⊠Lab			
ECTS Credits	2	2			□ Tut □ Pra	 □ Tutorial □ Practical 			
SWL (hr/sem)	<u>50</u>								
Module LevelUGx11 2			Semester of Delivery 1						
Administering Department GEO			GEO	College	ТЕМО				
Module Leader	Dr. Mostafa Ridha Muzaal			e-mail	Mostafa.redha@ntu.edu.iq				
Module Leader's Acad. Title Ass. Professor			Ass. Professor	Module Leader's Qualification Ph.D.					
Module Tutor	Mostafa	Ismat Al	bdulrahman	e-mail	mustafa.ismat@ntu.edu.iq				
Peer Reviewer Nan	ne		Name	e-mail	E-mail				
Scientific Committee Approval Date 01/06/2023			01/06/2023	Version Nu	nber	1.0			
Relation with other Modules									
العلاقة مع المواد الدراسية الأخرى									
Prerequisite module None							Semester		

Co-requisites	module
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Module	e Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية
Module Objectives أهداف المادة الدر اسية	The objectives aim to prepare students to effectively use computer technology in various aspects of geomatics, making them more competent and competitive in the field.
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Understanding Design Principles: Demonstrate a comprehensive understanding of the fundamental principles of land design, including aesthetics, functionality, and sustainability. Site Analysis Skills: Conduct thorough site analyses to assess environmental, social, and cultural factors that influence land design. Landscape Planning: Develop effective landscape plans that integrate natural and built environments, addressing ecological and community needs. Design Tools and Techniques: Utilize various design tools and software (e.g., CAD, GIS) for creating and presenting land design projects. Sustainable Practices: Apply sustainable design practices that promote ecological health, resource conservation, and resilience in land use. Regulatory Knowledge: Understand zoning laws, land use regulations, and environmental policies that impact land design projects. Community Engagement: Engage with stakeholders and communities to gather input and foster collaboration in the design process. Problem-Solving Abilities: Analyze and address design challenges through innovative and practical solutions. Project Management Skills: Plan and manage land design projects, including budgeting, scheduling, and resource allocation. Communication Skills: Effectively communicate design ideas and concepts through written reports, presentations, and visual media.
Indicative Contents المحتويات الإرشادية	 Indicative content includes the following. Introduction to Land Design Definition and significance of land design Historical context and evolution of land design practices Overview of different types of land design (urban, rural, landscape) Principles of Design Fundamental design principles: balance, contrast, harmony, and scale Aesthetic considerations in land design Functionality and usability in design Site Analysis Methods for conducting site assessments (topography, soil, climate) Environmental considerations: ecosystems, habitats, and biodiversity

Social and cultural factors influencing land design
4. Landscape Planning
 Concepts of landscape ecology and its application in design
 Techniques for integrating natural and built environments
 Planning for green spaces, parks, and recreational areas
5. Sustainable Design Practices
Principles of sustainable land design
 Strategies for resource conservation and ecological restoration
Use of native plants and sustainable materials
6. Design Tools and Technologies
 Introduction to design software (e.g., CAD, GIS, landscape design tools)
• Techniques for creating design presentations (sketching, modeling,
rendering)
• Visualization methods for conveying design ideas
7. Zoning and Land Use Regulations
 Overview of zoning laws and land use planning frameworks
 Understanding environmental regulations and their impact on design
Case studies of regulatory challenges in land design
8. Community Engagement and Stakeholder Collaboration
 Techniques for effective community engagement in the design process
 Methods for gathering stakeholder input and feedback
 Strategies for fostering collaboration and consensus-building

استر اتيجيات التعلم و التعليم 1. Interactive Lectures • Deliver engaging lectures that introduce key concepts and principles,	Learning and Teaching Strategies						
 1. Interactive Lectures Deliver engaging lectures that introduce key concepts and principles, 							
supplemented with visuals and case studies. • Encourage questions and discussions to enhance understanding. 2. Hands-On Workshops • Conduct practical workshops where students can use design software and tools for land design projects. • Facilitate exercises in sketching, modeling, and rendering designs. 3. Field Studies • Organize field trips to various sites for real-world observation and analysi • Conduct site assessments that allow students to apply theoretical knowle in practice. 4. Project-Based Learning • Assign projects that require students to create land design proposals based in the students in the students to create land design proposals based in the students in the	Strategies						

	Encoura Collaborative (ge creativity and practical problem-solving in project development.				
	Promote	e teamwork th	e teamwork through group projects, allowing students to share ideas			
	and approaches			iare lacas		
	Facilitat	e peer review:	peer reviews where groups critique each other's designs and			
	strategies.					
	6. Guest Lectures and Expert Panels					
	• Invite professionals from land design and related fields to share insights and					
	experiences.					
	Organize Q&A sessions to foster student engagement and networking.					
	7. Case Study Ana	alysis				
	 Analyze 	successful lan	nd design projects to highlight best practices a	and lessons		
	learned.					
	• Discuss the design decisions and community impacts of various case studies.					
	8. Problem-Solving Workshops					
	Present design challenges and encourage students to brainstorm and develop					
	innovative solut	ions.				
	Facilitate discussions around real-world constraints and ethical					
	considerations.					
	9. Use of Technol	logy				
	 Integrat 	e design softw	vare and GIS tools into the curriculum for pra	ctical		
	Provide	access to onli	ing resources tutorials and databases for re	search and		
	development		ine resources, totonais, and databases for re	search and		
	Stu	dont Work	alood (SWI)			
	الاست عا		الحمل الدراسي الطالب			
	- 5	5				
Structured SWL (h/sem		109	Structured SWL (h/w)	7		
الحمل الدر اسي المنتظم للطالب خلال الفصل			الحمل الدر اسي المنتظم للطالب اسبو عيا			
Unstructured SWL (h/sem)		91	Unstructured SWL (h/w)	6		
الحمل الدراسي غير المنتظم للطالب خلال الفصل		<i>7</i> 1	الحمل الدراسي غير المنتظم للطالب أسبوعيا	0		
Total SWL (h/sem)			50			
الحمل الدر اسي الكلي للطالب خلال الفصل			50			

