Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2025

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

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

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

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

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

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

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.
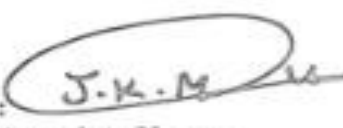
Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name:Southern Technical University
Faculty/Institute: Amarah Technical Institute
Scientific Department: Surveying Techniques Department
Academic or Professional Program Name: Diploma in Surveying Technology
Final Certificate Name: Diploma in Surveying Technology
Academic System: quarterly
Description Preparation Date: 30/6/2024
File Completion Date: 15/6/2025

Signature: AHS
Head of Department Name:
Athraa Abbas Kadhim
Date: 10 / 7 /2025

Signature: J.K.M
Scientific Associate Name:
Dr.Jehad Kadhum Mohammed
Date: 10 / 7 / 2025

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Dr.Akram Karim Khader
Date: 2 - 25/ 7 /10
Signature:

Approval of the Dean

1. **Program Vision**
The Surveying Department is one of the main technological departments at the Technical Institute of Amara. The department seeks to achieve a pioneering role in the fields of surveying, mapping, and geographic information systems, preparing specialized, trained, and qualified personnel to meet the needs of the local, regional, and international labor market. The department is working towards expanding the base of technical education and its modern applications to become a leader in providing accredited technical services, in a spirit of competition and cooperation with the community. It also offers distinguished applied academic programs in various fields of surveying and geospatial sciences, guided by societal values, achieving a prestigious position locally and regionally.

2. **Program Mission**
The Department of Surveying adopts a general mission based in its general form on the framework of technical education in Iraq. It strives to achieve this mission each year to highlight the department's distinctive features. It also seeks to graduate scientifically and professionally qualified human competencies, reinforced by ethical and societal values, within a distinguished and unprecedented educational environment. It also seeks to keep pace with developments in the field of surveying and geospatial sciences to meet the needs of the local and Arab communities.

3. **Program Objectives**
1. Embody the vision, mission, and objectives of the Southern Technical University, and implement best educational practices with a focus on ensuring and enhancing quality and performance.   2. Prepare specialized personnel capable of serving the community and preparing for future specializations.   3. Graduate qualified personnel to carry out land surveying, photogrammetry, and remote sensing techniques. In addition to the work of ribbing and leveling natural and artificial land surface features using traditional and modern surveying equipment (Total Stations, Global Positioning System (GPS), and DGPS), the ability to maintain and maintain various surveying equipment. This is in addition to preparing and drawing topographic, cadastral, real estate, thematic, and detailed maps.   4. Using Geographic Information Systems (GIS) to build a database and produce digital maps in various fields. Various surveying programs are also available, including Civil 3D, ERDASS IMAGIN, AutoCAD, and ARC GIS.

5. Preparing qualified graduates to engage in undergraduate programs inside and outside Iraq and to work in specialized research centers.
6. Conducting applied scientific research within the department's field of expertise to solve engineering problems in society. Providing unique and exclusive academic programs of high quality that meet the needs of the local community and the labor market.
7. Preparing competent graduates Highly academically distinguished and professionally qualified to meet the demands of the labor market.
8. Developing the infrastructure to meet the changing needs of technical education in the field of surveying sciences, using the latest modern technology and advanced surveying equipment.

4. Program Accreditation

No

5. Other external influences

No

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	32	104		
College Requirements				
Department Requirements				
Summer Training	yes			
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

			Study plan 2024 -2025			
			First year 2024-2025-first semester			
notes	Subject type	Credit hours	**Hour no.**			subject	no.

notes	Subject type	Credit hours	T.	p.	Th.	subject	no.
	specialized	6	6	4	2	**Surveying/ 1**	1
	specialized	4	4	2	2	**Aerial Photogrammetry/ 1**	2
	specialized	2	2	-	2	**Remote Sensing/ 1**	3
	specialized	2	2	-	2	**Quantity Surveying/ 1**	4
	Auxiliary	2	2	-	2	**Mathematics/ 1**	5
	Auxiliary	1	1	-	1	**Geomorphology**	6
	Auxiliary	2	2	2	-	**Computer Fundamentals/ 1**	7
	general	2	2	-	2	**English Language/ 1**	8
	general	-	3	3	-	**Workshops**	9
	general	2	2	-	2	**Human Rights& Democracy**	10
		23	26	11	15	**Sum**	

			First year 2024-2025 second semester			
notes	Subject type	Credit hours	T.	p.	Th.	subject	no.
	specialized	6	6	4	2	**Surveying/ 2**	1
	specialized	4	4	2	2	**Aerial Photogrammetry/ 2**	2
	specialized	2	2	-	2	**Remote Sensing/ 2**	3
	specialized	2	2	-	2	**Quantity Surveying/ 2**	4
	Auxiliary	2	2	-	2	**Mathematics/ 2**	5
	Auxiliary	2	2	2	-	**Computer Engineering Drawing**	6
	general	2	2	-	2	**Arabic Language/ 1**	7
	general	6	3	3	-	**Workshops**	8
		26	23	11	12	**Sum**	

			Study plan 2024 -2025					
			Second year 2024-2025-first semester					
notes	Subject type	Credit hours	Hour no.			subject		no.
			T.	p.	Th.			
	specialized	6	6	4	2	Advanced Surveying/ 1		1
	specialized	4	4	2	2	Digital Photogrammetry/ 1		2
	specialized	4	4	2	2	Engineering Surveying		3
	specialized	4	4	2	2	Cartography/ 1		4
	specialized	3	3	2	1	Geographic Information System (GIS)		5
	Auxiliary	2	2	2	-	Computer Fundamentals/ 2		6
	general	2	2	-	2	English Language/ 2		7
	specialized	-	2	2	-	Graduation Project		8
	Auxiliary	2	2	-	2	The Crimes of the Baath regime in Iraq		9
		27	29	16	13	Sum		

			Study plan 2024 -2025					
			Second year ---second semester					
notes	Subject type	Credit hours	Hour no.			subject		no.
			T.	p.	Th.			
	specialized	6	6	4	2	Advanced Surveying/ 2		1
	specialized	4	4	2	2	Digital Photogrammetry/ 2		2
	specialized	4	4	2	2	Cadastral Surveying		3
	specialized	4	4	2	2	Cartography/ 2		4
	specialized	3	3	2	1	Global Navigation Satellite System (GNSS)		5
	specialized	3	3	3	-	Surveying Software		6
	specialized	4	2	2	-	Graduation Project		7
		28	26	17	9	Sum		

8. Expected learning outcomes of the program	
Knowledge	
1- Identify the types of surveying equipment and how to use them. 2- Identify the devices used in aerial surveying. 3- Identify Global Positioning System (GPS) devices and their uses. 4- Identify and work with modern surveying software.	
How to view examples-e	
1- Using various surveying equipment and taking measurements for calculations. 3- Determining point locations using the GNSS system. 2- Drawing various maps using software such as AutoCAD, GIS, Surfer, and 3D Civil. 4- Dividing (sorting) land using various surveying equipment.	
- Developing students' ability to share ideas. - Excellence and creativity. - Continuous learning and teaching. - Persistence and initiative. - Teamwork	

9. Teaching and Learning Strategies
1. Explanation and clarification through lectures. 2. Methods for presenting scientific materials using projectors: data shows, smart screens. 3. Self-learning through homework and mini-projects within lectures. 4. Graduation projects. 5. Scientific visits. 6. Seminars held in the department. 7. E-learning programs: Google Classroom.

1. Evaluation methods
Daily written and practical exams, mid-term exam and final exam.

2. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Asst. professor	PhD in Surveying Engineering	Geomatics			staff	
Lecturer	PhD in Geology	Geotechnics			staff	
Asst. Lecturer	Master's/ Surveying Engineering	remote sensing and GIS	Head of Department		staff	
Asst. Lecturer	Master's/ Surveying Engineering	Geodesy			staff	
Asst. Lecturer	Master of Laws	General Law			staff	

Professional Development

Mentoring new faculty members

1- Holding courses
2- Holding seminars
3- Holding study groups
4- Holding courses and workshops within the department
5- Identifying new labor market requirements

Professional development of faculty members

1- Holding courses
2- Holding seminars
3- Holding study groups
4- Holding courses and workshops within the department
5- Identifying new labor market requirements

3. Acceptance Criterion

Central admission - interview - medical examination - average

4. The most important sources of information about the program

1. Semester Program
2. Virtual Library and Textbooks
3. Special Periodicals and Websites

Course Description Form

1. Course Name:
Surveying/ 1

2. Course Code:

3. Semester / Year
: Semester

4. Description Preparation Date:
20/6/2025

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
90 hours per course. 6 hours a week

7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Abdel Moneim Rady Email: hmdatc@stu.edu.iq

8. Course Objectives

1-the student learned the basic principles of geometric space, which give the student information on how to measure and calculate the levels of points and calculate the areas of regular and irregular shapes. **2-teaching the student how to read horizontal and vertical angles, lifting natural and artificial beams and signing them.** **3-teaching students to use various Cadastral devices and tools, such as leveling devices and various measuring tapes.** **4-teaching students to calculate areas on maps using various methods .**	● ● ●	....

9. Teaching and Learning Strategies

Strategy	Use the generative learning strategy to teach the space course to develop maintenance skills Spatial devices and metacognitive thinking in first-graders The strategy of education for solving problems and obstacles in the workplace. - Developing the course in twinning with the courses of other engineering departments. - Activating the practical side of the course to apply all concepts, information and methods Calculation, which was studied in The theoretical aspect becomes more understandable and centered the student's mind .

