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

Academic Program and Course Description Guide

2025

Introduction:

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

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

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

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

Academic Program Description Form

University Name: Wasit University

Faculty/Institute: College of Engineering

Scientific Department: Civil Engineering

Academic or Professional Program Name: Civil Engineering 2025–2026

Final Certificate Name: BSc in Civil Engineering

Academic System: Bolonga Process

Description Preparation Date: 1/9/2025

File Completion Date: 29/9/2025

Signature:

Head of Department Name:

Asst. Prof. Dr. Alaa Kharbat

Date: 2025/9/22

Signature: Mohammed G M

Scientific Associate Name:

Asst. Prof. Dr. Mohamed Galib

Date: 2025/9/23

The file is checked by: Asst. Prof. Dr. Haider Majid Hasan

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 2025/9/29

Signature:

Approval of the Dean

Prof. Dr. Thaer Saoud Salman

Date: 2025/9/29

1. Program Vision

To attain a distinguished position in the field of engineering education and scientific research, by fostering collaboration and innovation, and striving to graduate competent civil engineers who contribute to sustainable development and community service.

2. Program Mission

The mission of the department is to qualify creative civil engineers through modern teaching methods and scientific research, with an awareness of societal challenges and the development of sustainable engineering solutions to address them.

3. Program Objectives

1. Empowering graduates to become competent engineers with comprehensive knowledge of civil engineering.
2. Enabling graduates to acquire the ability to apply design and management methods and to work in construction projects related to civil engineering.
3. Equipping graduates with the ability to develop communication and teamwork skills in multidisciplinary projects.
4. Providing graduates with the capacity for lifelong learning to enhance professional performance, foster creativity, and engage in planning grounded in community values and professional ethics.
5. Keeping pace with the latest developments in civil engineering through periodic reassessment of study plans and proposed curricula.
6. Conducting scientific research and studies to expand knowledge and applications, while offering innovative solutions particularly to local and regional problems.
7. Establishing strong partnerships with local, regional, and international companies and institutions to promote and support scientific research and educational activities at the university.

4. Program Accreditation

We are continuing to work on completing the accreditation file and submitting both the self-assessment report and the review report.

5. Other external influences

Ministry of Higher Education and Scientific Research

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	450	15%	
College Requirements	1	25	1%	
Department Requirements	23	2525	84%	
Summer Training	1	NA	NA	
Other				

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

7. Program Description

Structured Hours		Code	Module Name	Level
Lab	Theory			
2	2	CE 112	Building materials1	First
2	2	CE 122	Building materials2	
	4	COE01	Mathematics1	
	4	CE 111	Engineering mechanics1	
	4	CE 122	Engineering Mechanics	
	3	CE 113	Statisitics and probability1	
	3	CE 124	Statistics and probability2	
4		CE 114	Engineering Drawing	
2	1	WU01	Computer1	
	2	WU02	Arabic	
2	1	CE 115	Engineering Practices	
4		CE 125	Drawing by computer	
2	1	CE 126	Computer programming1	
	2	WU03	Academic English1	
	2	WU04	Democracy and human rights	
	4	CE 121	Mathematics2	
	4	CE 231	Mathematics3	Second
	4	CE 241	Mathematics4	
	4	CE 232	Strength of materials	
3	2	CE 233	Engineering survey	
2	2	CE 234	Fluid mechanics1	
2	3	CE 244	Fluid mechanics2	
2	2	CE 235	Concrete technology1	
2	2	246 CE	Concrete technology2	
	2	CE 236	Building construction	
2	2	CE 245	Building construction and structural drawing	

2	**1**	**WU22**	Computer2	
	2	**WU05**	English2	
	4	**CE 242**	Strength of materials2	
3	**2**	**CE 243**	Engineering survey2	
	2	**WU21**	Arabic2	
	2	**WU23**	Baath crimes in Iraq	
	4	**CE 351**	Engineering analysis	**Third**
	4	**CE 352**	Structural analysis	
2	**3**	**CE 353**	Soil mechanics1	
	4	**CE 354**	Reinforced concrete1	
2	**2**	**CE 355**	Water engineering	
	3	**CE 356**	Traffic engineering	
	3	**CE 357**	Projects administration	
1	**1**	**CE 358**	Computer applications1	
	4	**CE 361**	Numerical analysis	
	4	**CE 362**	Structural analysis2	
2	**3**	**CE 363**	Soill mechanics2	
	4	**CE 364**	Reinforced concrete2	
	3	**CE 365**	Hydrology	
	3	**CE 366**	Road designs	
		CE 367	Engineering economy	
1	**1**	**CE 368**	Computer applications2	

8. Expected learning outcomes of the program

Knowledge	
1A	The ability to identify, formulate, and solve engineering problems using the principles of mathematics, science, and engineering
2A	The ability to conduct experiments, analyze data, and interpret results to reach sound engineering conclusions
Skills	
1B	The ability to design engineering systems or components that meet specified needs within realistic constraints
2B	The ability to communicate effectively, both orally and in writing, with diverse audiences
3B	The ability to work effectively in teams and manage projects efficiently in multidisciplinary environments
Ethics	
1C	Understanding ethical and professional responsibilities and the impact of engineering solutions on society and the environment
2C	The ability for continuous self-directed learning and keeping up with scientific and technological developments

9. Teaching and Learning Strategies

1. Theoretical Lectures: Serving as the primary means of delivering fundamental scientific knowledge.
2. Laboratory and Practical Sessions: To apply theoretical concepts in practice and enhance analytical skills.
3. Projects and Assignments: Particularly graduation projects and reports, aimed at developing design and innovation skills.
4. Presentations and Classroom Discussions: To strengthen communication and teamwork skills.
5. Field Visits: To connect students with real-world engineering practice.
6. E-Learning / Learning Management Systems (LMS): Through the use of electronic platforms and digital materials.
7. Self-Learning: Encouraging students to engage in independent research and utilize scientific resources

10. Evaluation methods

Implemented at all stages of the program in general.
Quizzes
Assignments
Projects / Lab.
Report
Midterm Exam

11. Faculty

Faculty Composition		**Specialization**		**Academic Rank**	
PT	**FT**			**General**	
	Permanent	**Specific Specialization**	**Major**	**PhD, MSc, etc**	**Name**
	Permanent	Project management	Civil Engineering	PhD	احسان علي حسين
	Permanent		Civil Engineering	PhD	احمد حميد شهاب
	Permanent	Environment	Civil Engineering	PhD	احمد عادل ناجي
	Permanent	Roads	Civil Engineering	MSc	احمد كاظم كريم
	Permanent	Geotech	Civil Engineering	MSc	اسراء محمد محسن
	Permanent	Geotech	Civil Engineering	PhD	اسعد حافظ حميش
	Permanent	Project management	Civil Engineering	PhD	بروج بشير محمود

	Permanent	Structure	Civil Engineering	PhD	ثائر سعود سلمان
	Permanent	Water resources	Civil Engineering	MSc	جاسم محمدرضا عزيز
	Permanent	Structure	Civil Engineering	MSc	جاسم محمود مهلهل
	Permanent	survey	Civil Engineering	PhD	جرير جابر محمد
	Permanent	Structure	Civil Engineering	MSc	حسام الدين القهار عمار
	Permanent	Geotech	Civil Engineering	PhD	حسن علي عباس
	Permanent	Structure	Civil Engineering	PhD	حسين عسكر جابر
	Permanent	Geotech	Civil Engineering	MSc	حقي هادي عبود
	Permanent	Structure	Civil Engineering	MSc	دانية عبدالناصر عبدالرضا عليوي
	Permanent	Geotech	Civil Engineering	MSc	دعاء طه ياسين
	Permanent	Water resources	Civil Engineering	MSc	رنا عقيل عبيد ياسين
	Permanent	Water resources	Civil Engineering	MSc	زهراء صباح حسن علي
	Permanent	Structure	Civil Engineering	MSc	زهراء علي عبدالحسين
	Permanent	**Materials**	Civil Engineering	MSc	سرى سليم حسن
	Permanent	Roads	Civil Engineering	PhD	سلام رضا عليوي
	Permanent	Geotech	Civil Engineering	PhD	سلمان فاضل شوكة
	Permanent	Geotech	Civil Engineering	MSc	سليم محمود معارك
	Permanent	Environment	Civil Engineering	PhD	صلاح لفتة فرحان
	Permanent	Structure	Civil Engineering	PhD	صلال راشد عبد
	Permanent	Geotech	Civil Engineering	PhD	عامر محسن مهاوش جابر
	Permanent	Water resources	Civil Engineering	MSc	عبدالله سراج أنور
	Permanent	roads	Civil Engineering	MSc	عبدالمهيمن جعفر كاظم

	Permanent	Survey	Civil Engineering	MSc	عقيل عبود عبدالحسن
	Permanent	Project management	Civil Engineering	PhD	علاء خرباط شذر
	Permanent	**Civil Engineering**	Civil Engineering	MSc	علاء محسن حمد
	Permanent	Environment	Civil Engineering	PhD	علي جويد جعيل
	Permanent	Structure	Civil Engineering	MSc	علي حسين احمد
	Permanent	Geophysics	Civil Engineering	PhD	علي عبد موحي
	Permanent	Water resources	Civil Engineering	PhD	علي ناصر حلو
	Permanent	Environment	Civil Engineering	PhD	علي وحيد نغيمش
	Permanent	History	Civil Engineering	MSc	علياء كاظم جبر
	Permanent	Structure	Civil Engineering	PhD	كرار علي فزع
	Permanent	Civil Engineering	Civil Engineering	MSc	لمياء جبار مطر
	Permanent	Water resources	Civil Engineering	PhD	ليث بدر فتحي
	Permanent	Geotech	Civil Engineering	PhD	محمد علي حسين حسن
	Permanent	Building materials	Civil Engineering	MSc	محمد فريح حطاب
	Permanent	Geotech	Civil Engineering	MSc	مرتضى هاشم حسون
	Permanent	Water resources	Civil Engineering	MSc	مروة كريم عزيز
	Permanent	arabic	Civil Engineering	PhD	مشتاق كاظم جمعة
	Permanent	materials	Civil Engineering	MSc	مصطفى ثائر حسن
	Permanent	roads	Civil Engineering	PhD	مقداد منذر عبدالغني
	Permanent	Water resources	Civil Engineering	MSc	منال عبدالستار محمد
	Permanent	Water resources	Civil Engineering	MSc	مهدي نهير راهي
	Permanent	Structure	Civil Engineering	PhD	ميلاد محمدحسن راضي

	Permanent	roads	Civil Engineering	PhD	نبيل سليم سعد
	Permanent	Geotech	Civil Engineering	PhD	نبيل محمدعلي حميد
	Permanent	Water resources	Civil Engineering	MSc	نذير صلاح الدين أيوب
	Permanent	Water resources	Civil Engineering	MSc	نور قاسم صبري
	Permanent	environment	Civil Engineering	PhD	نورالهدى علاءالدين جاسم
	Permanent	Geotech	Civil Engineering	MSc	هبة داود سليم
	Permanent	Water resources	Civil Engineering	MSc	هدى يوسف عناد
	Permanent	chemical Engineering	chemical Engineering	MSc	ولاء عبدالخالق زغير

Professional Development

Mentoring new faculty members

 Orientation Program:

An introductory session upon appointment covering the college mission, program objectives (PEOs), and learning outcomes (GOs).

Explanation of department systems: Outcome-Based Education (OBE), quality assurance, and assessment mechanisms.

 Academic Advising:

Assignment of an experienced faculty member as an academic supervisor/mentor for each new member.

Providing support in lecture preparation, teaching strategies, and classroom management.

 Training in Teaching and Learning Strategies:

Involving new members in workshops on:

Effective teaching methods.

Preparing exams and rubrics for student assessment.

 Research Preparation and Publication:

Workshops on how to write and publish research papers.

 Continuous Professional Development:

An annual plan for each faculty member, including participation in workshops and training courses.

 Administrative Support:

Familiarization with university regulations, rights, and responsibilities.

Professional development of faculty members

 Workshops and Training Courses:

On teaching strategies and active learning.

On the use of e-learning systems (LMS) and distance learning tools.

On preparing rubrics and modern assessment tools.

 Scientific Conferences and Seminars:

Participation in research presentations or attendance at local and international conferences.

Exchange of expertise with other universities.

Participation in external training programs.

 Scientific Research and Publication:

Support for applied research and community-related projects.

Encouragement of publication in reputable scientific journals (Scopus, WoS).

Provision of financial or time support to facilitate research completion.

 Self-Assessment and Feedback:

Student surveys on faculty performance.

Annual performance evaluation.

12. Acceptance Criterion

Central Admission:

According to the Central Admission Guide issued by the Ministry of Higher Education and Scientific Research, along with the Student Affairs Procedures Guide and the regulations and conditions of admission issued by the Ministry of Higher Education and Scientific Research.

Evening Study Program:
According to the Central Admission Guide issued by the Ministry of Higher Education and Scientific Research, along with the Student Affairs Procedures Guide and the regulations and conditions of admission issued by the Ministry of Higher Education and Scientific Research.

13. The most important sources of information about the program

1. The official website of the college/university.
2. Publication on the notice board.
3. Sending via the official email upon request.

