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

Department of Civil Technologies

Construction and Building Branch

2026

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.

University Name: Al-Furat Al-Awsat Technical University

Faculty/Institute: Technical Institute – Najaf

Scientific Department: Department of Civil Technologies / Construction and Building Branch

Academic or Professional Program Name: Academic

Final Certificate Name: Technical Diploma

Academic System: Annual

Description Preparation Date: 11/4/2026

File Completion Date: 15/4/2026

Signature:

Head of Department Name: Nabeel Kathan

Date:

Signature:

Scientific Associate Name: Salah. M Salch

Date:

Department: Director of the Quality Assurance and University Performance

Dr. Zaid Abdulkareem ALhamidawi

Date:

Signature:

Approval of the Dean

Prof. Dr. Haider Hassan Abd Hussein

CamScanner الممسوحة ضوئيا بـ

1. Program Vision

Distinction and modernity in qualifying technical cadres in the field of civil technologies scientifically and practically to meet the needs of the labor market.

2. Program Mission

Preparing scientifically and practically qualified human cadres in the field of civil engineering techniques capable of competing in the labor market in accordance with approved international quality standards and development in the field of construction and urbanization.

3. Program Objectives

1- Working to develop technical work through developing curricula, modernizing laboratories in accordance with internationally approved good laboratory standards, and involving department members in specialized qualification courses.

2- Contributing to community service by holding courses and workshops in various civil engineering applications and promoting construction and construction activities at a high level of quality.

3- Exchanging theoretical and practical technical expertise with technical institutes and colleges with corresponding specializations and the labor market in the private sector.

4-Providing a stimulating environment for learning and training.

5- Providing engineering and technical consultations to all departments and institutions of the state and the private sector.

4. Program Accreditation

ABET accredited certification program

5. **Other external influences**
Private and government sector work projects

6. **Program Structure**				
Program Structure	**Number of Courses**	**Credit hours**	**Percentage**	**Reviews***
Institution Requirements	**2**			
College Requirements	**4**			
Department Requirements	**16**			
Summer Training				
Other				

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

7. **Program Description**				
Year/Level	**Course Code**	**Course Name**	**Credit Hours**	
The first stage	_	Concrete materials	**theoretical**	**practical**
The second stage	_	Soil mechanics	**theoretical**	**practical**

8. **Expected learning outcomes of the program**	
Knowledge	
Learning Outcomes 1- Acquiring theoretical and practical knowledge in various scientific curricula in civil engineering specializations.	Learning Outcomes Statement 1

2- Reading various plans, drawings and designs in engineering specializations. 3- Conducting theoretical calculations for various issues in the field of specialization. 4- Conduct on-site soil investigation.	
Skills	
Learning Outcomes 1-Field and laboratory tests of soil. 2- Classification of soils based on their external appearance. 3-Physical soil calculations	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies

Lecture - laboratory - educational trips - summer methodological training - student projects.

10. Evaluation methods

1- Oral exams 2- Written exams 3- Semester exams 4- Final exams 5- Daily evaluation.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)	Number of the teaching staff	
	General	Special		Staff	Lecturer

Hussein Ali Muhammad	Civil Engineering	Geotechnics			✓	
Marwa Hameed Abdullah	Civil Engineering	Hydraulic structure			✓	
Hussam Abbas Mohsen	Civil Engineering	Transportation system			✓	
Zainab Ahmed Abd	Water resources	Hydraulic structure			✓	
Munqidh Sadiq Muhammad	Civil Engineering	Roads and Transportation			✓	
Rusul Hussein Ali	Civil Engineering	Geotechnics			✓	
Ahmed Kadem Slmaan	English	English			✓	

Professional Development
Mentoring new faculty members
Directing is done through direct meetings and meetings with the department head or direct manager
Professional development of faculty members
Academic and professional development for faculty members takes place through courses and workshops held inside and outside the department, conferences, and scientific research.

12. Acceptance Criterion

The central admission system is set by the Ministry and is subject to the institute's differentiation according to the secondary, vocational and preparatory school rates.

13. The most important sources of information about the program

1- Scientific curricula determined by the specialized sectoral committees of the Technical Education Authority.

2- Amendments proposed by subject teachers at a rate not exceeding 20% of the prescribed curriculum and according to the requirements of the labor market and the accredited scientific development taking place in the world currently.
3- ABET Academic Accreditation Program.

14. Program Development Plan

1- Working to develop technical education through developing curricula, modernizing laboratories in accordance with internationally approved good laboratory standards, and engaging the department's members in specialized qualifying courses.
2- Contributing to community service by holding courses and workshops in various civil engineering applications and advancing the construction and reconstruction movement at a high level of quality. 3- Exchanging theoretical and practical technical expertise with technical institutes and colleges with corresponding specialization and the labor market in the private sector.
4- Providing an appropriate stimulating environment for learning and training.
5- Providing engineering and technical consultations to all state departments and institutions and the private sector.
The department aims to graduate technical personnel qualified to carry out implementation work related to the fields of civil engineering, such as drawing and implementing plans, monitoring road projects and construction projects, conducting laboratory and field tests, surveying, and calculating quantities and dimensions of civil works projects.

Program Skills Outline															
				Required program Learning outcomes											
Year/ Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
The first stage	Construction materials	Basic		✓	✓			✓		✓		✓	✓	✓	✓
	Engineering mechanics	Basic		✓		✓		✓	✓		✓	✓	✓	✓	✓
	Space (1)	Basic			✓		✓	✓		✓	✓	✓		✓	
	Concrete materials	Basic		✓		✓		✓	✓		✓		✓	✓	✓
	mathematics	Basic		✓			✓	✓		✓		✓			
	Calculator Apps (1)	help			✓	✓		✓		✓	✓		✓	✓	✓
	Engineering drawing	Basic		✓	✓			✓	✓		✓	✓	✓	✓	
	Factories	help		✓			✓	✓	✓	✓	✓	✓	✓		✓

	Human rights and democracy	General			✓	✓		✓					✓		✓
	Technical English	help			✓			✓	✓					✓	✓
The second stage	Concrete technology	Basic			✓	✓	✓		✓	✓		✓	✓	✓	
	Construction techniques	Basic		✓		✓	✓	✓	✓		✓	✓			✓
	Soil mechanics	Basic		✓	✓					✓		✓	✓	✓	
	Civil drawing	Basic		✓			✓	✓		✓		✓		✓	✓
	Area (2)	Basic		✓	✓		✓	✓	✓		✓	✓	✓		✓
	Construction machines	Basic		✓		✓		✓		✓	✓		✓		✓
	Calculator Apps (2)	Basic				✓	✓	✓	✓	✓		✓		✓	
	Quantity surveying	Basic		✓			✓	✓			✓		✓		✓

	Buildings and factory construction	Basic		✓	✓			✓	✓		✓				✓
	The project	Basic		✓			✓	✓		✓		✓	✓	✓	
	English	help		✓			✓			✓			✓		✓
	Baath Party crimes	help				✓	✓		✓			✓			

Notes	Material type	number of units	The number of hours			Subject	T
			M	A	n		
	Specialized	8	4	2	2	Construction materials	1
Taught in English	Specialized	6	3	1	2	Engineering mechanics	2
	Specialized	8	4	2	2	Space (1)	3
	Specialized	6	3	2	1	Concrete materials	4
Taught in English	Specialized	6	3	-	3	mathematics	5
	help	6	3	2	1	Calculator Apps (1)	6
	Specialized	12	6	6	-	Engineering drawing	7
	help	6	3	3	-	Factories	8
	General	4	2	-	2	Human rights and democracy	9
	help	2	1	-	1	Technical English	10

		64	**32**	**18**	**14**	**the total**	

First academic year (Study plan suggested)

Course Description Form(1)

Course Name .1
Concrete materials - The first stage
Course Code .2
-
Semester/year .3
annual
Date this description was prepared .4
15/4/2026
Available attendance forms .5
Theoretical – practical
Number of study hours (total)/number of units (total) .6
weekly / 6 3
Name of the course administrator (if more than one name is mentioned) .7
:Name Munqidh Sadiq email : dr.mohammed.isa@atu.edu.iq
objectives Course .8
Objectives of the study subject
• **roducing the student to the materials that make up concrete and mastering the ysical, mechanical and chemical properties of these materials and their effect on .concrete. The practical part includes the necessary tests for these materials**
• **troducing the student to the importance of concrete and the materials it consists of such as cement, aggregates, and additives**
• **How to strengthen compressive strength using available devices**

• Conducting important laboratory tests for concrete	
.9 Teaching and learning strategies	
• Take the forms from the site and examine them in the laboratories • Conducting theoretical and practical calculations for various issues in the field of expertise. • Conduct on-site investigation of concrete.	he strategy

.10 Course structure

Study plan (suggeste)
First academic year

Name of the unit or topic	Required learning outcomes	hours	the week	evaluation method	learning method
General principles about concrete (its definition, composition, terminology, and properties).	General principles of concrete		the first and the second	oral exams + editorial	lecture + practical examples + laboratory
Portland cement, its manufacture, chemical composition, and types.	Portland cement		the third		

					nd the fourth nd the fifth
		Other types of cement (natural ,cementexpanding cement aluminum , cement) and specifications of each .type	Types of cement		I
		Cement ,properties: smoothness weight loss by combustion, cement stability, heat of .hydration	Cement properties		eventh nd the eighth
		Completion :of cement properties initial and final setting time, compressive .strength, tensile strength	Complementing the properties of cement		inth nd the tenth
		:Aggregates classification of aggregates, methods for taking models, shape of particles, surface texture	Aggregate		leventh

		of particles, durability of .aggregates			
		Mechanical :properties of aggregate specific gravity, unit) weight of compacted and ,unconsolidated ,gradation, porosity ,ability to absorb ,corrosion - abrasion .(sand swelling	Agg regate	5	welvet h nd the thirtee nth nd the fourtee nth nd the fifteent h nd the sixteen th
		The ,proportion of salts organic materials and clay materials in the aggregate, especially sand, interaction with .alkaline materials	Agg regate		eventee nth nd the eightee nth

		Light and heavy aggregate: Types of lightweight agg. ,(Natural and artificial) advantages and disadvantages of light aggregate compared to .ordinary aggregate	Aggregate		ineteenth nd the twenty
		Specifications of light aggregate used ,in structural concrete specifications of light aggregate used in insulating concrete, and specifications of light aggregate used in the production of concrete .blocks	Aggregate		1st wenty-second
		Uses of ,silicasilica fume, and fly ash in concrete production in terms of .specifications and effects	Aggregate		wenty third
		Water used :in concrete production mixing water, curing water, and specifications .of each type	Water used in concrete production		wenty fourth

		Fibers used ,in concrete (types .(specifications	Fibe rs used in concrete		5th
		Admixtures for concrete : types and reasons for using each type (mixing water ,reducing admixtures ,delay admixtures ,accelerating admixtures operational improvement admixtures, refining admixtures, anti-freeze .admixtures	Add itives for concrete		wenty-sixth he twenty-seventh
		Chemical composition of the additives, homogeneity of the substance, checking the specific gravity of the additives, examining the remaining residues by drying for liquid additives, examining the remaining residues by drying for solid additives, and the .specifications for that	Che mical composition of additives		wenty-eighth he twenty-ninth
		Physical requirements for	Phy sical		hirty

		concrete admixtures according to standard specifications (the permissible amount to delay the setting time for delaying materials and the permissible time for acceleration for accelerating materials …… .(..	requirements for concrete admixtures		

Course evaluation .11

Distribution of the grade out of 100 according to the tasks assigned to the .student, such as daily preparation, daily, oral, monthly, written exams, reports, etc

