Guide of Department of Civil Engineering

Edition 2026

9 الصناعة والابتكار والبنية التحتية

Iraq-Mosul-Al Majmoaa Street

Uomosul.edu.iq/engineering/

College of Engineering

Introduction

Civil Engineering Department at the University of Mosul is one of the earliest departments established at the College of Engineering.

This guide provides a detailed description about the department and its facilities and labs, in addition to the scientific and community services and activities that the Department provides.

In addition to offering undergraduate degree in Civil Engineering, the Civil Engineering Department offers graduate degrees in Structures, Geotechnics, and Transportation and Highway Engineering.

This guide is available in Arabic and English language and it is prepared under the directions of the Dean of the College of Engineering Prof. Dr. Abdul Rahim Ibrahim Jassim, under the supervision of the Head of the Civil Engineering Department, Prof. Dr. Moataz A. Al-Obaydi.

2025-2026

Department Management

Dr. Baraa Jabbar Mahmood

- Head of Civil Engineering Department
- Spcialty: Structural Engineering

Dr. Mohammed Shakeeb Mohammed

- Department Decision
- Specialty: Structural Engineering

Department Laboratories

Construction Materials Laboratory

- Ass. Professor Sufian Younis Ahmed

Geotechnics Laboratory

- Ass. Professor Moafak Aboo Awad

Rock Mechanics Laboratory

- Ass. Professor Abdulrahman Hani Taha

Bituminous Materials Laboratory

- Lecturer Mohammed Ganem Jameel

Engineering Survey Laboratory

- Leturer Dr. Yazin Abdul-Ellah Mustafa

Computer Laboratory

- Lecturer Dr. Mohammed Kamel Faris

Vision:

Develop the engineering education in the civil engineering field to achieve perfection and provide innovative and high-quality educational programs.

Mission:

Prepare engineers specialized in civil engineering who possess a scientific background with a high level of perfection to meet the developments in scientific curricula and researches, and utilize these capabilities in serving society and developing the public and private institutions with the requirement to commit to human, ethical and professional values.

Goals:

1. Acquire the fundamental knowledge and skills of Civil Engineering in the fields of structure, geotechnical, and transportation to serve the community and to easily involve in the professional societies.

2. Establish the engineering practice in the field of Civil Engineering to fulfill the need of society.

3. Engage in continued learning to ensure professional development.

4. Acquire the creative knowledge to be able to gain the problem-solving skills to be able to adapt to fast and new technologies in the fields of structure, geotechnical, and transportation engineering, in addition, to keep on continuous learning activities.

General Goals:

1.Develop the academic education in civil engineering to achieve a remarkable level in order to meet the quality requirements and qualify for national and international accreditation.

2. Develop the faculty members through scholarships, academic courses and scientific training, and to promote linking the department with equivalent departments in advanced international universities.

3. Continuous review of the curricula in order to enhance them to reach the scientific level in parallel with the scientific progress and the needs of society. Focus on highlighting the role of sustainable development in the field of civil engineering and try to reach a clean, healthy and safe environment.

4. Develop scientific labs to ensure the progress of the educational and research process, and give the student a professional experience in engineering applications.

5. Guide the student through the study phase to fulfill the effective role with colleagues to ensure the spirit of collaboration and teamwork and commitment to professional, humanitarian and ethical values.

6. Work to encourage communication with students online through blended learning and the constant development of diverse e-learning systems.

7. Create an engineering personality for the graduates who can understand and recognize engineering issues in his environment and deal with them in a wise and scientific approach based on his scientific knowledge. In addition to prepare him to lead at the academic and administrative level and contribute to the development of society.

8. Prepare the graduates to serve the community effectively and efficiently.

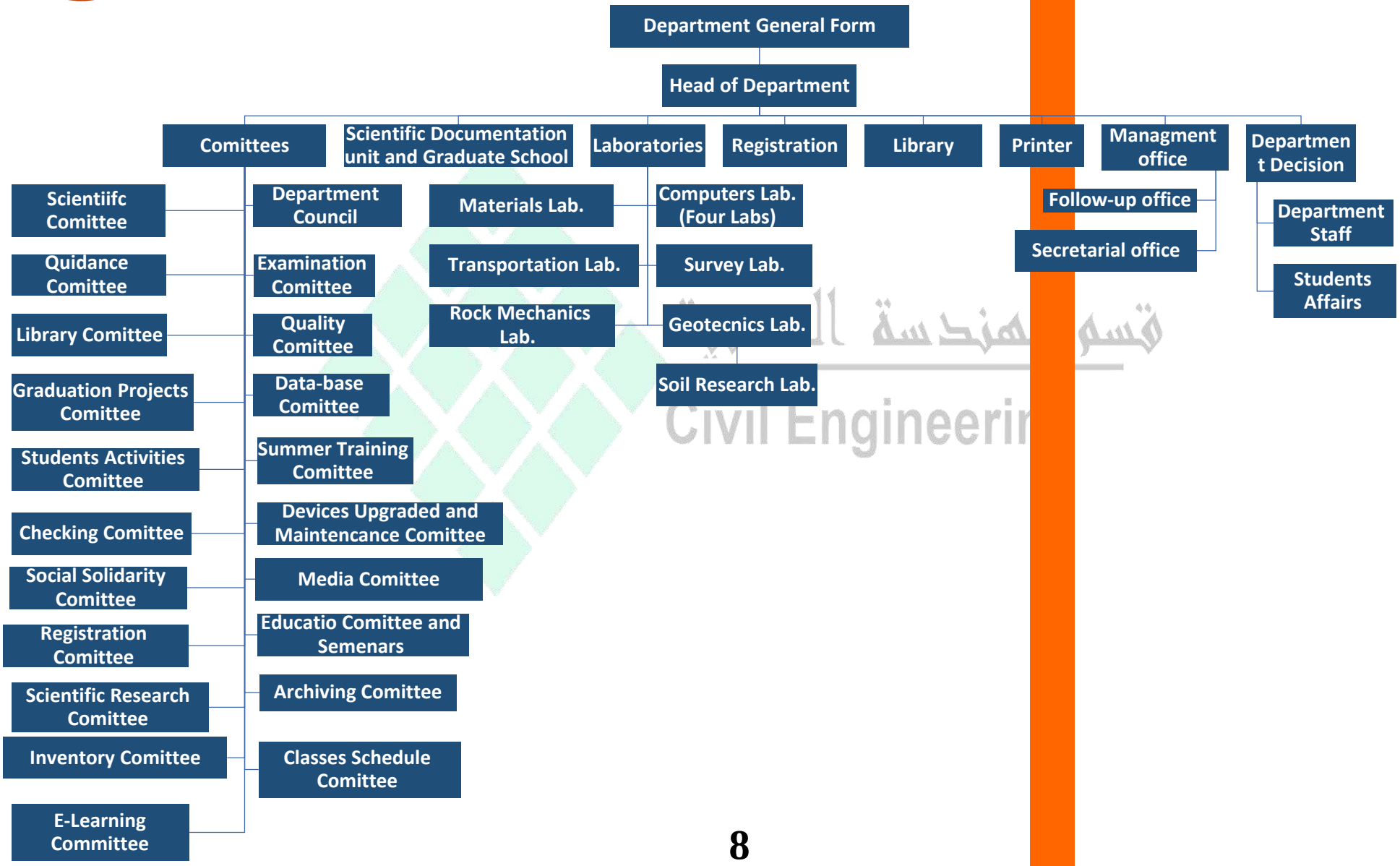
9. Maintain communication channels with alumni through scientific conferences and seminars, regular social events, and continued education courses.