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	6	Definition	Definition - Types	A theoretical lecture with Discussions	Monthly exa + Oral exam + Semnrat + Research
2	6		Basic principles Types of errors expectedFor works Measuring distances, tools and devicesUsed in measuring distances		
3	6		Difficulties during orientation and distance measurement (obstacles)		
4	6		Tape-specific corrections Metallometry with the solution of examples levelingso, a leveling machine with details of its accessories		
5	6		Leveling between two points, scoring methods Calculations of settlement works with the solution of examples		
6	6		How to calculate it, methods of Correction,		

7	6		sources		
			Errors in settlement work		
8	6		Calculation of the imputed difference between two points, calculation of the imputed unknown point in terms of a known point		
9	6		Supplement the calculation methods (rise and fall method), their comparison, leveling table, arithmetic investigation of the table, possible errors		
10	6		Supplement the calculation methods (rise and fall method), their comparison, leveling table, arithmetic investigation of the table, possible errors		
	6		Longitudinal and transverse sections, their definition, purpose, how they		

11	6		work in the field, designation of stations at regular and irregular distances, leveling of the longitudinal section،		
12	6		Leveling table, for longitudinal and transverse section, computational Investigation, field work and Correction, measurement of cross-sectional proportions, calculation of the leveling of the construction line, lateral inclinations, drawing of the longitudinal section on which the construction line is installed. Drawing the section and calculating the cross-sectional area (calculating the volumes between the identical stations (sections) by the method of		

13	6		averaging the two bases (as for the volumes between the switching stations, they are calculated by the pyramid law).		
14	6		(Contour period) factors influencing the choice of the contour period, giving a table showing the relationship between the purpose of preparing the map and its scale on the other hand and the contour period on the other hand Theodolite devices and get acquainted with its main parts and the function of each part, learn how to read horizontal and vertical circles and record them in a field notebook . How to read and calculate vertical angles and		

15	6		marginal error (heuristic or indicator error) and clarify the locations that benefit from it **End first course**		
1	6		Type of directions		
2	6		The student learned about the methods of monitoring horizontal angles		
3	6		Types of polygons		
4	6		Make corrections for angles of various kinds in closed circular polygons and calculate the correct directions through them		
5	6				
6	6		Calculation of horizontal and vertical compounds in closed circular polygons		

7	6		Forward calculations and reverse calculations of Point positions		
8	6		Calculation of coordinates (positions of points) using corrected horizontal and vertical compounds and correction of coordinates using horizontal and vertical compounds containing a locking error (Closure error) by Compass and transit methods.		
9	6				
10	6				
11	6		The student learned how to select the points of a closed Polygon (Connected Traverse) and monitor all angles (to the right and the angles of the detour).

Learn how to | | |

12+13	6		correct the angles of the Polygon link in my way (Deflection angle-angle to the right Calculations the student learns how to make a closed link Polygon (horizontal and vertical compounds) and calculate coordinates			
14+15			Making corrections by Compass and transit methods, how to overcome (correct) the locking error, with how to draw the closed link Polygon.			

11.Course Evaluation

The distribution of grades for each semester is as follows: 40 points for the midterm exam, 10 points for the daily semester exams, and 50 points for the final semester exams.

12.Learning and Teaching Resources

.Bannister and S.Raymond, SURVEYING, fourth edition, 1978	
Fawzi al-Khalisi, the flat space, 1982	
Juma Mohammed Daoud, principles of space, 2012	

Course Description Form

1. Course Name:
Quantitative survey
2. Course Code:
3. Semester / Year: Semester
4. Description Preparation Date:
20/6/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours per course/ 2 hours per week
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Abdel Moneim Rady Email: hmdatc@stu.edu.iq
8. Course Objectives
1-apply the vocabulary of the lecture on a real example 2-preparation of detailed designs for the construction joints, elements and materials contained therein and the raw materials contained therein. 3-the ability to know the appropriate environmental solutions in the designs and construction of buildings in various conditions. 4-the ability of students to interact with each other within one lecture in a discussi on the topic .
9. Teaching and Learning Strategies

Strategy	* Addressing the problems of the site and investing its characteristics and components to serve the integrated scene * Ability to know the important bonding materials in constructio with its special types * The ability to identify the methods of heat transfer in buildings the most important expansion joints, types of wood and other topics

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2 3 4 5	2 2 2 2 2	Introduce the student to the types of structural materials used in engineering projects.	General introduction / definition The student is on The lesson with its practical part And theoretical Raw materials: cement (properties, types), sand and gravel, calculation of the quantities of cement, sand and gravel in concrete mixtures. Bricks (types, properties) and calculation of quantities Types of mortar (calculation of the volume of mortar used in construction), blocks (its features and calculation of quantities). Tiles (types, counting the	Theoretical lecture Then make a summary About the topics And an entrance to the material Process and theory	

	2		number of tiles in the floors), shteiker .	
6			Moisture-proof materials (types, uses) , iron, wood	
7	2			
8	2		Plaster (its uses, calculate the amount of plaster needed to whiten the walls, calculate the amount of cement and sand needed to spray the walls.	
9	2		Construction machines, their use, efficiency, (drilling machines, bulldozers, cranes, transport machines, stacking machines, plowshares).	
10	2			
11	2		Guesswork (definition, purpose , types), tables of quantities, units of measurement used for all paragraphs	

			of the construction .		
12	2		Calculate the amount of earthworks for the foundations of buildings and explain the table of quantities for them.		
13	2		Calculation of the amount of structural paragraphs below the moisture barrier level (quadrature, foundation concrete, brickwork below the moisture barrier level)		
14	2		Calculation of the amount of concrete moisture blocker		
15	2		Calculate the amount of paragraphs above the moisture		

1	2		barrier level and explain their table of quantities Calculation of the quantities of reinforced ceiling concrete Calculation of the quantities of reinforced concrete Rabat End first course Calculate the amount of finishing works (focus,whitewash, scattering, dyeing) and explain its table of quantities.		
2	2				
3	2		Calculation of the quantity of flooring works, cashier, Department and table of quantities.		
4	2		Applying the above paragraphs using a computer Types of foundations for		

5	2		buildings, their forms and uses		
6	2		Types of routes		
7	2		Guesswork and arms for roadworks		
8	2		Methods for calculating the volumes of earthworks		
9	2		Various exercises for calculating the volumes of earthworks		
10	2		Types of joints in roads		
11	2		Guesswork and arms for canal works (for irrigation and puncture)		
12	2		The railway Tunnels,		

13	2		guess the cost of completing tunnels		
14	2		Types ofairports		
15	2		Traffic signs Demonstration films		

11.Course Evaluation

The distribution of grades for each semester is as follows: 30points for the midterm exam, 10 points for the daily semester exams, and 60 points for the final semester exams.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	The book of construction of buildings . By Zuhair Sako
Main references (sources)	The book of the construction of the buildings of Talif Anis Jawad
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Special periodicals and websites

Course Description Form

1. Course Name:
Cartography

2. Course Code:

3. Semester / Year:
Semester

4. Description Preparation Date: :
20/6/2025

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours per course/ 4 hours per week

7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Abdel Moneim Rady Email: hmdatc@stu.edu.iq

8. Course Objectives

Course Objectives	* To learn a large part of the skills and art of cartography and cartographic analysis * The student should know the concepts of thema[t] maps

9. Teaching and Learning Strategies

Strategy	1-the student should know what maps are and their types 2-the student should acquire information about the skills and reading o[f] the Thematic Map. 3-the student understands how to make international maps individually 4-the student should understand the regional and international geographical fields

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Learn the principles of cartography and its integration with major subjects such as surveying and aerial surveying inpreparing maps and	Principles of the science of mapping technology Its nature and relationship to surveying The ground	The lecture Discussion	Written and oral exam

2	4	raisingthe student's efficiency (performance) in preparing, designing, drawingand producing maps.	Types of maps, characteristics of each of them and their classification		
3	4		The scale and its relationship to the land area represented on maps are similar in dimensions and accuracy of the map		
4	4		Ways to minimize and enlarge maps (change the scale of the map)		
5	4		Geographical and quadratic coordinates.		
6	4		Projections of maps (their definition, classification, deviations).		
7	4		Cylindrical projectors Muscat Mercator (TM)		
			Projected Global Mercator (UTM)		

8	4		Conical projectors, Lambert congruent projectors (with a standard viewing circle and two standard viewing circles).		
9	4		Conical projectors, Bonn projectors of equal area		
10	4		Networking and indexing of topographic maps		
11	4		The role of colors and their importance in Maps, color systems, color value variation,color sizes , Election of colors		
12	4		Topographic codes (positional, linear and cadastral codes) and their		

13	4		classification		
14	4		Zoning of topographic maps and line specifications, methods of its implementation in Maps		
15	4		Map design (topographic map elements and functions) and visual balance between map components		
1	4		Map design (design concept and principles), raster and linear patterns and various forms		
2	4		How to set up the base map (the base map		
			Operations of copying and printing maps.		
			Cartographic		

3	4		summarization (generalization) and summarization operations		
4	4		Cartographic summarization (positional displacement and demarcation exaggeration), interpretation and analysis of topographic maps		
5	4		Thematic maps (their definition, sources, types), statistical maps and the application of colors in them		
6	4		Graphs, their types and importance		
			Electronic Combs, digital maps, their specifications, types of file		

7	4		extensions, network and vector data		
8	4		Contour maps and the (surveye) program, (installation, interface, menus)		
9	4		Modify the specifications of the digital contour map		
10	4		Preparing a 3D digital contour map		
11	4		The gis10 GIS concept, its components, interface and capabilities		
12	4		Preparing a project using a program, Arc Catalog and selecting the WGS1984 system		

13	4		Delineation of topographic features with their varieties in the form of layers and modification of their specifications		
14	4				
			Connecting the Surfer program and Geographic Information System in the preparation of maps		
15	4				

11.Course Evaluation	
The distribution of grades for each semester is as follows: 40 points for the midterm exam, 10 points for the daily semester exams, and 50 points for the final semester exams.	