Learning and teaching resources .12

Required textbooks (methodology, if any)	- Website of the Technical Institute Najaf
Main references (sources)	Book of Laboratory Tests for Concrete Technology (Haqqi Ismail Mohsen, Suad Abbas Al-Zubaidi) -1 Concrete Book (Muayad Nouri Al-Khalaf) -2 Lectures given by the professor. -3 Related sources and books in Arabic, English, and the Internet -4
Recommended supporting ,books and references (scientific journals ....reports)	Book of Laboratory Tests for Concrete Technology (Haqqi Ismail Mohsen, Suad Abbas Al-Zubaidi)

Internet sites	**Electronic references, Internet sites**

Course Name .13	
Construction materials - first stage	
Course Code .14	
-	
Semester/year .15	
annual	
Date this description was prepared .16	
15/4/2026	
Available attendance forms .17	
Theoretical – practical	
Number of study hours (total)/number of units (total) .18	
weekly / 8 4	
Name of the course administrator (if more than one name is mentioned) .19	
: Yamil Al Munqidh Sadiq Muhammad :Namedr.mohammed.isa@atu.edu.iq	
objectives Course .20	
Objectives of the study subject	
• roducing the student to construction materials and mastering the physical, mechanical l chemical properties of these materials and their effect on concrete. The practical part includes the necessary tests for these materials.	
• How to strengthen compressive strength using available devices .	
• Conduct important laboratory tests for these materials.	
Teaching and learning strategies .21	
Qualifying the student to carry out standard tests to determine the extent to which construction materials conform to specifications and determine the possibility of using them in construction, which ensures strength, safety and economy.	The strategy
Course structure .22	

Study plan (suggested) First academic year					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Oral +exams Editorial	+ Lecture practical examples + laboratory	A general description of the physical properties and standard specifications of building materials and their uses in .buildings	Knowledge of physical properties Standard for building materials and their uses	4	the first
=	=	Clay bricks and methods of .making them	Block industry	4	the second
=	=	Properties, uses and .specifications of clay bricks	Clay bricks	4	the third
=	=	.Tests for clay bricks	Knowledge of tests .for clay bricks	4	the fourth
=	=	,Limestone bricks, glass bricks properties and manufacturing .methods	Properties and manufacture of limestone bricks and glass bricks	4	Fifth
=	=	Concrete blocks - concrete blocks (properties and ,manufacturing method explaining the difference .(between the two	Properties and making Concrete blocks - concrete blocks	4	VI
=	=	Thermostone, its properties, and .methods of manufacturing	Properties and making Thermostone	4	Seventh

=	=	Discussing the visit to the brick .factory	Brick factory work	4	The price
=	=	Building stone - its classification .and types	Classification and types Building stone	4	Ninth
=	=	Uses of building stone according .to its types	Uses of building stone	4	The tenth
=	=	Bonding materials and their .types	Types of bonding materials	4	atheistic ten
=	=	Materials that resist moisture - cement mortar, cement mortar) ,Noora), Noora, how to make it its properties	Materials that resist moisture	4	twelvet h
=	=	Bonding materials that are not ,resistant to moisture (plaster) .properties and manufacture	Bonding materials that do not resist moisture	4	Thirtee nth
=	=	Gypsum products - their types and properties, secondary ceiling .materials and their types	They are for gypsum products And properties Secondary roofing materials and their types	4	fourtee nth
=	=	Application materials, tiles, tiles .and their types	Application ,materials, tiles tiles and their types	4	Fifteent h
=	=	- Manufacturing methods .application method - joints	Manufacturing - methods application method .joints -	4	sixteen

=	=	,Moisture-preventing materials .their types and reasons for use	Moisture-preventing materials, their types and reasons .for use	4	seventeenth
=	=	Materials that prevent high ,humidity, their types .manufacturing methods and uses	Materials that prevent high humidity, their ,types manufacturing .methods and uses	4	eighteen
=	=	Semi-flexible and flexible ,moisture-repellent materials their types, uses, manufacturing methods, and liquid moisture-.repellent materials	Semi-flexible and flexible moisture-,repellent materials ,their types, uses manufacturing methods, and liquid moisture-.repellent materials	4	nineteenth
=	=	,Epoxy, its definition, properties types, and uses	Epoxy, its ,definition ,properties, types and uses	4	The twentieth
=	=	Wood - its origin, types used and .methods of using it	,Wood - its origin types used and .methods of using it	4	Twenty first-
=	=	Wood drying methods and wood .defects	Wood drying methods and wood .defects	4	twenty tow

=	=	-Metals (ferrous and non ferrous materials) and their .uses in buildings	Metals (ferrous and non-ferrous materials) and their uses in .buildings	4	twenty third
=	=	Iron, methods of making it, its .types and uses	Iron , methods of making it, its types .and uses	4	twenty fourth
=	=	.Thermal insulation materials	Thermal insulation .materials	4	25th
=	=	.Dyes	.Dyes	4	27th
=	=	. the glass	. the glass	4	Twenty - eigh th
=	=	Asphalt, properties of asphalt .materials	Asphalt, properties of asphalt .materials	4	XXIX
=	=	in Types of asphalt and its uses .construction works	Types of asphalt and its uses in .construction works	4	thirty
Course evaluation .23					
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc					
Learning and teaching resources .24					
Website of the Technical Institute - Najaf			Required textbooks (methodology, if any)		
			Main references (sources)		

Course Description

/ Building Construction Book / 1986 -1 University of Baghdad Written by: Ertin Levon and Zuhair Sako Building Construction and Factory -2 Construction 1991/Technical Education Authority - Prepared by: Adnan Al-Dahan and Sarmad Fakhri Al-Nuaimi.	
,Book project (Construction Materials) written by: Jalal Sarsam / Technical Education Authority.	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Form(3)

Course Name .25
Engineering Mechanics - First Stage
Course Code .26
-
Semester/year .27
annual
Date this description was prepared .28
15/4/2026
Available attendance forms .29
theoretical

Number of study hours (total)/number of units (total) .30
weekly / 6 3
Name of the course administrator (if more than one name is mentioned) .31
: email The / Marwa Hamid Abdullah :Namemarwah934@atu.edu.iq
objectives Course .32
Objectives of the study subject
General objective of the course: To teach the student to analyze the forces and loads exerted on bodies and extract the stresses and strains resulting from these forces and their .relationship to the materials that make up these bodies
Teaching and learning strategies .33
The strategy: Analyzing structures and finding the forces and stresses in their parts as a result of external loads and their relationship to the dimensions of the various parts in engineering facilities so that they .can withstand the stresses placed on them safely and economically

Course structure .34

Study plan (suggested)

First academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Oral +exams Editorial	+ Lecture practical examples + laboratory	Definition of mechanics, general review of physics topics related to the subject, trigonometric ratios of angles, vector and non-.vector quantities	A general review of physics topics related to the topic	3	the first

=	=	,Analysis and synthesis of forces the law of the force triangle and . the force polygon	How to analyze and synthesize forces	6	the second And the third
=	=	.Power torque	.Glory be to God	3	the fourth
=	=	.Doubles	.Doubles	3	Fifth
=	=	The resultant of convergent, non- .convergent, and parallel forces	Knowing the resultant of different forces	6	VI And the seventh
=	=	.spread weights A	Scooping over the .spread weights	3	VIII
=	=	free Equilibrium, drawing a body diagram, equilibrium equations, equilibrium in the case of convergent, non- .convergent, and parallel forces	Balance, and drawing force diagrams	6	Ninth And the tenth
=	=	Types of tributaries, types of .sand, balance in tributaries	Feeding on the types of tributaries, types of supports, and balance in the .tributaries	3	eleventh
=	=	Gables, analysis of gables using .joints and sections	How to analyze gables using joints .and sections	6	twelveth The thirtee nth
=	=	,Friction, nature of friction theory of friction, laws of	,Theory of friction ,laws of friction	6	fourteent h

		,friction, types of friction .general application	,types of friction general . applications		And the fifteenth
=	=	Centers of gravity of simple and complex geometric shapes and .their applications	Centers of gravity of simple and complex geometric shapes and their .applications	6	Sixteenth and seventeenth
=	=	Moment of inertia of simple and complex geometric shapes and .their applications	Knowledge of the moment of inertia of simple and complex geometric shapes and their .applications	6	eighteen And the nineteenth
=	=	Introduction to the resistance of materials, definition of stresses .and their types, safety factor	Resistance of materials and types of stresses	3	The twentieth
=	=	.Applications to stress	Applications to .stress	3	21st
=	=	Strain, Hooke's law, the .relationship of strain to stress	Strain, Hooke's law, the relationship of .strain to stress	3	twenty tow
=	=	,Poisson's ratio ,Lateral strain .applications to strain and stress	,Lateral strain , Poisseau ratio applications to .strain and stress	3	twenty third

=	=	Shear and bending moment diagrams for bridges, how to shear and compose with .bending moment changes	Shear and bending moment diagrams for bridges, how to form equations for changing shear and bending .moments	3	twenty fourth
=	=	Applications to drawing shear and bending moment equations for bridges	Applications to drawing shear and bending moment equations for bridges	3	25th
=	=	Bending stress of bridges and .their applications	Bending stress of bridges and their .applications	6	twenty-sixth The twenty-seventh
=	=	Shear stress of bridges and their .applications	Shear stress of bridges and their .applications	3	Twenty-eighth
=	=	Bridges made of two different .materials and their applications	Identify bridges made of two different materials and their .applications	6	XXIX And the thirty
Course evaluation .35					
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc					
Learning and teaching resources .36					

Website of the Technical Institute - Najaf	Required textbooks (methodology, if any)
Source: Civil Engineering and / Engineering Mechanics, Part One Prof. Mazen Taha, M. Muhammad Amin, M.M. Maher Omar	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Course Description Form(4)

Course Name .37
The first stage - Space (1)
Course Code .38
-
Semester/year .39
annual
Date this description was prepared .40
15/4/2026
Available attendance forms .41

Theoretical - practical	
Number of study hours (total)/number of units (total) .42	
weekly / 8 4	
Name of the course administrator (if more than one name is mentioned) .43	
:address email The Munqidh Sadiq Mohammed :Na dr.mohammed.isa@atu.edu.iq	
objectives Course .44	
Objectives of the study subject	
General objective of the course: To teach the student the basics of surveying, its use for civil engineering purposes, and conducting calculations related to it	
Teaching and learning strategies .45	
Qualifying the student to use various surveying equipment for civil engineering work and implementing maps for projects and enabling him to .plan, supervise and implement these projects	The strategy

Course evaluation .46	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc	
Learning and teaching resources .47	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if any)
Construction Surveying book -1 written by: William Irvin	Main references (sources)

Engineering Survey, Ministry of -2 Higher Education and Scientific ,Research, Basra University Basra College of Engineering	
	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Course Description Form(5)

Course Name .48
Mathematics - first stage
Course Code .49
-
Semester/year .50
annual
Date this description was prepared .51
15/4/2026
Available attendance forms .52
theoretical
Number of study hours (total)/number of units (total) .53
weekly / 6 3
Name of the course administrator (if more than one name is mentioned) .54

Name: Noor Haider / Amil: NoorHaider.inj@atu.edu.iq
objectives Course .55
Objectives of the study subject
Developing the student's ability to use mathematics in practical applications and benefit .from it in other engineering lessons
Teaching and learning strategies .56
,The student learned the different ways of representing equations mathematical laws, and various data by forming curves in a graph and using different types of diagrams that suit the purpose of .drawing them — The strategy

Course structure .57

Study plan (suggested)