10. Serve the society by faculty members with practical experience holding postgraduate degrees and through the services provided by the College's Engineering Advisory Office.

11. Establish and creating short-term and comprehensive study programs to enhance the existing knowledge of the graduates with the award of a diploma.

12. Introduce a postgraduate program that provides the community with Master's and Doctoral degree holders in civil engineering specialties who possess extensive knowledge in their respective subjects and have the ability to drive civil engineering programs in the future.

Department of Civil Engineering




قسم الهندسة المدنية
Civil Engineering

Responsibilities

Head of Department: Managing the department in scientific, administrative, cultural, educational, financial, and students' affairs. Supervised on educational techniques and process, prepare a seasonally and annually reports on departments activities and raise it to the dean of the college. Distributing the duties on the department faculty and staff and issued administrative orders to do so .

Department Decision: Distributing and organizing the classes on the faculty members, follow up the student absence and the seminars .

Department Council Committee: Supervision on the department education program. Follow up and achieve the scientific plan and the development of faculty and staff .

Scientific and Graduate Studies Committee: The committee in contribution with the head of department prepare the curricula and upgrade them. The committee also review the promotion documents for faculty and check the research plagiarism. Follow up all graduate student-related problems: select qualified exam committee, prepare a committee for graduate students' extension requests .

Examination Committee: Follow up the mid-term and final exams, organize the observation schedule and observers. Receiving the exam questions and the grades from the faulty and organizing them securely. Prepare statistics to the final grades and provides the pass and fail percentages for examiners, preparing make-up exams .

Checking Committee: It works simultaneously with the examination committee during exams and results. The committee members check the marks received from the faculty

Graduation Projects Committee: Collecting the suggested projects prepared by the faculty, organize them and present them to students. Preparing committee for discussing the projects after the students have completed their projects.

Continuous Education and Seminars Committee: Following up the continuous education session prepared and presented by department faculty for engineering who are working industrials. Additionally, following up the conferences and seminars prepared by the department .

Summer Training Committee: Prepare official letter specifically for junior students to admit them to be trained at the industrials. monitoring the students during training. Receiving reports prepared by students after they completed their training .

Media Committee: The committee members report all scientific and social activities via that the department make them frequently. They are usually done via photos and posters .

Books Distribution Committee: Distributing books to students at the beginning of each academic year and receive them at the end of the academic year. Organizing a list for borrowed books by faculty and graduate students .

Classes Schedule Committee: The committee members prepare classes schedule for undergraduate and post graduate programs.

Archiving Committee: Archiving masters theses and doctorial dissertations electronically for all area of concentrations under civil engineering major. Additionally, archiving the high diploma and final level projects electronically .

Inventory Committee: An inventory for the furniture and equipment available at the department rooms and laboratories

Social Solidarity Committee: Following up the social cases for the department students and staff who needs financial support.

Registration Committee: Receiving and registering new students at the beginning of each new academic year. Registering students for all academic levels and following up student statuses during academic year such as transferring, hosting, postponing, etc. Preparing students lists for all academic levels according to the classrooms .

Department Management: **Reporting incoming official letters, sending out the official letter released from the head of department. Issued the official letters, and organization of issued and received official letters.**

Printer: **Typing, Printing, and reporting the official letter and reporting the student's daily attendance. Prepare a monthly table for the percent of student absence. Receiving and sending emails from and to the department management .**

Library: **Receive master thesis and doctorial dissertations electronically and hardcopies for graduated students who graduated recently Organize the work for borrowing books and theses and dissertations. Additionally, organize the Engineering software's CDs**

Department of Civil Engineering

Teaching staff

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Department Building

The civil engineering department was constructed in 1963 on an area of 1422 m2. The constructed area was 4274 m2. The top view of the build was designed on a T-shape. The building consists of four floors. The first floor includes the department management and computer laboratories, classrooms for graduate students. The second and the third floors include classrooms for undergraduate students and rooms for faculty members. The fourth floors include four meeting rooms. The building includes two main entrances and it is surrounding by yards from three sides. There is also a parking lots for the department faculty and staff. The renovation of the department building started on 2003 and it continue until now. The heating and cooling system has been upgraded recently. The table below illustrates the details of the department building.

Table illustrates the details of the department building

Details	Area (m^2)	No.	Type
Classrooms	16	954	Furnished rooms with heating and cooling system. Area of each classroom 53 m^2. (Two of these rooms 106 m^2)
Computer Laboratories	4	237	For each grade, a computer lab. (area of 60 m^2) with a cooling and heating system.
Faculty members rooms	29	464	Furnished rooms for faculty members (area of each room 16m^2) with a cooling and heating system
Seminars rooms	2	212	Furnished rooms for seminars (area of 106m^2) with a cooling and heating system. They also include a smart board and data show
Large Meeting Room	1	78	A furnished room with a cooling and heating system
Small Meeting Room	1	25	A furnished room with a cooling and heating system
Classrooms for Graduate Students	4	137	Furnished rooms (different area) with a cooling and heating system
Students Activities Room	1	53	A furnished room with a cooling and heating system
Secretary and Printer Room	2	40	A furnished room with a cooling and heating system
Department Presidency Room	1	47	A furnished room with a cooling and heating system
Department Decision Room	1	20	A furnished room with a cooling and heating system
Café Room	1	100	A furnished room with a cooling and heating system
Drawing Rooms	1	106	A furnished room with a cooling and heating system

Civil Engineering Laboratories

Seven laboratories are belonging to the civil engineering department. These laboratories have scientific and consultant activities. These laboratories include many devices, Maintenance is performed frequently to elongate the lifespan of the derives and maintains their good condition.
These laboratories help to produce high-quality research. Additionally, they contribute for performing many tests. The laboratory also contributes for providing consultations services.
Expert faculty members from the civil engineering department manage the laboratories. A good management is the reason of successfulness of these laboratories.

1. Construction Materials Laboratory

The Construction materials laboratory represents the most important and the biggest laboratory among civil engineering laboratories. The laboratory has been established in 1967 and its area was 1260 m2. The laboratory was equipped with a high-quality device. The laboratory includes rooms for lecturers and graduate students. The laboratory was renovated in 2007. It was destroyed because of military activities in 2017. It was renovated again in 2019 by UNDP organization and under supervision of Directorate of Construction and Projects at the University of Mosul.
The laboratory includes many apparatuses and tools used for performing physical tests of structural materials. The devices and tools are used by graduate students and for consultations purposes.
Compression tests for concrete cubes, ceramic tests, cement test, steel test, steel mech test, concrete block test, steel sections test, breaks test, curbstone test, testing of all pipe types, sand and gravel tests, concrete mix design. Non-destructive test (core test, ultrasound test, load test)
Finally, the laboratory can voluntarily provide assistances for graduate students form other departments or colleges.