14. Program Development Plan

1 .Curriculum and Course Development

2 .Achievement of Learning Outcomes (GOs)

3 .Development of Teaching and Assessment Methods

4 .Capacity Building for Faculty Members

5 .Development of Infrastructure and Laboratories

6 .Strengthening the Relationship with the Labor Market and the Community

7. Continuous Improvement

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
				★		★	Core	Building materials1	CE 112	First
				★		★	Core	Building materials2	CE 122	
					★	★	Core	Mathematics1	COE01	
				★		★	Core	Engineering mechanics1	CE 111	
				★		★	Core	Engineering Mechanics	CE 122	
					★	★	Core	Statisitics and probability1	CE 113	

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
					★	★	Core	Statistics and probability2	CE 124	
			★	★			supportive	Engineering Drawing	CE 114	
★			★	★		★	supportive	Computer1	WU01	
★		★	★				basic	Arabic	WU02	
			★	★			basic	Engineering Practices	CE 115	
			★	★			supportive	Drawing by computer	CE 125	
★			★	★		★	supportive	Computer programming1	CE 126	

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
		★	★				basic	Academic English1	WU03	
★	★						basic	Democracy and human rights	WU04	
					★	★	Core	Mathematics2	CE 121	
					★	★	Core	Mathematics3	CE 231	
					★	★	Core	Mathematics4	CE 241	Second
				★		★	Core	Strength of materials	CE 232	

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
			★	★		★	Core	Engineering survey	CE 233	
				★		★	Core	Fluid mechanics1	CE 234	
				★		★	Core	Fluid mechanics2	CE 244	
				★		★	Core	Concrete technology1	CE 235	
				★		★	Core	Concrete technology2	246CE	
				★		★	Core	Building construction	CE 236	

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
			★	★		★	Core	Building construction and structural drawing	CE 245	
★			★	★		★	supportive	Computer2	WU22	
★		★	★				basic	English2	WU05	
				★		★	Core	Strength of materials2	CE 242	
			★	★		★	Core	Engineering survey2	CE 243	
★		★	★				basic	Arabic2	WU21	
★	★						basic	Baath crimes in Iraq	WU23	

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
					★	★	Core	Engineering analysis	CE 351	Third
				★		★	Core	Structural analysis	CE 352	
				★		★	Core	Soil mechanics1	CE 353	
				★		★	Core	Reinforced concrete1	CE 354	
				★		★	Core	Water engineering	CE 355	
				★		★	Core	Traffic engineering	CE 356	

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
	★	★	★	★			Core	Projects administration	CE 357	
★			★	★		★	Core	Computer applications1	CE 358	
					★	★	Core	Numerical analysis	CE 361	
				★		★	Core	Structural analysis2	CE 362	
				★		★	Core	Soill mechanics2	CE 363	
				★		★	Core	Reinforced concrete2	CE 364	
				★		★	Core	Hydrology	CE 365	

Program Skills Map										
Program Learning Outcomes										
Values		Skills			Knowledge		Core, supportive or basic	Name	Code	Level
2C	1C	3B	2B	1B	2A	1A				
				★		★	Core	Road designs	CE 366	
	★			★		★	Core	Engineering economy	CE 367	
★			★	★			Core	Computer applications2	CE 368	

Course Description Form

1. Course Name:	
Statistics and Probability I	
2. Course Code:	
CE 114	
3. Semester / Year:	
1/1	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45/4	
7. Course administrator's name (mention all, if more than one name)	
Name:**Ali Jwied** Email: a**lijwaid@uowasit.edu.iq**	
8. Course Objectives	
Course Objectives	**1. To use appropriate statistical terms to describe data.** **2. To use appropriate statistical methods to collect, organize, display, and analyze relevant data.** **3. To compute fluently and make reasonable estimations.**
9. Teaching and Learning Strategies	
Strategy	In Statistics and Probability module, which needs a comfortable classroom

	environment due to its complex topics that need a unique way of delivering the materials to accommodate students' diverse learning needs to motivate and enable them to gain the skills needed to understand and succeed. Therefore, my strategy in this module is to adopt a variety of techniques designed to address the unique learning styles and diversity among students. In each lecture, I will begin with a brief example from real life to motivate interest in the subject and tie the topic into the larger picture and to make the subject much easier to understand. Also, students are encouraged to engage in the module through their questions, problem-solving, and teamwork for exchanging ideas and concepts regarding assignments. At the end of each subject within the module, questions involving extensions of the concepts covered and their applications will be proposed to prompt critical thinking as well as motivate the next subject to be covered. To pass the exams successfully, students must review each lecture on the same day to fully understand the subject, and they are encouraged to ask the tutor regarding anything they did not understand. Finally, reading and understanding the lectures given during the course will enable any student to succeed in the final exam.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	3	At the end of this modu students will be able to: 1. Recognize a differentiate between k terms. 2. Apply various types sampling methods to da collection. 3. Create and interp frequency tables. 4. Display data graphica and interpret grap histograms, and frequency polygon. 5. Recognize, describe, a calculate the measures location of data: quartiles and percentiles. 6. Recognize, describe, a calculate the measures the center of data: mean, median, and mode.	4	☒ **Theory** ☒ **Lecture** ☒ **Tutorial**	Quizzes Homework Classwork Mid term exa Final exam

		7. Recognize, describe, a calculate the measures the spread of data: varian standard deviation, a range. 8. Understand and use t terminology of probability 9. Determine whether t events are mutua exclusive and whether t events are independent. 10. Calculate probabilit using the addition rules a multiplication rules. 11. Construct and interp contingency tables. 12. Construct and interp Venn diagrams. 13. Construct and interp Tree diagrams.			

11. Course Evaluation
Quizzes Homework Classwork Mid term exam Final exam

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Elementary Statistics- A St By Step Approach Bluman A.G.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	YouTube channel of t instructor.

Course Description Form

1. Course Name:
Engineering Drawing
2. Course Code:
CE 114
3. Semester / Year:
1/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Laith bader Al-baderanee** Email: **laithbadr@uowasit.edu.iq**
8. Course Objectives

Course Objectives	• **To Create and interpret engineering drawing** • **Familiarizes students with the fundamentals of drawing.** • **Develop students' inspiration skills of the geometric objects**
9. Teaching and Learning Strategies	
Strategy	Assessment Strategy The student's work will be assessed according to the module tasks. The excises in the drawing hall will be marked weekly. And the homework will be assessed next lecture. During both assessments, the student will give oral and written feedback in order to improve their skills. The final exam will be done at the end of the semester. Note: late work will not be marked.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	60	On successful completion of this module, the students will be able to: -Sketch concept designs. -interpret and prepare engineering drawing a means of communication for the production of assemblies and the detail of the manufacture components. -produce two-and three dimensional engineering drawings -use appropriate formulae for the selection a design of machine elements for given engineering applications. •Drawing types: differences between genera arrangement, and detail drawings. •Layout: paper sizes, borders, title block, pa list. •Projection systems: first and third angle projection, projection symbols. •Lines and linework: line types and applicati thickness, leader lines, and arrowheads. •Lettering and symbols: style, height, directi and location. Common symbols • Views: partial, sections and rules associate with hatching. • Principles of dimensioning: projection and dimension lines, dimensioning methods, tolerance dimensions.•	4	**Theory Lecture Drawing**	**Classwork Quizzes Homwqork Project Midterm exam Final Exam**

11. Course Evaluation

Classwork
Quizzes
Homwqork
Project
Midterm exam
Final Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	M.B.Shah, "Engineering Drawing" Dorling Kendersley (India 2009 SIMMONS, COLIN H., Manual of engineering drawing, Butterworth-Heinemann.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	The most recent editions of: YARWOOD, A., Engineering drawing, Cassell.PHELPS, NEIL; SIMMONS, COLIN H., Engineering drawing practice: a guide for further and higher education to BS 8888:2006, Technical product specification (TPS), BSI. JENSEN, CECIL; HELSEL, JAY D., Engineering drawing and design,

	McGraw-Hill.
Electronic References, Websites	

Course Description Form

1. Course Name:
Mathematics 1
2. Course Code:
COE01
3. Semester / Year:
1/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
4/5
7. Course administrator's name (mention all, if more than one name)
Name: **Hiba D. Saleem** Email: **hdawood@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. Providing the students with a sufficient knowledge on doing calculations, interpreting results, and dealing with different mathematical functions and their graphs.** **2. Providing the students with the necessary skills on dealing with transcendental functions (trigonometric, inverse trigonometric, exponential, and power, natural logarithm, hyperbolic, inverse hyperbolic functions).** **3. Strengthen the students' knowledge on the principles of derivatives, their concept and applications in engineering.**

9. Teaching and Learning Strategies	
Strategy	1. Class lectures with using illustration means. 2. Encouraging the students to participate in solving exercises in class to improve students' skills. 3. 3.Training students on solving home works 4. Practicing in class questions and discussions 5. Doing quizzes and exams 6. In class questions and discussions to improve their understanding and critical thinking skills. 7. Supportive videos will also be available.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Realize the importance of studying mathematics and its relationship to engineering sciences. 2. Defining and understanding functions suc the trigonometric and transcendental functions and their graph. 3. The students will have the ability for deal with limits and how to check the continuity of the functions. 4. Define and find the relationship between Limits, Continuity and derivatives. 5. The students will be able to solve a wide variety of mathematical derivative problems using different mathematical met and understand their applications. 6. The students will be able to solve a wide variety of mathematical integration problems using substitution and integration parts. 7. To be able to use the fundamental theore calculus to evaluate definite integral and calculate the areas, volumes, lengths of plane curves. 8. Learn about mathematical analysis meth mathematical equations and formulas, and how to apply them in enginee 9. Solving complex functions. 10. Solving integrals and differentials equat with different coordinates. 11. Solving different equations using the ma method. 12. Solving complex equations and numbers simple and different mathematical ways.	5	Theory Tutorial	Quizzes Homework Classwork Project Midterm exa Final exam

11. Course Evaluation

Quizzes
Homework
Classwork
Project
Midterm exam
Final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Thomas' Calculus: (George B. Thomas, Maurice D. Weir and Joel R. Hass , 2011, 12th Editio
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1. Matrix Methods and Differential Equations A Practic

	Introduction by Wynand S. Verwoerd. 2. Advanced Engineering Mathematics by Erwin Kreyszig 8th Edition. 3. Essential Engineering Mathematics by Michael Batty 2011.
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Mechanics I
2. Course Code:
CE 111
3. Semester / Year:
1/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
4/5
7. Course administrator's name (mention all, if more than one name)
Name: **Saleem Mahmood Imarek** Email: **smahmood@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. define and explain principles of engineering mechanics (i.e. statics and dynamics) related to civil engineering domain** **2. solve problems of statics and dynamics related to civil engineering domain using principles of engineering mechanics. discuss and clarify concepts of principles of engineering mechanics (i.e. statics and dynamics) for different simple situations.** **3. prepare free body diagrams of real case phenomenon considering engineering mechanics point of view.**

9. Teaching and Learning Strategies

Strategy	Engineering Mechanics is a heavy course load that requires long instruction hours. Therefore, the strategy of the course to deliver this module depends mainly on the module instructor in the class, where the material should be delivered with practical examples. Moreover, class tutorials and homework assignments would help the students to practice solving analysis Composition and resolution of forces issues more efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given course elements. Visits to structural building construction sites are also another tool to combine the delivered theoretical material with its practical application.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Discern and determine the magnitude of loads act on simple structural members. 2. Analyze rigid body equilibrium including: a. Cons free body diagrams showing the function of simple structural elements; Analyze the force(s) or moment(s) required to maintain a structure in equilibrium; c. Analyze external reactions on structural members under applied loac d. Construct axial force, shear force and bending moment diagrams for simp beams . 3. Analyze the behavior of structural members including: a. Analyze section properties for simple cross sections; b. Analyze inte axial stresses, shear stresses and bending stresses in structural member such as beams, trusses, ties, struts, shafts and bolts .	4	Theory Tutorial	Quizz Report Project Homework exams

11. Course Evaluation

Quizz
Report
Project
Homework
exams

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering Mechanics By: A. Higdon and W.B. Sti 1974
Main references (sources)	
Recommended books and references (scientific journals, reports…)	A Textbook of Engineering Mec R.K. Bansal Laxmi Publications, 2005 R.K. Bansal
Electronic References, Websites	

Course Description Form

1. Course Name:
Computer1
2. Course Code:
WU03
3. Semester / Year:
1/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
3/3
7. Course administrator's name (mention all, if more than one name)
Name: **Yousif Raad Muhsen ALmolla** Email: **Yousif@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. Giving the student a general idea of computer material at a study environment, library, and at home. 2. Understanding the basic rules for dealing with and managing computers (computer basics, computer components, computer and software licenses, operating systems, ...), With the aim of preparing the student to enter the programs he needs in the department. 3. Giving the student knowledge about the office applications as basic principles for students in the College of Engineering.**

9. Teaching and Learning Strategies

Strategy	**1. Using computers and display screens to explain lectures to students to increase students' mental comprehension. 2. Practical application in the computer lab of what was explained in the theoretical lecture. 3. Using direct questions in the classroom as brainstorming skills. 4. Encouraging students to solve class and homework assignments and to perform specialized reports.**

10. Course Structure

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

15	3	1. Knowing computer peripherals, their connections and Windows system. 2. Distinguish between the important tabs in Word program. 3. The ability to write an entire paragraph wi formatting. 4. Understand the basics of power point program. 5. Understand the excel sheet program. 6. Understanding the concepts of programmi	3	Lab	Quizz Assignment Lab Exams Report

11. Course Evaluation

Quizz
Assignment
Lab
Exams
Report

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020) 2. Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020). 3. Ahmed Banafa, "Introduction to
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Building Materials1
2. Course Code:
CE 112
3. Semester / Year:
1/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Milad Mohammed Hasan** Email: **mhasan@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. Define and explain principles of engineering properties for building materials, especially materials used in construction, and finishing. 2. Educate the basic chemical compositions of different types of building materials and the raw materials used in their manufacture are made up. 3. Educate the methods of manufacturing building materials.**

9. Teaching and Learning Strategies

Strategy	**Engineering Material Properties is an important course that requires hours for theoretical and experimental explaining. Moreover, this course needs seminars, recorded or online videos, and educational trips which would help the students to understand the subjects and have a clear idea about all subject**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Understand the main properties of materials that responsible for their different behaviors. 2. Learn the basics of different types of building materials and the method of manufacture.	4	Theory Lab	Quizz Project Homework Exam

		3. Learn how to test different building materials and methods of obtaining the main properties of building materials experimentally. 4. Educate the preliminary mechanical and			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	S. C. Rangwala, Engineering Materials, 32nd Edition 2005
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Computer Programming I
2. Course Code:
CE 126
3. Semester / Year:
1/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
3/3
7. Course administrator's name (mention all, if more than one name)
Name: **Yousif Raad Muhsen ALmolla** Email: **Yousif@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. The aim of this Module is to provide the student with: provide you with the fundamental tools to use the C++ computer program .** **2. The module will familiarize you with the various C++ packages, their relative strengths and therefore which one to use to solve the problem at hand. This will enable you to work efficiently through all your modules on the programmer, As the C++ Suite remains the dominant office package in the workplace, the skills you obtain here will increase your employability both during your degree (work placement, summer internship) and upon graduation and The ability to plan, develop and test C++ computer programs for a range of routine programming problems.**

9. Teaching and Learning Strategies	
Strategy	**The computer programming course is rigorous and demands extensive instructional time. Consequently, the course's approach relies heavily on the instructor to deliver the content through practical examples during class. Furthermore, assigning tutorials and homework assignments enables students to practice and improve their software skills in problem-solving. Occasional utilization of practical and test videos aids in establishing connections between various elements of the course. Additionally, visits to intersections serve as a valuable tool to bridge the gap between theoretical concepts and their practical application.** **1. Using computers and display screens to explain lectures to students to increase students' mental comprehension.** **2. Practical application in the computer lab of what was explained in the theoretical lecture.**

	3. Using direct questions in the classroom as brainstorming skills. **4. Encouraging students to solve class and homework assignments and to perform specialized reports.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	3	1. Create and run programs written in a C++ programming language using an integrated development environment. 2. Identify classes and solve routine programming problems. 3. The ability to write an entire paragraph with formatting. 4. Create re-usable software routines in a C++ programming language. 5. Utilizes standard class library functionality.	3	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Object Oriented Programmi in C++ 4th Edition.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Arabic Language
2. Course Code:
WU02
3. Semester / Year:
2/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
2/2
7. Course administrator's name (mention all, if more than one name)
Name: **Mushtaq Jumaa** Email: **mjmaah@uowasit.edu.iq**
8. Course Objectives

