

مصادقة السيد العميد

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



2024

### Academic Program Description

University Name: Al-Furat Al-Awsat Technical University  
College/Institute: Technical Collage of Al-Mussaib  
Scientific Department: Department of Building and Construction  
Engineering Technology  
Academic or Professional Program Name: Bachelor's Degree  
Final Degree Name: Bachelor of Science in Building and Construction  
Engineering Technology  
Study System: Annual  
Description Preparation Date:  
File Filling Date: 19/2/2024

Signature:

Department Head Name:

Dr. Ammar Adel Andalnabe Al-Bakri

Date: 24/2/2024

Signature:

Scientific Assistant Name:

Prof. Dr. Nabil Hamid Abdul Majeed

Date: 21/4/2024

أ. د. نبيل حميد عبد المجيد  
معاون العميد للتعاون العلمي  
و الدراسات العليا

File Verified By:

Quality Assurance and University Performance Department

Quality Assurance and University Performance Department Director

Name: Dr. Haider Rahman Dawood

Date: 24/2/2024

Signature



### **1. Program Vision**

To keep pace with modern scientific developments in the undergraduate and postgraduate education program in the future, to guide and develop scientific research, and to employ applicable research capabilities to serve the machinery and equipment sector

### **2. Program Mission**

In line with the mission of Technical Collage of Al-Mussaib, the department is committed to preparing qualified technical engineers and researchers capable of contributing to the development of the construction and building sector.

### **3. Program Objectives**

To prepare engineering technicians with qualifications in civil and construction engineering

To prepare scientific cadres capable of keeping pace with scientific developments in civil and construction engineering

To provide students with the basic concepts and principles of management information systems, marketing, finance, and accounting

To provide graduates with the necessary skills to perform all field and laboratory tests (destructive and non-destructive) on all construction materials and soil, read their results, and compare them with standard specifications

To prepare graduates who have the ability to enter the labor market

To work on partnerships with government, private, and community sectors in all their different institutions

### **4. Program Accreditation**

null

### **5. Other External Influences**

null

6. Program Structure				
Category	Number of Courses	Total Credits	Percentage	Notes
Institutional Requirements	43	195		
College Requirements	43	195		
Department Requirements	43	195		
Summer Internship		2 months		For the second and third levels
Other				It follows the Bologna System - semester and final system

\*It would be possible to include in the notes whether the course is mandatory or elective

7. وصف البرنامج				
الساعات المعتمدة		اسم المقرر أو المساق	رمز المقرر أو المساق	المرحلة الدراسية
عملي	نظري			
30	60	الميكانيك الهندسي	ATU22011	الأولى
45	30	الرسم الهندسي	ATU22012	
30	60	الرياضيات	ATU22013	
30	30	الفيزياء الهندسية	ATU22014	
---	15	الحقوق والديمقراطية	ATU22015	
---	45	المهارات الإنكليزية المتقدمة	ATU22016	
60	60	المواد الإنشائية	ATU22021	
60	60	المساحة المستوية	ATU22022	
45	30	الجيولوجيا الهندسية	ATU22023	
15	30	الهندسة الوصفية	ATU22024	
30	15	أساسيات الحاسبة	ATU22025	
---	15	اللغة العربية	ATU22026	
60	60	انشاء المباني		الثانية
60	60	تقنية الخرسانة (1)		
90	60	المساحة (2)		
60	60	الرياضيات المتقدمة		
60	60	مقاومة المواد		
60	60	ميكانيك الموائع		
60	30	تطبيقات الحاسبة (1)		
---	60	تقنية صناعة المواد الإنشائية		
---	30	اللغة الإنكليزية		
---	---	التدريب المنهجي		
---	30	جرائم نظام البعث في العراق		
60	60	تحليل وتصميم المنشآت الخرسانية المسلحة (1)		
60	60	تقنية الخرسانة (2)		
90	90	ميكانيك التربة		
60	60	الإدارة الهندسية والمكان الإنشائية		
30	60	نظرية المنشآت		
30	60	التحليل الهندسي		
60	60	هندسة الطرق		
60	30	تطبيقات الحاسبة (2)		