12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Thematic maps/Dr. Falah Shaker black
Main references (sources)	Maps of human distributions, their concept and methods of creation. Nasser bin Mohammed bin Salma
Recommended books and references (scientific journals, reports...)	Access to the GPS/ GPS Global Positioning System. Juma Mohammed Dawood
Electronic References, Websites	Remote sensing basics and applications / Nabil Sobhi Dagestani Visible remote sensing data collection and analysis / Mohammed Abdullah Al-Saleh

Course Description Form

1. Course Name:
Mathematical

2. Course Code:

3. Semester / Year:
semester

4. Description Preparation Date:
20/6/2025

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours per week and 30 hours per semester

7. Course administrator's name (mention all, if more than one name)
Name: sarah fawzi ghafel Email: sara4math1996@gamil.com

8. Course Objectives	
Course Objectives	The course aims for the student to be able apply mathematical equations and methods in fielda of surveying

9. Teaching and Learning Strategies	
Strategy	Discussion strategy Teamwork strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		1-A review of solving equation first degree equation second degree equation using the genera law solve two first degree equation graphically	Explain the scientifitic material first then discuss with the student solutions to t examples and give the best mathematicl	Daily exams, Mid-term Exam And end–of-semester exam
2	2		2-matrix transpose, matrix inverse, matrix multiplication		
3	2		3- determinants, binary an		

4	2		ternary 4-solve simultaneous equation using determina 5-equation of a straight li two straight lines perpendicular, two straits parallel, the distance of a point from a straight line the distance between two point	Methods for solving These examples	
5	2				
6	2				
7	2		7 Triangles, some importa laws in trigonometric rati solving a right triangle. -		
8	2		8- Solving a triangle: Son of the laws used in solvin a triangle: the law of sine and cosines.		
9	2		9- Circular Sector Circula Segment Find the area an perimeter.		
10	2		10- Circular Sector Circu Segment Find the area an perimeter.		
11	2		11- Derivative Polynomial Functions Implicit Functions		
12		2	12- Derivative of trigonometric functions		
13		2			
14		2	13- Derivative applicatio / finding the tangent equation		
15		2	14- Integration of algebra functions.		
1		2	15- Integration of trigonometric functions.		
2		2	16-definiteintegrration applications of definite integration		
3		2			

			17-area under a curve the area between two curves		
4	2		18- Numerical methods in integration, 19-finding the		
5	2		area using the trapezoid rule		
6			20- Find the area using Simpson's rule		
7	2		21- Statistical operations/range, arithmetic mean, standard deviation		
8	2		22- Spherical triangle, its definition, properties, Napier's rules		
9	2		23- Solve the right spherical triangle		
10	2		24- Solve the equilateral and isosceles spherical triangle		
11	2		25-Oblique spherical triangle, law of sine and cosin		
12	2		26- The spherical area of spherical triangle, the area of a spherical triangle		
13	2		27- Various exercises in solving the spherical triangle		
14	2		28- Matlab program, its definition, and some of its applications		
15	2		29- Solving matrices and determinants, derivative, integration using Matlab 30- Graphs using Matlab		

11.Course Evaluation

The distribution of grades for each semester is as follows: 30 points for the midterm exam, 10 points for the daily semester exams, and 60 points for the final semester exams.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1-CALCULUS, George B.Thomas 2-TRLGONOMETRY, P. ABBOTT, B.A…

	3-Applied mathematics book written by yacoub sabbagh
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:
English language/1

2. Course Code:

3. Semester / Year:
Semester

4. Description Preparation Date:
20/6/2025

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
Two hours per week and thirty hours per semester

7. Course administrator's name (mention all, if more than one name)
Name: Rihab Hannon Jabir Email: rehabhj7@gmail.com

8. Course Objectives

Course Objectives	
It helps them to write scientific reports in the field of specialization in English language.	• ..... • ..... • .....

9. Teaching and Learning Strategies

Strategy	Discussion strategy Homework strategy Quiz strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		1- Hello/	Explain	Daily exams,

2	2		2- Your world	scientifitic	Mid-term
3	2		3-All about you	material	Exam
4	2		4-Family and	first, then	And end –of-
			friend	discuss	semester
5	2		5- The way I live	with	exam
6	2		6- Every day	the student	
7	2		7- My favourites		
8	2		8- Where I live		
9	2		9- Times past		
10	2		10- We had a great time		
11	2		11- I can do that!		
12	2		12- Please and thank you		
13	2		13- Here and now		
14	2		14- It's time to go!		
15	2		15- Exam		

11.Course Evaluation

The distribution of grades for each semester is as follows: 30 points for the midterm exam, 10 points for the daily semester exams, and 60 points for the final semester exams.

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	**HEAD WAY**
Main references (sources)	**BIGGENER STUDENT'S BOOKS** **Liz and John Sears**
Recommended books and references (scientific journals, reports...)	**English for technicians** **Wadie M. Hanna, B,A**
Electronic References, Websites	**https://zlibrary-asia.se/** **https://www.researchgate.net/**

Course Description Form

1.Course Name:					
English language/2					
2.Course Code:					
3.Semester / Year:					
Semester					
4.Description Preparation Date:					
20/6/2025					
5.Available Attendance Forms:					
Attendance					
6.Number of Credit Hours (Total) / Number of Units (Total)					
Two hours per week and thirty hours per semester					
7.Course administrator's name (mention all, if more than one name)					
Name: Rihab Hannon Jabir Email: rehabhj7@gmail.com					

8.Course Objectives

Course Objectives	
It helps them to write scientific reports in their field of specialization in English language.	• ..... • ..... • .....

9.Teaching and Learning Strategies

Strategy	Discussion strategy Homework strategy Quiz strategy

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2		1-Hello everybody	Explain scientific material first, then discuss with the student	Daily exams, Mid-term Exam And end –of- semester exam
2	2		2- Meeting people		
3	2		3-The world of wor		
4	2		4- Take it easy		
5	2		5- Where do you live		
6	2		6- Can you speak English		
7	2		7- Then and now		
8	2		8- how long ago?		
9	2		9- Food and like!		
10	2		10- Bigger and bett		
			11- Looking good!		
11	2		12- Life's an adventure		
12	2		13- How terribly clever		
13	2		14- Have you ever!		
14	2		15- Exam		
15	2				

11. Course Evaluation

The distribution of grades for each semester is as follows: 30 points for the midterm exam, 10 points for the daily semester exams, and 60 points for the final semester exams.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**HEAD WAY**
Main references (sources)	**ELEMENTARY STUDENT'S BOOK John and Liz Sears**
Recommended books and references (scientific journals, reports...)	**English for technicians Wadie M. Hanna, B,A**
Electronic References, Websites	**https://zlibrary-asia.se/ https://www.researchgate.net/**

Course Description Form

1. Course Name:
Digital Photogrammetry
2. Course Code:
3. Semester / Year:
Semester
4. Description Preparation Date:
20/6/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
4 hours per week and 60 hours per semester
7. Course administrator's name (mention all, if more than one name)
Elaf falah kalaf
8. Course Objectives

• ..... • ..... •	The student should be able to work with spatial data and digital aerial images, create mosaics using software, direct digital aerial images to form the model and display the model of the Earth's surface, extract information and measurements of surface features using remote sensing, use modern software for aerial triangulation and calibration of three-dimensional digital images, extract the Digital Elevation Model (DEM) of the model, and apply it in other software applications. Additionally, the student should understand the basic concepts of remote sensing, types of satellites, handling spatial data, specifications, processing, and interpretation.

Teaching and Learning Strategies	
1. Discussion Strategy. 2. Mind Mapping Teaching Strategy. 3. Teamwork Strategy	Strategy

10. Course tructure

Week	hours	Unit or subject name	Required Learning Outcomes	Learning method	Evaluation method
.1	4.	The spectral reflectance curves of Earth's surface phenomena and their natural response patterns.	Ability to work with digital images, spatial data, form a 3D model of the Earth's surface, perform aerial triangulation, image calibration, and identify types of satellites.	First, explain the scientific material, then provide exercises for students to apply using various digital images	Written exams, practical exams, mid-term exams, and end-of-term exams
2	4	. Weather and space sensors, satellites (American, French, European, etc.).			
3	4	nterpreting aerial images involves analysing the features of shape, size, pattern, shadows, texture, composition, location, and key factors to analyse the Earth's surface...			
4	4	Digital processing of spatial data (images), radiometric calibration, distortion removal, enhancement, and geometric correction are essential steps in two-dimensional image rectification. "			
5	4				
	4				
6		Executing mosaic work from digital aerial images or satellite data using Erdas software.. Digital images and the different resolutions of image resolution, the pixel coordinate system, the image coordinate system, and the ground coordinate			

		system are all essential aspects of working with digital images. Erdas software enables the extraction of various parts of digital images in different forms.			
7+8	4	**Airborne Photogrammetry** Fundamentals Internal Orientation • External Orientation • Elements: omega, phi, kappa • Absolute Orientation			
9	4	Identifying the "Stereo Analyst" icon within the "Erdas" software and exploring the "Stereo Analyst Toolbar."."			
10+11	4				
	4	Initialise the digital stereo model and obtain the initial stereo vision, then save the stereo model. As part of the process, select the left digital image while adjusting channel merging "Band combination", contrast, and brightness. Choose the right digital image and adjust it, align and rotate the digital images to be parallel to the flight line, remove the nadir deviation and adjust the zenith deviation, place			
12+13					
14+15	4				

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	hours	week
		the floating point on the target surface, and save the initial stereo model. Creating an oriented digital surface model (DSM) and saving it as an image file involves the following steps: adding digital images to the surface model, creating a "Block file," entering projection information, inputting the flying height and focal length, along with the digital camera details for the internal and external orientation of the left and right images respectively, and then saving it. "Checking the accuracy of digital stereo model(DSM"(			