First academic year

Evaluation method	Learning method	a unit or topic Name of	Required learning outcomes	hours	the week
Oral +exams Editorial	Lecture + practical example + s laboratory	Matrices, determinants, and .their properties	Matrices	3	the first
=	=	,Solving linear equations Cramer's method, applications	Solve linear equations	3	the second

		to determinants, solving force .analysis equations			
=	=	Vectors, vector analysis, vector and scalar quantities, vector algebra, arithmetic operations .for vectors in space	.Vector analysis	3	the third
=	=	,Unit of orthogonal vectors vector scale, scalar and cross multiplication, applications of vectors, calculation of torque .applications, work	Orthogonal vector unit	3	the fourth
=	=	Function, trigonometric functions and trigonometric relationships, logarith function .	Trigonometric functions	6	Fifth
=	=	Exponential function, hyperbolic .functions, their applications	Exponential function	3	VI
=	=	Objectives, the objective of algebraic and trigonometric functions, applications to the .objective	The purpose of functions	3	Seventh
=	=	.Sequences	.Sequences	3	VIII
=	=	,Differentiation, derivative ,derivative of algebraic functions .chain rule	differentiation	3	Ninth
=	=	Curvilinear functions, standard derivative function of higher .order	Curvilinear functions	6	The tenth

=	=	Derivative of trigonometric functions, derivative of .logarithmic functions	Derivative of trigonometric functions	3	eleventh
=	=	Derivative of exponential function, derivative of .hyperbolic functions	erivative of The the exponential function	3	twelveth
=	=	,Applications of the derivative the tangent and perpendicular ,equation, speed, acceleration .and magnification	Derivative applications	3	Thirteenth
=	=	.Exponents and logarithms	Exponents and .logarithms	3	fourteenth
=	=	General physical and ,engineering applications .drawing functions	General physical and engineering ,applications drawing .functions	3	Fifteenth
=	=	Integration, indefinite integration, integration of algebraic and logarithmic .functions	integration	3	sixteen
=	=	Integration of exponential and .trigonometric functions	Integration of exponential and trigonometric .functions	3	seventeenth
=	=	Definite integration, applications of definite integration, area under the curve, area between .two curves	Definite integral	3	eighteen

=	=	.Rotational volumes, arc length	Rotational volumes	3	nineteenth
=	=	physics and Application of ,engineering (work, torque .(momentum, moment of inertia	Physical and engineering applications	3	Ten and n
=	=	,General methods of integration including substitution and .division	General methods of integration	6	Twenty-first and - twenty second
=	=	exponential, and ,Use partial .logarithmic fractions	,Use partial exponential, and logarithmic .fractions	3	twenty third
=	=	Numerical methods in ,integration, the trapezoid rule the rule (calculating the volume of soil quantities and the area of .(longitudinal sections	Numerical methods in integration, the ,trapezoid rule the rule calculating the) volume of soil quantities and the area of longitudinal .(sections	3	twenty fourth
=	=	,Solving discrete, homogeneous and linear differential equations with their various applications .within the field of specialization	,Solving discrete ,homogeneous and linear differential equations with	3	25th

			their various applications within the field of .specialization		
=	=	Finding the highest or lowest .point of a vertical curve	Finding the highest or lowest point of a vertical .curve	3	twenty-sixth
=	=	,Complex numbers, addition ,subtraction, multiplication .division	Complex ,numbers ,addition ,subtraction ,multiplication .division	3	27th
=	=	the Polar formula, converting polar formula to algebraic and ,vice versa, powers and roots .representing roots graphically	Converting the polar formula to algebraic and vice versa	3	Twenty-eighth
=	=	Statistical operations, frequency ,distributions, histogram frequency curve, arithmetic ,mean, range, standard deviation .variance and proportion	Statistical operations	3	Twenty-nine thirtieth

Course evaluation .58

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc

Learning and teaching resources .59

Website of the Technical Institute - Najaf	**Required textbooks (methodology, if any)**

	Main references (sources)
The methodological book and the booklet on methodological issues	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Course Description Form(6)

Course Name .60
Calculator applications (1) - first stage
Course Code .61
-
Semester/year .62
annual
Date this description was prepared .63
15/4/2026
Available attendance forms .64
Theoretical - practical
Number of study hours (total)/number of units (total) .65
weekly / 6 3
Name of the course administrator (if more than one name is mentioned) .66
Name: :Marwa Hamid / Emailmarwah934@atu.edu.iq
objectives Course .67
Objectives of the study subject

Introducing the student to the calculator with an idea about its prospects and use in various fields and the principles of programming and providing him with skill in using the calculator .to implement programs previously prepared for application in his field of specialization					
Teaching and learning strategies .68					
Windows operating system , theAuto Cad drawing program , theMicros Word printing program , andExcel .					**The strategy**
Course structure .69					
Study plan (suggested) **First academic year**					
Evaluation method	**Learning method**	**Name of the unit or topic**	**Required learning outcomes**	**hours**	**the week**
Oral +exams Editorial	**+ Lecture practical examples**	**Windows : operating system The concept of the Windows system, its advantages and basic requirements, operating the system, components of the maindesktop screen , the concept of theicon how to , deal with mouse activities, the importance and components of the TaskBar making use , ofStart ,to enter programs exiting the system and turning**	**Windows operating system**	3	**the first**

		) .off the calculatorShut Down .(			
=	=	The concept of the window for any program and identifying its main components, dealing) :with desktop icons such as My Documents ; My Computer; Recycle Bin .(Desktop main screen , the concept of theicon how to , deal with mouse activities, the importance and components of the TaskBar using ,Start to enter programs, exit the system and turn off the) calculatorShut Down .(	Window concept for any program	3	the second
=	=	) Getting to knowMy Computer ,in terms of disks (folders and files, how to deal with formatting floppy disks ,and copying folders and files taking advantage of cutting and pasting and knowing the properties of disks, folders and files, dealing with the trash and how to delete and retrieve files through what the trash can provides in this .aspect	) IdentifyMy Computer in (,terms of disks	3	the third

=	=	Autocad program , getting to know the program, where its name comes from, the importance of the program and the contents of the program window, and how to .create a new file and store it	Autocad program	3	the fourth
=	=	How to select most AutoCAD commands	How to select most AutoCAD commands	3	Fifth
=	=	Toolbars in AutoCAD, how to hide and show them, and customize a special interface for the program	Toolbars in AutoCAD	3	VI
=	=	) Status barGrid, Ortho, Snap, ..., etc. (	) Status bar Grid, Ortho, Snap, ..., etc. (	6	Seventh and eighth
=	=	Auxiliary commands and) panel limitsLimits, Units, Zoom (	Auxiliary commands and) panel limits Limits, Units, Zoom (	6	The ninth and tenth
=	=	Basic drawing commands Draw menu	Basic drawing commands Draw menu	12	Eleventh - fifteenth
=	=	Modify menu commands	Modify menu commands	15	xvi-xx
=	=	Text commands with Dimension commands	Text commands	6	xxii-xxii

			withDimension commands		
=	=	Microsoft Word printing program, how to run it and ,write with it, how to store it change font types, modify the paper in terms of margins or flip the paper, use tables, and .print within them	Microsoft Word printing program	12	Twenty- - third twenty- sixth
=	=	Microsoft Excel , program how to run it, download numerical values in columns and store, add new columns or rows, and apply some functions such as addition and other mathematical .operations	Microsoft Excel program	12	Twenty- seventh - thirtieth
Course evaluation .70					
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc					
Learning and teaching resources .71					
Website of the Technical Institute - Najaf			Required textbooks (methodology, if any)		
by Nasser Hassan book3D AutoCAD -1 Ismail 3d max blue box -2020 revit model -2 design iteration turn the page Lectures given by the professor -3 . based on practical experience			Main references (sources)		

Scientific competition between students based ,through drawings on AutoCAD .on creativity and distinction	
	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Course Description Form(7)

Course Name .72
The first stage - Engineering drawing
Course Code .73
-
Semester/year .74
annual
Date this description was prepared .75
15/4/2026
Available attendance forms .76
practical
Number of study hours (total)/number of units (total) .77
weekly / 12 6
Name of the course administrator (if more than one name is mentioned) .78
Name: Zainab Ahmed Abd : leans one The / engi.zainab33@atu.edu.iq
objectives Course .79
Objectives of the study subject
Teaching the student the basic principles of engineering drawing and computer drawing .programs in an efficient and rapid manner, to enable him to express his ideas through it

: Teaching and learning strategies .80
Qualifying the student to draw and read engineering maps with knowledge of .architectural and construction terms used in maps **The strategy**

Course structure .81

Study plan (suggested)

First academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
+Oral exams Editorial	**+ Lecture applied examples**	**basics Engineering drawing, tools ,Used installing the board, types of fonts, writing in geometric calligraphy**	**basics Engineering drawing**	6	**the first**
=	**=**	**,Geometric operations ,bisecting a line segment ,bisecting an angle connecting a straight line ,with a circle with an arc connecting two straight lines with an arc, drawing an equal triangle ,Polygon ,pentagon, hexagon**	**Engineering operations**	**6**	**the second**

		straight line tangent to two circles inside and outside, arc tangent to two circles inside and outside			
=	=	Ellipse, drawing application Shapes Engineering using basic engineering processes	Ellipse	6	the third
=	=	principles ,Projection placement method Dimensions ,On drawing exercises on projection	principles Projection	6	the fourth
=	=	Isometric perspective drawing	Perspective drawing	*6*	Fifth
=	=	finding The missing projection with isometric perspective drawing	finding The missing projection with isometric perspective drawing	6	VI
=	=	Clips	Clips	6	Seventh
=	=	,AutoCAD applications redefining the relationship between the AutoCAD program and its use in creating two-) dimensional drawings 2D) .and three- (	AutoCAD applications	6	VIII

		) dimensional3D and (open a new page in the program, specify the) drawing areaLimits ,(draw a panel frame and a data table, while applying writing inside the data table)Text(			
=	=	Recognition Species Fonts and method Obtain it and use it in a program autocad from By placing it in multiple layersand colors Different and different thickness(Line weight)	Recognition Species lines	6	Ninth
=	=	fee Shapes Engineering ,Fundamental, triangle pentagon, hexagon and ,polygons in general ellipse, connecting two ,lines with a circle sector connecting two circles with an arc by CircleTtr directs a straight line to a circle with an arc in the same way	fee Shapes Engineering the basic	6	The tenth

=	=	fee shapes Engineering vehicles and mechanical parts (applications to (engineering processes	fee shapes Composite engineering	12	Eleventh and twelfth
=	=	fee Falls For shapes Stereoscopic and placement Dimensions on it using multiple layers.	fee Falls For shapes Stereoscopic	12	Thirteenth And the fourteenth
=	=	fee Falls For shapes Stereoscopic using colors Different lines and different thicknesses by changing the properties.	fee Falls For shapes Stereoscopic using colors Different fonts	3	Fifteenth
=	=	Find the missing projection and continue drawing the projections	Finding the lost location	6	sixteen
=	=	situation Extras On) graphicsHatch & gradient and how to ,(add additional patterns to the program from external sources	situation Extras On fees	6	seventeenth
=	=	Drawing a solid shape usingthe Isometric snap method	Drawing a solid shape usingthe Isometric snap method	12	eighteen And the nineteenth

=	=	Draw sections in the same way(Isometric snap)	Draw sections in the same way (Isometric snap)	6	The twentieth
=	=	How to duplicate shapes) using the command Polar array &array Rectangular (	How to repeat shapes	6	twenty one
=	=	How to makea block to repeat geometric shapes and how to store and recall them	Block method	6	twenty tow
=	=	Draw an integrated panel containing Species The drawings are(2D) and (3D) and contain a data table and an explanation of the drawings.	Drawing an integrated panel	12	Twenty-third and twenty-fourth
=	=	View method Shapes Different scenes on one screen using view ports command	View method Shapes	6	25th
=	=	How to transfer graphics between files and how to open more than one file using thewindow command)(	How to transfer graphics between files	6	twenty-sixth
=	=	Individualizing geometric ,shapes (cube, prism (pyramid	Individualizing geometric shapes	6	27th

=	=	Individualizing geometric shapes (truncated (pyramid, cone	Individualizing geometric shapes	6	Twenty-eighth
=	=	Dealing with the drawing scale and printing method using theplot command (	Dealing with scale drawing	6	XXIX
=	=	How to export drawings fromdwg format to (pdf) As well as(psd) to create virtual printers	How to export drawings	6	thirty