---	30	اللغة الانكليزية	الرابعة
---	---	التدريب المنهجي	
30	60	تحليل وتصميم المنشآت الخرسانية المسلحة (2)	
60	60	تقنية هندسة الأساس	
30	60	تصميم المنشآت الفولاذية	
60	60	التخمين والمواصفات والعقود	
90	90	هندسة البيئة	
---	60	الأيزو	
90	30	الرسم الانشائي	
60	30	تطبيقات الحاسبة (3)	
---	30	اللغة الانكليزية	
180	---	المشروع	

## 8. Expected Learning Outcomes of the Program

Knowledge	
Upon completion of the program, students are expected to be able to:	4- Utilize all theoretical knowledge acquired from the academic program and apply it to construction projects.
1- Recognize the fundamentals of engineering sciences and scientific engineering applications.	5- Employ modern methods in the design and execution of various civil projects, such as road and bridge projects, dams, concrete structures, and metal structures.
2- Differentiate between the various methods employed in civil and construction engineering.	6- Apply engineering laws and theories through the use of modern software applications.
3- Implement, analyze, and interpret data related to civil and construction engineering.	
Skills	
2 .Program-Specific Skill Goals	
1- Utilize laboratory equipment.	
2- Conduct scientific experiments in civil engineering laboratories.	
3. Learning Outcomes	3- Knowledge of design principles and rules.
1- Empower students to acquire practical skills	
2- Enable students to apply theoretical design concepts to graduation projects.	
Values	
3. Learning Outcomes	
- Provide students with a solid foundation in the fundamental principles and engineering practices in the field of design and engineering analysis.	- Enable students to undertake engineering projects in their area of specialization in accordance with the academic program.
- Meet the needs and aspirations of individuals and the labor market by aligning technical education with these needs.	- Prepare graduates with the ability to engage with the needs of the local community and local industry and support their development.
- Empower students to apply theoretical skills in the workplace.	- Enable students to complete their studies within the prescribed period according to international standards and then engage in postgraduate studies

## 9. Teaching and Learning Strategies

- 1- Lecture-based instruction
- 2- Scientific seminars in the specialization
- 3- Summer training
- 4- Educational field trips and visits to engineering sites

## 10. Assessment Methods

- 1- Practical exams
- 2- Theoretical exams
- 3- Reports
- 4- Classroom activities
- 5- Community volunteer work

## 11. Faculty

### Faculty Members

No. of Faculty Members		Faculty Requirements and Skills		Specialization		Rank
محاضر	ملاك			Specific Requirements/Skills (if any)	Specialization	
	√			Sanitary and Environmental Engineering	Civil Engineering	Professor
	√			Sanitary and Environmental Engineering	Civil Engineering	Professor
	√			Structures	Civil Engineering	Professor
	√			Geotechnics	Construction Engineering	Professor
	√			Roads and Bridges Engineering	Construction Engineering	Professor
	√			Materials Engineering	Materials Engineering	Assistant Professor
	√			Chemical Engineering	Chemical Engineering	Assistant Professor

	√			Soil Preparation Equipment	Agricultural Engineering	Assistant Professor
	√			Water Resources Engineering	Water Resources Engineering	Assistant Professor
	√			Applied Mechanics	Mechanical Engineering	Lecturer
	√			Structures	Civil Engineering	Lecturer
	√			Sanitary and Environmental Engineering	Civil Engineering	Lecturer
	√			Project Management	Civil Engineering	Lecturer
	√			Structures	Civil Engineering	Assistant Lecturer
	√			Surveying Engineering	Surveying Engineering	Assistant Lecturer
	√			Construction Materials	Civil Engineering	Assistant Lecturer
	√			Architectural Engineering	Architectural Engineering	Assistant Lecturer
	√			Structures	Civil Engineering	Assistant Lecturer
	√			Construction Materials	Civil Engineering	Assistant Lecturer
	√			Business Administration	Business Administration	Assistant Lecturer
	√			Applied Mechanics	Mechanical Engineering	Assistant Lecturer

## **Professional Development**

### **Orientation of New Faculty Members**

New faculty members are defined as those who have been newly hired by the university and are within their first year of academic service. A faculty member in their second year is eligible to participate if nominated by the dean