The geotechnical laboratory represents the stone-corner of the civil engineering laboratories because of it is importance for educating the undergraduate students the fundamental soil mechanics .

2. Geotechnical Laboratory

The laboratory was established by a group of experts at soil mechanics and foundation engineering fields in Iraq in 1963 which is the same date as the civil engineering has been established. The laboratory building is 300 m2. It includes a classroom, stages, and benches for performing tests, storage rooms, and lecturers' room.

The main purpose of the laboratory is for educating underground student of the physical soil properties such as specific gravity, Atterberg limits, grain size distribution, compaction test, hydraulic properties such as permeability test, and mechanical tests such as consolidation test, unconfined compression tests, direct shear tests, and triaxial tests. Additionally, chemical tests of soils can be performed in the laboratory. The laboratory also contributes for providing consultations services.

- **Soil Mechanics and Foundation Engineering Laboratory for Research**

In 2002, the civil engineering department reserved a section for soil mechanic's research. The research laboratory section area is around 150 m^2. The establishment of this laboratory was an important step for the ability of performing ahigh quality research by a faculty and graduate students .

3. Rock Mechanics Laboratory

The Rock mechanics laboratory was established on1986 as a part of Soil Mechanics Laboratory. In 2007, a new building was constructed specifically for Rock mechanics laboratory and since then it becomes a stand-alone laboratory. The area of the new building is 250 m2.

The rock mechanics laboratory includes many apparatuses and tools. These apparatuses and tools are useful for performing physical and mechanical rock tests. They can be use for research by graduate students and for the purpose of engineering consultations by the engineering consultation bureau workers.

4. Engineering Surveying laboratory

Surveying Engineering Laboratory was established in 1964 and was equipped with German and Chinese devices. One of the modern devices in the laboratory is the electronic theodolite device. In 2008, a new building was allocated to this laboratory. The tests conducted in the laboratory are measuring areas, quantities and volumes, creating adjustment numbers and points of triangulation, drawing longitudinal and cross-sections, and measuring distances .

This laboratory includes many devices, used to train students in all measurement operations, and everything that a survey engineer needs in his work. These devices can be classified as follows:

Set One: It includes modern electronic devices for measuring distances, directional measuring devices such as gyroothiodelites, special devices for receiving and recording time such as chronometers, short-wave receiving devices, and a small-scale planetarium .

Set Two: It includes various devices for measuring angles such as Theodolite, and the accuracy of measurement in these devices ranges from one minute to one second, and there are a number of tachometer devices and leveling devices of various kinds and accuracy.

Set Three: It includes traditional surveying devices such as flat panels. The laboratory contains antenna tapes that are used to measure baselines, and the horizontal rulers and a number of Substance bars.

5. Bituminous Materials Laboratory

The Bituminous materials laboratory was established in 1967 to examine the engineering properties of asphalt materials, dirt, and dyes used in road construction and civil engineering works. It is one of the laboratory of the Ministry of High Education and Scientific Research \ University of Mosul \ College of Engineering \ Department of Civil Engineering.

Lab Activities:

The activities of the laboratory, which it carries out with high efficiency, include the following:

1. **Conducting checks for asphalt materials, dirt, and dyes used in road construction and civil engineering works and determining their conformity with the approved standard specifications, (see the list of tests carried out in the laboratory based on the national and international standard), for the governmental and private sectors through the advisory office and the mechanism of cooperation. The test results are issued in all impartiality and transparency by an experienced and highly qualified engineering staff**
2. **Providing training services on tests and laboratory devices for new workers in the Civil Engineering Department as well as engineers working in the government institutions.**
3. **Performing its activities according to the international standard ISO / IEC 17025 / 2005.**
4. **Other requirements specified by the national and international accreditation body in addition to the customer's requirements.**
5. **To participate in the follow-up and supervision of the maintenance and repair of devices.**
6. **Providing engineering consultancy for researchers (teachers and postgraduate students) and for the private and government sectors.**

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
1	General Compressive Test Device	Examines concrete blocks for concrete pouring works in all engineering works. In addition, determines the suitability of the implemented concrete to the necessary requirements for each engineering work. Approved Specifications: Iraqi Specifications	
2	General Tensile Test Device	Examines reinforcing steel used in engineering works of various sizes, as well as examines various steel sections used in engineering works. Approved Specifications: American ASTM A 615 British BS 4449	
3	General Tensile Test Device	Examines the tiles used in the finishing processes of floors, as well as the tiles used for the surfacing of concrete ceilings	
4	General Tensile Test Device	Examines the types of ceramics used in the packaging of structural members (such as internal and external walls). As well as the ceramics used for cladding floors. Approved Specifications: Iraqi Specifications: (BCG 1392, BCG 1704, BCG 1627	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
5	General Tensile Test Device	Examines drinking water and waste water pipes Approved specification: M. S. P 1491	
6	General Compressive Test Device	Examines the building blocks used in construction work of all kinds (solid and hollow) for loaded and non-loaded walls (partitions). In addition, knowing its suitability for engineering work. Approved Specifications: Iraqi Specifications (M. Q. cl 1077, M. Q. p. 1129)	
7	General Compressive Test Device	Examines various types of bricks, which are used in engineering works. Approved Specification: M. S. P 25	
8	Utrasonic Test	This test is achieving by passing a pulse of ultrasonic waves through the concrete parts. The time of passing of these ultrasonic waves is measured. The velocities of passing of these ultrasonic waves give us an indication about the density and other properties of the tested materials. This test is conducting in accordance with ASTM C597.	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
9	Hammer Test	This test is conducting by using the hammer device as shown in the picture on the right. The device includes a metal hammer which is connected to a spring. The test measures the rebound of a steel hammer affected on the concrete by a spring. The test gives an approximate indication about the compressive strength of concrete. This test is conducting in accordance with ASTM C805.	
10	Core test	This test, which is considered a semi-destructive test, is using to assess the compressive strength of concrete. This test gives a real indication about the compressive strength of concrete in structural members such as, slab, beam, column, and foundation. This test is conducting in accordance with the Iraqi Code and ASTM C42.	
11	Jotting Table	This apparatus is utilizing to prepare samples of cement in accordance with European specifications.	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
9	Vicat-apparatus	This apparatus is using to determine the normal consistency, and initial and final time of setting. This test is conducting in accordance with: ASTM C187-13 and ASTM C191-13	
10	Steel frame for research and graduate studies	This steel frame is using to study the behavior of structural members and measure their strength. Different tests can be conducted by this steel frame.	
11	Apparatus for research and graduate studies	This apparatus is utilizing to study the behavior of structural members and measure their strength.	
12	Electrical Oven	Electrical oven which is used to dry structural materials. The capacity of the oven is 20 ft^3 and its temperature reaches up to 600 °C.	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
16	Electrical Oven	Electrical oven which is used to dry structural materials. The temperature of the oven reaches up to 250 °C.	
17	Universal compression Machine 4000 kN capacity	Electronic compression testing machine. The capacity of the machine is 4000 kN.	
18	Universal Tensile Test machine	Electronic universal testing machine. 1000 kN capacity, with ultimate-T control unit and computer display.	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
19	Universal Flexural Testing machine	Universal Flexural Testing machine, measurement of beam deflection and toughness.	
20	Grinding machine	Device for cylinder samples surface grading.	
21	Grinding machine	Concrete pan mixer	
22	Schmidt Hummer	Non-destructive testing device to evaluate the quality of concrete and compressive strength.	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
23	SIEVE SHAKER	Dry sieving sieve shaker for sieve dimeter 50 mm to 203 mm.	
24	Blain device	Cement blain fineness apparatuses, using the blain air - permeability.	
25	Utra-sonic waves device	Non-destructive testing device to evaluate the quality of concrete, compressive strength and cracks.	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
26	Vicat-apparatus	The Vicat frame to find setting time and consistency of cement paste.	
27	Compression-Flexural CEMENT Testers	Super-Automatic compression-flexural cement testers with PC control.	
28	Temperature/Temperature & humidity controlled cabinet	Preparation of specimens: mixing of cement mortar, fully automatic mortar mixer	