Course evaluation .82	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc	
Learning and teaching resources .83	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if any)
	Main references (sources)
Systematic engineering drawing book	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Course Description Form(8)

Course Name .84
Laboratories - first stage
Course Code .85

-
Semester/year .86
annual
Date this description was prepared .87
15/4/2026
Available attendance forms .88
practical
Number of study hours (total)/number of units (total) .89
weekly / 6 3
Name of the course administrator (if more than one name is mentioned) .90
:Asaad Abdel Zahra / Email : Namewww.eng.asaad65@gmail.com
objectives Course .91
Objectives of the study subject
Acquiring the manual skill in using hand tools, measuring tools, and operating machines necessa .to prepare the student as a technician in the building and construction specialization
Teaching and learning strategies .92
Acquiring the manual skill in using hand tools, measuring tools, and operat machines necessary to prepare the student as a technician in the building a .construction specialization — The strategy
Course structure .93

Study plan (suggested)

First academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

Oral +exams Editorial	+ Lecture practical examples	Industrial safety: general rules for accident prevention, health care equipment and methods of .using them	Industrial Safety	6	the first And the second
=	=	Carpentry: The basic principles of carpentry models and the use of ,hand tools (cut-off saw ,jigsaw, hammer, planer .(drill, file	Carpentry	6	the third And the fourth And the fifth
=	=	,Use of band saw machines ,disc machines, planers .and press machines	Using a saw machine	3	VI
=	=	Filing: Training students on filing work and using ,measuring tools, files , automatic sawing devices .hooks, and drills	The filings	6	Seventh And the eighth
=	=	Lathe: Using different lathes, lathe operations ,plane, internal draw) .(different tooth work	Lathing	*6*	Ninth And the tenth
=	=	Plumbing: industrial ,safety in casting, molds mold formation, and .plumbing work steps	Plumbing	3	eleventh

=	=	Welding: A. Occupational safety and security .precautions B. Used tools and industrial safety .equipment ,C. Types of welding (gas ultrasonic, pressure welding, electric arc .(welding	Welding	15	twelveth And the thirteenth And the fourteenth And the fifteenth And the sixteenth
=	=	Metal cutting and bending: Devices and machines used in cutting and bending metal sheets .and reinforcing steel bars	Devices and machines used in cutting and bending metal .sheets and rebar	6	seventeenth And the eighteenth
=	=	Plumbing: Training the student on the rolling mill machine and the process .of planning on plates	Plumbing	6	nineteenth And the twenty
=	=	Measurement processes ,and tools used (tape .(vernier, micrometer	Measurement operations	6	21st Twenty-second
=	=	Practical applications for carpentry works for civil :constructions, including	Practical applications for woodworking	3	twenty third
=	=	Work: Wooden doors press doors, packing) .(doors	a job wooden doors	3	twenty fourth

=	=	.Work: wooden molds	Work: wooden molds	3	25th
=	=	Applications on reinforcing steel, making roof, bridge and column reinforcement (cutting iron, bending iron and .(welding pieces	Applications to reinforcing steel	6	twenty-sixth The twenty-seventh
=	=	Exercises on cutting and joining structural steel using rivets, screws, and .welding	Exercises on cutting and joining steel	6	Twenty-eighth The twenty-ninth
=	=	Stone and plastering ,works: cutting, sawing .smoothing, perforation	Stone and stone works	3	thirty
Course evaluation .94					
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc					
Learning and teaching resources .95					
Website of the Technical Institute - Najaf			Required textbooks (methodology, if any)		
/ Building Construction Book / 1986 -1 University of Baghdad Written by: Ertin Levon and Zuhair Sako Building Construction and Factory -2 Construction 1991/Technical Education			Main references (sources)		

Authority - Prepared by: Adnan Al- .Dahan and Sarmad Fakhri Al-Nuaimi	
	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Course Description Form(9)

Course Name .96
Technical English - first stage
Course Code .97
-
Semester/year .98
annual
Date this description was prepared .99
15/4/2026
Available attendance forms .100
theoretical
Number of study hours (total)/number of units (total) .101
weekly / 2 2
Name of the course administrator (if more than one name is mentioned) .102
: NameAhmed Kadhim Salman ahmed.alkhaqani@atu.edu.iq Email /
objectives Course .103
Objectives of the study subject

The student reviews the basic, simplified rules of the English language that he had previously studied in the previous stages, but at length, as well as gradually introducing the student to the .atmosphere of technical terminology related to civil specialization in its various branches	
Teaching and learning strategies .104	
a . The theoretical part represents40% of the total allocated hours, equivalent to 12 .weeks B: The practical part represents60% of the total hours allocated, which is equivalent to8 .weeks	The strategy

Week	Sylibus
First	A/ pronunciation: voiceiess consonants B/ elements of sentence structure C/ patterns of sentences
Second	A/pronunciation : voiceless consonants (ii) B/ the part of speech: 1.nouns 2.verbs 3. Adjectives 4. Adverbs
Third	A/ pronunciation : voiced consonants (I) B/ the parts of speech : 1. articles 2. Demonstratives 3. Pronouns 4. Prepositions 5. Conjunctions 6. Interjunctions
Forth	A/ pronunciation: voiced consonants (ii) B/ ciassification of verbs
Fifth	A/ pronunciation : pure vowels B/ pronouns (I)

Sixth	**A/pronunciation :diphthongs** **B/pronounce (II)**
Seventh	**A/ types of questions** **B/genitives**
Eghteth	**A/ the present simple tense** **B/the present continuous tense** **C/ the present perfect tense**
Nineth	**A/ the past simple tense** **B/ the past perfect tense** **C/ future**
Tenth	**A/ active and passive voice** **B/ the number system in English**
Eleventh	**A/punctuation**
Twelveth	**A/business letters** **B/tenders**
Thirteenth-Thirty	**Comprehensive paragraphs about the branches of civil engineering**
	Interpretation of the above mentioned paragraphs
	Extracting the technical terms
	Making an independent sentences by using the terms.
	Writing a composition using the terms related to the subject under discussion

Course evaluation .105	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc	
Learning and teaching resources .106	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if any)
Headway English course for intermediate 2and beginners 1	Main references (sources)
	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

(10) Course Description Form

Course Name .107
The first stage - Human rights and democracy
Course Code .108
-
Semester/year .109
annual
Date this description was prepared .110
15/4/2026
Available attendance forms .111
theoretical

Number of study hours (total)/number of units (total) .112	
weekly / 4 2	
Name of the course administrator (if more than one name is mentioned) .113	
Name :Zainab Ali Saleh : Amil-/	
objectives Course .114	
Objectives of the study subject	
Introducing the student to human rights, their goals and development in various eras, and the role of international organizations and public opinion in respecting and protecting human .rights	
Teaching and learning strategies .115	
Introducing the student to human rights, their goals and development in various eras, and the role of international organizations and public opinion in respecting .and protecting human rights	The strategy

Course structure .116

Study plan (suggested)

First academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Oral +exams	+ Lecture practical examples	,Human rights, their definition and goals	General information	2	the first

Editorial			about human rights		
=	=	The roots of human rights and their development in human history: human rights in ancient and medieval times	Its development	2	the second
=	=	ancient Human rights in civilizations, especially the Mesopotamian civilization	Knowledge of human rights in ancient civilizations	2	the third
=	=	,Human rights in divine laws with a focus on human rights in . Islam	Knowledge of human rights in divine laws	2	the fourth
=	=	Human rights in the Middle Ages: Human rights in doctrines, schools, and political theories. Human rights in companies and their declarations, revolutions, and constitutions (English documents: the American Revolution - the French Revolution - the Russian .(Revolution	Knowledge of human rights in the Middle Ages	*2*	Fifth
=	=	rights in contemporary and modern history : international recognition of human rights since World War I and the .League/United Nations	Human rights in contemporary history	2	VI

=	=	Regional recognition of human rights: European Convention on Human Rights1950 , American Convention on Human Rights1969 African , Charter on Human Rights1981 Arab Charter on Human , Rights1994 .	Regional recognition of human rights	2	Seventh
=	=	NGOs and human rights International Committee of) the Red Cross, Amnesty International, Human Rights (Watch	Non-governmental organizations and human rights	2	VIII
=	=	National human rights organizations	National human rights organizations	2	Ninth
=	=	Human rights in Iraqi constitutions between theory .and reality	Human rights in Iraqi constitutions between theory .and reality	2	The tenth
=	=	The relationship between human rights and public freedoms In the Universal -1 Declaration of Human Rights	The relationship between human rights and public freedoms	4	Eleventh and twelfth

		In regional charters and : national constitutions			
=	=	Necessary human rights and collective human rights	Essential human rights	2	Thirteenth
=	=	Economic, social and cultural human rights, civil human .rights and politics	Economic, social and cultural human rights	2	fourteenth
=	=	Modern human rights: facts in development, the right to a clean environment, the right to solidarity, the right to religion	Modern human rights	2	Fifteenth
=	=	Exercises on cutting and ,connecting structural steel guarantees in constitutional oversight, guarantees in freedom of the press and public opinion, the role of non-governmental organizations in respecting and protecting .human rights	Exercises on cutting and linking guarantees in constitutional oversight	2	sixteen
=	=	Guarantees of respect and protection of human rights at the national level, guarantees in ,the constitution and laws guarantees in the principle of .the rule of law	Guarantees of respect and protection of human rights	2	seventeenth
=	=	Guarantees, respect and protection of human rights at :the international level	,Guarantees respect and	2	eighteen

		The role of the United Nations- and its specialized agencies in providing guarantees	**protection of human rights**		
=	**=**	**The role of regional organizations (the Arab League, the European ,Union, the African Union the Organization of American States, the (ASEAN Organization ,The role of international regional, non-governmental organizations and public opinion in respecting and protecting human rights**	**The role of regional associations**	**2**	**ninete enth**
=	**=**	**The general theory of freedoms: the origin of rights and freedoms, the project's position on declared rights and freedoms, the use of the term .general freedoms**	**The general theory of freedoms**	**2**	**The twenti eth**
=	**=**	**The functional nature of the :concept of public freedoms philosophical considerations of the functional right, structural considerations of the positive right, economic considerations .and public freedoms**	**The functional nature of the concept of public freedoms**	**2**	**21st**

=	=	The legal rule of the state of law	Identify the legal basis of the rule of law	4	twenty tow And the twenty third-
=	=	Regulation of public freedoms by public authorities	Regulation of public freedoms by public authorities	2	twenty fourth
=	=	Litigation or non-judicial injustice	The concept of litigation or non-judicial injustice	2	25th
=	=	Judicial appeal, determining the state's responsibility for its legitimate actions	Judicial appeal	2	twenty sixth-
=	=	The impact of double judiciary on public freedoms Public freedoms under administrative jurisprudence	The impact – of double judiciary on public freedoms	2	27th
=	=	Equality: the historical development of the administrative concept	Historical development of the	2	Twent y- eighth

			administrative concept		
=	=	The modern development of the idea of equality	The modern development of the idea of equality	2	XXIX
=	=	gender equality Equality between individuals according to their beliefs and race	Equality between genders and individuals	2	thirty

Course evaluation .117	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc	
Learning and teaching resources .118	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if any)
There are no prescribed books, binding are used to study the subject	Main references (sources)
Suggested sources . Human Rights Book Dr. Hamid Hanoun -1 Book on Human Rights, Democracy and -2 Public Liberties, Dr. Maher Sabry . Kazem	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Study plan (suggested)