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	hours	week
		Obtaining information and measurements from the digital solid model involves measuring from the solid digital model, which includes drawing points and determining their coordinates (X, Y, Z), drawing polylines with specified lengths, slope, angle, vertical difference, and the elevation difference between the starting and ending points of the line. It also involves		4	2+1
				4	5+4+3

		calculating the overall elevation difference, specifying and drawing polygons, calculating the area of the polygon, the lengths of its sides, and determining the angles. بين كل ثلاثة نقاط ومن ثم خزن المعلومات		4	8+7+6
		Identifying the feature toolbar in the program Stereo analyst feature toolbar Drawing and preparing maps from the digital surface model and editing GIS data Collecting and editing 3D GIS data""			
		By initiating a new project, exploring the groups and categories related to landmarks and their characteristics, drawing buildings, roads, rivers, forests, and other visual landmarks through a three-dimensional perspective.Create a project from digital aerial images, perform aerial triangulation, and conduct three-dimensional image calibration. Greating a new project and performingn aerial triangulation and orthorectify the images (by usin LPS(: -creat anew project -Add imagery to the block file		4	11+10+9

| | | -Define the camera model
-measure Gcps and check points
-use the automatic tie point collection function
-Triangulate the images
-Orthorectify the images
-view the ortho images
-save the block file

Automatic terrain extraction-:""
Open an exisiting block file-
- Check the automatically extracted tie
- Points in the point measurement tool
- Set DTM extraction options
- Edit the general tab contents
- View and manipulate images in the image pair tab
- Edit the area selection tab contents
- Edit the accuracy tab contents
- Extract and view the DTM-
- View the out put contour map-
- View the output DTM point status image
- Save the block file
- Check Applications of Digital Terrain Model (DTM) in the field of Geographic Information Systems (GIS) include creating three- | | 4 | 15+14+13+12 |

		dimensional models, drawing contour lines, and longitudinal profiles using ArcScene. DTM is also utilised in other software applications like Surfer and Global Mapper.			

11. Course Evaluation

The distribution of grades for each semester is as follows: 40 points for the midterm exam, 10 points for the daily semester exams, and 50 points for the final semester exams.

.12..Learning and Teaching Resources

	-. uired textbooks (methodology if ilable)
1. "Stereo Analyst",User'sguid ,Leica Geospatial Imaging,USA,2008 2. "Leica photogrammetry suite project manager",Users guide Leica Geosystem Geospatial Image, USA,2008 3. "LiecaPhotogrametry Suite, Automatic Terran Extraction", Users guide Leica Geosystem Geospatial Image, USA,2008 4. " Manual of photogrammetry" ,Us Army Crops of Engineers. 5. "Digital photogrammetry A Parctical Course", Wilfried Linder, Springer ,2009 6. "Baisc of Geomatics ", Mario A. Gomarasca, Springer ,2009 7. " Manual of Remote Sensing " , US Army Crops of Engineers , EM 1110-2-2907,2003 8. "Introuduction to the Physics and Technigues of remote Sensing ",Charles Elachi, Jakob Van Zyl ,John Wily & Sons ,2006 9. "نظم المعلومات الجغرافية "GIS"اسس وتطبيقات " ,الدكتور علي عبد عباس العزاوي , جامعه الموصل 2009 10. "Geoinformation Remote Sensing, Photogrammetry and Geographic Information System", Gottfried Konecny, Taylor & Francis Croup, London, 2003. 11. ERDAS IMAGINGE Tour Guide, Leica Geosystems Geospatial Imaging, USA ,2006 12. المسح الجوي ,لبيب ناصيف , لويز خليل , خالد هلال سرحان , هيئة التعليم التقني , الطبعة الثانية 1999	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports, etc.)
	Electronic references, websites.

Course Description Form

1.Subject Name:	
Surveying software	
2.Year/Grade:	
3.Date of preparation of this description	
20/6/2025	
4.: Available attendance options:	
attendance	
5.Total number of study hours/units:	
45 ours per semester. 3 hours per week.	
6.Name of the course coordinator (if more than one name is mentioned)	
Elaf falah kalaf	
7.Course Objectives	
• ..... • ...	The student will be able to use the software (Civil3D) to represent field-surveyed data from modern surveying devices such as Total Station and DGPS, and display it in the form of a map according to the purpose of the work and the design of urban structures.

					Strategy
1- Discussion Strategy. 2- Brainstorming Teaching Strategy.					

.10 .Course Structur

Evaluation Method	Learning Method	Unit or Topic Name	Required Learning Outcomes	hours	week
Written and practical exams, as well as end-of-semester exams.	Explain the program and then provide students with exercises for practical application using the designated field data.	Introduction to the program Civil3D, its features, applications, a comparison with Autocad, and an explanation of the main menus. Point formation, organization, and importation	Mastering the use of the Civil 3D software for drawing and designing buildings and structures based on surveyed field data.	3 3 3	1 23+ 4
		Create a project draft according to the design specifications (road design) .		3 3	7-5 8
		Creating, editing, and designing contour lines, displaying elevations and slopes.		 3	9+10 11+12
		Breakline		3	1314+
		Road alignment design			
		. Create and design		3	15

		a professional profile . Earthwork calculation Volume Calculation			

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11. Course Evaluation	
The distribution of grades for each semester is as follows: 40 points for the midterm exam, 10 points for the daily semester exams, and 50 points for the final semester exams.	
12.Learning and Teaching Resources	
- .	**Required textbooks (methodology if available)(**

1- **Auto Cad Land Desktop Tutorial / Autodesk / 2009**
2- **Practical Guide to Autodesk Land Desktop / Saad Yahya Hanea / Shuaa**
        2008/   -3
        \
	Main References (Sources)

	Recommended supporting books and references (scientific journals, reports, etc.)
	Electronic references, websites.

Course Description Form

1. Course Name:
Engineering and cadastral surveying
2. Course Code:
3. Semester / Year:
Semester
4. Description Preparation Date:
20/2/2024
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours for term/4 hours per week /60 Units
7. Course administrator's name (mention all, if more than one name)
Name: Athraa Abbas Kadhim Email: athraa.kadhim@stu.edu.iq

8. Course Objectives	
1-Carrying out topographic and cadastral surveying and projection work necessary for engineering projects and preparing general level and topographical maps. 2- Teaching and training students how to calculate and measure areas, find the volumes of soil quantities, perform calculations for horizontal and vertical curves, project them onto the ground, project structures, and perform the necessary calculations to find the missing lengths and directions of the boundaries of land plots, the coordinates of their corners, and calculate their areas. 3- Teaching and training students how to calculate and solve problems in various types of intersections, and land division, using advanced devices such as the total station device and GPS.	....

9. Teaching and Learning Strategies

	Strategy	1-Discussion strategy. 2- Brainstorming education strategy. 3-Teamwork strategy.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	1-Teaching and training students how to calculate and solve problems in various types of intersections, resection, and land division, using advanced devices such as the totsl station device and the global positioning device.	1-An introduction to engineering and cadastral surveying and the drawing scale used for each case, with an explanation of the different methods for calculating areas in the field, including: areas of regular shapes, and division into regular geometric shapes such as triangles, squares, rectangles, trapezoids, circles and their parts.	1-Teaching and training students how to calculate and solve problems in various types of intersections, resection, and land division, using advanced devices such as the total station device and GPS.	Written and practical exams, mid-semester and end-of-semester exams
2	4	2--The student learned how to use mathematical equations to calculate the locations and levels of ground points.	2 - Establishing columns at equal intervals (with the trapezoidal method and Simpson's method), and erecting columns at unequal intervals on the survey line of a piece of land and calculating its areas using all the methods shown.	2--The student learned how to use mathematical equations to calculate the locations and levels of ground points.	
3	4	3- How to calculate and measure areas, find the volumes of soil quantities, perform calculations for horizontal and vertical curves, project them onto the ground,	3- Using the coordinate method in calculating areas, the longitude multiplier (D.M.D) method. 4-Different methods for calculating areas from a map, including: dividing into regular geometric shapes such as triangles or squares, or using graph papers,	3- How to calculate and measure areas, find the volumes of soil quantities, perform	
4	4				

5	4	project structures, and perform the necessary calculations to find the missing lengths and directions of the boundaries of plots of land, the coordinates of their corners, and calculate their areas.	using slices, and using an electronic planometer to calculate areas (when the fixing point is inside or outside the shape). Arithmetic and demarcation methods for calculating the areas of cross-sections of different shapes and slopes of the Earth's surface.	calculations for horizontal and vertical curves, project them onto the ground, project structures, and perform the necessary calculations to find the missing lengths and directions of the boundaries of plots of land, the coordinates of their corners,and calculate their areas.
6	4		5- Calculating the volumes of dirt quantities using the law of the average of the two bases and the missing wedge method (or prismatic) and the approximate method from the longitudinal section and calculating the size of the quarry and the reservoir for the dams using contour lines and performing calculations and drawing the dust transport curve. And using the map to perform the necessary calculations for areas and volumes in different methods	
7	4		6-Getting to know road surveying: It includes ground surveying and aerial surveying methods used to determine the path of the center line of the road. Types of vertical curves used in roads: their symbols, terms, and laws and for calculating levels on them (geometric	

8	4		method), asymmetric vertical curves (its elements and calculations), quantitative calculation Dirt surface of a road section containing convex and concave vertical curves and a constant slope. Dirt surface of a road section containing convex and concave vertical curves and a constant slope.		
9	4		7- Identifying the types of vertical curves: convex curve and the concave curve) and the equation for the parabola to calculate the level (the analytical method) and how to project it to the ground - its specifications in terms of the relationship of its length to the viewing distance and speed and the algebraic difference		
10	4		between the two slopes and its equivalent radius. 8- Horizontal curves: the simple circular horizontal curve, its symbols, terms, laws, and specifications in terms of the relationship of its radius to vehicle speed, the coefficient of friction of tires, and the additional slope or (lateral lift).		
11	4		9- Compound and inverted circular horizontal curves and their types, calculating their elements and using them on highways and		

12	4		intersections, calculating the coordinates of main stations and points on the curves. 10- Various methods for projecting a simple circular curve, including: the method of tangent angles (or deviation) using a theodolite and a tape, or using only two theodolite devices, and using electronic devices to project this curve, or using the coordinates of control points and curve points (the method of modern site technologies).		
13	4				
14	4		11- The method of using columns to project curves (columns on the tangent and the columns on the major chord) and the method of projecting from the point of intersection - the obstacles that hinder projecting and how to overcome them (on the arch, at the main stations, or during construction).		
15	4		12- Transitional or spiral curves: their types, use, and calculations (cleothoids, cubic parabolas, and cubic spirals), methods of projecting them using tangent angles, chords, or coordinates, calculating the coordinates of main stations and points on the curves.		