### **Professional Development for Faculty Members**

The teaching ability of faculty members is developed by involving them in teaching methods courses held at the Skills Development Center, as well as by holding department-level seminars where each faculty member is assigned to prepare a seminar on a scientific topic and present it in the presence of the department's faculty staff. The topic is discussed and the necessary notes are recorded, which are then used to refine the faculty member's personality and assist them in managing discussions, defending and expressing opinions that will help raise the faculty member's scientific level and develop their capabilities. In addition, many department faculty members have participated in courses inside and outside the country in recent years, which have had a positive impact on increasing knowledge and developing skills. Most department faculty members also participate annually in many scientific conferences held by Iraqi universities as researchers or participants.

### **Professional Development Components**

- 1- Determining the department's needs for faculty members and their specializations is based on its vision and goals.
- 2- There are plans for training programs to develop the skills and abilities of faculty members.
- 3- There are databases of the qualifications and experiences of faculty members.
- 4- Faculty members contribute to the fields that serve the department in their area of specialization
- 5- Determining the faculty member's workload in the department is done according to the instructions.
- 6- The department works to provide research requirements for faculty members
- 7- Providing appropriate conditions and administrative and educational requirements within the department.
- 8- Providing clear and accurate instructions that include the use of modern teaching and learning methods within the department.
- 9- The department grants facilities to faculty members to participate in conferences, development courses, and training workshops

## 12. Acceptance Criterion

### 1- Admission Requirements

The Civil Engineering program has two main admission streams:

Stream 1: For Graduates of Technical Education Institutions/Technical Institutes

Direct Admission to Second Year:

Graduates of the Civil Engineering Technology Department/Construction and Installations Branch only. These students will be required to take the Engineering Geology course as a regular course and exam.

Admission to First Year:

Graduates of the Civil Engineering Technology Department/Engineering Drawing and Road Construction Branches.

Graduates of the Surveying Department.

Graduates of the Irrigation and Water Projects Operation Department.

Stream 2: For Graduates of Preparatory School (Science Stream)

Admission to First Year: Graduates of the preparatory school (science stream) only.

Stream 3: For Top Graduates from Other Institutes Outside the Technical Education Authority Institutes

Admission to First Year: Top graduates from other institutes outside the Technical Education Authority institutes.

Admission System

Students are admitted through the centralized admission system of the Ministry of Higher Education and Scientific Research in two stages:

Stage 1: First Year

### 2- Admission Criteria:

Graduates of the preparatory school (science stream).

Top graduates of vocational education in the specializations that can be accepted into the program.

Stage 2: Second Year

Admission Criteria:

The top ten graduates from the technical institutes specified in the program's inputs. Distinguished individuals in the field of work from the specializations specified in the inputs.



**13.The most important sources of information about the program**

**The Official Website of Collage**

**[www.tcm.edu.iq](http://www.tcm.edu.iq)**

**Technical Collage of Al-Mussaib**

**14.Program Development Plan**

The department's curriculum is subject to a 20% annual update process, driven by the subject matter instructor. This ongoing revision ensures that the curriculum remains relevant, aligned with industry standards, and incorporates the latest advancements in the field of civil engineering.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Year	ATU22021	Materials Science for Civil Engineering	Basic		*								*		
	ATU22022	Surveying	Basic		*							*	*	*	
Second Year		Building Construction	Basic		*							*			
		Technology of Construction Materials	Basic		*		*	*				*	*	*	
Third Year		Construction Management and Construction Equipment:	Basic	*	*	*	*	*	*	*		*	*	*	
		Highway Engineering	Basic	*	*	*	*	*	*	*		*	*	*	
Fourth Year		Foundation Engineering	Basic	*	*		*	*	*	*		*	*	*	
		Estimating, Specifications, and Contracts	Basic												