: Academic year second

Notes	Material type	number of units	The number of hours			Subject	T
			M	A	n		
	Specialized	8	4	2	2	Concrete technology	1
	Specialized	8	4	4	-	Construction techniques	2
	Specialized	8	4	2	2	Soil mechanics	3
Taught in English	Specialized	12	6	5	1	Civil drawing	4
	Specialized	6	3	2	1	Area (2)	5
	Specialized	4	2	-	2	Construction machines	6
Taught in English	Specialized	6	3	2	1	Calculator Apps (2)	7
	Specialized	6	3	2	1	Quantity surveying	8
	Specialized	4	2	-	2	Buildings and factory construction	9
	Specialized	4	2	2	-	The project	10
	help	2	1	-	1	English	11
		9 6	5 3	2 2	4 1	the total	

Course Description Form(1)

Course Name	.119
The second phase - Concrete techniques	
Course Code	.120

-	
Semester/year	.121
annual	
Date this description was prepared	.122
15/4/2026	
Available attendance forms	.123
Theoretical - practical	
Number of study hours (total)/number of units (total)	.124
weekly / 8 4	
Name of the course administrator (if more than one name is mentioned)	.125
Name : Hussam Abbas Mohsen :Aymil - Al / husamabujwaid.inj@atu.edu.iq	
objectives Course	.126
Objectives of the study subject	
Teaching the student the basic principles of concrete components and their composition, the different methods of pouring and producing concrete on construction sites, the types of .modern concrete, and the practical details of concrete works	
Teaching and learning strategies	.127
Teaching the student the basic principles of concrete components and th composition, the different methods of pouring and producing concrete on construct .sites, the types of modern concrete, and the practical details of concrete works	The strategy
Course structure	.128

Study plan (suggested)

Second academic year

Evaluation	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

method					
Oral exams + Editorial	**+ Lecture practical examples + laboratory**	**A general review of materials :used in concrete. Definitions Regular concrete, reinforced ,concrete, cast-in-place concrete premixed concrete, precast .concrete, prestressed concrete**	**Materials used in concrete**	2	**the first**
=	=	**Production and mixing of concrete, types of mixing, types .of mixers, mixing time**	**Concrete production and mixing**	**2**	**the second**
=	=	**:Properties of fresh concrete .workability and consistency Tests for fresh concrete: fluidity ,test, penetration test precipitation test, compaction factor test, reshaping test with vibration and reciprocating vibration, and study of factors . .affecting workability**	**Soft concrete**	**4**	**the third And the fourth**
=	=	**:Properties of fresh concrete bleeding, separation, plastic shrinkage, and unit weight in .fresh concrete**	**Properties of fresh concrete**	**4**	**Fifth And the sixth**
=	=	**The effect of air voids and ,methods of measuring them ,calculating unit weight, yield ,cement agent in fresh concrete density equation and absolute**	**The effect of air voids and methods for measuring them**	***4***	**Seventh and VIII**

		volume equation to calculate .concrete components			
=	=	Transporting, pouring and .placing regular concrete	,Transporting pouring and placing regular concrete	2	Ninth
=	=	,Curing (curing) concrete .pouring in hot and cold climates	Casting in hot .and cold climates	2	The tenth
=	=	Pumping concrete, properties of concrete in pumping, devices .used in pumping	Properties of concrete in pumping	2	elevent h
=	=	Ready-mixed concrete: its definition, benefits and mixer ,production methods . trucks and vibrating trucks	Ready mixed concrete	2	twelvet h
=	=	,Resistance of hardened concrete ,nature of concrete resistance .types of resistance	Resistance of hardened concrete	2	Thirtee nth
=	=	:Concrete strength tests compressive strength test, tensile strength test, (bending tensile .(test and splitting tensile test	Concrete resistance tests		fourtee nth
=	=	Factors affecting the strength of .hardened concrete	Factors affecting the strength of hardened concrete	2	Fifteent h

		Factors affecting the results of strength tests of hardened .concrete			
=	=	Concrete shrinkage: drying shrinkage, differential shrinkage, carbonation .shrinkage	Concrete shrinkage	2	sixteen
=	=	Concrete additives: their definition, their benefits and uses, the main materials used in their composition, and the notes that must be taken when using .them	Additives for concrete	2	seventeenth
=	=	,accelerators : Types of additives retarders, plasticizers, air ,vacuum makers, silica dust ,bubblers, moisture preventers .weight reducers...etc	Types of additives	2	eighteen
=	=	Design of concrete mixes: A- The .American method	Design of concrete mixes	2	nineteenth
=	=	Design of concrete mixes: B- The .British method	Design of concrete mixes	2	The twentieth

=	=	Applied issues for designing ordinary mixtures	Applied issues for designing ordinary mixtures	2	21st
=	=	Applied issues for designing .mixtures containing additives	Applied issues for designing mixtures containing .additives		twenty tow
=	=	Non-destructive tests for ,concrete: radiation methods hardness methods, pulse .methods and resonance methods	Non-destructive tests for concrete	2	twenty third
=	=	Use offibers such , In concrete ,as fibers (plastic, glass, iron .(wood	Use offibers	2	twenty fourth
=	=	The use of polymersin ,concrete . polymeric concrete	Use ofpolymers	2	25th
=	=	,block :Special types of concrete ,heavy concrete ,lightweight pre-placed , underwater concrete) aggregate concretePAC .(	Special types of concrete	2	twenty-sixth
=	=	Special types of concrete: High) Performance ConcreteHPC ,( ) High Strength ConcreteHSC ,( ) Self Compacting ConcreteSCC) Reactive Powder Concrete ,(	Special types of concrete	4	27th Twenty eighth-

Course Description

Course Form(2)

		RPC) Reinforced Concrete ,(RCC .(			
		Repairing, maintaining and using some modern materials	Course evaluation Using some such as epoxy and carbon fibres	4 12	.129 .130

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.	
Resources of learning and teaching	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if a
Source: Concrete Technology - Jalal Bashir -1 The Internet and related books in Arabic and English -2	Main references (sources)
	Recommended supporting books and ,references (scientific journals (....reports
Internet sites	Electronic references, Internet sites

Course Name .1
Soil mechanics - second stage
Course Code .2
-
Semester/year .3
annual
Date this description was prepared .4
15/4/2026
Available attendance forms .5
Theoretical - practical
Number of study hours (total)/number of units (total) .6

8/4					
Name of the course administrator (if more than one name is mentioned) .7					
:Amiel - Name: A.M. Hussein Ali Muhammad Alinj.hus@atu.edu.iq					
objectives Course .8					
The general and specific objective of the course: teaching the student the basic principles of concr components and their composition, the different methods of pouring and producing concrete .construction sites, the types of modern concrete, and the practical details of concrete works					
Teaching and learning strategies .9					
Reading various plans, drawings and designs in engineering specializations .1 .Conducting theoretical calculations for various issues in the field of expertise .2 .Conduct on-site soil investigation- .3					The strategy
Course structure .10					
Study plan (suggested) Second academic year					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

+Oral exams Editorial	**+ Lecture practical + examples laboratory**	**A general introduction to soil and rock geology**	**Definition of soil and how it is formed**	4	the first
=	**=**	**,Soil components soil physical ,properties granular analysis**	**Soil types and their physical properties**	**8**	**The second and third**
=	**=**	**Plasticity properties of soil**	**Utterbrack borders**	**8**	**Fourth and fifth**
=	**=**	**,Soil classification using the unified classification) methodUCS (**	**Soil classification**	**8**	**Sixth and seventh**
=	**=**	**Permeability in soft and coarse soil and methods for measuring it in the .field and laboratory**	**Permeability in soil**	**8**	**Eighth and ninth**
=	**=**	**Types of stresses in ,the soil, total stress ,effective stress .lateral pressure**	**Stresses in the soil**	**8**	**The tenth and eleventh**
=	**=**	**Improving soil ,properties .mechanical method**	**Improving soil properties**		**twelveth**
=	**=**	**Types of laboratory and field soil tests**	**Soil tests**	**8**	**thirteenth and fourteenth**

=	=	Using traditional methods to stabilize the soil and improve its .properties	Soil stabilization	4	Fifteenth
=	=	Using modern methods to stabilize the soil and improve its properties (soil reinforcement and types of materials .(used	Soil stabilization	4	sixteen And seventeenth
=	=	California endurance ratio for) road worksCBR .(	Soil bearing for road works	8	And the eighteenth
=	=	Attachment to the soil and its relationship to subsidence	Soil subsidence	4	nineteenth And The twentieth
=	=	The phenomenon of swelling and collapse	Problems related to changing soil volume	4	21st
=	=	Defining the shear resistance of the soil, calculating the amount of bearing	Shear resistance of soil	4	twenty tow

		resistance of the .piping press			
=	=	Unconfined shear examination	Find shear resistance	4	twenty third
=	=	Direct shear examination	Find shear resistance		twenty fourth
=	=			4	
=	=	Triaxial shear examination	Find shear resistance	4	25th twenty-sixth
=	=	Field shear tests	Find field shear resistance	4	27th
=	=	Types of foundations and their relationship to soil tolerance	Types of foundations	4	Twenty-eighth
=	=	Types of shallow and deep foundations and .piles	Shallow and deep foundations	4	XXIX
=	=	Introduction to soil ,investigation work ,types of models methods of taking them, and preparing and depth of test pits that must be carried out in the .laboratory	Soil investigation work	4	thirty

+Oral exams Editorial	+ Lecture practical + examples laboratory	A general introduction to soil and rock geology	Definition of soil and how it is formed	4	the first
=	=	,Soil components soil physical ,properties granular analysis	Soil types and their physical properties	8	The second and third
=	=	Plastic properties of soil	Utterbrack borders	8	Fourth and fifth
=	=	,Soil classification using the unified classification) methodUCS (	Soil classification	8	Sixth and seventh
=	=	Permeability in soft and coarse soil and methods for measuring it in the .field and laboratory	Permeability in soil	8	Eighth and ninth
=	=	Types of stresses in ,the soil, total stress ,effective stress .lateral pressure	Stresses in the soil	8	The tenth and eleventh
=	=	Improving soil ,properties .mechanical method	Improving soil properties		twelveth
=	=	Types of laboratory and field soil tests	Soil tests	8	thirteenth and fourteenth

=	=	Using traditional methods to stabilize the soil and improve its .properties	Soil stabilization	4	Fifteenth
=	=	Using modern methods to stabilize the soil and improve its properties (soil reinforcement and types of materials .(used	Soil stabilization	4	sixteen And seventeenth
=	=	California endurance ratio for) road worksCBR .(	Soil bearing for road works	8	And the eighteenth
=	=	Attachment to the soil and its relationship to subsidence	Soil subsidence	4	nineteenth And The twentieth
=	=	The phenomenon of swelling and collapse	Problems related to changing soil volume	4	21st
=	=	Defining the shear resistance of the soil, calculating the amount of bearing	Shear resistance of soil	4	twenty tow

		resistance of the .piping press			
=	=	Unconfined shear examination	Find shear resistance	4	twenty third
=	=	Direct shear examination	Find shear resistance	4	twenty fourth
=	=	Triaxial shear examination	Find shear resistance	4	25th twenty-sixth
=	=	Field shear tests	Find field shear resistance	4	27th
=	=	Types of foundations and their relationship to soil tolerance	Types of foundations	4	Twenty-eighth
=	=	Types of shallow and deep foundations and .piles	Shallow and deep foundations	4	XXIX
=	=	Introduction to soil ,investigation work ,types of models methods of taking them, and preparing and depth of test pits that must be carried out in the .laboratory	Soil investigation work	4	thirty
Course evaluation-11 .11					

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly, written exams, reports, etc	
Resources of learning and teaching-12 .12	
Website of the Technical Institute - Najaf	Required textbo (methodology, if any)
bookASTM Manual -3 Soil Mechanics Book / Dr. Hamid Al-Saidi -4 The Internet and related books in Arabic and English -5	Main references (sources)
	Recommended supporting books and references (scientific (....journals, reports
Internet sites	,Electronic referen Internet sites

Course Description Form(3)

Course Name .13
Construction techniques – second stage
Course Code .14
-
Semester/year .15
annual