			13- Small road projects: Performing the necessary calculations for vertical and horizontal curves (determining stations and levels, how to draw horizontal plans and the longitudinal section of the actual project and indicating all the elements and stations on them.		
			14- Calculate the cross-sectional areas of the project and the sizes of the dirt quantities, draw the dust transfer curve, and indicate the width of the excavation and backfill on both sides of the center line of the actual project.		
			15 Structural survey: Survey work related to constructing houses and large buildings, establishing their levels, straightening lines, canals, sewers, pipes, electrical transmission, and long trenches, and establishing their levels.		
Second 1	Course 4		**Cadastral surveying** 1-　　Traversing calculations: types of angles and directions, methods of correcting them and calculating them for the closed circular traverse and the connecting traverse, calculating the coordinates of the corners of the polygon		

2	4		and correcting them (compass method), calculating lengths and corrected directions (inverse calculations for sides).		
3	4		2-The intersections orunknown measurements in the process of and triangulation include: The first intersection (to find two unknown lengths) using the methods of trigonometry and the laws of traverse.		
4	4		3- Using the methods of analytical geometry and coordinate rotation, applications in road intersections and land division.		
5	4		4 The second intersection. (To find the length of one side and the direction of another side) using the trigonometry method.		
6	4		5- Using the laws ribbing, analyt geometry, and tl applications in r intersections and l division.		
7	4		6 Third intersection. find the directions of two unknown sides) us the trigonometric method		
8	4		7- Using the analyt engineering method, applications in r intersections and l division		
9			8- Finding the unkno		

10	4		measurements (lengths directions) in circular connected polygons us different intersections examples of the ty mentioned above.		
11	4		9-Resection or reverse intersection: to find the location of a selected poir by observing three points with known horizontal locations for three differe (or possible) cases.		
	4		10- How to prepare a tabl with logical steps to find unknown measurements various problems using th three intercepts, forward and inverse calculations, and resection.		
12			11- Dividing lands: Dividing traverse: Dividi a traverse into two parts using a line with two end with known locations. Dividing a polygon into t parts using a line with a known direction and start from a point with a know location (and with a speci width in the case of a roa or irrigation canal) and calculating the areas of th parts and uncalculated locations, practical applications in dividing la for multiple cases.		
	4				
13	4		12- Dividing a polygon ir two equal parts in area us a line starting from a poir with a known location.		
14			Dividing a traverse into equal parts in area using line with a known directi Practical applications in dividing land for multiple		
	4		practical cases.		

| 15 | 4 | | 13- A small project to divide large lands using different calculations and intersections and accordin to certain specifications f areas, street dimensions a radii.

14 Complete the project calculations and draw its horizontal plan.
15- Draw its longitudinal section, and conduct discussions about the fina results of dividing the plo of land. | | |

11. Course Evaluation

The distribution is as follows: 40 marks for the mid-term exam and 10 for the daily exams for the first semester. 50 marks for the final exams of the first semester

12. Learning and Teaching Resources

Required textbooks (curricular books, any)	ح الهندسي والكادسترائي (منهجي) / تأليف زياد عبد الجبار البكر / دار الكتب والنشر / جامعة الموصل 1993 .
Main references (sources)	1- المساحة (الجزء الأول) / تأليف بي . سي ز بينميا / ترجمة زياد عبد الجبار البكر (تحت الطبع منذ 1988) . 2- Surveying Vol. 1 & Vol. 2) / B.C. Punmi a/Standard Book House, Delhi, India. 1978. 3- Engineering Surveying (Vol. I & Vol.2)/ W.Scho field / Newness – Butter Woths/ London / Britain. 1978. 4- Surveying for Engineers / J. Uren. & W.F. Price / MacMillan / London/ Britain . 1985.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1.Course Name:	
Aerial photogrammetry	
2.Course Code:	
3.Semester / Year:	
Semester	
4.Description Preparation Date:	
20/2/2024	
5.Available Attendance Forms:	
Attendance	
6.Number of Credit Hours (Total) / Number of Units (Total)	
60 ours for term , 4 hours in week /60 Units	
7.Course administrator's name (mention all, if more than one name)	
Name: Athraa Abbas Kadhim Email: athraa.kadhim@stu.edu.iq	
8.Course Objectives	

1- The student will be able to learn about the principl of aerial photogrammetry, the types of aerial photographs and cameras, and find the scale of various types of aerial photographs.	• ..... • ..... • .....
2-Creating the three-dimensional model and calculating the levels of ground features, as well as designing airline lines and making mosaics.	
3-Using insertion devices to prepare detailed maps fro aerial photographs and dealing with modern software suc as Erdas-Imagine with regard to radiological and spatial correction of digital data and images and preparing maps from them.	

9.Teaching and Learning Strategies	
Strategy	1-Discussion strategy. 2- Brainstorming education strategy. 3-Teamwork strategy.

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	1-Provide students with the skill of using aerial photogrammetr devices to draw maps.	1-Ahistorical over view of the history of aerial photogrammetry and remote sensin its development and uses at the present tir the relationship of aerial surveying to rem sensing, types of projections, and types of images.	Explain scientific material firstand the Giving examples students discussing them with students find results solving th examples using mathemati equations	Writtenand practical exams,mid-semester end-of-semes exams
2	4	2- Training students to use modern progra such as Erdas-Imagine to process aerial satellite image	2-The difference between aerial photogrammetry and a map and some important terms in the subject of aerial photography related to the image and information appearing on aerial photographs.		
3+4	4	3-The student learned how to use mathemati equations to calculate the drawing scale an aerial photograph an the height of points.	3+4- Vertical aerial photographs, geometr relationships, coordinate systems, scale of vertical aerial photographs over flat grour and over ground of different levels, and th average drawing scale.		
5	4		5- Other methods for calculating the scale vertical aerial photographs, ground coordinates from vertical aerial photograp and calculating horizontal and diagonal distances between points.		
6	4		6-Relief Displacement and height calculations.		
7	4		7- Stereoscopic vision and its foundations 8- Using mirror stereoscope by the baselir method for the two images. Y parallax.		
8	4		9- parallax stereoscopic, the relationship between parallax and height of points, parallax difference, floating mark, methoc of measuring parallax, stereometer and hc to work with it.		
9	4		10+11- Finding the parallax of the base points of two successive aerial photograpl equations of parallax, and finding the relationship between the parallax and the height of the points. Reinforcing the topic with solved examples.		
10+11	4		12-Types of aerial photography cameras: "Digital and Analog"Angle of field of vie and classification of aerial photography cameras in relation to the angle of field of view and its uses, parts of the aerial came		
12	4		13+14 – Tilted photograph, Angular		

13+14	4		Orientation In Tilt, Swing and Azimuth, auxiliary axis system for a tilted photogra scale of the tilted photograph, ground coordinates from tilted photographs, geometric analysis of tilted aerial photographs. 15-Foundations of stereoscopic aerial photogrammetry using filling devices.		
15	4		**End first term**		
1+2	4		1+2-Rectification Of Tilted Photograph Rectification Foundation, Rectification Methods.		
3	4		3-Mosaic, its advantages, disadvantages a uses - its types.		
4	4		4-Designing flight lines, flight altitude, lo scale, longitudinal and side overlap, baseline, and calculating the number of to photos of an area.		
5	4		5-Using the "Erdas-Imagine" program to suit the student's needs for dealing with digital data, by clarifying the following headings: -The viewer -Image info -Histogram -pixel data		
6	4		6- Inquire cursor - Measurement tools - Inquire box .		
7	4		7- Tile viewers -Link viewers -Arrange layers viewer -Flicker		
8	4		8-Blend fed		

| 9-15 | 4 | | | -Swipe
-Raster attribute editor
-Image subset

9-15-Filtering
Mosaic Images-
Vector-
Raster to vector-
Map composer | - | | |

11.Course Evaluation

The distribution is as follows: 40 marks for the mid-term exam and 10 for the daily exams for the first semester. 50 marks for the final exams of the first semester

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	مسح الجوي التصويري- لبيب ناصيف,هيئة التعليم التقني ,الطبعة الثانية,1999
Main references (sources)	2-Manual of photogrammetry-American society of photogrammetry By Moffitt 3- Elements of photogrammetry – poulR.wolf 2nd Edition . 4-Erdas-magine Tour Guides ,Le Geosystems Geospatial Imaging,2006
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1.Course Name:
Advanced Surveying
2.Course Code:
3.Semester / Year:
Semester
4.Description Preparation Date:
20/2/2024
5.Available Attendance Forms:
Attendance
6.Number of Credit Hours (Total) / Number of Units (Total)
90 ours for each term/90 Units
7.Course administrator's name (mention all, if more than one name)
Name: Athraa Abbas Kadhim   Email: athraa.kadhim@stu.edu.iq

8.Course Objectives	
1- The student will be able to perform all measurements and calculations in traversing and tacheometry measurements. 2- Working on carrying out surveying work, including raising, laying out, and finding the coordinates of points through the complete station devices, as well as implementing all the work that the complete station device can provide. 3- Carrying out surveying work such as triangulation, traversing, and levelling for the purpose of establishing horizontal and vertical ground control points , using various surveying devices.	• ..... • ..... • .....