Apparatuses Description of Construction Materials Laboratory

No.	Device Name	Device Description	Device Picture
29	Temperature/Temperature & humidity controlled cabinet	Cabin to maintain temperature and humidity of samples.	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
1	Hot plate	Hote plate uses to increase the temperature of soil-water solution that uses to measure chemical properties of soils and soil specific gravity. It uses by undergraduate and graduate students	
2	Furnace	Furnace uses to find volatile and non-volatile solids by placing the soil sample inside it at a very high temperature of up to 1200 degrees Celsius. It benefits undergraduate and postgraduate students and geotechnical specialists	
3	Consolidation device	Consolidation device uses to measure the settlement of undisturbed soil sample. Then to find consolidation parameters such as Cc, Cc, Cv. It uses by undergraduate and graduate students and geotechnical researchers.	
4	shear testing device	The device uses to find the undrained shear strength of soils. It used by graduate students and geotechnical researchers	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
5	Direct shear testing device	The device uses to find shear strength parameters (angle of internal friction and cohesion). It uses by undergraduate and graduate students and geotechnical researchers	
6	Liquid limit device	The device uses to measure the liquid limit for clayey soils which is used to classify the soil.	
7	Hydrometer	Hydrometer uses to find the percentage of clay and silt. It uses by undergraduate and graduate students and geotechnical researchers	
8	pH meter series	It uses to measure the soil pH. It benefits both graduate and undergraduate students and geotechnical researchers	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
9	PH meter	It uses to measure soil pH and percentage of dissolved Oxygen, soil conductivity, relative humidity, and turbidity. It benefits undergraduate and graduate students and geotechnical researchers	
10	Distilled water device	The device uses to produce distilled water that free of ions and with a conductivity of 0.002u/cm. this water can be used for conducting chemical soil tests, it uses by undergraduate and graduate students and geotechnical researchers	
11	Vernia	Vernia uses to measure the dimensions of soil samples	
12	Tensiometer	Tensiometer uses to measure soil suction. It uses by graduate students and geotechnical researchers	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
13	Quartering	It uses to divide the soil sample to quarters for sieve analysis tests. It uses by undergraduate and graduate students	
14	Water path	It uses to control temperature. It benefits both undergraduate and graduate students	
15	Kongo vibrating hammer	It uses to compact sandy soil sample. It uses by graduate students and geotechnical researchers	
16	High speed mixer	It uses to prepare water -soil solution for hydrometer test. It uses by undergraduate and graduate students and geotechnical researchers	

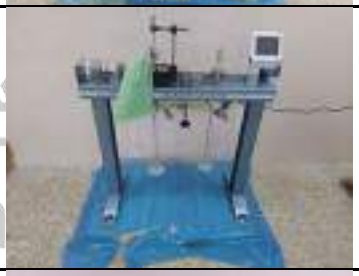
Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
17	Vacuum pump	It uses to apply vacuum to soil sample. It benefits undergraduate and graduate students and geotechnical researchers	
18	Cone device	It uses to measure soil liquid limits for soils that is difficult to measure it using Casagrande device. It benefits undergraduate and graduate students and geotechnical researchers	
19	Pocket penetrometer	It uses to measure soil strength. It benefits graduate students	
20	Cone penetrometer	It uses to measure soil resistance in the field. It uses by graduate students	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
21	Sand cone	It uses to find the relative compaction. It uses by undergraduate students	
22	Proving ring Calibrating device	It uses to calibrate proving rings that uses in unconfined compressive test, direct shear tests. It uses by graduate students and geotechnical researchers	
23	Mechanical shaker	It uses to shake soil -water solution for the purpose of conducting chemical tests. It benefits undergraduate and graduate students and geotechnical researchers	
24	Sieves	It uses to conduct soil sieve analysis for cohesionless soils. It benefits undergraduate and graduate students and geotechnical researchers	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
25	Static tri-axial shear device	The device is used to measure the shear strength parameters of soil samples.	
26	Large scale direct shear device	The device is used to measure the shear strength parameters of coarse grains soils where the sample dimensions are 30*30 cm.	
27	Direct shear test	The device is used to measure the shear strength parameters of soil sample	
28	Residual shear device	The device is used to measure the residual shear of soil samples.	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
29	Permeameters	The device is used to measure the coefficient of permeability for soil samples using the constant and variable height methods	
30	Automatic plate load test device	The device is used to measure the insitu bearing capacity of soils	
31	Casagrande device	The device is used to measure the Atterberg limits of fine -grained soils.	
32	Volumetric shrinkage device	The device is used to measure the volumetric shrinkage of soil samples.	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
33	Linear shrinkage device	The device is used to measure the linear shrinkage of soil samples.	
34	Pinhole device	The device is used to measure the properties of dispersed soils	
35	Proving ring	The proving ring is used for load measurement of the applied load on soil samples.	
36	Electronic balance	It is used to weigh soil samples.	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
37	Vibrator for sand relative density	It is used to find the relative density of sandy soils.	
38	Extruder	The device is used to extract soil samples.	
39	Electrical Density Gauge (EDG)	It uses to measure the field relative compaction	
40	Pile Integrity Tester	It uses to measure the integrity of the concrete piles	

Apparatuses Description of Geotechnical Laboratory

No.	Device Name	Device Description	Device Picture
41	Mechanical shaker	It uses to conduct sieve analysis of granular soils	
42	Oven	It uses to dry out soil samples	
43	Ground penetration Radar (GPR)	It uses to investigate underground cavities	

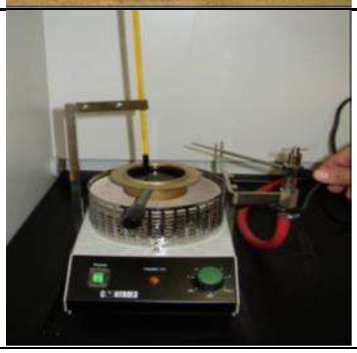
Apparatuses Description of Rock Mechanics Laboratory

No.	Device Name	Device Description	Device Picture
1	Uniaxial Compression Test	To determine stress-strain behavior and unconfined compressive strength of rocks	
2	Triaxial Compression Test	To determine stress-strain behavior, Shear strength, and shear strength parameters (cohesion and friction angle) of rocks	
3	Bending Test	To determine the bending strength of rocks	
4	Direct Shear Test	To determine the shear force of rocks by applying vertical loads and to determine the angle internal friction.	