Module Evaluation						
تقييم المادة الدر اسية						
As	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome		

	Quizzes	5	10% (10)	5 and 10	LO #1, #2 and #10, #11
Formative	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7
assessment	Projects / Lab.	0	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)						
	المنهاج الأسبوعي النظري					
Week	Material Covered					
Week 1	Introduction to the CIVIL3D program					
Week 2-3	Preparing the surveying - points - for the 3D bottom program					
Week 4-5	Methods of entering data into the program					
Week 6-7	Modifying points and their shapes, Points Editing					
Week 8-9	Create Points Group					
Week 10-11	Extracting point coordinates in several ways from a program CIVIL 3D					
Week 12	Create a Surface, Edit Surface, Display Surface					
Week 13-15	Making surface analysis maps.					
Week 16	Preparatory week before the final Exam					

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

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	"Mastering AutoCAD Civil 3D" •للمؤلفين Cyndy Davenport و Ishka المؤلفين Cyndy Davenport و Ishka من Voiculescu:يعتبر هذا الكتاب دليلًا شاملاً يغطي كل ما تحتاجه لتعلم Civil 3D من الصفر حتى المستوى المتقدم.	Yes			
Recommended Texts	"Autodesk Civil 3D 2023 for Engineers and Designers" وللمؤلفين Sham Tickoo و CADCIM Technologies: هذا الكتاب يقدم شرحًا مفصلًا لتصميم الأراضي باستخدامCivil 3D ، ويشمل العديد من التطبيقات العملية.	No			
Websites					

Grading Scheme										
مخطط الدرجات										
Group	Grade	التقدير	Marks %	Definition						
Success Group (50 - 100)	\mathbf{A} – Excellent	امتياز	90 - 100	Outstanding Performance						
	B - Very Good	جيد جدا	80 - 89	Above average with some errors						
	C – Good	ختر	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						

MODULE DESCRIPTION FORM نموذج و صف المادة الدر اسبة

Module Information								
معلومات المادة الدراسية								
Module Title	PLAIN SURVEYING-IV			Module Delivery				
Module Type	Core		⊠Theory					
Module Code	GEO 208			⊠Lecture ⊠Lab □Tutorial □Practical				
ECTS Credits	<u>8</u>							
SWL (hr/sem)	200 Seminar							
Module Level		UGx11 2	Semester of Delivery		2			
Administering Department		GEO	College TEMO					
Module Leader	Assist. Prof. Dr. Mustafa R. Mezaal		e-mail	Mostafa.redha@ntu.edu.iq				
Module Leader's Acad. Title		Ass. Professor	Module Leader's Qualification		Ph.D.			
Module Tutor	Name (if available)		e-mail	E-mail				
Peer Reviewer Name		Name	e-mail	E-mail				
Scientific Committee Approval Date		01/06/2023	Version Nu	Version Number 1.0				

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Objectives أهداف المادة الدر اسية	The objective is to provide knowledge and skills related to the practical application of surveying techniques and methods in various engineering and construction projects. It aims to equip individuals with the necessary tools and techniques to accurately measure, map, and analyze land and other physical features. The objective of studying applied surveying is to provide individuals with the knowledge, skills, and techniques required to carry out accurate and reliable measurements, mapping, and analysis in engineering and construction projects. It enables individuals to effectively contribute to land development, infrastructure projects, resource management, and spatial data analysis in various industries.
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 11. Understand the basic principles and terminology used in plain surveying, including distance measurement, leveling, and angle measurement 12. Students should grasp fundamental concepts like datum, control points, horizontal and vertical measurements, and types of surveys.Summarize what is meant by a basic electric circuit. 13. Apply appropriate methods and instruments to carry out basic surveying tasks such as leveling, traversing, and setting out.Describe electrical power, charge, and current. 14. Students should gain practical skills in using surveying equipment like theodolites, total stations, levels, and GPS receivers.Identify the basic circuit elements and their applications. 15. Collect, analyze, and interpret field data obtained from plain surveying activities. Discuss the various properties of resistors, capacitors, and inductors. 16. Solve practical problems in the field related to measurements and land surveying using mathematical and geometrical principles. 17. Students should be able to calculate areas, volumes, and other geometrical properties from field data.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Surveying Theory Leveling, types of leveling, leveling instrumentation, leveling by taping, and trigonometric leveling. [SSWL=20 hrs] Computes Bearing and angles. [20 hrs] Draws Contour lines. [SSWL=20 hrs] Calculates Areas and volumes. [SSWL=20 hrs] Part B – Surveying Practical Trigonometric leveling. Close leveling, Topographic survey [SSWL=25 hrs] Level test by two pegs methods, Area computation. [SSWL=25 hrs] survey by total station instrument

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
Strategies	Provide structured lectures to introduce students to the fundamental concepts, principles, and mathematics behind plain surveying. Use visuals like diagrams, maps, and videos to explain topics such as angle measurement, distance measurement, leveling, and error analysis. Ensure key topics like coordinate systems and datums are covered with illustrative examples			

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) 200 Structured SWL (h/w) 12 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 12				
Unstructured SWL (h/sem) 40 Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبوعيا				
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	200			

Module Evaluation							
تقييم المادة الدر اسية							
As Time/Number Weight (Marks) Week Due Relevant Learning Outcome							
	Quizzes	10	10% (10)	2 to 14	LO #1, #2 and #10, #11		
Formative	Assignments	5	10% (10)	2,4,6,10 12	LO #3, #4 and #6, #7		
assessment	Out Assignments	5	10% (10)	2,4,6,10 12	All		
	Reports	5	10% (10)	continous	All		
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessmen	t		100% (100 Marks)				

Delivery Plan (Weekly Syllabus)					
	المنهاج الأسبوعي النظري				
Week	Material Covered				
1, 2	Demonstrates knowledge of the Leveling, types of leveling, leveling instrumentation, leveling by				
	taping, and trigonometric leveling,				
	 Identifies Sources of errors in leveling (vertical, horizontal). 				
3-5	Computes Bearing and angles: (Methods of angles measurement and bearing calculation)				
6-8	Demonstrates knowledge of the Vertical sections, Longitudinal sections,				
	Calculates of cut and fill.				
9-11	Draws Contour lines: Method of drawing and construction.				
12-15	Calculates Areas and volumes: Volume computation from cross-section, Volume from topographic maps				
	and grid net, Volume computation from contour maps.				
16	Preparatory week before the final Exam				

Delivery Plan (Weekly Lab. Syllabus)				
	المنهاج الاسبوعي للمختبر			
Week	Material Covered			
1-2	Uses correctly Trigonometric leveling.			
3-4	Carries out Close leveling.			
5-6	Carries out Topographic survey using level instrument.			
7-8	Carries out Level test by two pegs methods.			
9-10	Carries out Area computation.			
11-13	Carries out Details survey by stadia method.			
13-15	Carries out Details survey using total station instrument.			