Course Objectives	المهارة اللغوية للطلبة و تمكينهم من التعبير عن أفكارهم و مشاريعهم باللغة العربية و بطلاقة. **Linguistic proficiency of students by enabling them to express their ideas and projects in fluent Arabic.** 2- تجنب الطلبة التحدث باللغة الدارجة او الكلمات غير العربية **Students avoid speaking in colloquial and non-Arabic language in the simplest ways.** 3- كتابة التقارير و المقالات باللغة العربية و بشكل انسيابي و دقيق و منظم **Writing reports and articles in fluent, concise and well-organized Arabic.** 4- استخدام قواعد اللغة العربية بشكل صحيح لان اللغة هي الأداة الأساسية للتواصل بين افراد المجتمع. **Use Arabic grammar correctly; Because language is the primary tool of communication between members of society.** 5- قراءة و فهم النصوص الاكاديمية باللغة العربية. **Reading and understanding academic texts in Arabic.** 6- تطوير قابلية الطلبة على أداء المهام و تقديمها في الوقت المطلوب. **Developing the student's ability to perform assignments and submit them on time.**

9. Teaching and Learning Strategies	
Strategy	**Present theoretical lectures and determine the information that is most significant by extracting keywords and ideas.** **• Students are given opportunities to produce language, and receive direct feedback to improve their language skills.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	Upon completion of this course, students will be abl 1- Demonstrate proficiency in reading, writing, and speaking to Arabic. 2-Use Arabic to communicate effectively in academi and professional settings 3- Gain an understanding of linguistic and literary expressions 4-Demonstrate an understanding of the importance Arabic language skills for success in engineering 5-Apply critical thinking and problem-solving skills real-world situations 6- It	2	Theory	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Explanation of Ibn Aqeel on t Alfiyyah of Ibn Malik, edited Muhyiddin Abdul Hamid
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Statistics and Probability II
2. Course Code:
CE 114
3. Semester / Year:
2/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
3/4
7. Course administrator's name (mention all, if more than one name)
Name: **Ali Jwied** Email: **alijwaid@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**To enable students:** **1. To apply concepts of the normal distribution to find probability.** **2. To learn the basic components of hypothesis testing and perform hypothesis tests on population means, variances and proportions.** **3. To use correlation and regression to find relations between variables and determine the equation of such relationship**

9. Teaching and Learning Strategies

Strategy	**In Statistics and Probability module, which needs a comfortable classroom environment due to its complex topics that need a unique way of delivering the materials to accommodate students' diverse learning needs to motivate and enable them to gain the skills needed to understand and succeed. Therefore, my strategy in this module is to adopt a variety of techniques designed to address the unique learning styles and diversity among students. In each lecture, I will begin with a brief example from real life to motivate interest in the subject and tie the topic into the larger picture and to make the subject much easier to understand. Also, students are 3 encouraged to engage in the module through their questions, problem-solving, and teamwork for exchanging ideas and concepts regarding assignments.** **At the end of each subject within the module, questions involving extensions of the concepts covered and their applications will be proposed to prompt critical thinking as well as motivate the next subject to be covered.** **To pass the exams successfully, students must review each lecture on the same day to fully understand the subject, and they are encouraged to ask the tutor regarding anything they did not understand. Finally, reading and understanding the lectures given during the course will enable any student to succeed in the final exam.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	3	At the end of this module, students will be able to: 1. Recognize the normal probability distribution and apply it appropriately. 2. Recognize the standard normal probability distribution and apply it appropriately. 3. Compare normal probabilities by converting to the standard normal distribution. 4. Describe hypothesis testing in general and in practice. 5. Differentiate between Type I and Type II Errors. 6. Conduct and interpret hypothesis tests for a single population mean, population standard deviation known. 7. Discuss basic ideas of linear regression and correlation. 8. Create and analyze scatter plots. 9. Create and interpret a line of best fit. 10. Calculate and interpret the correlation coefficient	4	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Elementary Statistics- A Step By Step Approach Bluman A.G.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Engineering Drawing by Computer	
2. Course Code:	
CE 125	
3. Semester / Year:	
2/1	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Theory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4/4	
7. Course administrator's name (mention all, if more than one name)	
Name: **Dr.laith bader Al-baderanee** Email: **laithbadr@uowasit.edu.iq**	
8. Course Objectives	
Course Objectives	**• Familiarizes students with the fundamentals of drawing.** **• Enhance communication of engineering drawings and product design.** **• Develop students' inspiration skills for the geometric objects.** **• Explore the Auto-CAD program with the students accurately.**
9. Teaching and Learning Strategies	
Strategy	**The engineering drawing in the second semester is an extension of the first semester.** **While the first one is more about drawing technics and skills manually, the second one is more about the fundamental principles of drawing.** **Those fundamentals contain various view categories, relationships between them, sections, and introducing different ways of presentation.** **Moreover, the fundamental aspects of computer-aided design will be explained to students properly. The Auto-CAD program will be used as the main software program for drawing. Using Auto CAD helps the student to draw on the computer accurately.** **Learning Session Structure as for Each week, there are 3 hours of lectures in the drawing hall. At the beginning of each lecture:** **there will be introduced to the new topic. After that, the students will be asked to practice it in the drawing hall.** **Assessment Strategy The student's work will be assessed according to the module tasks.** **The excises in the drawing hall will be marked weekly.** **And the homework will be assessed next lecture. During both assessments, the 3** **student will give oral and written feedback in order to improve their skills.** **The final exam will be done at the end of the semester.** **For the auto-CAD program, there will be an individual project. Through it, the student's performance will be assessed.**

	Note: the late work will not be marked

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1 At the end of this module, the students should be a to. • Understand and read complicated engineering drawings clearly. • Prepare and present the technical drawings effectively. • Enhances the Imagination of geometric shapes. • Using Auto-CAD engineering program professiona	4	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	AutoCAD 2014 and AutoCAD 2014: No Experience Required: Autodesk Official Press [Paperback]-Donnie Gladfelter- Publisher: John Wiley & Sons (16 Aug 2013)-Indiana
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Mathematics II
2. Course Code:
CE 122
3. Semester / Year:
2/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
4/5
7. Course administrator's name (mention all, if more than one name)
Name: **Hiba D. Saleem** Email: **hdawood@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. Develop their mathematical knowledge and oral, written and practical skills in a way which encourages confidence and provides satisfaction and enjoyment.** **2. Read mathematics, and write and talk about the subject in a variety of ways.** **3. Develop a feel for number, carry out calculations and understand the significance of the results obtained.** **4. Apply mathematics in everyday situations and develop an understanding of the part which mathematics plays in the world around them.** **5. Solve problems, present the solutions clearly, check and interpret the results.** **6. Develop an understanding of mathematical principles.** **7. Recognize when and how a situation may be represented mathematically, identify and interpret relevant factors and, where necessary, select an appropriate mathematical method to solve the problem.** **8. Use mathematics as a means of communication with emphasis on the use of clear expression.** **9. Develop an ability to apply mathematics in other subjects, particularly science and technology.** **10. Develop the abilities to reason logically, to classify, to generalize and to prove.** **11. Appreciate patterns and relationships in mathematics.** **12. Produce and appreciate imaginative and creative work arising from mathematical ideas.** **13. Develop their mathematical abilities by considering problems and conducting individual and co-operative enquiry and experiment, including extended pieces of work of a practical and investigative kind.**

	14. Appreciate the interdependence of different branches of mathematics. **15. Acquire a foundation appropriate to their further study of mathematics and of other disciplines.**

9. Teaching and Learning Strategies

Strategy	**1. Lectures** **2. Tutorials** **3. Home works** **4. Test and exams** **5. In class questions and discussions**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. To be able to use the fundamental theorem of calc to evaluate Standard integral and definite integral. 2. The process of integration. 3. Techniques of integration. 4. Definite integral, physical application of integrati velocity and acceleration 5. Area under and between curves 6. Volume of solids revolution 7. Theory of matrices, matrix notation and determin 8. Inverse of matrices. 9. Solutions of simultaneous equations by matrices.	5	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Thomas' Calculus: (George B Thomas, Maurice D. Weir and Joel R. Hass , 2011, 12 Edition)
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Academic English Language 1

2. Course Code:

WU01

3. Semester / Year:

2/1

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

2/2

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

Name: **Muqdad Mundher AbdulGhani**
Email: **muqdadcrhi@gmail.com**

8. Course Objectives

Course Objectives	**This module provides all the language and skills students need to improve their English, with grammar, vocabulary, and skills work in every unit. The aim is represented by the module's trusted methodology combines solid grammar and practice, vocabulary development, and integrated skills.**

9. Teaching and Learning Strategies

Strategy	**Reading a range of pre-intermediate level articles on selected general topics. Writing a topic (informal emails, e.g.,) to classmates to discuss group work. Writing and submitting an assignment to a lecturer, Writing slides for presentations. Listening to authentic material at the beginner level to develop listening skills and comprehension. For Speaking, students may self-select and discuss topics with classmates on a group project. Typical topics that could be used at this level in the teaching of vocabulary include The World Around Us (Countries, Nationality, Language, Physical world, Weather, etc.). It may be appropriate for students to select grammar points for discussion in class, or for the lecturer to select them as they arise in students' writing. Grammar points that typically arise at this level include present simple and past simple; present continuous; question forms and auxiliary verbs; comparison; word order; prepositions; basic phrasal verbs.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	1- Demonstrate understanding of academic texts an summarize them orally and in writing. 2- Demonstrate an ability to write with a fair degree accuracy in a variety of genres. 3- cope effectively with everyday situations everyw in English	2	Theory	Quizz Project Homework Exam

		4- Demonstrate learner independence and be aware their own linguistic strengths and weaknesses. 5- Participate in discussions/seminars on a variety subject related, academic and general topics.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

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

1. Course Name:	
Democracy and Human Rights	
2. Course Code:	
WU04	
3. Semester / Year:	
2/1	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30/2	
7. Course administrator's name (mention all, if more than one name)	
Name: A**lyaa kadhim jepur** Email: **aliaa.kadim@uowasit.edu.iq**	
8. Course Objectives	
Course Objectives	**1- Acquiring the skill of distinguishing between states' relations with their citizens.** **2- Dealing with the concept of human rights.** **3- Acquisition of knowledge in dealing with problems affecting those rights.**
9. Teaching and Learning Strategies	
Strategy	1- Managing the lecture in such a way that the student feels the importance of time. 2- Assigning the student some group activities and duties. 3- Allocate a percentage of the grade for group activities. 4- Developing the topic of group campaigns that shed light on negative societal

	phenomena and the role of students as active individuals in society. 5- Active participation in the classroom is evidence of the student's commitment and responsibility. 6 Commitment to the deadline for submitting the assignments and reports required of the student to submit them. 7- Quarterly

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	1- Graduating a generation that is aware, educ and aware of its duties as an individual in society and the state, and its righ exchange for those duties. 2- Developing in society a culture of respect fo other, regardless of his beliefs, personal inclinations, attitudes, and soc behaviors. 3- Referring first and foremost to the law regar any offensive phenomena that may prevail in the work environment Developing the student's ability to dialogue and discussion. 5- It has a major role in analyzing emer problems in society. 6- It contributes to increasing students' knowl of how to prepare scientific reports.	2	**Theory**	Quizzes Assignments Report Misterm Exam Final Exam

11. Course Evaluation

Formative assessment
Quizzes 20%
Assignments 10%
Report 10%
Summative assessment
Midterm Exam 10%
Final Exam 3hr 50%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Human rights book, Dr. Ta Hamid Hassan
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Engineering Mechanics II

2. Course Code:

CE122

3. Semester / Year:

2/1

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

4/5

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

Name: **Saleem Mahmood Imarek**
Email: **smahmood@uowasit.edu.iq**

8. Course Objectives

Course Objectives	**1. define and explain principles of engineering mechanics (i.e. statics and dynamics) related to civil engineering domain** **2. solve problems of statics and dynamics related to civil engineering** **domain using principles of engineering mechanics.** **discuss and clarify concepts of principles of engineering mechanics (i.e.** **statics and dynamics) for different simple situations.** **3. prepare free body diagrams of real case phenomenon considering** **engineering mechanics point of view.**

9. Teaching and Learning Strategies

Strategy	**Engineering Mechanics is a heavy course load that requires long instruction hours. Therefore, the strategy of the course to deliver this module depends mainly on the module instructor in the class, where the material should be delivered with practical examples. Moreover, class tutorials and homework assignments would help the students to practice solving analysis Composition and resolution of forces issues more efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given course elements. Visits to structural building construction sites are also another tool to combine the delivered theoretical material with its practical application.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Discern and determine the magnitude of loads act on simple	5	Theory	Quizz

		structural members. 2. Analyze rigid body equilibrium including: a. Cons free body diagrams showing the function of simple structural elements; Analyze the force(s) or moment(s) required to maintain a struct in equilibrium; c. Analyze external reactions on structural members under applied loading; 3. Analyze the behavior of structural members including: a.Understanding Principle of Centroid and centers of gravity; b. Analy the moment of inertia.			Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering Mechanics By: A. Higdon and W.B. Sti 1974
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Principles of Civil Engineering
2. Course Code:
CE126
3. Semester / Year:
2/1
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
2/3
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	**1. To introduce students to the concept of civil engineering and its role in serving the community.** **2. To familiarize students with the different branches of civil engineering and their fields of work.** **3. To equip students with the fundamental principles of successful engineering project standards.** **4. To equip students with the fundamental principles of successful engineering project standards.** **5. To introduce students to sustainable construction and its general characteristics.** **6. To develop engineering thinking skills in students during the early stages of their studies.**

9. Teaching and Learning Strategies

Strategy	**1. To introduce students to the concept of civil engineering and its role in serving the community.** **2. To familiarize students with the different branches of civil engineering and their fields of work.** **3. To equip students with the fundamental principles of successful engineering project standards.** **4. To equip students with the fundamental principles of successful engineering project standards.** **5. To introduce students to sustainable construction and its general characteristics.** **6. To develop engineering thinking skills in students during the early stages of their studies..**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	A. Knowledge and Understanding: • Understanding the fundamental principles of c engineering. • Recognizing the role of the civil engineer and professional ethics. B. Cognitive Skills: • Connecting the different branches of civil engineering. • Understanding quality control procedures. • Understanding occupational safety procedures the workplace.	3	Theoretical lectures, Classroom discussions, Presentations	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Grigg, N. S., Introduction to Civi Engineering. Ching, F. D. K., Building Construction Illustrated.
Main references (sources)	Department Professor's Lectur Accredited Scientific Websites
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Building Materials2