9.Teaching and Learning Strategies	
Strategy	1-Discussion strategy. 2- Brainstorming education strategy. 3-Teamwork strategy.

10.Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	6	1-Providing stude with the skill of using surveying equipment of all kinds. 2- Training stude on using surveyin equipment in the process of laying and data collect using theodolite devices and the T Station. 4-The student's ability to calculate the locations of unknown points using intersections. 5- The student understands the basics of mathematical calculations to find real measurements of distances and angles, as well as calculate coordinates for the locations of ground points in order to laying out on paper at a specific drawing scale.	1- Review the classification of theodolite devices and learn about its main parts and the function of each part. Learn how to read the horizontal and vertical circuits and record them in the field book for different devices. 2 - Methods of observing horizontal angles. 3- How to read and calculate vertical angles and marginal error (inference or indicator error) and clarify the locations from which they can be used, as well as the sources of errors in measuring vertical circles (angles). 4- Types of north, how to observe true north, magnetic north, and asummed, and calculate the directions of the sides through the angles observed in the field. 5- Types of traverses, their use and degrees (classification), along with field works related to traversing and the types of angles used in closed circular traverses. (Closed Loop Trav., Closed Connected Trav.). 6- Making corrections for various types of angles in closed circular traverses and calculating the correct directions from them. 7- Calculating Departura and Latitude in closed circular traverses and methods for correcting them: Compass Rule & Transit Rule. 8-Calculating coordinates (point locations) using the corrected	Explain the scientific mate first and then Give examples For students ar discuss it with students to fin the results of solving these optimizations using mathematical equations and questions and answers	Written and practical exams, mid-semester an end-of-semester exams
2	6				
3	6				
4	6				
5	6				
6	6				
7	6				
8	6				
9	6				
10	6				

11	6	horizontal and vertical components and correcting the coordinates using the horizontal (Departure) and vertical (Latitude) components that contain a closure error in the compass and transit methods.		
12	6	9- Forward calculations and reverse calculations for point locations.		
13	6	10- Selecting Connected Traverse points and observing all angles and how to correct them (Deflection angle – angle to the right).		
14	6	11- How to perform closed link traversal calculations (horizontal and vertical components), calculate coordinates and make		
15	6	corrections using the compass and transit methods, and how to overcome (correct) the closing error. 12-Defining tacheometric survey, its purposes and use, and explaining the possible methods for finding distances and levels of sides and points using tachometric methods. 13- Use the theodolite device and a regular ruler to find distances and height differences using the Tangential Method. 14- Use the theodolite device and a regular ruler to find distances and height differences using the Stadia Method		
1	6	15- The theoretical foundations of using electronic devices (T.S., EDM), their types, accuracy, ranges, and uses. **End First term**		
2	6			

3	6		1- Introducing methods measuring horizontal and vert angles through electronic devi (Total Station).	
4	6		2- Measure the height of a rem point using a reflector and withou reflector.	
5	6		3- Calculating the diagonal vertical distances between two po (Tie Distance) in two ways: Polygon. 2-Radial..	
6	6		4- Find the coordinates of a set points (Reference Element) if reference is a line a-laying out one point.	
7	6		b- Laying out a group of points in	
8	6		form of a grid.	
9	6		5-Extension: Finding a point loca along a known straight line. 6- Calculating areas and volumes.	
10	6		7- Stakeout. 8 -Surveying.	
11	6		9- Laying out through construction line and the Lay	
12	6		method and surveying (Data collec 10-How to perform first intersect calculations.	
13	6		11- How to perform sec intersection calculations.	
14	6		12- How to perform third intersect calculations. 13- Horizontal control netwo their types, degrees, accura classification methods, uses, rang establishing a base l	
15	6		specifications of control points how to select them. 14- The student learned how calculate the strength figure of different ty of networks, the conditions achieving angles, sides, and static and finding the best paths (R1, l	

			from the possible paths of different triangular network. 15-Corrections different triangu networks and shapes with a differ central point in different ways.		

11. Course Evaluation

The distribution is as follows: 40 marks for the mid-term exam and 10 for the daily exams for the first semester. 50 marks for the final exams of the first semester

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1- المسح الهندسي والكادسترائي (منهجي) / تأليف زياد عبد الجبار البكر / دار الكتب والنشر / جامعة الموصل 1993 . 2- المساحة (الجزء الأول) / تأليف بي . سي ز بينميا / ترجمة زياد عبد الجبار البكر (تحت الطبع منذ 1988) . -Surveying Vol. & Vol. 2)/B.C. Punmi a/Standard Boo House, Delhi, India. 1978
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://www.academia.edu/32277699/Smart_Notes_Fo Total_Station_Help

Course Description Form

1. Course Name:
Arabic Language

2. Course Code:

3. Semester / Year:
second semester

4. Description Preparation Date:
2025/6/20

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours for course , 2 hours weekly

7. Course administrator's name (mention all, if more than one name)
Zahraa Saad Hussein

8. Course Objectives
1. Develop oral and written expression skills in standard Arabic.
2. Develop the ability to write research papers, reports, and academic articles.
Enhance the ability to use Arabic in modern contexts (digital media, technical writing, formal communication).

9. Teaching and Learning Strategies	
Strategy	1. Lecture or presentation strategy. 2. Problem-solving strategy. 3. Report-based learning strategy.

10.	Course Structure				
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	1-Presentation Oral Academic Proficient Arabic.	Hamza Writing Rules	A lectures	Daily, monthly and final exams
2	2		Nominative and Accusative Cases of Nouns		
3	2				
4	2				
5	2	2 - Participation Active Discussions andUniversity Seminars	Solar and Lunar Letters		
6	2		Declension and Syntax of Nouns, Verbs, and Letters		
7	2				
8	2	3- Writing reports, articles and research Proficient academic	About the Styles of Exclamation and Comparatives		
9	2		Repeating Nouns		
10	2		Conjunctions		
11	2		Interrogative Words		
12					
	2		Punctuation Marks and Their Uses		
13	2		Exceptional Words Number and Counted		
14	2		Of the Five Objects (Maf'ul al-Mutlaq)		
15	2				

11.	Course Evaluation

The distribution is as follows: 40 marks for daily and monthly exams. 60 marks for final exams.

12.	Learning and Teaching Resources
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
The Crimes of the Baath regime in Iraq

2. Course Code:

3. Semester / Year:
Semester

4. Description Preparation Date:
2025/6/20

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours for course , 2 hours weekly

7. Course administrator's name (mention all, if more than one name)
Reem slman gwitaa reem.kwaita@stu.edu.iq

8. Course Objectives

The objective of studying the Ba'ath Party's crimes

The objectives of studying the crimes of the Ba'ath regime, particularly in Iraq, vary according to academic, legal, or documentary purposes, and include the following:

1. Documenting crimes and violations

3. Analyzing the nature of dictatorial regimes

4. Promoting a culture of human rights

5. Preventing the recurrence of crimes

6. Supporting national reconciliation efforts

9. Teaching and Learning Strategies	
Strategy	1. Lecture or presentation strategy. 2. Problem-solving strategy. 3. Report-based learning strategy

10.		Course Structure			

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1-Presentation Oral	The concept of crime, its linguistic and	A lecture	Daily, monthly and final exams
2	2	Academic	technical definition,		
3	2	Proficient	and types of crimes.		
4	2	Arabic.	Crimes of the Ba'ath regime according to		
5	2	2 - Participatio Active Discussions	the documentation of the Iraqi High Criminal Court Law		
6	2	andUniversity	of 2005.		
7	2	Seminars	Psychological and social crimes of the		
8	2	3- Writing reports, article and research Proficient	Ba'ath regime and understanding their effects on individuals and society.		
9	2	academic	The Ba'ath regime's position on religion.		
10	2		Violations of Iraqi laws, forms of human		
11	2		rights violations.		

			Prison and detention facilities of the Ba'ath regime.		
12	2		Midterm exam.		
13	2		Environmental crimes of the Ba'ath regime in Iraq: war pollution and the scorched earth policy.		
14	2		Mass graves crimes. Genocide graves events committed by the Ba'ath regime in Iraq: the events of 1963 and their relationship to mass graves.		
15	2		Week Eleven (for events extending from 1979 to 2003 and their relationship to mass graves in Iraq)		
			The buried Ba'ath and the visit to Imam Hussein The Anfal crime The Sha'ban uprising A comprehensive review of the above materials to prepare for the exam.		

11.	Course Evaluation

The distribution is as follows: 40 marks for daily and monthly exams. 60 marks for final exams.

12.	Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	

Electronic References, Websites	

Course Description Form

1. Course Name:
Human Rights and Democracy

2. Course Code:

3. Semester / Year:
Semester

4. Description Preparation Date:
2025/6/20

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours for course , 2 hours weekly

7. Course administrator's name (mention all, if more than one name)
reem slman gwitaa   reem.kwaita@stu.edu.iq

8. Course Objectives
1.The goal of studying human rights is to promote and protect human dignity, freedom, equality, justice, peace, and sustainable development. 2.It aims to empower individuals to claim their rights, hold accountable those who violate them, and promote a culture of human rights in society.

9. Teaching and Learning Strategies	
Strategy	1. Lecture or presentation strategy. 2. Problem-solving strategy. 3. Report-based learning strategy.