Apparatuses Description of Rock Mechanics Laboratory

No.	Device Name	Device Description	Device Picture
5	Point Load Test	To determine the index compressive strength of rocks. It has a relation with the compressive strength of the rocks.	
6	Brazilian Test	To determine the indirect tensile strength of rocks	
7	Slaking and Durability Test	To determine the amount of rock erosion and its durability in the presence of water	

Apparatuses Description of Bituminous Materials Laboratory

No.	Device Name	Device Description	Device Picture
1	Tensile and Ductility Properties Test Device for Bituminous	Measuring the tensile properties and ductility of bituminous materials used in civil engineering works	
2	A loss Test Machine for Volatile Substances of Bituminous	Measuring the percentage of the loss of volatile materials for bituminous used in road cladding works	
3	Friction Properties Test Device for Flexible Piling	Measuring Friction characteristics (coefficient of friction) of a (flexible) asphalt paving with a dry or wet surface	
4	Flash and Burn Point Test Device for Bituminous	Determine the flash and burn point for bituminous (which are considered a safety factor in (asphalt mix production plants	

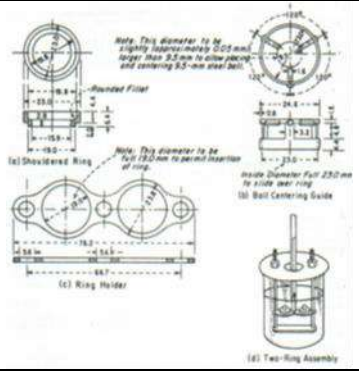
Apparatuses Description of Bituminous Materials Laboratory

No.	Device Name	Device Description	Device Picture
5	Core drilling machine	Obtaining cylindrical asphalt samples with different diameters based on a cylinder size	
6	Extraction Machine for Asphalt Mixtures	Washing concrete asphalt samples and separating aggregate from asphalt	
7	Cohesometer Test Machine for Bituminous Mixtures	Measuring the cohesion of asphalt mixtures at a maximum temperature of 60 °C	
8	Tensile and Compression Strength Test Machine of asphalt Mixtures	Measuring tensile and compressive strength properties of asphalt Mixtures	

Apparatuses Description of Bituminous Materials Laboratory

No.	Device Name	Device Description	Device Picture
9	Aggregate Heating Furnace	Heating aggregate and filler used in the production of asphalt mixtures to a temperature of 110 ± 5 ºC	
10	Concrete Asphalt Mixer	Mixing concrete asphalt samples	
11	Asphalt Specific Gravity Scale	Measuring the specific gravity of asphalt samples up to 2.5 kg with an accuracy of 0.01 g	
12	Gyratory Compaction Machine	Compacting of concrete asphalt samples with a diameter of 177.8 mm, and a height of 342.9 mm at a horizontal angle of 1.25º and under pressure of 600 KPa	

Apparatuses Description of Bituminous Materials Laboratory

No.	Device Name	Device Description	Device Picture
13	Marshall hammer	Compacting of concrete asphalt samples with a diameter of 101.6 mm and a height of 63.5 mm under (weight = 44.4 , vertical fall distance of 457.2 mm)	
14	Wheel Tracking Compaction Machine	Compacting square concrete asphalt samples with a length of 300 mm and a maximum thickness of 70 mm	
15	California Bearing Ratio Test Machine	Testing cylindrical samples of flexible paving layers (nature ground, foundation, and sub-foundation) with a diameter of 152 mm and a height of 178 mm	
16	Softening Point Test Machine of Bituminous	Measuring a ductility point of bituminous used in road cladding and surfacing works	

Apparatuses Description of Bituminous Materials Laboratory

No.	Device Name	Device Description	Device Picture
17	Penetration Test of Bituminous Device	Measuring the penetration of bituminous used in civil engineering work	
18	Viscosity Test of Bituminous by Saybolt Device	Measuring the viscosity of bituminous used in road cladding, liquids, and petroleum solvents, and oil	
19	Marshall Test Machine	Determining stability and Marshall creep of laboratory or field asphalt samples	
20	Water Bath for Marshall Test	Saving asphalt concrete samples with a diameter of 101.6 mm and a height of 63.5 mm for performing a Marshall stability test	

Apparatuses Description of Bituminous Materials Laboratory

No.	Device Name	Device Description	Device Picture
25	Ignition Oven	Burning asphalt materials containing organic solvents and the filler extracted by washing of asphalt mixtures at a temperature of 538 ºC	
26	Aggregate Measurement	Measuring gravel, sand, and soil samples up to 20 Kg with an accuracy of 1 g	
27	Specific Gravity Measurement of Asphalt Mixtures	Measuring cylindrical concrete asphalt samples with a diameter of 101.6 mm and a height of 63.5 mm	
28	Oven for Flow Test of felt material	Measuring the flow test for mastic (cold and hot type) used in filling joints of buildings, roads, and other civil engineering works. The oven is also used to calculate the percentage of asphalt material included in the composition of felt material	

Apparatuses Description of Bituminous Materials Laboratory

No.	Device Name	Device Description	Device Picture
29	Mixer of Asphalt–Additives, Asphalt Emulsion and Diluents Asphalt		
30	California Bearing Ratio Hammer	Compacting of cylindrical concrete asphalt samples with a diameter of 152 mm and a height of 178 mm using a mechanical hummer (weight = 24.4 N, and a vertical fall distance of 305 mm	
31	Flexural Strength Test	Measuring flexural strength properties of asphalt mixtures	
32	Ripples Resistance Test of Bituminous Mixtures	Measuring ripples resistance of bituminous mixtures	

Computer Laboratory

The Department of Civil Engineering has four computer laboratories that are used for preliminary studies lectures. They are equipped with the latest computers and are elegantly furnished.

The table below shows the contents of the laboratories

Computer Lab -1

Description:
Lab 1 is for Grade-1 students in which practical programming is taught (IC3 Language), as well as AutoCAD and Microsoft Office.
Devices :
The laboratory includes 23 computers and a Data Show.

Computer Lab -2

Description:
Lab 2 is for Grade-2 students in which Visual Basic is taught.
Devices :
The laboratory includes 24 computers, a Data Show, and a scanner.