2. Course Code:

CE 125

3. Semester / Year:

2/1

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

3/3

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

Name: **Milad Mohammed Hasan**
Email: **mhasan@uowasit.edu.iq**

8. Course Objectives

Course Objectives	**1. Define and explain principles of engineering properties for building materials, especially materials used in construction, and finishing. 2. Educate the basic chemical compositions of different types of building materials and the raw materials used in their manufacture are made up. 3. Educate the methods of manufacturing building materials.**

9. Teaching and Learning Strategies

Strategy	**Engineering Material Properties is an important course that requires hours for theoretical and experimental explaining. Moreover, this course needs seminars, recorded or online videos, and educational trips which would help the students to understand the subjects and have a clear idea about all subject**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Understand the main properties of materials that responsible for their different behaviors. 2. Learn the basics of different types of building materials and the method of manufacture. 3. Learn how to test different building materials and methods of	4	Theory Lab	Quizz Project Homework Exam

		obtaining the main properties of building materials experimentally. 4. Educate the preliminary mechanical and			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	S. C. Rangwala, Engineering Materials, 32nd Edition 2005
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Computer2

2. Course Code:

WU22

3. Semester / Year:

3/2

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

3/3

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

Name: **Yousif Raad Muhsen ALmolla**
Email: **Yousif@uowasit.edu.iq**

8. Course Objectives

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

9. Teaching and Learning Strategies

Strategy	**1. Theoretical.** **2. Explanation using modern means. (For example, using the virtual class, and using simultaneous communication programs such as meet, recording simultaneous lectures and then publishing them in the virtual class)** **3. Practicality.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	3	The expected outcomes for this course are: 1. Students will be able to effectively use a compute basic tasks such as managing files and navigating the operating syste 2. Students will have a solid understanding of the hardware components of a computer system and their respective functions. 3. Students will demonstrate proficiency in creating formatting documents using word processing software, as well designing and delivering presentations. 4. Students will develop skills in conducting researc using the Internet,	3	Theory Lab	Quizz Project Homework Exam

		including evaluating sources and gathering relevant information. 5. Students will gain a foundational understanding o Artificial Intelligence, its applications, and its impact on vario fields.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	5. Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology" 3rd Edition (2020) 6. Alan Evans, Kendall Martin Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020). Ahmed Banafa, "Introduction to Artificial Intelligence (Al)", 1st Edition (2024).
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Mathematics (III)

2. Course Code:

CE231

3. Semester / Year:

3 / 2

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

4/5

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

Name: **Salah Lafta Farhan**
Email: **salahlafta@uowasit.edu.iq**

8. Course Objectives

Course Objectives	**1. To provide students with the necessary mathematical tools, skills, and techniques to deal with a variety of design engineering problems.** **2. To provide students with the opportunity to actively participate in activities during lectures and classes.** **3. To enable students to improve their problem-solving skills through the use of relevant and appropriate mathematical strategies.** **4. To enhance the previous mathematical knowledge of students gained in the previous module of Mathematics.** **5. The contents of this module will be further applied to solve engineering problems in the module of Engineering**

9. Teaching and Learning Strategies

Strategy	**Providing teaching material such as lecture notes, records, and or textbook that a student can have the confidence to read and understand** **Since students struggle with new concepts in Engineering Mathematics and face difficulties with the need of using different mathematical techniques to solve problems, we developed teaching strategies to support students' development of mathematical knowledge and problem-solving skills** **communication and team working skills.** **We used an action research perspective as various methods within this stance can ensure flexibility in responding to the dynamics of interaction between the teachers and the students.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	After taking this course, the student should be able t	5	Theory	Quizz

		1. Show logical thinking in problem solving and wor effectively with self-study material. 2. Demonstrate knowledge and understanding of sh logical thinking in problem solving. 3. Develop mathematical models that effectively cap the fundamental characteristics of an engineering problem. 4. Analyze mathematical outcomes and implications within a more general (engineering) framework. 5. Perform calculations in simple situations and wor through them to solve more complex examples. 6. Demonstrate knowledge and understanding of: a) Sequences and series; arithmetic and geometric series, b) Vectors. c) Differentiation; gradients of curves; equations of tangent and normal. d) Analytical solutions for certain first-order and second-order ordinary differential equations. e) Partial differentiation and some more advanced techniques of calculus.			Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

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

Course Description Form

1. Course Name:
Mathematics (IV)
2. Course Code:
CE241
3. Semester / Year:
4 / 2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
4/5
7. Course administrator's name (mention all, if more than one name)
Name: **Salah Lafta Farhan** Email: **salahlafta@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. To provide students with the necessary mathematical tools, skills, and techniques to deal with a variety of design engineering problems.** **2. To provide students with the opportunity to actively participate in activities during lectures and classes.** **3. To enable students to improve their problem-solving skills through the use of relevant and appropriate mathematical strategies.** **4. To enhance the previous mathematical knowledge of students gained in the previous module of Mathematics.** **5. The contents of this module will be further applied to solve engineering problems in the module of Engineering**

9. Teaching and Learning Strategies	
Strategy	**Providing teaching material such as lecture notes, records, and or textbook that a student can have the confidence to read and understand** **Since students struggle with new concepts in Engineering Mathematics and face difficulties with the need of using different mathematical techniques to solve problems, we developed teaching strategies to support students' development of mathematical knowledge and problem-solving skills communication and team working skills.** **We used an action research perspective as various methods within this stance can ensure flexibility in responding to the dynamics of interaction between the teachers and the students.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	After taking this course, the student should be able t 1. Show logical thinking in problem solving and wor effectively with self-study	5	Theory	Quizz

		material. 2. Demonstrate knowledge and understanding of sh logical thinking in problem solving. 3. Develop mathematical models that effectively cap the fundamental characteristics of an engineering problem. 4. Analyze mathematical outcomes and implications within a more general (engineering) framework. 5. Perform calculations in simple situations and wor through them to solve more complex examples. 6. Demonstrate knowledge and understanding of: a) Sequences and series; arithmetic and geometric series, b) Vectors. c) Differentiation; gradients of curves; equations of tangent and normal. d) Analytical solutions for certain first-order and second-order ordinary differential equations. e) Partial differentiation and some more advanced techniques of calculus.			Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

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

Course Description Form

1. Course Name:
English II
2. Course Code:
WU23
3. Semester / Year:
4 / 2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
2/2
7. Course administrator's name (mention all, if more than one name)
Name: **Dr Lecturer Ahmed Naji** Email: **ahmedadil@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**The main teaching objectives of English IV is to focus on developing language skills relevant to both general and academic contexts, as well as specific civil engineering vocabulary and concepts. It focused on:** **1. Improve students' reading, writing, listening, and speaking skills in English.** **2. Expand vocabulary and understanding of grammatical structures.** **3. Develop the ability to comprehend and produce intermediate-level English in various contexts.** **4. Improve academic writing skills, focusing on clarity, coherence, and proper use of technical terminology.** **5. Familiarize students with key civil engineering terms and phrases.**

9. Teaching and Learning Strategies	
Strategy	**Assessment Strategy The student's work will be assessed according to the module tasks. The home works and two writing assignments will be marked and the student will be instructed with oral and written feedback in order to improve their skills. Also, the student learning will be assessed by two quizzes and one oral presentation. The final exam will be done at the end of the semester. Note: late work will not be marked.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	On successful completion of this module, the studen will be able to: 1. Understand and Use Civil Engineering Terminolo • Comprehend and accurately use technical terms a interpret	2	Theory	Quizz Project Homework

		engineering diagrams, plans, and technical documentation and literature written in English. 2. Communicate Effectively in Professional Contexts • Write clear and concise emails, reports, and propo related to civil engineering projects. • Present technical information and project ideas confidently to both technical and non-technical audiences. • Communicate effectively with peers, supervisors, a clients in multinational environments.			Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	"New Headway Plus: P intermediate" by John and Soars
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Arabic2

2. Course Code:

WU24

3. Semester / Year:

4 / 2

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

2 / 2

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

Name: **Mushtaq Jumaa**
Email: **mjmaah@uowasit.edu.iq**

8. Course Objectives

Course Objectives	تنبيه الطلبة بأهمية اللغة العربية في تنمية القدرات والمهارات الاتصالية بين المتكلم والمتلقي . 2- تمكن الطلبة من التحدث بلغة عربية سليم ة وتجنب الأخطاء الإملائية واللغوية الشائعة . 3- كتابة التقارير والمقالا ت والمخاطبات الرسمية باللغة العربية و بشكل انسيابي و دقيق و منظ م . 4- تعريف الطلبة بالكتابة والقراءة الصحيحة . 5- تواصل الطلبة مع لغتهم الأ م . 6- تطوير قابلية الطلبة على أداء اللغة والقائها بصورة سليمة في المحافل المختلفة .

9. Teaching and Learning Strategies

Strategy	شرح المادة النظرية للطلبة بشكل تفصيلي. • مشاركة الطلبة في المناسبات والمهرجانات الخطابية في المجتمع الأكاديمي. • إشاعة روح التعاون والعمل الجماعي بين الطلبة.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	عند الانتهاء من هذا الفصل، سيكون الطلاب قادرين على: 1- رفع مستوى الكفاءة التعبيرية الشفهية والكتابية لدى الطلبة. 2- قدرة الطلب ة على تحليل وفهم النصوص الشعرية والنثرية . 3- تعرف الطلبة على مفردات لغوية تسهم في إثرائهم المعرف ي في تخصصهم الهندسي . 4- هار فهم الطلب ة لأهمية اللغة العربية في لغة التخاطب والتعبير عن اهتماماتهم الثقافية والفكرية . 5- ت مكن الطلبة من قراءة القرآن الكريم بصورة صحيحة . 6- ت ساهم في زيادة معرفة الط لاب بكيفية كتابة البحوث	2	Theory	Quizz Project Homework Exam

11. Course Evaluation

Quizz Project Homework Exam	

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	ح ابن عقيل على ألفية ابن مالك، - . تحقيق محيي الدين عبد الحميد
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Surveying I
2. Course Code:
CE233
3. Semester / Year:
3 / 2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
5 / 5
7. Course administrator's name (mention all, if more than one name)
Name: **Jareer Jaber Mohammed** Email: **jareermohammed@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1. Introduce fundamental principles: The aim of the module is to provide students with a comprehensive understanding of the fundamental principles and concepts of engineering surveying. This includes the theory and application of measurement techniques, instruments, and equipment used in surveying.** **2. Develop practical skills: The module aims to develop students' practical skills in surveying through hands-on experience with surveying instruments and equipment. Students will learn how to accurately measure distances, angles, and heights, and how to apply these measurements to various civil engineering projects.** **3. Enhance spatial awareness: Engineering surveying requires a strong spatial awareness and the ability to interpret and visualize three-dimensional spaces. The module aims to enhance students' spatial awareness skills, enabling them to understand and work with complex engineering plans, maps, and spatial data.** **4. Promote data analysis and interpretation: Surveying generates large amounts of data that need to be analyzed and interpreted. The module aims to equip students with the necessary skills to process, analyze, and interpret surveying data using appropriate software and statistical techniques. This includes understanding error analysis and making informed decisions based on survey data.** **5. Foster teamwork**

9. Teaching and Learning Strategies

Strategy	**1. Lectures: Traditional lectures can be used to deliver theoretical concepts, principles, and methodologies of surveying. Lectures provide a structured framework for presenting information and introducing new topics. Visual aids such as slides, diagrams, and videos can be incorporated to enhance understanding.** **2. Practical Demonstrations: Practical demonstrations allow students to observe and understand the proper use of surveying instruments and equipment. Instructors can demonstrate measurement techniques, instrument calibration, data collection, and other practical aspects of surveying. Students can actively participate in the demonstrations to reinforce their understanding.** **3. Laboratory Sessions: Laboratory sessions provide hands-on experience for students to apply theoretical knowledge and practice surveying techniques. Students can work in groups or individually to perform experiments, measurements, and data analysis using surveying instruments and software.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	5	1. Demonstrate a comprehensive understanding of t fundamental principles and concepts of engineering surveying, including measurement techniques, instruments, and equipment used in surveying. 2. Apply practical skills in surveying, including accu measurement of distances, angles, and heights using surveying instruments and equipment. 3. Interpret and analyze surveying data, including processing and applying appropriate statistical techniques and error analysi 4. Utilize spatial awareness skills to interpret and w with complex engineering plans, maps, and spatial data. 5. Work effectively in a team and demonstrate stron communication skills in presenting surveying findings and collaborating wit other professionals. 6. Demonstrate knowledge of professional ethics, standards, and	5	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- CHARLES D. GHILANI and PAUL R. WOLF Elementary Surveying An Introduction to Geomatics. 2012 2 -Moffit & Bughard , Surveying, Batsford ,1982 . 3- Bruce R. Harvey SURVEY COMPUTATIONS The University of New South Wales 2013 4- Barry F. Kavanagh .SURVEYING with Constructi

	Applications. Seventh Edition .2010 5 W. Schofield & M. Breach Engineering Surveying Sixth Edition Linacre House, Jordan Hill, Oxford OX2 8DP, UK .20 6- JAMES BAO-YEN TSUI Fundamentals of Global Positioning System Receivers A Software Approach, JOHN WILEY & SONS, INC,2000.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Surveying II
2. Course Code:
CE234
3. Semester / Year:
4 / 2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
5 / 5
7. Course administrator's name (mention all, if more than one name)
Name: **Jareer Jaber Mohammed** Email: **jareermohammed@uowasit.edu.iq**
13. Course Objectives

Course Objectives	**1. Introduce fundamental principles: The aim of the module is to provide students with a comprehensive understanding of the fundamental principles and concepts of engineering surveying. This includes the theory and application of measurement techniques, instruments, and equipment used in surveying.** **2. Develop practical skills: The module aims to develop students' practical skills in surveying through hands-on experience with surveying instruments and equipment. Students will learn how to accurately measure distances, angles, and heights, and how to apply these measurements to various civil engineering projects.** **3. Enhance spatial awareness: Engineering surveying requires a strong spatial awareness and the ability to interpret and visualize three-dimensional spaces. The module aims to enhance students' spatial awareness skills, enabling them to understand and work with complex engineering plans, maps, and spatial data.** **4. Promote data analysis and interpretation: Surveying generates large amounts of data that need to be analyzed and interpreted. The module aims to equip students with the necessary skills to process, analyze, and interpret surveying data using appropriate software and statistical techniques. This includes understanding error analysis and making informed decisions based on survey data.** **5. Foster teamwork**