	Learning and Teaching Resources	
	مصادر التعلم والتدريس	
	Text	Available in the Library?
Required Texts		
Recommended		
Texts		
Websites		

Grading Scheme						
مخطط الدرجات						
Group Grade التقدير Marks % Definition						

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

Module Information معلومات المادة الدراسية						
Module Title	Fundamentals of Geographic Information System			Module Delivery		
Module Type	<u>Core</u>			⊠ Theory		
Module Code	GEO 207			⊠ Lecture ⊠ Lab	⊠ Lecture ⊠ Lab	
ECTS Credits	<u>6</u>			□ Tutorial □ Practical		
SWL (hr/sem)	<u>150</u>			□ Seminar		
Module Level		UGx11 2	Semester of	Delivery	2	
Administering Department GEO G		College	ТЕМО			
Module Leader	Assist. Prof. Dr. Mustafa R. Mezaal e-mail		Mostafa.redha@ntu.edu.iq			
Module Leader's Acad. Title Ass. Professor		Module Lea	der's Qualification	Ph.D.		
Module Tutor	r Mostafa Ismat Abdurahman e-mail		Mostafa.ismat@nti.edu.iq			

Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023	Version Nur	nber	1.0

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

Module	Module Aims, Learning Outcomes and Indicative Contents				
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Objectives أهداف المادة الدر اسية	The objective is to provide a comprehensive understanding of the principles, concepts, and applications of GIS. GIS is a powerful technology used for the collection, storage, analysis, and visualization of spatial data, and understanding its fundamentals is crucial for working in the field of geomatics and related disciplines. the objective of studying the fundamentals of GIS is to provide individuals with the knowledge and skills to effectively use GIS technology in various applications. It equips individuals with the ability to collect, manage, analyze, and visualize geospatial data, enabling informed decision-making, problem-solving, and spatial analysis in diverse fields.				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Demonstrate an understanding of the fundamental concepts, definitions, and terminology used in Geographic Information Systems (GIS). 2. Students should be able to explain how GIS is used in land surveying, urban planning, environmental management, disaster response, transportation, and other fields. 3. Understand the role of GIS within the field of geomatics and its applications in various industries. 4. Students should be able to explain how GIS is used in land surveying, urban planning, environmental management, disaster response, transportation, and other fields. 5. Analyze spatial data using GIS tools to solve real-world problems. 6. Students should learn how to apply spatial analysis techniques such as buffering, overlay, interpolation, and proximity analysis to derive meaningful insights and solutions from data. 7. Acquire, manage, and organize spatial data from various sources (satellite imagery, GPS, surveying data, etc.). 				
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Surveying Theory</u> Mapping GIS, Classifying Data, Labeling Features [SSWL=30 hrs]				

Presenting GIS Data as a Map, Map Project Proposals Due. [30 hrs]
Querying Data, Selecting Features, [SSWL=30 hrs]
Incorporating GIS into an Organization. [SSWL=30 hrs]
Total hrs = $120 = SSWL - (Exam hrs) = 30$ hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies						
		، التعلم والتعليم	استراتيجيات			
	To effectively te	each the Funda	mentals of Geographic Information Systems	(GIS) in a		
	Geomatics Tech	nnical Enginee	ring program, a combination of theoretical a	nd practical		
	learning strategie	s is essential. L	ectures help establish a solid understanding of c	ore concepts		
Strategies	like spatial data	models, coordi	nate systems, and map projections, while hands	-on sessions		
	using GIS softwa	are (e.g., ArcGI	S or QGIS) allow students to practice data mani	pulation and		
	spatial analysis. Problem-based learning (PBL) encourages students to solve real-world					
	geographic problems, enhancing critical thinking skills and reinforcing the application of GIS					
tools in scenarios like urban planning or environmental analysis.						
	Stu	dent Work	kload (SWL)			
	۱ اسبوعا	، محسوب لـ ٥	الحمل الدر اسي للطالب			
Structured SWL (h/sem	ı)		Structured SWL (h/w)			
سي المنتظم للطالب خلال الفصل	الحمل الدر أ	90	الحمل الدر اسى المنتظم للطالب أسبوعيا	6		
Unstructured SWL (n/sem)		60	Unstructured SWL (h/w)	4		
غير المنتظم للطالب خلال الفصل	الحمل الدر اسي ـ		الحمل الدراسي غير المنتظم للطالب أسبوعيا	-		
Total SWL (h/sem)						
الحمل الدر اسى الكلى للطالب خلال الفصل		150				

Module Evaluation							
تقييم المادة الدر اسية							
Time/Number Weight (Marks) Week Due Relevant Learning							
As			(interns)	V con Duc	Outcome		
	Quizzes	10	10% (10)	2 to 14	LO #1, #2 and #4, #5		
Formative	Assignments	5	10% (10)	2,4,6,10 12	LO #3, #4 and #6, #7		
assessment	Projects	2	10% (10)	continous	All		
	Online Assigm.	5	10% (10)	continous	1,2,3,5,6		
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7		

assessment	Final Exam	3hr	50% (50)	16	All
Total assessmen	t		100% (100 Marks)		

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
Week	Material Covered				
1	Mapping GIS.				
2	Classifying Data.				
3-4	Labeling Features				
5-6	Presenting GIS Data as a Map				
7-8	Map Project Proposals Due				
9-10	Querying Data				
11-12	Selecting Features				
13-14	Intro to Geo-processing, Incorporating GIS into an Organization, Future Trends for GIS				
15	Seminars & Map Project Due				