Computer Lab 2

Description:
It is a laboratory for second-year students, in which Visual Basic is taught
Devices:
The laboratory includes 24 computers in addition to a Data show and Scanner

Computer Lab 3

Description:
It is a laboratory for third-year students, where Matlab and premiere are taught.
Devices:
The laboratory includes 21 computers and a Data show

Computer Lab 4

Description:
It is a laboratory for grade 4 students, where Plaxis, Staadpro, Saab and Staad Foundation are taught.

Devices:
The laboratory includes 22 computers and a Data show

A typical electronic laborator

Description:
It is a laboratory for continuing education courses.

Devices:
The laboratory includes 20 laptops and a Data show

Library and student activities hall:

The department's library contains scientific books and dissertations related to civil specialties, and the library is supplied with new books from the financial allocations of the department as well as scientific organizations and centers.

The library is divided into two types:

Paper library: It contains books, periodicals and references on the shelves of the library.

Digital library: It contains books, periodicals and references on CD-ROMs within the library's contents.

Electronic Library:

The electronic library of the Library of the Deanship of the College of Engineering / University of Mosul contains electronic books and periodicals of up to (5000 electronic books and periodicals), and an electronic guide (index) has been started for the purpose of tracking and searching for the required book, and we are currently working on preparing a detailed paper guide (index) for these various electronic books and periodicals.

Department of Civil Engineering

University of Mosul / College of Engineering / Department of Civil Engineering
First and Second Stage 2024-2025

Department of Civil Engineering

Civil Engineering Department – First level courses – First semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code	Notes
University	Compulsory	English Language	3	-	3	-	UOMC101	
	Compulsory	Rights and Freedoms	2	-	2	-	UOMC103	
	Compulsory	Computer	3	2	2	-	UOMC102	
College	Compulsory	Calculus I	3	2	2		ENGC121	
	Compulsory	Engineering Drawing					ENGC123	
	Compulsory	Physics					ENGE133	
Department	Compulsory	Engineering Mechanics - Statics	1	3			CIV141	
	Compulsory	Engineering Geology	2	-	2		CIV143	
Credits summation of the first semester			16	9	20			

Department of Civil Engineering

Civil Engineering Department – First level courses – Second semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code	Notes
University	Compulsory	Arabic Language	2	-	2	-	UOMC100	
	Elective	Manufacturing Processes	2	-	2	-		The student selects one course, the required credit is 2 only
	Elective	Environmental Pollution	2	-	2	-		
	Elective	Information Technology	2	-	2	-		
	Elective	Electrical Installations	2	-	2	-		
	Elective	Modeling of Building Materials	2	-	2	-		
College	Compulsory	Calculus II	3	-	3	Calculus I	ENGC122	
	Compulsory	Auto-CAD	2	-	2	Engineering Drawing	ENGC124	
	Elective	Electrical Engineering	2	2	3	-	ENGE131	Compulsory for Civil department students
	Elective	Chemistry	2	2	3	-	ENGE134	
	Elective	Public Safety	1	2	2	-	ENGE129	
Department	Compulsory	Engineering Mechanics - Dynamics	2	-	2	Engineering Mechanics - Statics	CIV142	
Credits summation of the second semester			15	4	17			

Department of Civil Engineering

Civil Engineering Department – Second level courses – First semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code	Notes
University	Compulsory	English language – Pre Intermediate	1	0	1			
College	Compulsory	Statistics	2	-	2	-	ENGC227	
Department	Compulsory	Engineering Mathematics I	3	-	3	Calculus II	CIV201	
	Compulsory	Mechanics of Materials I	3	-	3	Engineering Mechanics – Dynamics	CIV203	
	Compulsory	Construction Materials I	2	2	3	-	CIV205	
	Compulsory	Engineering Surveying I	2	2	3	-	CIV207	
	Compulsory	Fluid Mechanics	2	2	3	-	CIV209	
	Compulsory	Damages Assessment	2	-	2	-	CIV211	
Credits summation of the first semester			17	6	20			

Department of Civil Engineering

Civil Engineering Department - Second level courses – Second semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code	Notes
University	Compulsory	Professional Ethics	2	-	2		UOMC104	
	Elective	Manufacturing Processes	2	-	2			The student selects one course, the required credit is 2 only
	Elective	Environmental Pollution	2	-	2			
	Elective	Information Technology	2	-	2			
	Elective	Electrical Installations	2	-	2			
	Elective	Modeling of Building Materials	2	-	2			
Department	Compulsory	Engineering Mathematics II	3	-	3	Engineering Mathematics I	CIV202	
	Compulsory	Mechanics of Materials II	2	-	2	Mechanics of Materials I	CIV204	
	Compulsory	Construction Materials II (Concrete Technology)	2	2	3	Construction Materials I	CIV206	
	Compulsory	Engineering Surveying II	2	2	3	Engineering Surveying I	CIV208	
	Compulsory	Computer Programming	1	2	2		CIV210	
	Compulsory	Building Construction	2	-	2		CIV212	
Credits summation of the second semester			16	6	19			

Department of Civil Engineering

Civil Engineering Department – Third level courses – First semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code	Notes
University	Compulsory	English language – Intermediate	2	-	2	-	-	
Department	Compulsory	Engineering analysis	3	-	3	Engineering Mathematics II	CIV301	
	Compulsory	Analysis of Determinate Structures	3	-	3	Mechanics of Materials II	CIV303	
	Compulsory	Fundamentals of Reinforced Concrete	3	-	3	Construction Materials II (Concrete Technology)	CIV305	
	Compulsory	Fundamentals of Soil Mechanics	2	2	3	Engineering Geology	CIV307	
	Compulsory	Transportation Engineering and Design	3	-	3	Statistics + Engineering Surveying II	CIV309	
	Elective	Construction Enterprises	2	-	2	-	CIV311	
	Elective	Contracts and Specifications	2	-	2	-	CIV313	
	Elective	English language – Intermediate	2	-	2	Fluid Mechanics	CIV314	
Credits summation of the first semester			18	2	19			

Department of Civil Engineering

Civil Engineering Department- Third level courses – Second semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code	Notes
University	Elective	Principles of Engineering Design	2	-	2	-	ENGE337	
Department	Compulsory	Applied Numerical Analysis	3	-	3	Engineering analysis	CIV302	
	Compulsory	Analysis of Indeterminate Structures	2	-	2	Analysis of Determinate Structures	CIV304	
	Compulsory	Reinforced Concrete	2	-	2	Fundamentals of Reinforced Concrete	CIV306	
	Compulsory	Soil Mechanics - Shear Strength and its applications	2	2	3	Fundamentals of Soil Mechanics	CIV308	
	Compulsory	Highway Engineering	2	2	3	Transportation Engineering and Design	CIV310	
	Elective	Hydraulic Structures	2	-	2	Fluid Mechanics	CIV316	
	Elective	Environmental Engineering	2	-	2	-	CIV317	
	Elective	Construction Methods	2	-	2	-	CIV318	
Credits summation of the first semester			17	4	19			CIV31