10.	Course Structure				
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1- Presentation Oral Academic Proficient Arabic. 2 - Participatio Active Discussions andUniversity Seminars 3- Writing reports, article and research Proficient academic	The concept of right, human being, and human rights. The historical development of the idea of human rights. The idea of human rights in Eastern societies. The idea of human rights in Western societies. The idea of human rights in the Middle Ages. The idea of human rights in Christian and Islamic law. Midterm exam. Intellectual contributions to the development of the idea of human rights. Social contract theory. Types of rights and freedoms. The right to participate in the management of public	A lecture	Daily, monthly and final exams
2	2				
3	2				
4	2				
5	2				
6	2				
7	2				
8	2				
9	2				
10	2				
11	2				
12	2				
13	2				
14	2				

15	2		affiliars. Human rights in the declarations of rights and international documents. Human rights in the 2005 Constitution of the Republic of Iraq. Means of protecting human rights. A comprehensive review of the above articles.		

11.	Course Evaluation

The distribution is as follows: 40 marks for daily and monthly exams. 60 marks for final exams.

12.	Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Geographic Information Systems (GIS) & Global Navigation Satellite System (GNSS)

2. Course Code:

3. Semester / Year:
First and Second semester/ Second grade

4. Description Preparation Date:
2025/6/20

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
Total number of hours: 90 hours - 45 hours per semester - 3 hours per week / Number of units: 3

7. Course administrator's name (mention all, if more than one name)
Ali Salah Jumaah

8. Course Objectives
1. Apply lecture content to a real-life example.
2. The ability to engage students in a discussion on the topic within a single lecture.
3. The student will be able to employ Geographic Information Systems (GIS) principles by using spatial, descriptive, and network data to prepare maps of all types (thematic, topographic, and cadastral) and produce them in their final form as digital or paper maps with reports. Students will also be trained on how to use the DGPS system and its applications.
4. This course description provides a concise summary of the course's key features and the learning outcomes expected of the student, demonstrating whether they have made the most of the available learning opportunities. This must be linked to the program description.

9. Teaching and Learning Strategies	
Strategy	• A strategy for developing the course by integrating it with other engineering department courses. • A strategy for activating the practical aspect of the course to apply all the concepts, information, and calculation methods studied in the theoretical aspect, making them more understandable and central to the student's mind. • A discussion strategy. • A teaching strategy for solving problems and obstacles in the workplace. • A teamwork strategy.

1. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	3	A theoretical lecture, followed by a summary of the topics and an introduction to the practical and theoretical material.	The concept of a Geographic Information System (GIS), its components, capabilities, and related programs such as Arc Catalog, Arc Globe 10, Arc Scene 10, Arc GIS Administrator. The types of data it handles (spatial, descriptive, grid, and vector data), familiarization with the program interface, and installation.	A theoretical lecture, followed by a summary of the topics and an introduction to the practical and theoretical material. ----------- Explanation and clarification. The lecture is delivered by displaying the theoretical lessons on screens, using examples and explanations, solving them on the board, and discussion. Then, the students are given exercises to	Daily quick practical tests, quizzes, daily assessment, written exams, midterm exam final exams
2	3		Methods for entering (retrieving) data (aerial and satellite images) using Add Data. Methods for displaying data using the Extent Full icon or Zoom to Layer. Using the Effects bar, including adjusting contrast, transparency, and brightness, and sliding images horizontally and vertically (Layer Swipe & Flicker).		
3	3		Geometric correction of a topographic map and determining the		

	3		maximum allowable error (RMSE).	practice.	
4			Geometric correction of a satellite image and determining the maximum allowable error (RMSE).		
5	3		How to set up a new project using Arc Catalog and familiarize it with the WGS 1984 global projection system, the projection, the appropriate range for the data used, and how to change the projection. and scope)		
6	3		Layer drawing of land surface features (locational, linear, and area) nodes (Edit and delete vertices), and how to store layers and projects.		
7	3		Application of drawing tools (trace tool, end point, arc segment, point, etc.)		
8	3		Application of drawing tools (intersection tool, midpoint tool, split tool, cut polygon tool).		
9	3		Application of additional drawing tools (advanced editing tools)		

10	3		such as (Copy Feature, Extent Tool, Trim Tool, Line Intersection, Generalized, Smooth). Methods of zooming in and out of features and methods of selecting drawn features (zoom to select, select feature, pan to select features, and delete select).		
11	3		Adding and deleting nodes (add and delete vertices). Preparing descriptive tables for the features of each drawn layer (how to add and delete fields to tables) and methods of entering data into tables.		
12	3		Layer Properties window, including layer labeling based on data in the distribution table fields, transparency, viewing the image data source (spatial reference), and displaying any feature's specifications using the Show Map Tips and Identify icon.		
13	3		Selection menu, accessing features using the layer data table		

14	3		fields and by location (Selection by attributes and location). Preparing thematic maps (contour and field data).		
15	3		Final configuration of all map elements (Layout, Title, Border, Grid, Scale, Legend, Index, Map source).		
Second semester					
1	3		Defining GPS and the GNSS system.		
2	3		Understanding the types of currently available and future satellite systems.		
3	3		Components of the GPS system and an explanation of each component (the space component, the command and control systems, and the user system component).		
4	3		Understanding the GPS navigation device and its uses.		
5	3		Understanding the sources of errors in the GPS system.		

	3		Learn how GPS works		
6	3		Learn the principles of geodetic (geo, spheroid, coordinate systems)		
7	3		Explain monitoring methods using the GNSS system and explain each method		
8	3		Explain the components of the Leica Viva GNSS system		
9	3		How to perform a job and configure the GS10 and GS15		
10	3		How to configure the Base GS10 and Rover GS15 to operate using post processing		
11	3		Create ground control points in the field using post processing and process the observed data using the LGO program		
12	3		Configure the Base GS10 and Rover GS15 to operate using RTK and raise the beams using this method.		
13			Drag the observed data using the above method from the device to the		

			computer and export it to Land Desktop or GIS software		
14	3				
15	3		Find the coordinates of an unknown point (X, Y, Z) and process them using Send it to correction sites via the Internet		

1. Course Evaluation

The distribution is as follows: 40 marks for the midterm exam and 10 marks for the daily exams for the first semester. 50 marks for the final exams for the first semester. The same distribution applies to the grades for the second semester.

2. Learning and Teaching Resources

Required textbooks (methodology if any)	1ـنظم المعلومات الجغرافية(GIS) ,الادارة العامة لتصميم وتطوير المناهج ,المملكة العربية السعودية2010 0 2- أسس المساحة الجيودوسية والجي بي أس د0جمعة محمد داود 1433 /2012 3ـأساسيات منظومة تحديد الموقع العالمي/ وزارة التعليم العالي والبحث العلمي / جامعة الموصل0مركز التحسس النائي/أعداد صباح حسين علي 4- نظم المعلومات الجغرافيةGISالدليل العلمي الكامل لنظامARCVIEW/ ترجمة واعداد الدكتور المهندس هيثم يوسف زرقطة0 5ـلمحة على نظم المعلومات الجغرافية GIS /د0محمد يعقوب محمد سعيد /جامعة الامارات العربية0
Primary references (sources)	1ـنظم المعلومات الجغرافية(GIS) ,الادارة العامة لتصميم وتطوير المناهج ,المملكة العربية السعودية2010 0 2ـأسس المساحة الجيودوسية والجي بي أس د0جمعة محمد داود 1433 /2012 3ـأساسيات منظومة تحديد الموقع العالمي/ وزارة التعليم العالي والبحث العلمي / جامعة الموصل0مركز التحسس النائي/أعداد صباح حسين علي 4ـنظم المعلومات الجغرافيةGISالدليل العلمي الكامل لنظامARCVIEW/ ترجمة واعداد الدكتور المهندس هيثم يوسف زرقطة0 5ـلمحة على نظم المعلومات الجغرافية GIS /د0محمد يعقوب محمد سعيد /جامعة الامارات العربية0
Recommended supporting books and references (scientific journals, reports, etc.)	1ـمحاضرات للدكتور محمد مهنا السهلي في مدخل الى نظم المعلومات الجغرافية /جامعة الكويت /كلية العلوم الاجتماعية
Electronic references, websites	

Course Description Form

1. Course Name:
Remote sensing /1

2. Course Code:

3. Semester / Year:
Semester

4. Description Preparation Date:
23/ 06/ 2025

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours per Semester. 2 hours per week

7. Course administrator's name (mention all, if more than one name)
Name: Muhammed M.Mutlaq Email: dr.muhmd18@gmail.com

8. Course Objectives
The student should be able to understand the basics of remote sensing, which include monitoring, studying, and identifying terrestrial or near-terrestrial phenomena without contact with them. This is achieved by studying and analyzing the electromagnetic radiation or energy reflected or emitted from these targets, which carry the properties of the target under study.

9. Teaching and Learning Strategies	
Strategy	Involve a combination of theoretical understand practical application, and technological tools. Effect strategies include interactive lectures, hands-on exercises w real data, and the use of simulation games. These methods h students develop skills in image interpretation, data analy and the ability to apply remote sensing techniques to vari fields.

10.	Course Structure				
	Week	**Hours**	**Subject**	**Learning method**	**Evaluation method**
	1	2	Introduction to remote sensing, a brief history of remote sensing, and a definition of remote sensing.	A theoretical lecture with Discussions	Daily quick practical tests, quizzes, daily assessment, written exams, midterm exams, final exams
	2	2	The basic elements of a remote sensing system include the electromagnetic radiation source, the radiation transmission path, the observed target, and the sensor.		
	3	2	Electromagnetic energy, electromagnetic energy properties, electromagnetic field, electromagnetic energy sources, and blackbody radiation.		
	4	2	Characteristics of aerial photographs and satellite images		
	5	2	Remote sensing devices.		
	6	2	Information sources in remote sensing: Second: Non- photographic sources, including aerial means (multispectral detectors, thermal infrared linear		
	7	2	detectors, microwave sensors), space means (manned spacecraft, unmanned spacecraft)		
	8	2	Completion of previous week		

	9	2	Some terms used in remote sensing (resolution, spatial coverage, satellite orbits, accuracy)		
	10	2	Completion of previous week Satellites (high spatial resolution satellites, medium spatial resolution satellites, low spatial resolution satellites)		
	11	2	Remote sensing information sources: First: Photographic sources, including (regular black and white film, black and white infrared film, regular		
			color film, color near-infrared film, multispectral images)		
	12	2	Various applications in remote sensing: 1- Urban applications: These include (mapping Detailed urban planning, traffic and parking studies, park and garden planning and distribution, land use studies, urban sprawl and its direction, industrial complex studies.		
	13	2	2. Agricultural applications: These include (studying agricultural and crop types, studying natural plants, and studying plant diseases).		
	14	2	3. Military applications: These include (intelligence and enemy surveillance, pilot training).		
	15	2	4. Other applications: (studying environmental pollution, studying natural disasters).		