Learning and Teaching Resources					
	مصادر التعلم والتدريس				
	Text	Available in the Library?			
	"William Irvine المؤلفين Surveying for Construction				
Required Texts	و :Finlay Maclennanكتاب شامل يغطي أساسيات المساحة ويُستخدم في				
	الجامعات والكليات الهندسية				
Recommended Texts	 Elementary Surveying: An Introduction to Paul R. Wolf: و Charles D. Ghilani يُعتبر مرجعًا مهمًا يحتوي على شرح لمفاهيم المساحة التقليدية و الحديثة. مساحة الأراضي والمسطحات) "مراجع عربية متوفرة في الجامعات): كتب متخصصة في أساسيات المساحة وتطبيقاتها في البيئات المختلفة 				
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	ختر	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	FX – Fail	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0-49)	F – Fail	راسب	(0-44)	Considerable amount of work required

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسبية							
Module Title	ESTIMATION & QUANTITY SURVEYING				Module Delivery		
Module Type	Core			⊠The	⊠Theory		
Module Code	GEO 208				⊠ Lecture ⊠Lab		
ECTS Credits	<u>4</u>				□ Tutorial □ Practical		
SWL (hr/sem)	<u>60</u>				□Seminar		
Module Level UGx11 2 Semest		Semester of Delivery 1		1			
Administering Dep	artment	GEO	College	TEMO			
Module Leader	Ammar M. Dhai	nnoon	e-mail	Ammarsaleh517@ntu.edu.iq		iq	
Module Leader's Acad. Title Ass. Lecturer		Module Leader's Qualification M.Cs.		M.Cs.			
Module Tutor	Name (if available) e-mail			E-mail			
Peer Reviewer Name Name		e-mail	E-mail				
Scientific Committee Approval Date 01/06/2023			Version Nu	nber 1.0			

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

Module Aims, Learning Outcomes and Indicative Contents					
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Objectives أهداف المادة الدر اسية	The objective of studying "Quantity Surveying & Estimating" topics is to provide individuals with the knowledge and skills required to accurately estimate and manage the costs of construction projects. Quantity surveying is a professional discipline that involves the measurement, estimation, and management of construction costs, while estimating focuses specifically on predicting the costs of construction projects. the objective of studying quantity surveying and estimating is to provide individuals with the knowledge, skills, and techniques required to accurately estimate, manage, and control the costs of construction projects. It equips individuals with the ability to assess project requirements, estimate costs, prepare tender documents, manage project budgets, and ensure cost-effective project delivery. Effective quantity surveying and estimating skills are essential for successful project planning, execution, and financial management in the construction industry.				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Knowledge and Understanding: What knowledge should students acquire? Example: "By the end of this module, students will understand the key principles of Estimation ." Intellectual Skills (Critical Thinking and Analysis): 				

	strategies to ensure that students gain the intended knowledge and skills from the module.		
Indicative Contents	Indicative Contents refer to the key topics, themes, and areas of study that will be covered in a module or course. They provide an outline or a guide to what students can expect to learn and explore, without necessarily being exhaustive or overly detailed. This content is aligned with the Module Learning Outcomes to ensure that students gain the necessary knowledge and skills. Purpose of Indicative Contents:		
	 To give students a clear idea of the scope and depth of the material covered in the module. To help instructors structure lectures, assignments, and assessments. To align the teaching material with the intended Learning Outcomes. 		

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 الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) Structured SWL (h/w)				
الحمل الدر اسي المنتظم للطالب خلال الفصل	00	الحمل الدر اسي المنتظم للطالب أسبو عيا	-	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)		
الحمل الدراسي غير المنتظم للطالب خلال الفصل	الحمل الدراسي غير المنتظم للطالب أسبوعيا			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	60			

Module Evaluation
تقييم المادة الدر اسية

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

Delivery Plan (Weekly Syllabus)				
المنهاج الأسبوعي النظري				
Week	Material Covered			
Week 1	Demonstrates knowledge of the Introduction: engineering projects & estimation, definition of estimation			
Week 2	benefits of estimation, factors affecting cost estimation, types of estimation, practical examples on			
week 2	approximate estimation.			
	Demonstrates knowledge of the General rules in quantitative survey: Principles in selecting units of			
Week 3	measurement for items, various units and modes of measurement for different items of works, details of			
	quantities measuring.			
	Demonstrates knowledge of the rate analysis, factors affecting the cost of materials and labour, Plants			
Week 4	and equipment -hour costs based on total costs and Outputs, Overhead charges, rates for various items			
	of construction of civil engineering works, problems and examples on rate analysis .			
	Demonstrates knowledge of the Methods of working quantities for various items of works Able to			
Week 5	perform the Measurement and abstract sheets and recording, excavation and fill works for wall footings			
Week	Estimation of walls and other items of buildings up to D. P. C. level, methods used to calculate the			
Week o	length of various works: method of strips and center lines method, examples and problems.			
Wook 7	Demonstrates knowledge of the Earthworks for various engineering projects: irrigation channels,			
WCCK /	roadway embankments,			
	Demonstrates knowledge of the methods used for calculating earthwork quantities and volumes, Mass			
Week 8	diagrams, calculations of excavation volumes due to cut works (grid leveling method and triangular			
	method), examples and problems.			
Week 9	Able to perform the Estimation of masonry works, Demonstrates knowledge of the basic units and			

	materials used, Able to perform the Estimation of walls construction, damp proofing used, brick works,
	block, works, stone works, examples and problems.
Week 10	Able to perform the Estimation of concrete works, primary materials used, mixing of concrete
week 10	materials, types of concrete mixers .
Week 11	calculating quantities of concrete materials, examples and problems
Week 12	Able to perform the Estimation of concrete works quantities for spread
Week 13	Able to perform the combined footings .
Week 14	Able to perform the Estimation of concrete works quantities for lintels, beams, roofs, columns and stairs