Date this description was prepared .16
15/4/2026
Available attendance forms .17
practical
Number of study hours (total)/number of units (total) .18
8 / 4
Name of the course administrator (if more than one name is mentioned) .19
- Name: Ali Adel AlZuhairi aliadelalzuhairi@atu.edu.iq /
objectives Course .20
Providing the student with manual skills and qualifying him to carry out construction and building works so that he will be qualified upon graduation to efficiently supervise the work.
Teaching and learning strategies .21
Providing the student with manual skills and qualifying him to carry out construction and building works so that he will be qualified upon graduation to efficiently supervise the work. The strateg
Course structure .22

Study plan (suggested)

Second academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

+Oral exams Editorial	+ Lecture practical + examples laboratory	Foundation planning, using surveying equipment	Foundation planning	4	the first
=	=	Excavations, and supporting the sides of the .excavation	Excavations	8	the second
=	=	Making and strengthening a foundation for a wall or support	Making and strengthening a foundation for a wall or support	8	the third
=	=	How it works and the machines used for that. A scientific film for pile .works, types	And how it works The pillars	8	the fourth
=	=	,Brick construction work English bonding, German bonding, other types of .bonding	Brick building works	8	Fifth and sixth
=	=	,Block construction (block . .(thermostone	With blocks ,block) . .(thermostone	8	Seventh
=	=	,Wooden template work training on making a wooden template for a column, bridge, stairs and .roofs	Wooden mold work		Eighth and ninth
=	=	Pouring regular and reinforced concrete and	Formwork of ordinary and	8	The tenth

		using manual mixing, as well as training on .automatic mixing	reinforced concrete		
=	=	A scientific visit to the site of making a wooden mold .and pouring concrete	A scientific visit to a wooden block making site	4	And the eleven th
=	=	,Reinforcing works, rebar ,the correct way to use it making reinforcement ,models for a column, roof .and bridge	Reinforcing works	4	The twelft h and thirtee nth
=	=	Iron works, iron structural sections and aluminum sections, and when they are not available, a scientific .film is shown for that	Iron works	8	And the fourte enth
=	=	Application with cashier .and sticker	Application with cashier and sticker	4	Fiftee nth
=	=	,Moisture-preventing works training on the use of some moisture-repellent materials and how to use them optimally, such as asphalt felt, bituminous	Moisture proofing works	4	sixtee n And sevent eenth

		materials, according to .what is available			
=	=	Showing a scientific film about thermal insulation materials: their types, how to use them, and their .benefits	Showing a scientific film about thermal insulation materials	4	And the eighte enth
=	=	,Whitewashing works whitewashing of a wall .using plaster	Whiteness works	4	ninete enth
=	=	:Ficus and prose works .Using cement mortar .1 Using cement mortar .2 .Noura -	Ficus and prose works		Twent y and twent y -first
=	=	Packaging works with Al- .Furfouri Kashi	Cashier packaging works	4	twent y tow
=	=	Wall covering works, wall .covering using solutions	Wall covering works	4	twent y third
=	=	Secondary ceilings (Moroccan), making a model of a Moroccan	Secondary ceilings	4	twent y fourth

		ceiling, training on how to .install them			
=	=	**Dyeing work (training on how to use it and how to adapt each type to the dyed .(surface**	**Painting works**	**4**	**25th**
=	=	**Sanitary works: Training the student on how to lay sewage pipes, clear water pipes, and the locations of .sinks, bathtubs , toilets, etc**	**: Health business**	**4**	**twenty-sixth**
=	=	**Electrical works: Training the student on making the rails and the correct finishing around them and how to install some electric lamps (establishing a light .(point and blocks**	**Electrical Works**	**4**	**27th**
=	=	**Mechanical works: making .ventilation ducts (i.e making aduct for a .(refrigerator**	**Mechanical works**	4	Twenty-eighth
=	=	**Road works: Foundation work and under the**	**Road works are foundation work**	**8**	**Twenty-nine**

		foundation for a road (as a .(model			and thirty-nine
Course evaluation-11 .23					
,Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral .monthly, written exams, reports, etc					
Resources of learning and teaching-12 .24					
Website of the Technical Institute - Najaf			Required textbooks (methodology, (any		
Building construction book by Martin Levon and Zuhair Sacco_ Videos available on the Internet, such as YouTube, which explain the_ stages of work as a reality if the material is practical and does not have a .theoretical aspect For example, specialized videos are selected that explain the practical steps and common mistakes during work, according to the lecture, such as flattening, interior plastering, application of caulk, making wooden and ....iron molds, electrical and mechanical works, insulation, etc In addition to lectures presented by the subject professor and specialized .assistant technicians, based on practical experience			Main references (sources)		
			Recommended supporting books ,and references (scientific journals (....reports		
Internet sites			Electronic references, Internet sites		

Course Description Form(4)

Course Name .25
Civil drawing - second stage
Course Code .26
-
Semester/year .27
annual
Date this description was prepared .28
15/4/2026
Available attendance forms .29
Theoretical - practical
Number of study hours (total)/number of units (total) .30
12 / 6
Name of the course administrator (if more than one name is mentioned) .31
Name rusul.hussein.inj@atu.edu.iq :Rusul Hussein :
objectives Course .32
Teaching the student the construction details and the details of all construction works so that he is qualified to understand the executive m and transfer their information to the work site and the workers to implement them. The student also learns the principles used in prepar .sets of executive maps
Teaching and learning strategies .33
Teaching the student the construction details and the details of all construction works so that he is qualified to understand the executive maps and transfer their information to the work site and the workers to implement them. The student also .learns the principles used in preparing sets of executive maps — The strategy
Course structure .34
Study plan (suggested)

Second academic year					
Evaluation method	**Learning method**	**Name of the unit or topic**	**Required learning outcomes**	**hours**	**the week**
+Oral exams Editorial	**+ Lecture practical + examples laboratory**	**,Introduction to structural drawing architectural and terminological symbols, lines in maps, drawing models ,for building and construction materials drawing scale, executive maps, and .types of brick and block construction**	**introduction**	6	the first
=	**=**	**Drawing the horizontal plan of a residential house or small building, the plan of the first floor, and determining the longitudinal and cross-sections and .the facades**	**Draw the horizontal chart**	**6**	**the second**
=	**=**	**Drawing longitudinal and cross-sections and detailed sections of the finishing .layers for floors, ceilings, and surfacing**	**Draw longitudinal and cross sections**	**6**	**the third**
=	**=**	**Introduction to sanitary drawing and structures for water and sanitary ,establishments and sanitary furniture and then drawing the network of water**	**Introduction to health drawing**	**6**	**the fourth**

		and sanitary establishments for the .previous horizontal plans			
=	=	Drawing the structural details of the inspection basins and linking them to .the health facilities network	Drawing the structural details of the inspection basins	6	Fifth
=	=	Drawing the structural details of the septic tanks and storage (drains) .attached to the house plan	Drawing the structural details of septic tanks and storage	6	VI
=	=	Introduction to concrete and construction principles, concrete bearing stresses and the necessary types of reinforcement steel, and drawing symbols used in maps and construction .details	Introduction to concrete and construction principles	6	Seventh
=	=	Concrete slabs, their types, the transmission of loads through them and ,the necessary reinforcement for them along with drawing the structural .details of solid, unidirectional slabs	Concrete slabs	6	VIII
=	=	Drawing the structural details of solid .two-way slabs	Drawing the structural details of	6	Ninth

			solid two- .way slabs		
=	=	-Drawing the structural details of one .and two-way polygonal slabs	Drawing the structural details of one- and two-way polygonal .slabs	6	The tenth
=	=	Introduction/Types of concrete joists and drawing the structural details of .simple support joists with sections	Introduction to tributaries	6	eleventh
=	=	Drawing structural details for .continuous joists and sections	Drawing the structural details of the joists	6	twelveth
=	=	Drawing the structural details of the monolithic tributaries along with their .sections	Drawing the structural details of the joists	6	Thirteenth
=	=	Introduction with a drawing of the structural details of precast prestressed .joists	Introduction with a drawing of the structural details of precast prestressed .joists	6	fourteenth

=	=	Drawing (key) for the joists of a ,building, a horizontal structural plan .and fixing tables and details of the joists	Horizontal chart	6	Fifteen th
=	=	Drawing the structural details of the types of concrete columns, drawing the longitudinal and cross-sections, and showing the reinforcement of the .columns	Drawing the structural details of types of concrete columns	6	xvi twentie th
=	=	Drawing structural details and vertical sections to illustrate the bonding of reinforcing steel for columns of .successive floors	Drawing structural details and vertical sections	6	sevente enth
=	=	Introduction to foundations/their types and principles of operation, and drawing the structural details of the ,single foundation, combined foundation .and wall foundations	Introduction to foundations	6	eightee n
=	=	Drawing the structural details of continuous foundations and mat .foundations	Drawing the structural details of continuous foundations and mat .foundations	6	ninetee nth

=	=	**Drawing the structural details of the pile foundations and their types with the hat**	**Drawing the structural details of the foundations of the pillars**	**6**	**The twentie th**
=	=	**Identifying concrete stairs and their types: a straight staircase, a half-straight staircase, a spiral staircase, and .drawing their structural details**	**Getting to know concrete stairs**	**6**	**21st**
=	=	**Drawing structural details of joints in buildings, expansion joints, structural .joints**	**Drawing the structural details of joints in buildings**	**6**	**XXII**
=	=	**Drawing the structural details of the reinforced walls of elevators and .basement walls**	**Drawing the structural details of the reinforced walls**	**6**	twenty third
=	=	**Introduction to manufactured and prefabricated construction and drawing the structural details for connecting .walls with prefabricated ceilings**	**Introduction to prefabricated and manufacture**	**6**	**twenty fourth**

			d construction		
=	=	Introduction to steel structures, their sections, tables, and how to obtain specifications and details of their .sections	Introduction to steel structures	6	25th
=	=	Drawing the structural details for the connection of steel parts according to .their load bearing	Drawing the structural details of the connection of steel parts	6	twenty-sixth
=	=	,Bonding of steel foundations and bases bonding of steel columns, bonding of .joists to each other	Bonding of steel foundations and foundations	6	27th
=	=	Details of the steel gable drawing and .the connection of its ribs	Steel gable drawing details	6	Twenty eighth-
=	=	Using the computer and its applications in structural drawing of reinforced .concrete structures	Using the computer and its applications in	12	Twenty nine-and thirty-nine

			construction drawing		
Course evaluation-11 .35					
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written .exams, reports, etc					
Resources of learning and teaching-12 .36					
Website of the Technical Institute - Najaf			Required textbooks (methodology (any		
RANGWALA, 2017: Civil Engineering Drawing -1 Edition 3rd -2 .: 938503930X (Including Computer aided building drawing) -3			Main references (sources)		
ISBN-13: 978-9385039300 ISBN-10.			Recommended supporting books and references (scientific (....journals, reports		
Internet sites			Electronic references, Internet site		

Course Description Form(5)

Course Name .37
The second phase - Buildings and factory construction
Course Code .38
-
Semester/year .39

annual
Date this description was prepared .40
15/4/2026
Available attendance forms .41
theoretical
Number of study hours (total)/number of units (total) .42
4 / 2
Name of the course administrator (if more than one name is mentioned) .43
Name nabeelkl@atu.edu.iq : Nabil Kaftan/ AL :
objectives Course .44
Providing the student with the necessary information about the stages of implementation of traditional and manufactured buildings, the .works that fall within each stage, and the appropriate construction machines for each work
Teaching and learning strategies .45

Enabling the student to organize the site, direct the works, and supervise their implementation, and teach the student the .basic principles and supervision of factory construction	The strategy

Course structure .46

Study plan (suggested)