Name: **Yousif Raad Muhsen ALmolla**

Email: **Yousif@uowasit.edu.iq**

8. Course Objectives

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

9. Teaching and Learning Strategies

Strategy	**1. Lectures: Traditional lectures can be used to deliver theoretical concepts, principles, and methodologies of surveying. Lectures provide a structured framework for presenting information and introducing new topics. Visual aids such as slides, diagrams, and videos can be incorporated to enhance understanding.** **2. Practical Demonstrations: Practical demonstrations allow students to observe and understand the proper use of surveying instruments and equipment. Instructors can demonstrate measurement techniques, instrument calibration, data collection, and other practical aspects of surveying. Students can actively participate in the demonstrations to reinforce their understanding.** **3. Laboratory Sessions: Laboratory sessions provide hands-on experience for students to apply theoretical knowledge and practice surveying techniques. Students can work in groups or individually to perform experiments, measurements, and data analysis using surveying instruments and software.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	5	1. Demonstrate a comprehensive understanding of t fundamental principles and concepts of engineering surveying, including measurement techniques, instruments, and equipment used in surveying. 2. Apply practical skills in surveying, including accu measurement of distances, angles, and heights using surveying instruments and equipment. 3. Interpret and analyze surveying data, including processing and applying appropriate statistical techniques and error analysi 4. Utilize spatial awareness skills to interpret and w with complex engineering plans, maps, and spatial data. 5. Work effectively in a team and demonstrate stron communication skills in presenting surveying findings and collaborating wit other professionals. 6. Demonstrate knowledge of professional ethics, standards, and	5	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- CHARLES D. GHILANI and PAUL R. WOLF Elementary

	Surveying An Introduction to Geomatics. 2012 2 -Moffit & Bughard , Surveying, Batsford ,1982 . 3- Bruce R. Harvey SURVEY COMPUTATIONS The University of New South Wales 2013 4- Barry F. Kavanagh .SURVEYING with Constructi Applications. Seventh Edition .2010 5 W. Schofield & M. Breach Engineering Surveying Sixth Edition Linacre House, Jorda Hill, Oxford OX2 8DP, UK .20 NO 9 6- JAMES BAO-YEN TSUI Fundamentals of Global Positioning System Receivers A Softwa Approach, JOHN WILEY SONS,
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Building Construction and Structural Drawing	
2. Course Code:	
CE245	
3. Semester / Year:	
4 / 2	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Theory	
6. Number of Credit Hours (Total) / Number of Units (Total)	
4 / 3	
7. Course administrator's name (mention all, if more than one name)	
Name: **Buroog Basheer Mahmood** Email: **Buruj@uowasit.edu.iq**	
8. Course Objectives	
Course Objectives	**The program provides students with a rigorous understanding of the principles, practices and ethics in a world-wide context involved in building construction up to first degree level standard.** **The program reflects the academic underpinning necessary to prepare students for a career as a Chartered Builder, Construction Manager, and other related international professional bodies.** **Also, introduce civil engineering first stage students to the fundamentals, basic principles and applications of Building construction.** **These include varies of building materials and equipment. The course combines theory with drawing a number of sheets as a class and home work.** **The importance of building elements and the relationships between architects and civil engineer responsibility.** **Also, provides students with progressive development of knowledge and skills over three levels of study. The program is designed to ensure that graduates have a stimulating and challenging education, which prepares them for their professional career, and produces capable individuals with the potential to progress to professional status and prepare for advancement to master's level qualification. Students will develop a broad range of skills which are transferable across other industries.** **Emphasis is placed on the management**
9. Teaching and Learning Strategies	
Strategy	**Building construction is a significant course that requires focused instruction hours. Therefore, the strategy of the course to deliver this module depends**

	mainly on the module instructor in the class, where the material should be delivered with practical examples from surrounding projects. Moreover, classwork and homework assignments would help the students to practice solving building construction issues more efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given course elements. Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	The student will able to explain basic concepts relat building. The student explains type of buildings and their usage aims. The student explains construction stages. The student will able to explain properties of building elements and prepare the drawings. The student explains functions of building elements The student explains types and properties of foundations .The student prepares foundation plans of buildings. The student expresses properties of different structures walls. The student expresses properties of different struct floors. The student draws details of foundation, walls and floors. The student v able to explain principles of construction in mass buildings and use of the techni knowledges in project drawings .The student explains properties of mass buildings. The student defines building elements of mass building. The student explains principles of mass building and uses them in project drawings. The student will able to explain types of isolation using in buildings and use the technical knowledges project drawings. The student defines isolation materials using for heat, water, noi and fire insulation and explains their usage place.	3	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

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

Course Description Form

1. Course Name:
Building Construction I
2. Course Code:
CE235
3. Semester / Year:
3 / 2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
2 / 2
7. Course administrator's name (mention all, if more than one name)
Name: **Buroog Basheer Mahmood** Email: **Buruj@uowasit.edu.iq**
13. Course Objectives

Course Objectives	**The program provides students with a rigorous understanding of the principles, practices and ethics in a world-wide context involved in building construction up to first degree level standard.** **The program reflects the academic underpinning necessary to prepare students for a career as a Chartered Builder, Construction Manager, and other related international professional bodies.** **Also, introduce civil engineering first stage students to the fundamentals, basic principles and applications of Building construction.** **These include varies of building materials and equipment. The course combines theory with drawing a number of sheets as a class and home work.** **The importance of building elements and the relationships between architects and civil engineer responsibility.** **Also, provides students with progressive development of knowledge and skills over three levels of study. The program is designed to ensure that graduates have a stimulating and challenging education, which prepares them for their professional career, and produces capable individuals with the potential to progress to professional status and prepare for advancement to master's level qualification. Students will develop a broad range of skills which are transferable across other industries.** **Emphasis is placed on the management**

Name: **Yousif Raad Muhsen ALmolla** Email: **Yousif@uowasit.edu.iq**
8. Course Objectives

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

9. Teaching and Learning Strategies

Strategy	Building construction is a significant course that requires focused instruction hours. Therefore, the strategy of the course to deliver this module depends mainly on the module instructor in the class, where the material should be delivered with practical examples from surrounding projects. Moreover, classwork and homework assignments would help the students to practice solving building construction issues more efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given course elements. Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	The student will able to explain basic concepts relat building. The student explains type of buildings and their usage aims. The student explains construction stages. The student will able to explain properties of building elements and prepare the drawings. The student explains functions of building elements The student explains types and properties of foundations .The student prepares foundation plans of buildings. The student expresses properties of different structures walls. The student expresses properties of different struct floors. The student draws details of foundation, walls and floors. The student v able to explain principles of construction in mass buildings and use of the techni knowledges in project drawings .The student explains properties of mass buildings. The student defines building elements of mass building. The student explains principles of mass building and uses them in project drawings. The student will able to explain types of isolation using in buildings and use the technical knowledges project drawings. The student defines isolation materials using for heat, water, noi and fire insulation and explains their usage place.	3	Theory Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	انشاء المباني زهير ساكو
Main references (sources)	

Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Concrete Technology I

2. Course Code:

CE236

3. Semester / Year:

3 / 2

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

4 /4

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

Name: **Ihsan Ali**
Email: **ihsanali@uowasit.edu.iq**

8. Course Objectives

Course Objectives	**1. The subject is designed to introduce the properties and use of the more common materials in modern methods in concrete practice. 2. Define and explain principles of engineering properties for concrete composition, cement, aggregate and water. 3. Introduce more Supplementary Cementitious Materials such as fly ash, Ground Granulated Iron Blast Furnace Slag and Amorphous Silica. 4. Educate basic fresh properties of concrete and the manufacturing process details such as mixing, handling, pouring and finishing. 5. Educate the most important**

9. Teaching and Learning Strategies

Strategy	**Traditional lectures can be used to deliver theoretical concepts, principles, and methodologies of concrete. Lectures provide a structured framework for presenting information and introducing new topics. Visual aids such as slides, diagrams, and videos can be incorporated to enhance understanding.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Demonstrate knowledge of the production, physi and engineering properties of construction materials; 2. Understand the effect of environmental factors or properties and performance of construction materials; 3. Select construction material in relation to specifie construction requirements;	4	Theory Lab	Quizz Project Homework Exam

		4. Demonstrate knowledge of International standar relation to material testing methods and interpretation of test results.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	لوجيا الخرسانة, مؤيد نوري ف+هناء عبد يوسف, الجامعة التكنولوجى
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Concrete Technology II

2. Course Code:

CE246

3. Semester / Year:

4/2

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

4 /4

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

Name: **Ihsan Ali**
Email: **ihsanali@uowasit.edu.iq**

8. Course Objectives

Course Objectives	**1. The subject is designed to introduce the properties and use of the more common materials in modern methods in concrete practice. 2. Define and explain principles of engineering properties for concrete composition, cement, aggregate and water. 3. Introduce more Supplementary Cementitious Materials such as fly ash, Ground Granulated Iron Blast Furnace Slag and Amorphous Silica. 4. Educate basic fresh properties of concrete and the manufacturing process details such as mixing, handling, pouring and finishing. 5. Educate the most important**

9. Teaching and Learning Strategies

Strategy	**Traditional lectures can be used to deliver theoretical concepts, principles, and methodologies of concrete. Lectures provide a structured framework for presenting information and introducing new topics. Visual aids such as slides, diagrams, and videos can be incorporated to enhance understanding.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Demonstrate knowledge of the production, physi and engineering properties of construction materials; 2. Understand the effect of environmental factors or properties and performance of construction materials; 3. Select construction material in relation to specifie construction requirements;	4	Theory Lab	Quizz Project Homework Exam

		4. Demonstrate knowledge of International standar relation to material testing methods and interpretation of test results.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	لوجيا الخرسانة, مؤيد نوري ف+هناء عبد يوسف, الجامعة التكنولوجى
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Baath Crimes in Iraq
2. Course Code:
CE 238
3. Semester / Year:
4 / 2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
2/2
7. Course administrator's name (mention all, if more than one name)
Name: **Mushtaq Jumaa** Email: **mjmaah@uowasit.edu.iq**
8. Course Objectives

Course Objectives	**1-** اطلاع الطلبة على جرائم نظام البعث في العرا ق التي لا تعد ولا تحصى ضد العراقيين **2-Raising students' awareness to reject all forms of injustice, tyranny, violence and persecution of these oppressive regimes** **2-** رفع الوعي لدى الطلبة لرفض جميع أشكال الظلم والتسلط والعنف والاضطهاد لهذه الأنظم ة القمعي ة **3-Enabling students to write reports and articles in Arabic in a smooth, accurate and organized manner** **3-** تمكين الطلبة من كتابة التقارير والمقالات باللغة العربية وبشكل انسيابي دقيق ومنظ م **4-Highlighting serious violations of human rights and the environment** **4-** تسليط الضوء على الانتهاكات الخطيرة لحقوق الإنسان والبيئ ة **5-Explaining the facts of this unjust regime to generations that did not go through the stages of its rule** **5-** بيان حقائق هذا النظام الجائر إلى الأجيال التي لم تمر بمراحل حكم ه **6-Informing students about the extent of the Baathist regime in Iraq's fight against religion and scholars in seminaries** **6-** اطلاع الطلبة على مدى محاربة النظام البعثي في العراق للدين والعلماء في الحوزات العلمي ة

9. Teaching and Learning Strategies	
Strategy	**• Present theoretical lectures and determine the information that is most significant by extracting keywords and ideas.** **• • Students are given opportunities to learn about the crimes committed against the Iraqi people during the time of the former regime**
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	-The student's knowledge of Baath crimes according the Iraqi Criminal Court law -1 عرفة الطالب ب جرائم البعث وفق قانون المحكمة الجنائية العراقى ة 2-Using linguistic terms to define the crime -2 است عمال المصطلحات اللغوية للتعريف بالجريمة . 3-Identify the decisions issued by the Iraqi Criminal Court against the regime and its cronies -3 ب الطلبة على القرارات الصادرة من المحكمة الجنائية العراقية ضد النظام وأزلام ه 4-Demonstrating students' understanding of the eff of psychological crimes and the environment on the Iraqi individual that time -4 هار فهم الطلبة لأثار الجرائم النفسية والبيئة على الفرد العراقي آنذاك 5-Identifying mass graves and when they occur -5 تعرّف الطلبة على المقابر الجماعية ووقت حدوثها 6-Watch video documents of the crimes of the defu Baath Party -6 مشاهدة وثائق مصورة لجرائم حزب البعث البائد	2	Theory	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Platform for the crimes of the Baath Party in Iraq - Ministry of Higher Education and Scienti Research منهاج جرائم حزب البعث في
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Strength of Materials I

2. Course Code:

CE 232

3. Semester / Year:

3 / 2

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

4 / 5

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

Name: **Jasim Mahmood**
Email: **jmahmood@uowasit.edu.iq**

8. Course Objectives

Course Objectives	**2. Identify the types of structural members and their supports and calculate the reactions. 3. Structural analysis of structural members and finding internal forces. 4. Calculating the stresses, and strains generated in the materials and comparing them to the permissible limits to indicate the suitability of the materials used.**

9. Teaching and Learning Strategies

Strategy	**Strength of Materials is a heavy course load that requires long instruction hours. Therefore, the strategy of the course to deliver this module depends mainly on the module instructor in the class, where the material should be delivered with practical examples. Moreover, class tutorials and homework assignments would help the students to practice solving analysis Composition and resolution of forces issues more efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given course elements. Visits to structural building construction sites are also another tool to combine the delivered theoretical material with its practical application.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Draw a diagram of the axial forces, shear and ben moments of the beams. 2. Estimation of bending stresses, axial stresses and compound stresses. 3. Estimation of thermal stresses, mechanical stress and combined stresses.	4	Theory	Quizz Project Homework Exam

11. Course Evaluation

Quizz Project Homework Exam	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• Mechanics of Materials, 10t edition (SI version), by: R. C. Hibbeler, 2017 • Mechanics of Materials, 2nd edition (SI version), by: E. Popov, 1990
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Strength of Materials II

2. Course Code:

CE 242

3. Semester / Year:

4/2

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Theory

6. Number of Credit Hours (Total) / Number of Units (Total)

4 / 5

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

Name: **Jasim Mahmood**
Email: **jmahmood@uowasit.edu.iq**

8. Course Objectives

Course Objectives	**2. Identify the types of structural members and their supports and calculate the reactions. 3. Structural analysis of structural members and finding internal forces. 4. Calculating the stresses, and strains generated in the materials and comparing them to the permissible limits to indicate the suitability of the materials used.**

9. Teaching and Learning Strategies

Strategy	**Strength of Materials is a heavy course load that requires long instruction hours. Therefore, the strategy of the course to deliver this module depends mainly on the module instructor in the class, where the material should be delivered with practical examples. Moreover, class tutorials and homework assignments would help the students to practice solving analysis Composition and resolution of forces issues more efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given course elements. Visits to structural building construction sites are also another tool to combine the delivered theoretical material with its practical application.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Draw a diagram of the axial forces, shear and ben moments of the beams. 2. Estimation of bending stresses, axial stresses and compound stresses. 3. Estimation of thermal stresses, mechanical stress and combined stresses.	4	Theory	Quizz Project Homework Exam

11. Course Evaluation

Quizz Project Homework Exam	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• Mechanics of Materials, 10t edition (SI version), by: R. C. Hibbeler, 2017 • Mechanics of Materials, 2nd edition (SI version), by: E. Popov, 1990
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Fluid MechanicsI
2. Course Code:
CE 234
3. Semester / Year:
3 / 2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Nadheer S. Ayoob** Email: **Naayoob@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. To introduce a mathematical description of fluid flow to familiarize students with the practical applications of mathematics in the fields of fluid in static state and ideal fluid flow, and the module has been developed for students who have little or no experience in fluid mechanics. 2. To examine the principles of fluid flow relevant to a wide range of civil engineering applications. 3. To prepare students for future study of advanced topics.