Delivery Plan (Weekly Lab. Syllabus) المنهاج الإسبوعي للمختبر			
Week	Material Covered		
Week 1	Compute map scale		
Week 2	Changing map scale		
Week 3	Ex. for Grid coordinate system		
Week 4	Ex. for Geographic coordinate system		
Week 5	Ex. for Relation between Grid & Geographic coordinate system		
Week 6	Construction of map projection		
Week 7	Construction of cylindrical projection		
Week 8	Construction of mercater projection		
Week 9	Construction of lambert projection		

Learning and Teaching Resources					
	مصادر التعلم والتدريس				
	Text	Available in the Library?			
Required Texts	الدار الجديد، تصميم وتخمين، م . احمد شهاب احمد، 1987 .	Yes			
Recommended Texts	التخمين والمواصفات، مدحت فضيل فتح اهلل، الطبعة الرابعة المنقحة، 1985.	Yes			
Websites					

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition

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

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية							
Module Title	Cartograp	<u>hy 2</u>		Modu	Module Delivery		
Module Type	Core			⊠The	⊠ Theory		
Module Code	<u>GEO 210</u>			⊠Lec	⊠Lecture		
ECTS Credits	4			⊠Lat)		
				□Tut	orial		
SWL (hr/sem)	<u>100</u>				Practical		
				□Seminar			
Module Level		UGx11 1	Semester of Delivery 1		1		
Administering Dep	artment	Type Dept. Code	College	Type College Code			
Module Leader	Dr. Mostafa ridha	a Muzaal	e-mail	Mostafa.redha@ntu.edu.iq			
Module Leader's A	cad. Title	Professor	Module Leader's Qualification Ph.D.		Ph.D.		
Module Tutor	Name (if availab	e)	e-mail	E-mail			
Peer Reviewer Name Name		Name	e-mail	E-mail			
Scientific Committee Approval Date01/06/2023Version Number1.0							
Relation with other Modules							
العلاقة مع المواد الدراسية الأخرى							

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module	Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر إسية ونتائج التعلم والمحتويات الإرشادية					
Module Objectives أهداف المادة الدر اسية	 3. The objective of studying "Cartography" topics is to provide individuals with the knowledge and skills necessary to create accurate, visually appealing, and informative maps. Cartography is the art and science of map-making, and its objective is to effectively represent spatial information and geographic phenomena. 4. the objective of studying cartography is to equip individuals with the knowledge and skills to create accurate, visually appealing, and informative maps. It involves understanding map design principles, geographic data representation, map projection, and symbology. Cartography also includes the application of spatial analysis techniques and the use of modern mapping technologies. By mastering cartographic skills, individuals can effectively communicate spatial information, support decision-making processes, and contribute to various fields such as geography, urban planning, environmental studies, and transportation. 					
	 Understanding Cartographic Principles: Demonstrate a comprehensive understanding of the fundamental principles of cartography, including scale, projection, and map design. Map Interpretation: Analyze and interpret various types of maps, understanding their purpose, features, and the information they convey. Map Design and Creation: Design and create maps that effectively communicate spatial information, using appropriate symbols, colors, and layouts. Cartographic Techniques: Apply various cartographic techniques, including thematic mapping, contouring, and the use of GIS tools for map production. 					
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Projection Knowledge: Understand different map projections and their implications for representing spatial data accurately. Data Visualization: Use data visualization techniques to represent geographical data effectively on maps, enhancing user comprehension. Geographic Information Systems (GIS): Utilize GIS software to analyze spatial data and produce high-quality cartographic outputs. Ethical Considerations: Recognize and address ethical considerations in cartography, including data representation, bias, and user impact. Collaborative Skills: Work effectively in teams to create maps, demonstrating strong communication and collaborative problem-solving skills. Critical Thinking: Evaluate the effectiveness of different cartographic methods and approaches, applying critical thinking to improve map design and utility. 					

	Indicative content includes the following.
	 Introduction to Cartography Definition and importance of cartography Historical development of cartography Types of maps and their uses
	 2. Map Design Principles Basic design elements: symbols, colors, and typography Layout and composition: visual hierarchy and balance Effective map communication: clarity and aesthetics
	 3. Map Projections Understanding map projections: definitions and purposes Types of projections: cylindrical, conic, and azimuthal Distortions and trade-offs in different projections
	 4. Thematic Mapping Types of thematic maps: choropleth, dot density, and graduated symbol maps Data classification methods: equal intervals, quantiles, and natural breaks
	 Visualizing qualitative and qualitative data 5. Geographic Information Systems (GIS) Introduction to GIS and its role in cartography Data collection and management in GIS Spatial analysis techniques and map production using GIS software
Indicative Contents المحتويات الإرشادية	 6. Cartographic Techniques and Tools Traditional cartographic methods: hand-drawing and engraving Digital mapping techniques: software tools and applications Using remote sensing data in cartography
	 7. Cartographic Symbols and Standards Development and use of cartographic symbols National and international cartographic standards (e.g., ISO, OGC) Symbolization for different themes and audiences
	 8. Map Interpretation and Use Skills for reading and interpreting maps Understanding scale, orientation, and legends Practical applications of maps in decision-making and analysis
	 9. Ethical Considerations in Cartography Issues of accuracy and representation

 Addressing bias and ensuring inclusivity in map design The impact of maps on society and policy
 10. Project Work Designing and creating a comprehensive map or series of maps Incorporating feedback from peers and instructors Presenting and defending the final cartographic project

Learning and Teaching Strategies					
استر اتيجيات التعلم والتعليم					
Strategies	Learning and Teaching Strategies Image: Im				
	 6. Problem-Based Learning (PBL) Present students with real-world cartographic problems to solve, encouraging critical thinking and application of knowledge. 				
	• Facilitate discussions that explore multiple solutions and perspectives.				
	 7. Use of Technology Integrate GIS software and other digital mapping tools into the curriculum for hands-on experience. 				