11.Course Evaluation	
The distribution is as follows: 40 marks for daily and monthly exams. 60 marks for final exams	
12.Learning and Teaching Resources	

1.الاداره العامه لتصميم وتطوير المناهج ، "الاستشعار عن بعد"، المؤسسه العامه للتعليم الفني والتدريب المهني، المملكه العربيه السعوديه.

2.د. جمعه محمد داود(2015) "اسس وتطبيقات الاستشعار عن بعد"، القاهره، جمهورية مصر العربيه.

3. د. محمد احمد مياس(2013) "الاستشعار عن بعد"، دار جامعة صنعاء للطباعه واليمن، اليمن.

4- "principles of remote sensing" University of Technology Building & Construct Department Remote Sensing & GIS lecture, Iraq

5.د.عصمت محمد الحسن، (2007)، " معالجة الصور الرقمية في الاستشعار عن بعد"، كلية الهندسه، جامعة الملك سعود، المملكه العربيه السعوديه

6- Dr. Hussein Hameed Karim "Digital Image Processing", University of Technol Building & Construction, Iraq

Course Description Form

1. Course Name:
Geomorphology
2. Course Code:
3. Semester / Year:
Semester
4. Description Preparation Date:
20/6/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
15 hours – 1 hour per week
7. Course administrator's name (mention all, if more than one name)
Name: Mohammed M.Mutlag Email:
8. Course Objectives
-The student learned the basic principles of geomorphology and the relationship with surveying applications.
9. Teaching and Learning Strategies

Strategy	Use the generative learning strategy to teach the space cours to develop maintenance skills - Developing the course in twinning with the courses of other engineering departments.

10.Course Structure

Week	hours	Unit or subject name	Learning method	Evaluation method
1	1	An introduction to the subject of geoscience and its relationship to other sciences and surveying.	**A theoretical lecture with Discussions**	Daily quick practical tests, quizzes, daily assessment, written exams, midterm exams, final exams
2	1	Main features of the Earth's crust, interior, and atmosphere.		
3	1	Minerals, their physical properties, with examples.		
4	1	Rocks, their definition		
5	1	Types, and cycles in nature.		
6	1	Igneous rocks		
7	1	Sedimentary Rocks		
8	1	Metamorphic Rocks		

9	1	Mechanical Weathering		
10	1	Chemical Weathering		
11	1	Soil Section and Controlling Factors		
12	1	Soil Types and the Soil Triangle		
13	1	Erosion and Its Causes		
14	1	Rivers: Their Dynamic Properties and Types Geomorphological Phenomena of River Erosion		
15	1	Topographic Phenomena of River Deposition		

11.Course Evaluation

The distribution is as follows: 40 marks for daily and monthly exams. 60 marks for final exams

12.Learning and Teaching Resources

Geological Survey (U.S.). *Publications of the Geological Survey 1879/1961*. Washington, DC:S. Government Printing	

Course Description Form

1. Course Name:
Computer Basics /1

2. Course Code:

3. Semester / Year:
Semester

4. Description Preparation Date:
20/6/2025

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours – 2 hours per week

7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Abdel Moneim Rady Email: hmdatc@stu.edu.iq

8. Course Objectives
1. Utilize the computer for fundamental tasks. 2. Identify and discuss the hardware components of the computer system 3. Creating documents using a word processor and creating presentations. 4. Conducting research on the Internet. 5. An introduction to Artificial Intelligence

9. Teaching and Learning Strategies	
Strategy	1.Teamwork strategy 2.Discussion strategy 3. brainstorming strategy .

10. Course Structure

Week	hours	Unit or subject name	Learning method	Evaluation method

1	2	.Introduction to Computer: Concepts of Hardware and Software with their components; Concept of Computing, Data and Information: Connecting input/output devices, and peripherals to CPU.	1. Board (Normal or Smart) 2. Computers 3. Presentation software such as PowerPoint	Daily quick practical tests, quizzes, daily assessment, written exams, midterm exams, final exams
2	2	Computer Components: Computer Portions, Hardware Parts, I/O Units, Memory Types		
3	2	Computer Components (Cont.): Basic CPU Components, Computer Ports, Personal Computer, Personal Computer (Features and Types)		
4	2	Operating System and Graphical User Interface GUI: Operating System; Basics of Common Operating Systems; The User Interface, Using Mouse Techniques		
5	2	Operating System and Graphical User Interface GUI(Cont.): Use of Common Icons, Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts.		

	6	2	Word Processing: Word Processing Basics; Basic Features of Word Processors, Opening and Closing of documents, Text creation and Manipulation; Formatting Text and Paragraphs, Using Templates for Document Creation		
	7	2	. Word Processing (Cont.): Creating and Managing Tables. Utilizing Styles and Themes, Spell Check and Grammar Tools, Using Headers and Footers		
	8	2	Spread Sheet: Introduction to Spreadsheet Software, Creating and Formatting Worksheets. Sorting and Filtering Data, Using Formulas and Functions		
	9	2	Spread Sheet (Cont): Using Formulas and Functions, Using Pivot Tables for Data Analysis, Data Validation and Error Checking, Data Visualization: Creating Charts and Graphs		
	10	2	Presentation Software: Introduction to Presentation Software, Overview of Popular Presentation Tools, creating a New Presentation, Using Templates and Themes, Inserting and		

		Formatting Text and Images, Transition and Animation Effects.		
11	2	Presentation Software (Cont.): Using Speaker Notes and Timers,, Advanced Features: Hyperlinks and Action Buttons, Troubleshooting Common Presentation Issues, Future Trends in Presentation Technology.		
12	2	.Introduction to Internet and Web Browsers: Computer networks Basic; LAN, WAN; Concept of Internet and its Applications; connecting to internet.		
13	2	. Introduction to Internet and Web Browsers (Cont.): World Wide Web: Web Browsing software's, Search Engines; Understanding URL; Domain name; IP Address.		
14	2	Communications and Emails: Basics of electronic mail; Getting an email account; Sending and receiving emails: Accessing sent emails; Using Emails; Document collaboration.		
15	2	Introduction to Cloud Computing and Services: Definition of		

			Cloud Computing and its concept, Cloud-Based Office Suites (Office 365 and Google Workspace), Google Docs, Google Sheets, Google Drive, Google Meet.		

11.Course Evaluation
The distribution of grades for each semester is as follows: 40 points for the midterm exam, 10 points for the daily semester exams, and 50 points for the final semester exams.

12.Learning and Teaching Resources	
1. Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020) **2. Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020).** **3. Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", 1st Edition (2024).** **4. Microsoft Office 2019 Step by Step 1st Edition by Curtis Frye & Joan Lambert** **5. 2016 أساسيات الحاسوب " بحاث الخضر على الخضر** **6. 2005 " الدكتور عادل عبد النور, مدخل إلى عالم الذكاء الاصطناعي**	

Course Description Form

1. Course Name:
Computer Basics /2

2. Course Code:

3. Semester / Year:
Semester

4. Description Preparation Date:
20/6/2025

5. Available Attendance Forms:
Attendance

6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours – 2 hours per week

7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Abdel Moneim Rady Email: hmdatc@stu.edu.iq

8. Course Objectives
Students acquire the skill to use the computer to write texts, create tables to deal with databases, and create slides to display graphic forms.

9. Teaching and Learning Strategies

Strategy	1.Teamwork strategy 2.Discussion strategy 3. brainstorming strategy .

10. Course Structure

Week	hours	Unit or subject name	Learning method	Evaluation method

1	2	Microsoft Word 2010 Run Microsoft Word 2010.	1. Board Smart 2. Computers 3. Presentation software such as PowerPoint	Daily quick practical tests, quizzes, daily assessment, written exams, midterm exams, final exams
2	2	Microsoft Word 10 20 interface		
3	2	File Tab Home Tab		
4	2	Page Layout tab, View tab		
5	2	Insert objects in Microsoft Word 2010		
6	2	Insert Tab Pages group		
7+8	2	Tables group		
9	2	Illustration collection		
10	2	Header & Footer group links		
11	2	. Text set Symbols set		
12	2	Additional tasks for Microsoft Word 2010		
13	2	-Microsoft PowerPoint 2010: Open a new file and save it to your desktop. -Add and edit slides: Title slide with content, subtitle, text, comparison, title -Only a blank slide with content, caption, image with caption		
14+15	2	-Add a themeMaster - view group -Add animations and set the time and repetition for all slides, with each slide having a different layout.		

11.Course Evaluation
The distribution of grades for each semester is as follows: 40 points for the midterm exam, 10 points for the daily semester exams, and 50 points for the final semester exams.

12.Learning and Teaching Resources	
كتاب اساسيات الحاسوب للمؤلف احمد محمد ابراهيم - كتابWindows 7 By Shereen Elmasry -كتاب تعلم واحتراف Windows 7 للمؤلف محمد نزيه http:/www.4shared.com/document/TCXX 0vb/Windows_7_Learning_in_Arabic_.html http:/www.4shared.com/document/5r_zE uZ /Learning_word_2010_in_Arabic_.html WceL/Excel_2010 _Learning_in_Arabic_.html http:/www.4shared.com/document/kyyg	