Department of Civil Engineering

Civil Engineering Department – Fourth level courses – First semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code
University	Compulsory	English language – Upper Intermediate	2	-	2	-	-
Department	Compulsory	Fundamentals of Steel Structures	2	-	2	Analysis of Indeterminate Structures	CIV401
	Compulsory	Reinforced Concrete Design	2	-	2	Reinforced Concrete	CIV402
	Compulsory	Fundamentals of Foundation Engineering	3	-	3	Soil Mechanics - Shear Strength and its applications	CIV403
	Compulsory	Graduation Project I	2	-	2	All compulsory subjects of third level	CIV404
	Compulsory	Computer Applications	-	2	1	Analysis of Indeterminate Structures	CIV405
	Elective	Special Topics in Design of Reinforced Concrete Structures	2	-	2	Reinforced Concrete	CIV406
		Special Topics in Structural Analysis and Design	2	-	2	Reinforced Concrete + Analysis of Indeterminate Structures	CIV407
	Elective	Special Topics in Geotechnical Engineering	2	-	2	Soil Mechanics - Shear Strength and its applications	CIV408
		Problematic Soils in Engineering Applications	2	-	2	Soil Mechanics - Shear Strength and its applications	CIV409
	Elective	Flexible Pavement Design	2	-	2	Highway Engineering	CIV410
		Rigid Pavement Design	2	-	2	Highway Engineering	CIV411
Credits summation of the first semester			17	2	19		

Department of Civil Engineering

Civil Engineering Department- Fourth level courses – Second semester

Requirement Name	Requirement Type (Compulsory - Elective)	Course Name	Theoretical Hours	Applied Hours	Credits	Pre-request Course, if present	Course Code	Notes
College	Compulsory	Engineering Management	2	-	2	-	ENGC425	
	Compulsory	Engineering Economics	2	-	2	-	ENGC426	
Department	Compulsory	Graduation Project II	2	-	2	Graduation Project I	CIV412	
	Compulsory	Quantity Survey	2	-	2	Reinforced Concrete Design	CIV413	
	Compulsory	Sanitary and Environmental Engineering	3	-	3	-	CIV414	
	Compulsory	Construction Drawing	-	2	1	Auto-CAD	CIV415	
	Elective	Steel Structures Design	2	-	2	Fundamentals of Steel Structures	CIV416	
		Prestressed Concrete and Bridge Design	2	-	2	Reinforced Concrete Design	CIV417	
	Elective	Analysis and Design of Shallow Foundations	2	-	2	اساسيات هندسة الاسس	CIV418	
		Analysis and Design of Deep Foundations	2	-	2	اساسيات هندسة الاسس	CIV419	
	Elective	Special Topics in Highway Engineering	2	-	2	Highway Engineering	CIV420	
		Special Topics in Traffic Engineering	2	-	2	Highway Engineering	CIV421	
Credits summation of the first semester			17	2	18			

Postgraduate studies:

Curriculum / Civil Engineering / Master Degree/ Structure / First Semester

No.	Code	Course	Credits	Hours	
				Theoretical	Practical
1	CE 501	advanced Engineering Mathematics and Numerical Analysis	3	3	-
2	CE 502	Theory of elasticity and plasticity	3	3	-
3	CE 503	Advanced Structural Analysis	3	3	-
4	CE 504	Concrete Technology	1.5	1	1
5	CE 505	English Language	2	1	2
Sum			12.5	10	3

Curriculum / Civil Engineering / Master Degree/ Structure / Second Semester

No.	Code	Course	Credits	Hours	
				Theoretical	Practical
1	CE 506	Structural Dynamic	2	2	-
2	CE 507	Practical Stress Analysis	1.5	1	1
3	CE 508	Advanced Reinforced Concrete	2.5	2	1
4	CE 509	Plate Theory	3	3	-
5	CE 510	Finite Element method	2.5	2	1
6	CE 511	Scientific research methodology	2	1	2
Sum			13.5	10	5

Curriculum / Civil Engineering / Master Degree/ Soil Mechanics (Geotactic) / First Semester

No.	Code	Course	Credits	Hours	
				Theoretical	Practical
1	CE 512	Advanced Mathematics	2	-	2
2	CE 513	Numerical Analytics	2	2	2
3	CE 514	Selected Topics (Special Topics)	2	-	2
4	CE 515	Advanced Shear Strength and Its Applications	2.5	2	3
5	CE 516	Soil Improvement	2.5	-	2
6	CE 505	English Language	2	2	1
Sum			13	4	12

Curriculum / Civil Engineering / Master Degree Soil Mechanics (Geotactic) / Second Semester

No.	Code	Course	Credits	Hours	
				Theoretical	Practical
1	CE 517	Advanced Analysis of Stress and Depression	2	-	2
2	CE 518	Finite elements	2.5	1	2.5
3	CE 519	Foundation Engineering	2.5	1	2.5
4	CE 520	Advanced Material Mechanics	3	2	3
5	CE 521	Soil Structures	2	-	2
6	CE 505	Scientific research methodology	2	2	1
Sum			13	4	12

Master in Roads and Transportation/ First semester

No.	Course	Hours		Credits
		Theoretical	Practical	
1	Advanced Traffic Engineering	3	-	3
2	Tiling analysis and design	3	-	3
3	Soil stabilization	2	-	2
4	Advanced engineering statistics	2	-	2
5	Finite elements	2	-	2
6	English Language	2	-	1
Sum		14		13

Master in Roads and Transportation/ Second semester

No.	Course	Hours		Credits
		Theoretical	Practical	
1	Advanced road engineering design	2	-	2
2	Methods materials	2	2	3
3	Urban transportation planning	2	-	2
4	Railway and airport engineering	2	-	2
5	Simulation and modeling	2	-	2
6	Scientific research methodology	2	-	1
Sum		12	1	12

Curriculum / Civil Engineering / PhD in Structure / First Semester

Item	code	Subjects	Units	HOURS	
				T	P
1	Eng.Civil601	Advanced engineering mathematics	2	2	--
2	Eng.Civil602	Plasticity Applications	2	2	--
3	Eng.Civil603	Stability of structures	2	2	--
4	Eng.Civil604	Prestressed concrete	2	2	--
5	Eng.Civil605	Theory of shells	2	2	--
6	Eng.Civil606	English language	2	--	2
TOTAL			12	10	2

Curriculum / Civil Engineering / PhD in Structure / Second Semester

Item	code	Subjects	Units	HOURS	
				T	P
1.	Eng.Civil 607	Dynamics of structures	2	2	--
2.	Eng.Civil 608	Reliability of structures	2	2	--
3.	Eng.Civil 609	Advanced steel structures	2	2	--
4.	Eng.Civil 610	Special topics	2	2	--
5.	Eng.Civil 611	Nonlinear finite element	2	2	--
6.	Eng.Civil 612	Scientific research methodology	2	--	2
TOTAL			12	11	2