Provide access to online resources, tutorials, and databases for research as project development.				earch and	
	 8. Guest Lectures and Expert Talks Invite professionals from the field of cartography and GIS to share their insights and experiences. Encourage students to ask questions and engage with guest speakers. 				
Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا					
Structured SWL (h/sem) 109 Structured SWL (h/w) 7 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 7				7	
Unstructured SWL (h/se فير المنتظم للطالب خلال الفصل	em) الحمل الدر اسي .	91Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا6		6	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل		100			

Module Evaluation تقييم المادة الدر اسية							
As	As Time/Number Weight (Marks) Week Due Relevant Learning Outcome						
	Quizzes	10	10% (10)	5 and 10	LO #1, #2 and #10, #11		
Formative	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7		
assessment	Projects / Lab.	2	10% (10)	Continuous	All		
	Report	0	10% (10)	13	LO #5, #8 and #10		
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessmen	t		100% (100 Marks)				

Delivery Plan (Weekly Syllabus)				
المنهاج الأسبوعي النظري				
Week	Material Covered			
1-2	Lambert conical projection			
3-4	Zenithal projection			
5-6	Map projection			
7-8	Map color design			
9-10	Map printing			
11-13	Preparation of printing plate			

14	Map ratification
15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر				
Week	Material Covered			
1	Construction of conical projection			
2-3	Construction of lambert conical projection			
4-5	Construction of zenithal projection			
6-7	Construction of map projection			
8-10	Ex. of map color design			
11	Ex. of map printing			
12-13	Ex. of preparation of printing plate			
14-15	Ex. of map ratification			

Learning and Teaching Resources				
	مصادر النعلم والندريس			
	lext	Available in the Library?		
Required Texts	Arthur H. وللمؤلفين "Elements of Cartography" Robinson و: Joel L. Morrison هذا الكتاب يُعتبر من الكتب الكلاسيكية والمهمة في مجال رسم الخرائط، ويغطي الأساسيات والاعتبارات الفنية في تصميم الخرائط.	Yes		
Recommended Texts	• "Thematic Cartography and Geovisualization" للمؤلفين Terry A. Slocum و Robert B. McMaster. تصميم الخرائط المواضيعية ويشرح كيفية تحليل البيانات الجغرافية وعرضها.	No		
Websites				

Grading Scheme							
مخطط الدرجات							
Group	Grade	التقدير	Marks %	Definition			
Success Group (50 - 100)	\mathbf{A} – Excellent	امتياز	90 - 100	Outstanding Performance			
	B - Very Good	جيد جدا	80 - 89	Above average with some errors			
	C – Good	ختر	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
		•		

MODULE DESCRIPTION FORM

دراسية	المادة ال	وصف	نموذج
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Module Information									
			مادة الدراسية	معلومات ال					
Module Title	Photo	ogram	<u>imetry 2</u>		Modu	le De	livery		
Module Type	<u>Core</u>				⊠The	⊠Theory ⊠Lecture ⊠Lab □Tutorial □Practical			
Module Code	<u>GEO</u>	<u>211</u>			⊠Leo ⊠Lal				
ECTS Credits	<u>4</u>				□Tut □Pra				
SWL (hr/sem)	<u>100</u>				□Sen	ninar			
Module Level			UGx11 1	Semester of	Delivery	Delivery 1			
Administering Dep	artment		Type Dept. Code	College	Type C	Type College Code			
Module Leader	Assist.	Prof. D	Dr. Mustafa R. Mezaal	e-mail	Mostafa	Mostafa.redha@ntu.edu.iq			
Module Leader's A	.cad. Title	!	Ass. Professor	Module Leader's QualificationPh.D.					
Module Tutor	Mostafa	Ismat Al	odurahman	e-mail	Mostafa	Mostafa.ismat@nti.edu.iq			
Peer Reviewer Nan	ne		Name	e-mail	E-mail	E-mail			
Scientific Committee	e Approva	l Date	01/06/2023	Version Number 1.0					
	Relation with other Modules								
العلاقة مع المواد الدراسية الأخرى									
Prerequisite module None							Semester		
Co-requisites module None Semester									

Module Aims, Learning Outcomes and Indicative Contents						
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية					
Module Objectives and precise spatial information. This knowledge enables them to generate a measurements, models, and maps that are vital in various fields, including su mapping, engineering, environmental monitoring, and cultural heritage preser 4. the objective of studying photogrammetry is to equip individuals w knowledge and skills to capture, process, analyze, and derive valuable info from photographs or imagery. Photogrammetry enables the creation of a maps, 3D models, and digital elevation data for a wide range of applications. It significant role in surveying, mapping, and spatial analysis and is an essential professionals in geomatics, civil engineering, environmental science, and fields						
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 Understanding Photogrammetric Principles: Demonstrate a comprehensive understanding of the fundamental principles of photogrammetry, including the geometric and physical concepts involved in image capture and interpretation. Image Acquisition Techniques: Identify and utilize appropriate techniques for capturing aerial and terrestrial images, including the use of drones, cameras, and sensors. Camera Calibration and Setup: Explain the importance of camera calibration and demonstrate the ability to set up and calibrate photogrammetric equipment for accurate data collection. 3D Model Creation: Apply photogrammetric methods to create accurate 3D models from images, utilizing software tools for processing and modeling. Data Processing and Analysis: Analyze and process photogrammetric data, including point cloud generation, orthophoto creation, and surface modeling. Measurement Techniques: Conduct measurements using photogrammetric data, including distance, area, and volume calculations, ensuring accuracy and precision. Error Analysis: Identify potential sources of error in photogrammetric processes and apply methods to minimize and correct these errors. GIS Integration: Integrate photogrammetric outputs with Geographic Information Systems (GIS) for enhanced spatial analysis and visualization. Ethical and Legal Considerations: Understand and address the ethical and legal implications of photogrammetric practice, including issues of privacy, data ownership, and professional standards. Project Management Skills: Plan and execute a photogrammetric project, including budget considerations; time management, and resource allocation. 					
Indicativa Contanta	Indicative content includes the following.					
Indicative Contents المحتويات الإرشادية	1. Introduction to Photogrammetry					