Second academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

+Oral exams Editorial	Lecture + practical + examples laboratory	Introduction to the methods of implementing construction projects and the relevant parties and the tasks of each member of ,the construction project team .especially the technicians	Implementing construction projects	6	the first
=	=	Organizing and planning the work site and the factors that affect it, along with preparing a plan for the work site for a specific project	Organizing and planning the work site	6	the second
=	=	Earthen excavations, methods of supporting the sides of excavations, excavation of basements	Earth excavations	6	the third
=	=	Techniques used to withdraw groundwater during construction	Techniques used to withdraw groundwater	6	the fourth
=	=	Dictations of dirt and the correct methods for making them, layers of roads and methods of implementing them	Earth dictates	6	Fifth
=	=	Moisture-preventing layers for ,both basements and walls flatness	Moisture repellent layers	6	VI

=	=	Construction of walls with bricks, types of bricks, methods of joining, seams	Building walls with bricks	6	Seventh
=	=	Building walls with stone (types of stone preparation, types of (connection, joints	Building walls with stone	6	VIII
=	=	Building walls with construction blocks (types of blocks and their .(specifications	Building walls with construction blocks	6	Ninth
=	=	All types of interior wall .finishing techniques	Interior wall finishing techniques	6	The tenth
=	=	Techniques for finishing external .walls of all kinds	Techniques for finishing walls from the outside	6	eleventh
=	=	Methods of finishing floors for the ground floor, other floors .and ceilings	Methods of finishing floors	6	twelveth
=	=	Thermal insulation techniques	Thermal insulation techniques	6	Thirteenth
=	=	,Concrete formwork (types (requirements, components	Concrete molds	6	fourteenth

=	=	Lifting molds, causes of mold collapse, sliding molds and related techniques	Uploading templates	6	Fifteenth
=	=	,Scaffolding (types, components (safety factors	Scaffolding	6	sixteen
=	=	Secondary ceilings (types and methods of installing them) and installing air ducts	Secondary ceilings	6	seventeenth
=	=	Sanitary installations (pure water, sewage), types of pipes used for each, and methods of .connection and installation	Health establishments	6	eighteen
=	=	,Doors and windows (types (requirements, components	Doors and windows	6	nineteenth
=	=	Joints in buildings (structural joints, expansion joints), details of each type and methods of implementation	Joints in buildings	6	The twentieth
=	=	Low-cost construction and ways ,to rationalize costs (goals requirements, construction .(methods	Horizontal curves	6	Twenty first- and twenty-second

=	=	,Factory construction (properties (supplies	Construction is low cost	6	twenty third
=	=	The different types of factory construction and the characteristics of each type	Different types of factory construction	6	twenty fourth
=	=	Components of the factory construction plant and production method	Components of the factory construction plant and production method	6	25th
=	=	Details of structural members in manufactured construction and methods of installing them	Details of structural members in factory construction	6	Twenty sixth- and twenty-seventh
=	=	Joints in manufactured construction (types, components (and methods of implementation	Joints in factory construction	6	Twenty eighth-
=	=	Methods of transportation in ,buildings, stairs, elevators (types components, construction (methods	Methods of transportation in buildings	6	XXIX
=	=	Fire resistance of buildings and .fire control systems	Fire resistance of buildings	6	thirty
					Course evaluation-11 .47

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written .exams, reports, etc	
Resources of learning and teaching-12 .48	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if any)
Building construction book - Zuhair Sako -1 Construction Equipment Book - Ayoub Sabry -2 Prefabricated construction brochure -3	Main references (sources)
.Lectures given by the professor	Recommended supporting books and references (scientific journals, reports....)
Internet sites	Electronic references, Internet sites

Course Description Form(6)

Course Name .49
second stage - (2) Computer applications
Course Code .50
-
Semester/year .51
annual
Date this description was prepared .52
15/4/2026
Available attendance forms .53
Theoretical - practical
Number of study hours (total)/number of units (total) .54

6 / 3
Name of the course administrator (if more than one name is mentioned) .55
the name : Marwa Hameed Abdulla :AMIL - AL / marwah934@atu.edu.iq
objectives Course .56
.Teaching the student how to use ready-made systems and their applications in completing civil drawings
Teaching and learning strategies .57
.The student will be able to use ready-made systems and their applications to complete civil fees — The strategy
Course structure .58

Study plan (suggested)

Second academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
+Oral exams Editorial	+ Lecture practical + examples laboratory	A general review of AutoCAD	A general review of AutoCAD	3	the first
=	=	Return menu applicationsDraw , Modify ,Osnap .	Re-applications	3	the second
=	=	,Complete dimensions writing, and summary viewing .	Complementary dimensions	3	the third

=	=	Principles of drawing in .three dimensions List of cortical trigrams Surface .	Principles of drawing in three dimensions	3	the fourth
=	=	List ofsolids .	List of triangular drawing	3	Fifth
=	=	Applications on commandsExtrad , Revolve_Slice .	Applications on commands Extrad ,Revolve_Slice .	3	VI
=	=	Solidediting drawing . revisions	Drawing revisions	3	Seventh
=	=	Applications about ordersUnion ,Subtruct .	Applications about orders Union ,Subtruct .	3	VIII
=	=	CompleteSolid editing commands .	CompleteSolid editing commands	3	Ninth
=	=	Create a simple building .in three dimensions	Create a simple building in .three dimensions	3	The tenth
=	=	Completion of the .previous building	Complete the previous building	3	eleventh
=	=	Making a model of a horizontal section in a building (residential .house) and furnishing it	Make a model of a horizontal section	3	twelveth

=	=	Complete the previous .form	.Complete the previous form	3	Thirteenth
=	=	Making a longitudinal sectional model in a building (residential .house) with furnishing	Make a model	3	fourteenth
=	=	Rendering design . principles	Design principles	3	Fifteenth
=	=	.Add lighting to the scene	Add lighting to the scene	3	sixteen
=	=	Adding materials to .surfaces	Adding materials to surfaces	3	seventeenth
=	=	Manufacture of display .materials	Manufacture of display materials	3	eighteen
=	=	Other effects in the ,scene: night lighting .backgrounds	Influences	3	nineteenth
=	=	A project to create a model of a multi-storey building with the addition of other ,accessories: trees, cars ...people	project	3	The twentieth

		A simple introduction to the parallel programs for) AutoCAD3DMax .(			
=	=	Using additional processors for the - completed image AutoCAD using the Photo Shop program .	Using processors for the completed image	30	Twenty-one ..... thirty

Course evaluation-11 .59	
,Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly .written exams, reports, etc	
Resources of learning and teaching-12 .60	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if any
by Nasser Hassan Ismail book3D AutoCAD -4 3d max blue box -2020 revit model design iteration turn the page -5 . based on practical experience Lectures given by the professor -6 based on ,3D graphics Scientific competition between students through -7 .creativity and distinction	Main references (sources)
) Other design engineering programs3d max, revit, lumion, sketchup)	Recommended supporting books and ,references (scientific journals (....reports
Internet sites	Electronic references, Internet sites

Course Description Form(7)

Course Name .61
second stage - Quantity surveying
Course Code .62
-
Semester/year .63
annual
Date this description was prepared .64
15/4/2026
Available attendance forms .65
Theoretical-practical
Number of study hours (total)/number of units (total) .66
6 / 3
Name of the course administrator (if more than one name is mentioned) .67
: Sabah Nouri / Email : Namesabah.saaid.inj@atu.edu.iq
objectives Course .68
. Calculating quantities and analyzing prices and dimensions for construction works
Teaching and learning strategies .69
Introducing the student to how to calculate the quantity of construction items involved in the implementation of facilities and buildings, as well as beams, and analyzing those quantities into their primary resources with the principles of .calculating prices and costs, as well as contracting work, specifications, and engineering project management The strate
Course structure .70

Study plan (suggested)

Second academic year

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
+Oral exams Editorial	Lecture + practical examples + laboratory	Definitions of estimation, its purpose, the foundations on which estimation is based, and the benefits expected from the .estimation process	Definitions of guesswork	6	the first
=	=	Types of estimation, units of measurement used for all construction paragraphs, table .of quantities	Types of estimation	6	the second
=	=	Calculating the quantity of earthworks for the foundations of facilities (buildings) (various types of foundations) and explaining its schedule of quantities, mentioning the unified standard guide for these works, their specifications, and price .analysis	Calculating the amount of earthworks for the foundations of facilities	6	The third and fourth

=	=	Calculating the quantity of structural sections under the ,moisture barrier (squares ,(foundation concrete, cubes mentioning the unified ,standard guide for these works their specifications, and their .schedule of quantities	Calculating the amount of structural sections under the moisture barrier	6	Fifth and sixth
=	=	Calculating the quantity of structural parts above the ,moisture barrier (badlo) including moisture barrier concrete, building above the moisture barrier (bricks and concrete blocks), and mentioning the unified ,standard guide for its height specifications, and its table of .quantities	Calculating the amount of structural sections above the moisture barrier	6	Seventh and eighth
=	=	Calculating the quantity of concrete, rebar, and wooden formwork for foundations structural buildings with wall) foundations and pillar foundations), and mentioning	Calculate the amount of concrete	6	The ninth and tenth

		the unified standard guide for .their height and specifications			
=	=	Calculating the quantity of concrete, reinforcing steel , and wooden molds for connecting bridges in structural buildings below the level of the basement and bridges above the ,openings, analyzing the prices and mentioning the unified standard guide for the scope of .these works	Calculate the amount of concrete	12	eleventh And the twelfth
=	=	Calculating the quantity of concrete, rebar, and wooden ,molds for columns of all types analyzing their prices and mentioning the unified standard guide and .specifications	Calculate the amount of concrete	6	Thirteenth
=	=	Calculating the quantity of concrete, rebar, and wooden molds for various concrete works in special shapes, such .as domes and arches	Calculate the amount of concrete	6	fourteenth

=	=	Calculating the quantity of concrete, rebar, and wooden molds for various concrete works in special shapes, such .as domes and arches	Calculate the amount of concrete	6	Fifteenth And the sixteenth
=	=	Calculating the quantity of concrete, wooden molds, and reinforcing steel for all types of stairs, analyzing prices, and mentioning the unified standard guide for their height .and specifications	Calculate the amount of concrete	6	seventeen th
=	=	Calculating the quantity of secondary roofing works of all kinds, and flattening works for ,all its sections (gear, paddocks and stayers), and mentioning the unified standard guide for .their height and specifications	Calculating the quantity of secondary roofing ,works of all types	6	eighteen
=	=	Calculating the quantity of ,finishing works (finished whitewashing, spreading, and ,dyeing) and the furfural casing analyzing the prices, and mentioning the unified ,standard guide for their type	Calculating the amount of finishing work	12	nineteent h And the twenty

		specifications, and the table of .quantities			
=	=	Calculating the quantity of flooring work, casing, casing work, and covering the facades with alabaster and plaster, and mentioning the unified standard guide, its specifications, and the table of .quantities	Calculating the amount of flooring work	6	21st
=	=	Calculating the quantity of electrical and mechanical foundation works and mentioning the unified ,standard guide for its scope specifications, and schedule of .quantities	Calculating the amount of electrical and mechanical installation work	6	XXII

=	=	**Calculating the quantity of water and sanitary foundation works, analyzing and mentioning the unified ,standard guide for its scope specifications, and schedule of .quantities**	**Calculating the amount of water and sanitary installation works**	**6**	twenty third
		Calculating the quantity of water and sanitary foundation works (walls and ceilings) and ,explaining their specifications the schedule of quantities, and the unified standard guide for .that	**Calculating the amount of water and sanitary installation works**	**6**	twenty fourth
=	=	**Calculating the quantity of works and some items of steel structures and analyzing their prices, dimensions and schedule of quantities**	**Calculating the amount of work and some items of steel structures**	**6**	**25th**
=	=	**Contracts, contracting and ,contract organization application books, tender form and instructions for contractors, maintenance**	**,Contracts contracting and contract ,organization submission books**	**6**	**twenty-sixth**

		period and advances and how .to calculate them			
		,Definitions of management ,interpersonal relations organization, cadre responsibilities, organization in projects, site planning and control, and engineering .management of projects	Definitions in management and relationships between individuals	6	And the twenty-seventh
=	=	Project scheduling: work progress schedule, arrow wire .diagrams, and critical path	Project scheduling	12	Twenty-eighth and twenty-ninth
=	=	Some applications for calculating the quantities of construction paragraphs using the computer	Some applications for calculating the quantities of construction paragraphs using the computer	6	thirty