9. Teaching and Learning Strategies	
Strategy	**Lecture - a lecture per week delivered primarily via PowerPoint.** **Tutorial - One hour per week typically dedicated to problem paper questions and examples** **Laboratory Work - Each lab takes 2 hours and then a technical note is 3 needed to be produced**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Be able to distinguish the basic terminology of Flu Mechanics. 2. Be able to solve practical problems in Fluid Mechanics 3. Have a systematic and coherent understanding of theoretical mathematics in the field of fluid static. 4. Have sufficient knowledge about the topics of ide fluid flow.	4	Theory Lab	Quizz Project Homework Exam

		5. Become able to carry out proper tests and measurements, analyze the results, and utilize engineering judgmer make inferences. 6. Have the ability to work adequately on teams. 7. Be able to practice simple scientific research and presentation.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	V.L. Streeter, and E.B. Wylie, Fluid Mechanics. 8th edition. McGraw-Hill.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Fluid MechanicsII
2. Course Code:
CE 244
3. Semester / Year:
4/2
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Nadheer S. Ayoob** Email: **Naayoob@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. To introduce a mathematical description of fluid flow to familiarize students with the practical applications of mathematics in the fields of fluid in static state and ideal fluid flow, and the module has been developed for students who have little or no experience in fluid mechanics. 2. To examine the principles of fluid flow relevant to a wide range of civil engineering applications. 3. To prepare students for future study of advanced topics.

9. Teaching and Learning Strategies	
Strategy	**Lecture - a lecture per week delivered primarily via PowerPoint.** **Tutorial - One hour per week typically dedicated to problem paper questions and examples** **Laboratory Work - Each lab takes 2 hours and then a technical note is 3 needed to be produced**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Be able to distinguish the basic terminology of Flu Mechanics. 2. Be able to solve practical problems in Fluid Mechanics 3. Have a systematic and coherent understanding of theoretical mathematics in the field of fluid static. 4. Have sufficient knowledge about the topics of ide fluid flow.	4	Theory Lab	Quizz Project Homework Exam

		5. Become able to carry out proper tests and measurements, analyze the results, and utilize engineering judgmer make inferences. 6. Have the ability to work adequately on teams. 7. Be able to practice simple scientific research and presentation.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	V.L. Streeter, and E.B. Wylie, Fluid Mechanics. 8th edition. McGraw-Hill.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Structural analysis I
2. Course Code:
CE 352
3. Semester / Year:
5/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory, Lecture, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Karrar Ali Al-Lami** Email: **karrarali@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. Understanding the basic philosophy of structural analysis and distinguishing between various forms of structures such as trusses, beams, frames, and arches. 2. Identify stable structures from unstable and classify structures based on their indeterminacy. 3. Drawing axil, shear, and bending diagram for frames and arches. 4. Understanding the analysis of structures with variable or moving loads such as bridges. 5. Drawing the influence lines for various response function of structures. 6. Applying the principle of influence line to determine the absolute maximum value of a response function that may occur anywhere in a structure. 7. Introducing the principle of virtual work 8. Applying the principle of virtual work method to determine the deflection and rotation in beams, frames, and trusses. 9. Using the Castigliano's second theorem to evaluate the deflection in beams, frames, and trusses.

9. Teaching and Learning Strategies	
Strategy	**Structural analysis is a continuation of previously studied courses and aims to provide students with the knowl to analyze different types of determinate structures. Therefore, students should have a strong backgroun engineering mechanics and strength of materials. Students are encouraged to review subjects like equilibr truss analysis and shear and moment diagrams from previous courses. The course will be in the form of lect covering the main aspects of the course. In addition, multiple examples will be demonstrated for each sub Students will be handed homework and asked to solve it. At the end of each part of the course, there will be a re and discussion of the homework. Student evaluation in this course will depend on various criteria including ex homework, class discussions, and quizzes.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Recognize stable and indeterminate structures. 2. Analyze indeterminate structures using f method (consistent deformation method). 3. Achieving the competence to analyze indeterminate structures using slope-deflection-method. 4. Analyzing indeterminate frames via slope deflection method. 5. Evaluation structures' external reactions internal forces after settlement. 6. Using moment-distribution method to analyze braced frames and frames with side sway.	4	Theory Lecture Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Structural analysis by R. C. Hibbel
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Computer Applications in Civil Engineering (I)
2. Course Code:
CE 358
3. Semester / Year:
5/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab
6. Number of Credit Hours (Total) / Number of Units (Total)
2/2
7. Course administrator's name (mention all, if more than one name)
Name: **Ali Hussein Ahmed** Email: **Ali.Hussein@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. Introduce students to the fundamentals of structural modeling and analysis using Autodesk Robot Structural Analysis Professional. 2. Develop students' ability to define materials, sections, loads, and boundary conditions in a structural model. 3. Enhance students' understanding of structural behavior through computer-based simulation and interpretation of analysis results. 4. Provide students with the skills to design structural elements such as beams, columns, slabs, and shear walls according to design codes. 5. Train students to integrate theory and practice through the execution of a complete multi-story building project. 6. Prepare students for professional practice by emphasizing report generation, teamwork, and problem-solving in real-world structural engineering contexts.

9. Teaching and Learning Strategies

Strategy	**1. Lectures (Theoretical Sessions):** **A. To explain fundamental concepts of structural analysis and design.** **2. Practical/Laboratory Sessions:** **A. Students practice modeling, analysis, and design using Autodesk Robot Structural Analysis.** **B. Step-by-step guidance for software applications.** **3. Project-Based Learning:** **A. Students work individually or in groups on a multi-story building project, integrating different ski** **B. Encourages teamwork, problem-solving, and creativity.** **4. Interactive Discussions & Problem-Solving:** **A. Encourage students to analyze case studies and discuss structural behavior.** **B. Develops critical thinking and analytical skills.** **5. Self-Directed Learning (SDL):** **A. Students are encouraged to explore tutorials, and manuals** **B. Promotes independent learning and professional development.** **6. Assessment-Based Learning:** **A. Quizzes, midterm, project, and final exam used as learning tools.**

	B. Students reflect on feedback to improve performance.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	Knowledge By the end of this module, students will be able to: 1. Explain the fundamentals of structural modeling and analysis using Autodesk Robot Struct Analysis. 2. Identify different types of structural elem (beams, columns, slabs, shear walls) and their role i structural systems. 3. Recognize the principles of applying load load cases, and load combinations in structural anal 4. Describe the basics of linear, nonlinear, a dynamic analysis of structures. Skills By the end of this module, students will be able to: 1. Create structural models in Robot, includ defining materials, cross-sections, supports, and loa cases. 2. Perform structural analysis and interpre results (internal forces, reactions, displacements). 3. Design structural members (beams, slab columns, and walls) according to design codes. 4. Apply mesh generation and evaluate the accuracy of analysis for slabs and complex structure 5. Use Robot to model and analyze multi-st buildings under different loading conditions. Competence By the end of this module, students will be able to: 1. Integrate theoretical knowledge with software-based applications to solve engineering problems. 2. Work independently and collaboratively structural projects using Robot. 3. Communicate analysis and design results effectively through technical reports. 4. Demonstrate professional responsibility applying codes and standards in structural design.	2	Lecture, Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. ENV 1997-1: 1994, Eurocc 7 2. PN-81/B-03020 Build soils. Foundation bases. Sta calculation and design. 3. Soil Mechanics, Des Manual 7.01, Change 1, Septeml 1986, Naval Facilities Engineer Command, 200 Stovall Stre Alexandria, Virginia 22332-2300 4. Cours pratique de mecanic des sols, J.Coset, G.Sanglerat, Pa 1975

	5. Soil Mechanics, Stanisl Pisarczyk, Oficyna wydawni Politechniki Warszawsk Warszawa, 1991
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Description Form

1. Course Name:
Traffic Engineering
2. Course Code:
CE 356
3. Semester / Year:
5/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory ,Lecture, Lab
6. Number of Credit Hours (Total) / Number of Units (Total)
2/3
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Lecturer Muqdad Mundher** Email: **mmunthir@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. To introduce the fundamental principles of traffic flow, control, and management. 2. To develop understanding of driver behavior, road user characteristics, and their impact on traffic systems. 3. To equip students with knowledge of traffic data collection, analysis, and interpretation methods. 4. To provide skills in the design and evaluation of intersections, road capacity, and signalized systems. 5. To familiarize students with traffic safety principles and accident analysis techniques. 6. To introduce the use of modeling and simulation tools in traffic engineering decision-making. 7. To highlight sustainable and smart traffic management strategies for modern cities. 8. To prepare students to apply traffic engineering knowledge in solving real-world transportation problems.

9. Teaching and Learning Strategies

Strategy	**1. Lectures to introduce core principles, theories, and frameworks in traffic engineering.** **2. Tutorials and problem-solving sessions to practice calculations, design exercises, and case analysis.** **3. Laboratory sessions / fieldwork for traffic surveys, data collection, and use of measurement tools.** **4. Computer-based workshops to apply traffic simulation and modeling software.** **5. Case studies on real-world traffic problems, safety issues, and management strategies.** **6. Group projects to encourage teamwork in designing and evaluating traffic solutions.** **7. Seminars and discussions to critically examine contemporary challenges (e.g., ITS, smart mob sustainability).**

	8. **Independent learning through guided reading and research to deepen understanding of advanced to** 9. **Guest lectures / industry input from transportation professionals to link theory with practice.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	1. Demonstrate knowledge of fundamental traffic flow theories and their applications. 2. Apply appropriate techniques for traffic d collection, processing, and analysis. 3. Evaluate roadway capacity and level of service using standard methodologies. 4. Design and assess traffic control devices s as signals, signs, and markings. 5. Analyze accident data and propose traffic safety improvement measures. 6. Utilize traffic modeling and simulation to to support decision-making. 7. Critically assess sustainable traffic management strategies in urban contexts. 8. Communicate technical findings effective through written reports and presentations.	3	Theory ,Lecture, Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	American Association of St Highway and Transportat Officials 2011+
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Analysis
2. Course Code:
CE 351
3. Semester / Year:
5/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Salman F. AlRubaye** Email: **salman@uowasit.edu.iq**
8. Course Objectives

Course Objectives	To develop students' ability to model and solve engineering problems using analytical methods for ordinary and partial differential equations, Fourier series, and related techniques, with emphasis on practical applications

9. Teaching and Learning Strategies	
Strategy	**Problem-Solving Sessions – Engage students in solving ODE and PDE problems during class to streng analytical skills.** **Visual Demonstrations – Use graphs, simulations, and software (e.g., MATLAB) to illustrate solutions and Fo series representations.** **Application-Based Assignments – Assign tasks that require applying analytical methods to practical engine situations.** **Group Discussions & Presentations – Encourage peer learning through problem analysis and solution presenta** **Blended Learning – Integrate online resources, video tutorials, and interactive tools to reinforce concepts.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	Solve first-order ordinary differential equations and apply them to engineering problems. Analyze and solve second and higher-order ordinar differential equations with real-world applications. Formulate and solve systems of simultaneous linear ordinary differential equations. Apply Fourier series techniques to represent perio functions and solve related engineering problems.	4	Lecture, Lab	Quizz Project Homework Exam

		Solve partial differential equations using analytical methods, including separation of variables. Interpret and apply mathematical solutions to mode and analyze engineering systems.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Xie, W. C. (2010). Differen equations for engineers. Cambric university press. • DuChateau, P. (2011). Advanced mathematics for engineers and scientists. Courier Corporation.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Description Form

1. Course Name:
Soil Mechanic I
2. Course Code:
CE 353
3. Semester / Year:
5/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory, Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
5/5
7. Course administrator's name (mention all, if more than one name)
Name: **Prof. Dr. Asad H. Humaish** Email: **asadaldefae@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. An understanding the principles of soil mechanics with the basis scientific tools needed to understand soil behavior. 2. Gain understanding the soil composition and grain size distribution and achieving the minimum requirement of ability to classify soils and grain size distribution. 3. Knowledge the differences of void ratio in both the granular soil and cohesive soil and how this effecting on the density and stiffness of soil. 4. Understanding the principles of compaction and how this effect on the soil strength and settlement. 5. Understanding the Soils are permeable due to the existence of interconnected voids through which water can flow from points of high energy to points of low energy and investigating problems involving the pumping of water for underground construction. 6. An understand of capillary phenomenon and Knowledge of effective stresses. 7. Knowledge the overburden stress and the stresses due to structure loads. 8. Gain understanding the seepage flow with in the soil mass. Flow net and calculation of factor of safety due to seepage flow. 9. Knowledge the seepage flow within the earth dams.