Definition and significance of photogrammetry
Historical development and applications
Comparison with other remote sensing techniques
2. Basic Principles of Photogrammetry
 Geometry of imaging: perspective and projection
• Photographic principles: exposure, focus, and image quality
Coordinate systems and reference frames
3. Image Acquisition
 Types of cameras and sensors (aerial, terrestrial, UAV)
 Image capture techniques and flight planning
• Ground control points (GCPs) and their importance
4. Camera Calibration
Principles of camera calibration
Calibration methods and tools
Importance of lens distortion correction
5. Data Processing Techniques
Overview of photogrammetric workflows
 Software tools for photogrammetry (e.g., Agisoft, Pix4D)
 Image processing: stitching, filtering, and classification
6. 3D Model Generation
 Techniques for creating 3D models from images
 Point cloud generation and densification
Mesh generation and texture mapping
7. Measurement and Analysis
 Techniques for measuring distances, areas, and volumes from
photogrammetric data
 Accuracy assessment and validation methods
 Applications in engineering, architecture, and land surveying
8. Orthophoto Creation
Principles of orthophotography and its significance
 Techniques for creating orthophotos from aerial images
Georeferencing and accuracy considerations
9. Integration with GIS
Combining photogrammetric data with GIS software
 Applications in spatial analysis and mapping
 Case studies demonstrating GIS and photogrammetry integration

Learning and Teaching Strategies					
استر اتيجيات التعلم والتعليم					
Strategies 1. Interactive Lectures					

	Deliver	engaging lectu	ires that introduce key concepts, supported b	oy visuals	
	• Use rea	l-world case st	udies to illustrate the applications of photog	rammetry.	
	2. Hands-On Wor	kshops		annietry.	
	• Conduct practical sessions where students can use cameras and drones for				
	image acquisitio	on.			
	• Provide	guided worksl	hops on photogrammetric software for data	processing	
	and model creation.				
	3. Field Exercises				
	Organiz	e field trips for	r students to collect data using photogramme	etric	
	techniques.				
	• Teach s	tudents how to	o set up ground control points (GCPs) and pla	in aerial	
	surveys.	<i>.</i> .			
	4. Project-Based	Learning		to ophio	
	 Assign p real-world prob 	loms	students apply photogrammetry techniques	to solve	
	Encourage creativity and innovation in project design and inclumentation				
	 Encourage creativity and innovation in project design and implementation. Collaborative Learning 				
	Promote teamwork through group projects, allowing students to share				
	responsibilities and learn from each other.				
	• Facilitat	e peer reviews	s where students critique each other's work a	and	
	provide feedbad	ck.			
	6. Use of Technol	logy			
	 Integrat 	te GIS and pho	togrammetry software into the curriculum fo	or practical	
	experience.				
	• Utilize	online platfor	rms and resources for supplementary lea	arning and	
	research.				
	Stu	dent Work	kload (SWL)		
	۱ اسبوعا	ب محسوب لـ ٥	الحمل الدر اسي للطالب		
Structured SWL (h/sem)		109	Structured SWL (h/w)	7	
سي المنتظم للطالب خلال الفصل	الحمل الدر	107	الحمل الدر اسي المنتظم للطالب أسبو عيا	,	
Unstructured SWL (h/sem)		01	Unstructured SWL (h/w)	6	
غير المنتظم للطالب خلال الفصل	الحمل الدر اسي	71	الحمل الدراسي غير المنتظم للطالب أسبو عيا	U	
Total SWL (h/sem)			100		
الحمل الدر اسي الكلي للطالب خلال الفصل			100		

Module Evaluation تقييم المادة الدراسية							
As Time/Number Weight (Marks) Week Due Relevant Learning Outcome							
	Quizzes	10	10% (10)	5 and 10	LO #1, #2 and #10, #11		
Formative	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7		
assessment	Projects / Lab.	2	10% (10)	Continuous	All		
	Report	0	10% (10)	13	LO #5, #8 and #10		
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #7		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessmen	t		100% (100 Marks)				

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
Week	Material Covered			
16	Application of collinearty condition equation			
17-18	SPRO I			
19-20	Space intersection			
21-23	Relative orientation			
24	Absolute orientation			
25	Analytical instrument			
26	Aero triangulation			
27	Analogue Aero triangulation			
28	Semi-analytical Aero triangulation			
29-30	Analytical Aero triangulation			

Delivery Plan (Weekly Lab. Syllabus)					
	المنهاج الاسبوعي للمختبر				
Week	Material Covered				
1	Ex. For Application of collinearty condition equation				
2-3	Ex. For SPRO I				
4-5	Ex. For Space intersection				
6-8	Ex. For Relative orientation				
9	Ex. For Absolute orientation				
10	Ex. For Analytical instrument				
11	Ex. For Aero triangulation				
12	Ex. For Analogue Aero triangulation				
13	Ex. For Semi-analytical Aero triangulation				
14-15	Ex. For Analytical Aero triangulation				

Learning and Teaching Resources مصادر التعلم والتدريس					
Text Available in the Libra					
Required Texts	 Photogrammetry: Geometry from Images and "Photogrammetry: Geometry from Images and للمؤلف :Karl Kraus يُعتبر هذا الكتاب مرجعًا أكاديميًا مهمًا يغطي المبادئ الأساسية للمسح التصويري وتحليل الصور. "Manual of Photogrammetry" ويُعتبر من الكتب المرجعية الشاملة حول التقنيات الحديثة في المسح التصويري. 	Yes			
Recommended Texts		No			

Grading Scheme							
	مخطط الدرجات						
GroupGradeالتقديرMarks %Definition							
Success Group	A – Excellent	امتياز	90 - 100	Outstanding Performance			
	B - Very Good	جيد جدا	80 - 89	Above average with some errors			
	C – Good	ختر	70 - 79	Sound work with notable errors			
(50 - 100)	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			

Websites

MODULE DESCRIPTION FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية							
Module Title	Pr	Professional Ethics			le Delivery		
Module Type	<u>support</u>			🛛 Th	⊠ Theory		
Module Code		NTU 201		□ Leo	cture b		
ECTS Credits	2			□ Tu □ Pra	Tutorial Reactical		
SWL (hr/sem)	<u>50</u>	<u>50</u>					
Module Level UGx11 2		Semester of Delivery		2			
Administering Dep	artment	GEO	College	ТЕМО			
Module Leader	Assist. Prof. D	Dr. Mustafa R. Mezaal	e-mail	Mostafa.	Mostafa.redha@ntu.edu.iq		
Module Leader's Acad. Title Ass. Professor		Module Lea	Leader's Qualification Ph.D.		Ph.D.		
Module Tutor	Name (if available)		e-mail	E-mail	E-mail		
Peer Reviewer Name Name		e-mail	E-mail	E-mail			
Scientific Committee Approval Date 01/06/2023			Version Nu	nber	1.0		

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

Module Aims, Learning Outcomes and Indicative Contents				
أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Objectives أهداف المادة الدر اسية	 فهم المبادئ الأساسية لأخلاقيات المهنة :تعليم الطلبة القيم والمبادئ الأخلاقية الأساسية في الهندسة ودورها في المسؤولية المجتمعية. تعزيز المسؤولية المهنية :إدراك أهمية الالتزام بالمعايير المهنية والقانونية عند ممارسة العمل في مجالات الجيوماتكس. 			