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

## Course Description Form

<b>1. Course Name:</b>					
Engineering Mechanics					
<b>2. Course Code:</b>					
ATU22011					
<b>3. Semester / Year:</b>					
Semester					
<b>4. Description Preparation Date:</b>					
Theoretical and practical lectures and field trips					
<b>5. Available Attendance Forms:</b>					
Daily					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
250X10					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Hayder Saad Oleiwi Email: hayder.rashid@atu.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>• Teaching the student, the fundamentals of engineering mechar (Static's&amp;</li> <li>• Dynamics) in engineering applications, the loads analysis, resultan</li> <li>• Equilibrium in 2-D and 3-D, moments and couples .</li> <li>• First and second moment of inertia, motion of particles, and th theories.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>		The primary strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials			
<b>10. Course Structure</b>					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3	Force systems, Scalar & vector quantities , Parallelogram law , Triangle	Introduction to mechanics, Force systems, Scalar & vector quantities , Parallelogram	Giving lectures	Assignments, oral exams, discussions, direct questions, and short quizzes

		law , Forces & components .	law , Triangle law , Forces & components .		
<b>Week 2</b>	<b>3</b>	Varignon`s theorem , Applications	Moment of a force , Varignon`s theorem , Applications	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 3</b>	<b>3</b>	a force into a force & a couple .	Couples , Resolution of a force into a force & a couple .	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 4</b>	<b>3</b>	Resultant of parallel force system , Resultant of non-concurrent force system .	Resultant of force systems , Resultant of concurrent force system , Resultant of parallel force system , Resultant of non-concurrent force system .	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 5</b>	<b>3</b>	Equilibrium of concurrent force system , Equilibrium of parallel force system , Equilibrium of non-concurrent force system .	Equilibrium of force system , Free body diagram , Equilibrium of concurrent force system , Equilibrium of parallel force system , Equilibrium of non-concurrent force system .	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 6</b>	<b>3</b>	beams, Supports, and loads, Equilibrium of beams.	Types of beams, Supports, and loads, Equilibrium of beams.	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 7</b>	<b>3</b>	method of Joint , method of section .	Trusses, Analysis of trusses, method of Joint , method of section .	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 8</b>	<b>3</b>	Analysis of frames ( method of members ) .	Analysis of frames ( method of members ) .	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 9</b>	<b>3</b>	friction , Angle of friction , Types of friction , Wedges ,Applications.	Friction , Theory of friction , Angle of friction , Types of friction , Wedges ,Applications.	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct questions, and short quizzes</b>
<b>Week 10</b>	<b>3</b>	, Centroids by integration , Centroids of composite areas , Applications.	Centroids of areas & lines , Centroids by integration , Centroids of composite areas , Applications.	<b>Giving lectures</b>	<b>Assignments, oral exams, discussions, direct</b>

					questions, and short quizzes
Week 11	3	Moment of inertia , Polar moment of inertia .	Moment of inertia , Polar moment of inertia , Radius of gyration , Transfer formula for moment of inertia , Moment of inertia for composite areas , Product of inertia , Moment of inertia with respect to inclined axes , Mohr` circle for moment of inertia .	Giving lectures	Assignments, oral exams, discussions, direct questions, and short quizzes
Week 12	3	Principles of dynamics , Kinematics & kinetics , Motion of a particle ,	Principles of dynamics , Kinematics & kinetics , Motion of a particle , Fundamental Equations of kinetics for a particle , Effective force on a particle.	Giving lectures	Assignments, oral exams, discussions, direct questions, and short quizzes
Week 13	3	Rectilinear translation, Rectilinear motion	Rectilinear translation, Rectilinear motion with constant acceleration , Free falling bodies .	Giving lectures	Assignments, oral exams, discussions, direct questions, and short quizzes
Week 14	3	Kinetics of rectilinear translation Dynamic Equilibrium in translation	Kinetics of rectilinear translation (Analysis as a particle ) , Dynamic Equilibrium in translation ( Analysis as a rigid body ) .	Giving lectures	Assignments, oral exams, discussions, direct questions, and short quizzes
Week 15	3		Preparing for the final exam	Giving lectures	short quizzes

## 11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20% (20)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	-	-	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	R. C. Hibbeler, J. L. Meriam
Main references (sources)	L. G. Kraige
Recommended books and references (scientific journals, reports...)	John Wiley & Sons, Inc
Electronic References, Websites	