9. Teaching and Learning Strategies	
Strategy	**Soil Mechanics is one of the main branches in civil engineering that concerns the application of the principl mechanics, hydraulics and to smaller extent, chemistry, to engineering problems related to soils. The branch eq a civil engineer with the basic scientific tools needed to understand soil behavior. Thus, the practical examp understand the soil behavior under loads is main core of the module and for the instructor in the class. Then, tutorial consecutively after few theoretical hours can provide well-understanding to the students' knowledge improve the professional skills to solve geotechnical problems.**

	Experimentally, in the soil mechanic laboratory, these are many experimental tests that should be done by stud groups and many geotechnical parameters that have to be determined. This labs class push the student to be r practical experience in the future. Some of the experiments should be done by student's group in the field and stage give them more confidence in geotechnical problems in the future. Finally, the actual site investig collected specimens can be used by student's groups to do some experimental tests rather than man-r specimens. Short mandatory videos are also used during module to see what we are talking about.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	5	1. Understanding the basic philosophy of mechanic and origin of Soil, soil composition and i properties. 2. Understand what is soil composition an understanding of sieve analysis, Knowledge of Atter limits and their usage and ability to classify soils determine their properties. 3. Understand the purpose and importanc soil compaction and know the factor that will influ the field compaction of soil. Then ability to determin optimum moisture content and maximum dry de from a standard or modified proctor test result. 4. Gain an understanding of Head and its rc fluid flow. Knowledge of Darcy's Law and its usage understanding of hydraulic conductivity, measurement, and typical values for different soils an ability to compute equivalent hydraulic conductiv for layered systems 5. An ability to compute pore water pres effective stress, and total stress at any given point soil layer. 6. An ability to understanding the stresse saturated Soil without Seepage, in saturated downv seepage and in saturated upward seepage. 7. Understanding the stresses due to struc Loads, concentrated loads, vertical and horizontal loads, surface loads (i.e. circular and rectangular loa 8. Gain an understanding of seepage pres and its role in causing the quick condition. An abili draw flow nets and determine the water head at a g point and the water flow rate and an ability to calc critical hydraulic gradient and factor of safety ag quick condition. 9. Understanding the Seepage through an e dam on an Impervious base.	5	Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to Geotechni Engineering, 2nd Edition, Baraja D 2014
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Project Management
2. Course Code:
CE 357
3. Semester / Year:
5/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
3/3
7. Course administrator's name (mention all, if more than one name)
Name: **Asst.Prof. Dr. Alaa Kharbat Shadhar** Ema **akhirbat@uowasit.edu.iq**
8. Course Objectives

Course Objectives	The program provides students with a rigorous understanding of the principles, practices and ethics in a world-wide context involved in construction management up to first degree level standard. The program reflects the academic underpinning necessary to prepare students for a career as a Chartered Builder, Construction Manager, and other related international professional bodies. Also, provides students with progressive development of knowledge and skills over three levels of study. The program is designed to ensure that graduates have a stimulating and challenging education, which prepares them for their professional career, and produces capable individuals with the potential to progress to professional status and prepare for advancement to master's level qualification. Students will develop a broad range of skills which are transferable across other industries. Emphasis is placed on the management of schedule throughout the construction cycle, and also upon project planning.

9. Teaching and Learning Strategies	
Strategy	**Construction management is a significant course that requires focused instruction hours. Therefore, the stra of the course to deliver this module depends mainly on the module instructor in the class, where the material sh be delivered with practical examples from surrounding projects. Moreover, classwork and homework assignn would help the students to practice solving scheduling and productivity issues more efficiently. Practical and videos should also be occasionally used to facilitate connecting the given course elements. reports prepare student may be increase their information in this scope.**
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	3	1. Learn end-to-end project management, tools you can use individually or as a full methodolo 2. Articulate what is in your project scope, is out of scope, and why. 3. Plan effectively and develop an accu schedule to manage projects. 4. Stay in control of your project to delive time, on budget, and on scope. 5. Define roles and responsibilities for project team. 6. Create a project that's resilient to risks changes, rather than reactive. 7. Develop tangible methods to engage c stakeholders. 8. Identify how to deal with planning scheduling technique. 9. Review claims in construction project, defining the ways to prevent stained relationshi parties, stalemates, delays, disputes.	3	Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Construction Management: Fr Project Concept to Complet Paperback –2017, by Paul Netsch
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Reinforced Concrete I
2. Course Code:
CE 354
3. Semester / Year:
5/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
4/5
7. Course administrator's name (mention all, if more than one name)
Name: **Prof. Dr. Sallal Rashid Abid** Email: **sallal@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. Understanding the basic philosophy of reinforced concrete design and distinguishing between different limit-state design criterions. 2. Understanding load distributions from surface flexural members (slabs and roofs) to beams and transferring accumulated loads and moments to columns. 3. Analyzing shear forces and bending moment in flexural members of small structures, and defining the resulting normal and shear stresses on the structural members. 4. Introducing the design of reinforced concrete beams against bending moments and shear forces. 5. Defining bond issues between steel and concrete and distinguishing the suitable design procedures to avoid bond failure. 6. Defining economical design solutions to save steel reinforcement using cut-off and bent-up techniques.

9. Teaching and Learning Strategies	
Strategy	**Reinforced concrete design is a heavy course load that requires long instruction hours aiming to lead the engineering student to the basic knowledge about the analysis and design of reinforced concrete construc system, which is the main bone of most national buildings and civil structures. Therefore, the strategy of the co to deliver this module depends mainly on the module instructor in the class in addition to class tutorials, g discussions, and homework assignments that help the students to practice solving design and analysis issues r efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given co elements. Visits to structural building construction sites are also another tool to combine the delivered theore material with its practical application.**

10. Course Structure

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

15	4	1. Learn end-to-end project management, tools you can use individually or as a full methodolo 2. Articulate what is in your project scope, is out of scope, and why. 3. Plan effectively and develop an accu schedule to manage projects. 4. Stay in control of your project to delive time, on budget, and on scope. 5. Define roles and responsibilities for project team. 6. Create a project that's resilient to risks changes, rather than reactive. 7. Develop tangible methods to engage c stakeholders. 8. Identify how to deal with planning scheduling technique. 9. Review claims in construction project, defining the ways to prevent stained relationshi parties, stalemates, delays, disputes.	5	Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Building Code Requirements Structural Concrete ACI 318-14 , A 318-19
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Water Engineering

2. Course Code:

CE 355

3. Semester / Year:

5/3

4. Description Preparation Date:

1/9/2025

5. Available Attendance Forms:

Lecture, Lab,

6. Number of Credit Hours (Total) / Number of Units (Total)

4/4

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

Name: **Dr . Salah Lafta Farhan** Email: **salahlafta@uowasit.edu.iq**

8. Course Objectives

Course Objectives	This module aims to provide students with foundational knowledge and applied skills in water engineering, focusing on the planning, design, and operation of systems related to water supply. It explores water sources, water treatment processes, distribution networks, and environmental considerations to equip students with the competencies needed for real-world water infrastructure projects.

9. Teaching and Learning Strategies

Strategy	**Learning and Teaching Strategies:** • **Lectures: Core theory and concepts are delivered through interactive lectures.** • **Tutorials: Problem-solving sessions and worked examples.** • **Quizzes and Assessments: Short quizzes to reinforce learning and monitor progress.** • **Case Studies: Real-life examples of water engineering projects.** • **Group Projects: Design-focused assignments to develop collaborative and practical skills.** • **Lab Demonstrations or Virtual Labs (if available): Visualization of water treatment processes.** □ **Self-Directed Learning: Students are encouraged to explore beyond the syllabus using recomme readings and online resources.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	By the end of this module, students will be able to: 1. Explain the roles and scope of sanitary environmental engineering in modern w management. 2. Identify and classify sources of water wastewater and estimate their quantities. 3. Evaluate the physical, chemical, and biolo characteristics of water and their relevance to drin water standards. 4. Describe and apply the principles of w treatment processes including coagulation, floccula sedimentation, filtration, and disinfection.	5	Lecture, Lab Tutorial	Quizz Project Homework Exam

		5. Design basic elements of water in pumping systems, and distribution networks. 6. Calculate water demand, including dom use and fire-fighting needs, and assess their impa system design. 7. Recognize the importance of advanced w treatment technologies and when they are applicab 8. Apply theoretical knowledge to practical studies and problem-solving in water engine systems.			

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Water Supply and Sewerage. E. Steel and Terence J. McGh McGraw-Hill Kogakusha, LTD.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Geometric Road Design
2. Course Code:
CE 366
3. Semester / Year:
6/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
2/3
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Lecturer Muqdad Mundher** Email: **mmunthir@uowasit.edu**
8. Course Objectives

Course Objectives	1. Understand principles and standards of road design. 2. Design safe and efficient road components. 3. Apply national and international guidelines. 4. Integrate safety, environment, and economy in design. 5. Prepare for professional road engineering practice. 6. Explain road design principles. 7. Apply design standards (AASHTO/local). 8. Design curves, cross-sections, and sight distances. 9. Evaluate intersections and interchanges. 10. Consider terrain, traffic, and environment in design. 11. Use software tools for geometric design. 12. Assess and justify design alternatives. 13. Introduction and design principles. 14. Standards and manuals (AASHTO, local). 15. Design controls: speed, vehicles, topography. 16. Cross-section elements. 17. Sight distances. 18. Horizontal and vertical alignment. 19. Intersection and interchange design. 20. Auxiliary lanes. 21. Roadside safety and environment. 22. Design software applications.

9. Teaching and Learning Strategies

Strategy	**1. Lectures to explain principles, standards, and design methods.** **2. Tutorials for problem-solving and design exercises.** **3. Laboratory/fieldwork for surveys and data collection.** **4. Computer workshops using CAD/road design software.** **5. Case studies on real-world road projects.** **6. Group projects to encourage teamwork in design tasks.** **7. Seminars/discussions on modern practices and challenges.** **8. Independent study through guided reading and assignments.** **9. Guest lectures from industry professionals.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	1. Explain fundamental principles of geom road design. 2. Apply relevant design standards guidelines (e.g., AASHTO, local codes). 3. Design horizontal and vertical curves, distances, and cross-sections. 4. Evaluate the safety and efficiency intersections and interchanges. 5. Incorporate terrain, traffic, environmental factors into design solutions. 6. Use software tools to perform geometric design tasks. 7. Assess alternative design options and pre justified technical solutions.	3	Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	American Association of State Highway and Transportation Officials 2011
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Hydrology
2. Course Code:
CE 365
3. Semester / Year:
6/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
3/3
7. Course administrator's name (mention all, if more than one name)
Name: **Asst. Prof. Dr. Nuralhuda Aladdin Jasim** Email: **njasim@uowasit.edu.iq**
8. Course Objectives

Course Objectives	• To provide students with a thorough understanding of hydrology and the hydrological cycle. • To introduce the key concepts related to meteorological data, precipitation, and streamflow analysis. • To equip students with practical skills for estimating missing precipitation data and applying techniques such as double mass curve analysis. • To study the process of evaporation, transpiration, infiltration, and groundwater dynamics. • To understand the concepts of stream flow and its routing, including hydrograph analysis and flood probability.

9. Teaching and Learning Strategies

Strategy	استراتيجيات التدريس والتعلم **1. Lectures and Discussions** المحاضرات والنقاشات **Lectures will be used to introduce core hydrological concepts, followed by discussions to engage students and a them to critically think about hydrological phenomena and related problems.** تم استخدام المحاضرات لتعريف الطلاب بالمفاهيم الأساسية في الهيدرولوجيا، تليها مناقشات لتمكين الطلاب من التفكير النقدي حول الظواهر الهيدرولوجية والمشاكل ذات الصلة **2. Practical Workshops** ورش العمل العملية **Hands-on sessions will allow students to apply theoretical concepts, such as estimating precipitation dat constructing hydrographs, using real-life examples and case studies.** ستتيح الجلسات العملية للطلاب تطبيق المفاهيم النظرية، مثل تقدير بيانات هطول الأمطار أو بناء الرسوم البيانية لتدفق المياه باستخدام أمثلة حقيقية ودراسات حالة. **3. Field Visits and Case Studies** الزيارات الميدانية ودراسات الحالة **Field visits to rivers, reservoirs, or groundwater monitoring sites will provide students with firsthand experi in collecting data and understanding hydrological processes in real-world environments.** ستوفر الزيارات الميدانية للأنهار أو السدود أو مواقع مراقبة المياه الجوفية للطلاب تجربة عملية في جمع البيانات وفهم العمليات الهيدرولوجية في بيئات العالم الحقيقي. **4. Group Projects and Collaborative Learning**

المشاريع الجماعية والتعلم التعاوني

Students will work in groups to analyze hydrological data, simulate hydrological models, and develop solution real-world hydrological challenges. This fosters teamwork and problem-solving skills.

الطلاب في مجموعات لتحليل البيانات الهيدرولوجية، محاكاة النماذج الهيدرولوجية، وتطوير حلول للتحديات الهيدرولوجية في العالم الحقيقي. يعزز هذا العمل الجماعي ومهارات حل المشكلات.

5. Simulations and Software Tools

المحاكاة وأدوات البرمجيات

The use of hydrological simulation software (e.g., SWMM, HEC-HMS) will allow students to model and ana various hydrological scenarios and gain practical skills in managing hydrological data.

ب بمحاكاة وتحليل سيناريوهات هيدرولوجية متنوعة واكتساب مهارات عملية في إدارة **(SWMM ،HEC-HMS** مثل) سيسمح استخدام برامج المحاكاة الهيدرولوجية البيانات الهيدرولوجية.

6. Problem-Based Learning (PBL)

التعلم القائم على المشكلات

Students will be presented with real-world hydrology problems, and they will work in teams to research, ana and propose solutions. This method emphasizes practical problem-solving and the application of theore knowledge.

تقديم مشكلات هيدرولوجية حقيقية للطلاب، حيث سيعملون في فرق للبحث والتحليل واقتراح الحلول. يركز هذا الأسلوب على حل المشكلات العملية وتطبيق المعرفة النظرية

7. Interactive Tutorials

الدروس التفاعلية

Tutorials will focus on reinforcing key concepts through problem-solving exercises, interactive discussions, Q&A sessions to ensure students grasp the material thoroughly.

تركز الدروس التفاعلية على تعزيز المفاهيم الأساسية من خلال تمارين حل المشكلات، المناقشات التفاعلية، وجلسات الأسئلة والإجابات لضمان فهم الطلاب للمادة بشكل جيد

8. Assessment and Feedback

التقييم والتغذية الراجعة

Regular quizzes, assignments, and group projects will assess students' understanding. Timely feedback wi provided to help students improve their learning and address any gaps in knowledge.

تقييم فهم الطلاب من خلال الاختبارات المنتظمة، الواجبات، والمشاريع الجماعية. سيتم تقديم التغذية الراجعة في الوقت المناسب لمساعدة الطلاب على تحسين تعلمهم ومعالجة أي فجوات في المعرفة.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	3	Upon successful completion of this module, students be able to: عند إتمام هذه المادة بنجاح، سيكون الطلاب قادرين على: 1. Demonstrate an understanding of hydrological cycle and its components. 2. Analyze and estimate precipitation including methods for dealing with missing data conducting double mass curve analysis. 3. Calculate average precipitation over an and analyze its significance. 4. Understand the processes of evapora transpiration, and infiltration, and their impact or water cycle. 5. Analyze stream flow data, and extend rating curve for accurate stream flow estimation. 6. Construct and interpret hydrographs, apply reservoir routing techniques. 7. Understand well hydraulics and groundw flow concepts. 8. Evaluate flood probabilities based hydrological data and analysis.	3	Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	APPLIED HYDROLOGY, Ven Te Ch Late, Urbana-Champaign David Maidment, Larry W. Mays.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Description Form

1. Course Name:
Numerical Analysis
2. Course Code:
CE 361
3. Semester / Year:
6/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Salman F. AlRubaye** Email: **salman@uowasit.edu.iq**
8. Course Objectives

Course Objectives	• Understand the fundamental principles of numerical analysis and their applications to engineering and scientific problems. • Apply numerical methods for solving nonlinear equations, systems of algebraic equations, and ordinary/partial differential equations. • Perform numerical differentiation and integration with attention to accuracy and error analysis. • Use curve fitting, interpolation, and extrapolation techniques to analyze and predict data behavior. • Evaluate the efficiency, stability, and accuracy of various numerical algorithms. • Implement numerical methods using computational tools and interpret the obtained results.