	3. تطوير مهارات اتخاذ القرارات الأخلاقية :تمكين الطلبة من اتخاذ قرارات مهنية تتماشى مع
	القيم الأخلاقية وتوازن بين المصالح الشخصية والعامة.
	.4 تحفيز على النزاهة والشفافية : التأكيد على أهمية النزاهة في العمل الهندسي والابتعاد عن أي
	نوع من أنواع التضليل أو التلاعب في البيانات الجيوماتية.
	5. الالتزام بالممارسات المستدامة : غرس فكرة الاستدامة وحماية البيئة عند تطبيق الحلول
	الهندسية المتعلقة بالجيو ماتكس
	 فهم الأخلاقيات المهنية : القدرة على تحديد المفاهيم الأساسية لأخلاقيات المهنة وتطبيقها في
	ممارسات الجيوماتكس.
	 تحليل المواقف الأخلاقية :تقييم المواقف المهنية المعقدة واختيار الحلول الأخلاقية المناسبة.
Module Learning	 الالتزام بالمعايير الدولية : التعرف على المعايير الدولية و المحلية التي تنظم العمل في هندسة
Outcomes	الجيوماتكس والألتزام بها.
	4. التعامل مع البيانات بمسؤولية : فهم أهمية التعامل الأخلاقي مع البيانات الحساسة والبيانات
مخر حات التعلم للمادة الدر اسبة	المتعلقة بالأراضي والمعلومات الجغر إفية.
	5. تعزيز القيم المهنية : القدرة على العمل بفعالية ضمن فريق مع الحفاظ على القيم المهنية
	وأخلاقيات العمل الجماعي
	يتضمن المحتوى الإرشادي ما يلي.
	مفهوم الاخلاق والعمل والمهنة[SSWL=10 hrs] .
Indicative Contents	اخلافيات مهنه المهندس[10 hrs] .
المحتويات الار شادية	[SSWI = 10 hm] = 502.501 J = 502.501
	القيم الهندسية الاكلافية[Unis] . القيم الهندسية الاكلافية[Unis] .
	ميثاق اخلاق مهنة المهندس [SSWI –10 hrs]
	Total hrs = $50 = SSWL - (Exam hrs) = 10$ hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies					
استر اتيجيات التعلم والتعليم					
	تمثل استراتيجيات تدريس مادة "أخلاقيات المهنة" للمهندسين في المزج بين المحاضرات التفاعلية ودراسات الحالة التي				
Strategies	نعزز النفاش حول المواقف الأخلاقية. يتم التركيز على النعلم الفاتم على حل المشكلات ولعب الادوار لتطوير التفكي النفدي والقدرة على اتخاذ قرارات أخلاقية. تُستخدم المشاريع الجماعية والبحوث لتعميق الفهم، إلى جانب التعلم المدمج الذي يجمع				
Strategies	بين التعليم التقليدي والإلكتروني. كما يتم تشجيع التأمل الذاتي وتقديم زيارات ميدانية ومحاضرات من خبراء الصناعة لإثراء				
	التجربة التعليمية .				

Student Workload (SWL)					
الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا					
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	40	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا			
Unstructured SWL (h/sem)	10	Unstructured SWL (h/w)	1		

خلال الفصل	للطالب	المنتظم	غبر	الدر اسے	الحمل
• •	•	(<u>_</u>	9 2	•

الحمل الدراسي غير المنتظم للطالب أسبوعيا

Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل

Module Evaluation						
تقييم المادة الدر اسية						
		Time/Number	Weight (Marks) Week Due		Relevant Learning	
As			0		Outcome	
	Quizzes	5	10% (10)	2 to 14	LO #1, #2 and #4, #6	
Formative	Assignments	2	10% (10)	2,4,5,11 12	LO #3, #4 and #6, #7	
assessment	Out Assignments	2	10% (10)	2,4,6,10 12	All	
	Reports	2	10% (10)	continous	All	
Summative	Midterm Exam	2hr	10% (10)	7	LO #1 - #6	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessmen	t		100% (100 Marks)			

Delivery Plan (Weekly Syllabus)				
المنهاج الأسبوعي النظري				
Week	Material Covered			
1	مفهوم الاخلاق			
2,3	العمل و المهنة			
4,5	اخلاقيات المهنة			
6,7	القيم و اخلاقيات المهنة			
8,9	أنماط السلوك غير ألاخلاقي في المهنة			
10,11	وسائل واساليب ترسيخ اخلاقيات المهنة			
12,13	اخلاقيات ممارسة المهن الهندسية ، اخلاقيات مهنة الهندسية عنه الهندسية الهندسية مهنة المندسة			
14,15	ميثاق اخلاق مهنة الهندسة لاتحاد المهندسين العرب			

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Professional ethics/a methodological course for students of technical colleges/prepared by the Middle Technical University	YES		
Recommended				
Texts				
Websites				

Grading Scheme مخطط الدرجات							
Group	roup Grade التقدير Marks % Definition						
	A - Excellent	امتياز	90 - 100	Outstanding Performance			
~ ~	B - Very Good	جيد جدا	80 - 89	Above average with some errors			
Success Group (50 - 100)	C - Good	ختر	70 - 79	Sound work with notable errors			
(50 - 100)	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	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded			
	F – Fail	راسب	(0-44)	Considerable amount of work required			