Course evaluation-11 .71	
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written .exams, reports, etc	
Resources of learning and teaching-12 .72	
Website of the Technical Institute - Najaf	Required textbooks (methodology, if an
Lectures given by the professor according to the methodological book (Quantity -1 (Surveying Book	Book of systematic quantitative surveyi

.Related sources and books in Arabic, English, and the Internet -2	
	Recommended supporting books and ,references (scientific journals (....reports
Internet sites	Electronic references, Internet sites

Course Description Form(8)

Course Name .73	
second phase – Project	
Course Code .74	
-	
Semester/year .75	
annual	
Date this description was prepared .76	
15/4/2026	
Available attendance forms .77	
practical	
Number of study hours (total)/number of units (total) .78	
4 / 2	
Name of the course administrator (if more than one name is mentioned) .79	
: Name / name	
objectives Course .80	
.Teaching students how to conduct research and practical and applied projects in various fields of work	
Teaching and learning strategies .81	
Teaching the student how to search scientific sources and how to conduct research and projects with the help of specialized professors in the department, and to utilize the laboratories and equipment of the department and	The strategy

institute, as well as equipment in state departments, according to the available capabilities and in a manner .commensurate with the nature of the project	

Course Description Form(9)

Course Name .82
Construction machines - second stage
Course Code .83
-
Semester/year .84
annual
Date this description was prepared .85
15/4/2026
Available attendance forms .86
theoretical
Number of study hours (total)/number of units (total) .87
4 / 2
Name of the course administrator (if more than one name is mentioned) .88
: Maha Aboudi / Email : Namemaha.subi@yahoo.com
objectives Course .89
. .Determine the productivity of machines and their operating costs and supervise their proper completion of work
Teaching and learning strategies .90
The strategy .Determine the productivity of machines and their operating costs and supervise their proper completion of work
Course structure .91

Study plan (suggested) Second academic year					
Evaluation method	**Learning method**	**Name of the unit or topic**	**Required learning outcomes**	**hours**	**the week**
+Oral exams Editorial	**Lecture + practical example + s laboratory**	**Construction equipment, the importance of machines, ways to obtain them, and the advantages and disadvantages ,of owning or renting machines .with a scientific film shown**	**Construction equipment, the importance of machines**	2	the first
=	**=**	**Calculating the costs of owning machines (costs of ,obsolescence, investment .(maintenance and repair**	**Calculating the costs and ownership of machines**	**2**	**the second**
=	**=**	**Calculating the costs of owning machines (costs of ,obsolescence, investment .(maintenance and repair**	**Calculating the costs and ownership of machines**	**4**	**The third and fourth**
=	**=**	**Engineering foundations for ,engineering machinery work**	**Engineering foundations for**	**2**	**Fifth**

		including (resistance to .(movement and the effect of tilt	engineering machinery .work		
=	=	Complementing the engineering foundations of engineering machinery work the effect of elevation, swelling) ...and contraction of soil on	Complementing the engineering foundations of engineering machinery work	2	VI
=	=	:The quarry (dozer, including description of the machine, its (types, productivity calculation .with a scientific film shown	The quarry	2	Seventh
=	=	,Loading shovel (shovel) including (its types, difference between them, productivity ,calculation, raking work cycle	Loading shovel (shake)	2	VIII
=	=	A scientific visit to one of the business sites that has different .machines	A scientific visit to one of the business sites that has different .machines	2	Ninth
=	=	Drilling machines, total drilling rigs, face drilling rigs .with scientific film showing	Drilling machines	2	The tenth

=	=	,Drilling machines (back shovel waterwheel shovel, oyster shovel) with a scientific film .shown	Drilling machines (back ,shovel waterwheel shovel, oyster (shovel	2	elev enth
=	=	,Transport unit machines paved and unpaved road trucks, classification of trucks ,according to multiple factors tippers, productivity calculation with a scientific .film showing	Transport ,units machines	2	twel veth
=	=	Balancing the number of tippers with the size of drilling machines, lorries, locomotives and trailers, and railway .trucks	Balancing the number of tippers	2	Thi rtee nth
=	=	The stands include (their types and benefits, along with productivity calculations) and .a scientific film is shown	Terraces	2	four teen th
=	=	Types of skimmers, their benefits, and productivity calculations, with a scientific .film shown	Skimmers	2	Fift eent h
=	=	Sipper productivity: Use the scraper performance chart to .calculate productivity	Using the skimmer performance	2	sixt een

			chart to calculate .productivity		
=	=	A scientific visit to a business site with a scientific film .showing	A scientific visit to one of the business sites	2	seventeenth
=	=	,Soil compaction machines their importance includes their types and places of use, along .with showing a scientific film	Soil compacting machines	2	eighteen
=	=	Complementing the forging machines and calculating productivity, pressure bulb .theory for distributing weights	Ironing machines and productivity calculations	2	nineteenth
=	=	Complementing the ironing machines with vibrating rollers, calculating the productivity of the rollers	Vibrating ,rollers calculating the productivity of rollers	2	The twentieth
=	=	Material mixing equipment for concrete works with a scientific film showing	Material mixing equipment for concrete works	2	21st
=	=	Concrete compacting and polishing transportation equipment	Concrete compacting and polishing transportation equipment	2	XXII

=	=	,Asphalt production plants .their types and specifications	Asphalt production .plants	2	twe nty third
=	=	Specifications of asphalt ,spreaders, spreader speed types of spreaders, with a .scientific film shown	Specifications of asphalt spreaders	2	twe nty four th
=	=	Scientific visit to asphalt .production plants	Scientific visit to asphalt production .plants	2	25th
=	=	Trench types, calculating production rates and showing .a scientific film	Trenches	2	twe nty-sixt h
=	=	Tunnels, their importance and types, with a scientific film .shown	Tunnels	2	And the twe nty-seve nth
=	=	Digging tunnels with ,mechanical excavators ventilating the tunnels and .showing a scientific film	Tunnels with mechanical excavators	4	Twe nty-eigh th
=	=	Conveyor belts, calculation of transportation costs with conveyor belts, parts of conveyor belts	Conveyor belts	2	XXI X

=	=	The use of modern control systems in construction machines, with the presentation of a special .scientific film about them	Modern control systems in construction machines	2	thir ty

Course evaluation-11 .92
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written .exams, reports, etc
Resources of learning and teaching-12 .93

Website of the Technical Institute - Najaf	Required textbooks (methodology, if any
Construction planning methods and equipment (Part One) - 1 Translated by Dr. Muhammad Ayoub Sabri Al-Ezzi Guessing: by Medhat Fadil -2	Main references (sources)
	Recommended supporting books and ,references (scientific journals (....reports
Internet sites	Electronic references, Internet sites

Course Description Form(10)

Course Name .94
Surveying - Phase Two
Course Code .95
-
Semester/year .96
annual
Date this description was prepared .97

15/4/2026					
Available attendance forms .98					
Theoretical - practical					
Number of study hours (total)/number of units (total) .99					
6 / 3					
Name of the course administrator (if more than one name is mentioned) .100					
:NameEmad Al-deen Abd al-ameer amadnajaf@atu.edu.iq: Amil- Al /					
objectives Course .101					
Teaching and learning strategies .102					
The strategy					
Course structure .103					
Study plan (suggested)					
Second academic year					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

+Oral exams Editorial	Lecture + practical example + s laborato ry	Identifying the theodolite ,device/its parts, uses, types installing the device, reading the horizontal and vertical .directions of the various types	Getting to know the theodolite .device	2	the first
=	=	Checking and adjusting the theodolite device for all types of vertical and horizontal examinations, then finding the .device's constant	Checking and adjusting the theodolite device	2	the seco nd
=	=	Methods for measuring horizontal angles with a .theodolite device	Methods of measuring horizontal angles	4	the thir d
=	=	,Polygons, types of polygons .their purposes, and uses	ribbing		the four th
=	=	Measure and correct the interior horizontal angles of a .closed polygon	Measure horizontal angles	2	Fift h
=	=	Methods of measuring the horizontal distances of the .sides of a polygon	Methods of measuring the horizontal distances of the	2	VI

			sides of a .polygon		
=	=	Drawing closed and open .polygons	Drawing closed and open .polygons	2	Sev enth
=	=	Raising beams for polygons using a theodolite device and .tape	Raising beams for polygons	2	VIII
=	=	Calculating the horizontal components and vertical components of the sides of a polygon and calculating the .coordinates	Calculate horizontal components and vertical components	2	Nint h
=	=	Calculating the horizontal components, vertical components, and coordinates .of an open polygon	Calculate horizontal components and vertical components	2	The tent h
=	=	Methods for measuring vertical angles with a .theodolite device	Methods of measuring vertical angles	2	elev enth
=	=	Finding the height of a building (target) that can be reached using the theodolite device	Find the height of a building	2	twel veth

=	=	Finding the height of a building (target) that cannot be reached using a theodolite device		2	Thirteenth
=	=	Finding the height of a building (target) by measuring three angles of elevation or depression using a theodolite device	Find the height of a building	2	fourteenth
=	=	Measuring the length of an - inaccessible building measuring the horizontal angle .between two walls	Measuring the length of an inaccessible building	2	Fifteenth
=	=	Curves/types	Curves	2	sixteen
=	=	Horizontal curves (elements of a simple circular curve) and equations used in designing a .simple circular curve	Horizontal curves	2	seventeenth
=	=	Methods of projecting horizontal curves / method of columns based on tangents (Baker method) - method of columns located on the chord (offsets) - method of dividing	Methods of projecting horizontal curves	2	eighteen

		the chords - method of deviation angles			
=	=	Projecting curves using two .theodolite devices	Projection of curves	2	nineteenth
=	=	Drawing a road with its .horizontal curves	Draw a road with its horizontal curves	2	The twentieth
=	=	The main convex and concave curves/their elements/calculating the length of the vertical curve	Convex and concave principal curves	2	21st
=	=	Calculations related to the .vertical curve	Calculations related to the vertical curve	2	XXII

=	=	,Triangulation, its purposes use, choosing triangulation .points, triangulation networks	Triangulation	2	twe nty third
=	=	Measure the base line for triangulation and make fortifications for measuring .with tape	Measure the base line for triangulation	2	twe nty four th
=	=	Measuring the horizontal angles of the triangulation network, making calculations and making the necessary .fortifications	Measuring the horizontal angles of a triangulation grid	2	25th
=	=	Tachymetric survey, types of .tachymeter devices	Tachymetric area	2	twe nty-sixt h
=	=	Learn about modern electronic measuring devices and how to use them to measure horizontal .and vertical distances	Identify modern electronic measuring devices	2	And the twe nty-seve nth
=	=	A general project about constructing a road or drainage channel, calculating the dirt needed to complete the	A general project on constructing a road	4	Twe nty-eigh th

		project along with its .horizontal and vertical curves			
=	=	Introduction to the .comprehensive station device Using the total station device to measure the lengths of the sides of a polygon, interior .angles, and coordinates	Introduction to the comprehensive station device	2	Twe nty-nine and thir ty-nine
Course evaluation-11 .104					
Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written .exams, reports, etc					
Resources of learning and teaching-12 .105					
Website of the Technical Institute - Najaf			Required textbooks (methodology, if any		
			Surveying methodology book		
			Recommended supporting books and ,references (scientific journals (....reports		
Internet sites			Electronic references, Internet sites		