9. Teaching and Learning Strategies	
Strategy	**Interactive Lectures – Present theory with real-world engineering and scientific examples to illustrate applica of numerical methods.** **Problem-Solving Sessions – Engage students in solving step-by-step numerical problems during class to reinf concepts.** **Hands-on Computational Labs – Use MATLAB, Python, or similar tools to implement and test nume algorithms.** **Group Projects – Assign small projects where students apply multiple numerical techniques to solve prac problems.** **Error Analysis Discussions – Encourage students to analyze computational errors, stability, and convergenc chosen methods.** **Blended Learning – Combine face-to-face teaching with online simulations, tutorials, and visual demonstratic**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	Solve nonlinear equations, systems of algel equations, and differential equations using nume methods. Apply numerical differentiation and integratio practical engineering and scientific problems. Use interpolation, extrapolation, and curve fi techniques for data analysis and prediction. Assess the accuracy, stability, and efficiency of nume algorithms. Implement and validate numerical solutions u appropriate computational tools	4	Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Steven, C. C. (2007). Applie Numerical Methods with Matlab: For Engineers and Scientists. Tata McGraw Hill Education Private Limited. • Numerical Methods Engineers, S. C. Chapra and R Canale, McGraw-Hill, 6th edit 2010
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Reinforced Concrete II
2. Course Code:
CE 364
3. Semester / Year:
6/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
4/5
7. Course administrator's name (mention all, if more than one name)
Name: **Prof. Dr. Sallal Rashid Abid** Email: **sallal@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. Understanding the basic philosophy of reinforced concrete design and distinguishing between different limit-state design criterions. 2. Understanding load distributions from surface flexural members (slabs and roofs) to beams and transferring accumulated loads and moments to columns. 3. Analyzing shear forces and bending moment in flexural members of small structures, and defining the resulting normal and shear stresses on the structural members. 4. Introducing the design of reinforced concrete beams against bending moments and shear forces. 5. Defining bond issues between steel and concrete and distinguishing the suitable design procedures to avoid bond failure. 6. Defining economical design solutions to save steel reinforcement using cut-off and bent-up techniques.

9. Teaching and Learning Strategies	
Strategy	**Reinforced concrete design is a heavy course load that requires long instruction hours aiming to lead the engineering student to the basic knowledge about the analysis and design of reinforced concrete construc system, which is the main bone of most national buildings and civil structures. Therefore, the strategy of the co to deliver this module depends mainly on the module instructor in the class in addition to class tutorials, g discussions, and homework assignments that help the students to practice solving design and analysis issues r efficiently. Practical and test videos should also be occasionally used to facilitate connecting the given co elements. Visits to structural building construction sites are also another tool to combine the delivered theore material with its practical application.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Recognizing the main serviceability is facing a successful structural design of reinfo concrete slabs and beams. 2. Understanding design procedures with l term consideration of deflection and cracks contro to the minimum possible limits based on recommendations and limitations of the American 318 design code. 3. Achieving the capability to design si structures composed of reinforced concrete slab bearing walls, which is the typical housing constru procedure in Iraq. 4. Achieving the ability to use a simpl method to analyze and design reinforced concrete s in typical monolithic slab-beam reinforced con systems. 5. Designing of short reinforced con columns, concentrically or eccentrically loa uniaxially and biaxially loaded. 6. Designing of slender reinforced con columns.	5	**Theory** ,Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Building Code Requirements Structural Concrete ACI 318-14 , A 318-19
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Description Form

1. Course Name:
Soil Mechanic II
2. Course Code:
CE 363
3. Semester / Year:
6/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory, Lecture, Lab, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
5/5
7. Course administrator's name (mention all, if more than one name)
Name: **Prof. Dr. Asad H. Humaish** Email: **asadaldefae@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. An understanding the purpose and the importance of consolidation with the basic scientific tools needed to understand clayey soil behavior under loads. 2. Know the assumptions made in Terzaghi's theory of consolidation. 3. Understand the cause of settlement in primary and secondary consolidation 4. Identify the difference between consolidation and compaction. 5. An ability to calculate consolidation settlement at various degree of consolidation and the time require to achieve given settlement. 6. Extrapolation of Field Consolidation Curve, Compression Index and Some Empirical Correlations to calculate the consolidation parameters. 7. Knowledge principles of Settlement determination and the vertical displacement brought by this volume change due to water dissipation. 8. Knowledge the rate of stress history and why the clayey soil being either normally consolidated or over consolidated based on the over consolidation ratio. 9. Understand what are the factors that contribute to the shear strength of soils. 10. Knowledge of Mohr circle and the ability to use Mohr circle to determine the stresses and shear in the soil at given condition. 11. Identify the difference between consolidated drained, consolidated undrained, and unconsolidated undrained test from the Triaxial tests.

	12. An ability to use the result from triaxial test to determine the angle of internal friction and the allowable shear stress of the soil. 13. Get familiar with direct shear test and the unconfined compression test.

9. Teaching and Learning Strategies

Strategy	**The engineer needs to know two main design steps in the future during the preliminary design stage of founda of any structures. The settlement of the structure due to layers' consolidation and the shear strength soil l resistance. The branch equips a civil engineer with the basic scientific tools needed to understand soil beha under two the main concepts above. Thus, the practical example to understand the soil behavior under l (consolidation settlement and shear strength) is main core of the module and for the instructor in the class. T class tutorial consecutively after few theoretical hours can provide well-understanding to the students' knowl and improve the professional skills to solve such important geotechnical problems. Experimentally, in the soil mechanic laboratory, these are many experimental test that should be done by stud groups and many geotecnical consolidation and shear strength parameters that have to be determined. This class push the student to be more practical experience in the future. Some of the experiments should be don student's group in details and this stage give them more confidence in geotechnical problems in the future. Fin the actual site investigation collected specimens can be used by student's groups to do some experimental rather than man-made specimens. Short mandatory videos are also used during module to see what we are tal about.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	5	1. Teach the student the basic philosopl consolidation theory and the types of settler under loads. 2. Knowledge the consolidation parame and settlement determination and what the factors effecting on the settlement. 3. Understand the clayey soil behavior u loads and the relationship between the time and degree of consolidation. 4. What is the difference between norm consolidated and over-consolidated soils? Wha the effects of over consolidation on the phy properties of clay? What are the causes of consolidation? 5. Knowledge how to determine consolidation parameters like the compression in swelling index, coefficient of consolidation, consolidation ratio, degree of consolidation and consolidation stress. 6. An ability to compute the time factor u two methods, the square root time method or th time method. 7. An ability to understanding relationship between the changing in voids under structure loads and the applied stress du the structure. 8. Knowledge how to determine consolidation stress from void ration-vertical s relationship. 9. Understanding the oedometer test (dimensional compression test and knowledge ho calculate the void ratio change with stress in the 10. Improve the student capability to know principles of shear strength of soil and the s strength parameters variation under loads. 11. The engineer needs to know the natu shearing resistance in the soil mass to ana problems such as bearing capacity of foundat stability of slopes and the lateral pressure retaining walls.	5	Theory ,Lecture, Lab Tutorial	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project

Homework Exam	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Introduction to Geotechni Engineering, 2nd Edition, Baraja D 2014
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Structural analysis II
2. Course Code:
CE 362
3. Semester / Year:
6/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Theory, Lecture, Tutorial
6. Number of Credit Hours (Total) / Number of Units (Total)
4/4
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Karrar Ali Al-Lami** Email: **karrarali@uowasit.edu.iq**
8. Course Objectives

Course Objectives	1. Differentiate determinate structures from indeterminate structures. 2. Introducing the method of consistent deformation to analyze indeterminate structures. 3. Presenting displacement methods as alternative methods to analyze indeterminate structures. 4. Distinguish braced frame from frames with side sway. 5. Applying the slope-deflection method to evaluate indeterminate beams and frames. 6. Utilizing the moment-distribution method to analyze indeterminate structures.

9. Teaching and Learning Strategies	
Strategy	**Structural analysis is a continuation of previously studied courses and aims to provide students with the knowl to analyze different types of indeterminate structures. Therefore, students should have a strong backgrou engineering mechanics, strength of materials, and structural analysis I. Students are encouraged to review sub like equilibrium and shear and moment diagrams from previous courses. The course will be in the form of lec covering the main aspects of the course. In addition, multiple examples will be demonstrated for each sub Students will be handed homework and asked to solve it. At the end of each part of the course, there will be re and discussion of the homework. Student evaluation in this course will depend on various criteria including ex homework, class discussions, and quizzes.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	4	1. Recognize stable and indeterminate structures. 2. Analyze indeterminate structures using f method (consistent deformation method).	4	Theory Lecture Lab	Quizz Project Homework

		3. Achieving the competence to analyze indeterminate structures using slope-deflection-method. 4. Analyzing indeterminate frames via slope deflection method. 5. Evaluation structures' external reactions internal forces after settlement. 6. Using moment-distribution method to analyze braced frames and frames with side sway.			Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Structural analysis by R. C. Hibbel
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Economy
2. Course Code:
CE 367
3. Semester / Year:
6/3
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
Lecture, Lab,
6. Number of Credit Hours (Total) / Number of Units (Total)
3/3
7. Course administrator's name (mention all, if more than one name)
Name: **Asst.Prof. Dr. Alaa Kharbat Shadhar** Ema **akhirbat@uowasit.edu.iq**
8. Course Objectives

Course Objectives	The need for engineering economy is primarily motivated by the work that engineers do in performing analyses, synthesizing, and coming to a conclusion as they work on projects of all sizes. In other words, engineering economy is at the heart of making decisions. These decisions involve the fundamental elements of cash flows of money, time, and interest rates. Decisions are made routinely to choose one alternative over another by individuals in everyday life; by engineers on the job; by managers who supervise the activities of others; by corporate presidents who operate a business; and by government officials who work for the public good. Most decisions involve money, called capital or capital funds, which is usually limited in amount. The decision of where and how to invest this limited capital is motivated by a primary goal of adding value as future, anticipated results of the selected alternative are realized. Engineers play a vital role in capital investment decisions based upon their ability and experience to design, analyze, and synthesize.

9. Teaching and Learning Strategies	
Strategy	**Construction management is a significant course that requires focused instruction hours. Therefore, the stra of the course to deliver this module depends mainly on the module instructor in the class, where the material sh be delivered with practical examples from surrounding projects. Moreover, classwork and homework assignn would help the students to practice solving fundamental elements of cash flows of money, time, and interest issues more efficiently. Practical and test videos should also be occasionally used to facilitate connecting the g course elements. reports prepared by student may be increase their information in this scope.**
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	3	Solve first-order ordinary differential equations and apply them to engineering problems. Analyze and solve second and higher-order ordinar differential equations with real-world applications. Formulate and solve systems of simultaneous linear ordinary differential equations. Apply Fourier series techniques to represent perio functions and solve related engineering problems. Solve partial differential equations using analytical methods, including separation of variables. Interpret and apply mathematical solutions to mode and analyze engineering systems.	3	Lecture, Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering Economy, leland blan anthony tarquin. 2012 seve edition.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:	
Computer Applications in Civil Engineering (II)	
2. Course Code:	
CE 358	
3. Semester / Year:	
6/3	
4. Description Preparation Date:	
1/9/2025	
5. Available Attendance Forms:	
Lecture, Lab	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2/2	
7. Course administrator's name (mention all, if more than one name)	
Name: **Ali Hussein Ahmed** Email: **Ali.Hussein@uowasit.edu.iq**	
8. Course Objectives	
Course Objectives	1. Introduce students to the fundamentals of structural modeling and analysis using Autodesk Robot Structural Analysis Professional. 2. Develop students' ability to define materials, sections, loads, and boundary conditions in a structural model. 3. Enhance students' understanding of structural behavior through computer-based simulation and interpretation of analysis results. 4. Provide students with the skills to design structural elements such as beams, columns, slabs, and shear walls according to design codes. 5. Train students to integrate theory and practice through the execution of a complete multi-story building project. 6. Prepare students for professional practice by emphasizing report generation, teamwork, and problem-solving in real-world structural engineering contexts.
9. Teaching and Learning Strategies	
Strategy	**Teaching and Learning Methods – Revit Structural Module** **1. Lectures (Theoretical Sessions):** **A. Explain fundamental concepts of Building Information Modeling (BIM) and structural modeling workflow** **B. Introduce standards of structural documentation and coordination processes.** **2. Practical / Laboratory Sessions:** **A. Students practice creating structural models using Autodesk Revit Structure.** **B. Step-by-step guidance for modeling elements, reinforcement detailing, and drawing production.** **3. Project-Based Learning:** **A. Students work individually or in groups on a multi-story building BIM model integrating modeling, detai and documentation.** **B. Encourages teamwork, coordination, and problem-solving in a realistic engineering environment.** **4. Interactive Discussions & Problem-Solving:** **A. Students review model coordination cases and discuss constructability and detailing solutions.** **B. Develops spatial understanding, critical thinking, and engineering judgment.** **5. Self-Directed Learning (SDL):** **A. Students explore tutorials, BIM libraries, and software manuals independently.**

	B. Promotes independent learning and preparation for professional BIM practice. **6. Assessment-Based Learning:** **A. Quizzes, midterm, project submissions, and final exam used as learning tools.** **B. Students improve their models and drawings based on instructor feedback.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2	Knowledge By the end of this module, students will be able to: 1. Explain the fundamentals of structural modeling and analysis using Autodesk Robot Struct Analysis. 2. Identify different types of structural elem (beams, columns, slabs, shear walls) and their role i structural systems. 3. Recognize the principles of applying load load cases, and load combinations in structural anal 4. Describe the basics of linear, nonlinear, a dynamic analysis of structures. Skills By the end of this module, students will be able to: 1. Create structural models in Robot, includ defining materials, cross-sections, supports, and loa cases. 2. Perform structural analysis and interpre results (internal forces, reactions, displacements). 3. Design structural members (beams, slab columns, and walls) according to design codes. 4. Apply mesh generation and evaluate the accuracy of analysis for slabs and complex structure 5. Use Robot to model and analyze multi-st buildings under different loading conditions. Competence By the end of this module, students will be able to: 1. Integrate theoretical knowledge with software-based applications to solve engineering problems. 2. Work independently and collaboratively structural projects using Robot. 3. Communicate analysis and design results effectively through technical reports. 4. Demonstrate professional responsibility applying codes and standards in structural design.	2	Lecture, Lab	Quizz Project Homework Exam

11. Course Evaluation

Quizz
Project
Homework
Exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	American Concrete Institute — ACI 318: Building Code Requirements for Structural Concrete and Commentary.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	

Electronic References, Websites	