Curriculum / Civil Engineering / PhD in Soil Mechanics / First Semester

No.	Code	Course	Hours	Credits
1	CE 619	Finite elements	2	2
2	CE 614	Modeling in geotechnics	3	3
3	CE 615	Plasticity and application in geotechnical engineering	2	2
4	CE 616	Under ground structures	2	2
6	CE 606	English language	2	2
Sum			11	10

Curriculum / Civil Engineering / PhD in Soil Mechanics / Second Semester

No.	Code	Course	Hours	Credits
1	CE 617	Unsaturated soil mechanics	3	3
2	CE 618	Deep foundations	3	3
3	CE 613	Advance engineering mathematics (ii)	2	2
4	CE 620	Soil dynamics & machine foundations	3	3
6	CE 612	Scientific research methodology	2	2
Sum			13	12

Curriculum / Civil Engineering / PhD in Roads and Transportation / First Semester

Course	CODE	Hours		Credits
		Theo.	Exp.	
Traffic Flow Theory	CE719	2	—	2
Advanced Railway and Airport Engineering	CE720	3	—	3
Advanced Materials Properties for Highway	CE721	3	–	3
Numerical Analysis	CE722	2	—	2
English Language	CEP01	2	—	2
Total		12	-	12

Curriculum / Civil Engineering / PhD in Roads and Transportation / Second Semester

Course	CODE	Hours		Credits
		Theo.	Exp.	
Advanced Traffic Engineering II	CE723	3	—	3
Advanced Geometric Design of Highways II	CE724	3	—	3
Intelligent Transportation System	CE725	2	–	2
Finite Element Applications	CE726	1	2	2
Scientific Research Methods	CEP02	2	—	2
Total		11	2	12

Research Directions/Aspects Considered in Civil Engineering Department

Composite Construction: The composite construction is one of the modern structures. Therefore, Papers deal with the design, research and development studies, experimental investigations, theoretical analysis, and fabrication techniques relevant to the application of composites components, ranging from individual components such as plates and shells to complete composite structures.

Rehabilitation of Structures: Structural repairs and rehabilitation is a process of reconstruction and renewal of structural elements. A research involves determining the origin of distress, removing damaged materials and causes of distress, as well as selecting and applying appropriate repair materials that extend a structure's life.

Design and Analysis of Bridges: Concepts and Analysis provide a unique approach, combining the fundamentals of concept design and structural analysis of bridges in a single volume Researchers dealt with principal design and analysis concepts in a unified approach, including modeling and detail design aspects, which are discussed for different bridge typologies and structural materials .

Structural Construction Materials: In general, all materials used in constructions can be studied and investigated to develop or enhance each materials' usage in structural engineering. Therefore, one research direction is looking at these materials to improve the structure containing these materials.

Non-linear dynamic analysis of reinforced concrete structures: The dynamic analysis includes the effect of earthquakes on reinforced concrete structures and assessing the damages that induced in the buildings, considering the earthquake damage. While for bridges, the dynamic analysis should consider the influence of both earthquakes and vehicle movement .

Non-linear structural analysis of the interaction between reinforced concrete structures and soil: This approach includes studying the effect of the interaction between the reinforced concrete structure and soil, taking into consideration the constitutive relationships that describe the non-linear behavior of both the soil and the structural elements of the building.

Ferrocement concrete: Ferrocement concrete consists of two different materials, cement mortar and layers of wire mesh, which can be used in the rehabilitation of damaged buildings. In addition, the possibility of molding it to produce various geometric shapes used in simple facilities such as car park shades and lightweight shell roofs.

Stability of Underground structures under Static and Dynamic Loading: The analysis and design of the underground structures like tunnels, powerhouse cavern, underground metro railways, oil and gas storage, mining, and many other uses is very important issue in the stability of such structures. Many factors should be considered in the stability analysis such as the interaction between the underground and surface structures under static and dynamic loading, sequence of excavation, and type of support system.

Problematic Gypseous Soils: Gypseous soil is a problematic soil that suffers from collapsing and lose its strength under saturation and leaching process. Many additives as stabilizers added to gypseous soils to reduce the effect of water. These additives comprise of lime, cement, asphalt compound, reinforcement, and mixed additives.

Sustainable Development of Using Waste Materials in Geotechnical Works: Many waste materials have detrimental effects on the environment; hence, attempts have been carried out to evaluate the use of waste materials in geotechnical works as additives to improve the properties of the soils. These waste materials produced from a construction-demolition process or as industrial waste process. The studies emphasize that such materials can be re-used or recycles in the engineering geotechnical.

Ground improvement and soil stabilization: This line of research is concerned with ground treatment methods to enhance the physical and mechanical properties of problematic soil (expansive soils, collapsible soils, soils containing soluble materials, and random fill soils) to make it suitable for the civil engineering uses. This research includes physical and chemical processes, soil injection and grouting, soil reinforcement with various materials, and the application of other methods to ensure suitable bearing capacity for the facilities built on them and to determine the susceptibility to volumetric change, particularly settlement and swelling.

Partially saturated soil mechanics and applications: This subject is considered as one of the relatively recent topics for studying the mechanics of soils where theoretical and practical bases have been laid down based on a three-dimensional soil analysis, taking into consideration the effect of suction forces in addition to vertical stresses.

It is a field that is a reconfiguration of all the axes and topics of classical saturated soil mechanics and has very wide applications. Our department is a leader at the level of the Middle East by adopting this line of research science 2003 until now.

Physical and numerical modeling applications to study soil behavior: The department involved a study and development of research related to the topics of geotechnical engineering applications; through designing physical models aimed at studying and analyzing some applications of soil mechanics as slope stability, retaining walls, bearing capacity and settlement and the effects of some factors on them. This follows; relating the obtained practical results with numerical models through advanced software's applying a parametric study. These design charts are proposed for engineering use purposes. Finally, these results were checked through a real case study.

Geoenvironmental engineering: It is a field based on the use of engineering applications of soil mechanics to study the reflection of soil mechanics, treatments and applications on the surrounding environment and to ensure its protection. It is a scientific field that includes applications in rock and soil mechanics, environmental engineering, and groundwater hydrology and their impact on human health and the environment. Geoenvironmental engineering deals as well with issues related to a complex problem, such as soil contamination and diffusion and transport of pollutants from a landfills, remediation of polluted sites, and reuse of materials.

Modification of Paving Materials: Recently, this domain is considered as one of the essential topics that deal with the behavior, advantages and disadvantages of the modification of asphalt binders and mixtures with polymers (plastomeric and elastomeric types), warm-asphalt additives (Zeolite, Sasobit, Petroleum wax), starch, citric acid, ABS…etc. under short and long-term ageing conditions. As well as, to the mechanistic-empirical (M-E) design approach of these mixtures .

This guide has been prepared under the guidance of the Dean of the College of Engineering

Assistant Professor

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To serve as a reference for introducing the Department of Computer Engineering, its members, and the study programs for undergraduate and graduate studies

coordination

Department of Media and Government Communication at the College of Engineering