جامعة حائل
University of Ha'il

جامعة حائل
University of Ha'il

رؤية VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

CIVIL ENGINEERING ACADEMIC PROGRAM GUIDE

2024

Contents

Introduction

Civil Engineering – Background

Established in 1430 H (2008 C.E.), the Civil Engineering Department is one of the first Departments at the University of Hail. It prepares a young student to become a civil engineer whose role is to establish and maintain the structural and infrastructural systems in the Kingdom of Saudi Arabia. The department currently offers an undergraduate program leading to a Degree of Applied Civil and Environmental Engineering. The faculty members are well selected academic individuals coming from different horizons and dedicated to teaching and research in various areas such as structural engineering, material science, structural mechanics, construction management, transportation, geotechnical, environment, sanitary and infrastructure.

History of the Program

University of Ha'il (UOH) started as a community college, called Ha'il Community College (HCC), under the auspices of King Fahad University of Petroleum & Minerals in September 1998. HCC was the first Community College to open in a planned expansion of educational opportunities for Saudi Arabian high school graduates. HCC started by offering three-year associate degree programs in Business Administration, Computer Systems, and Electronics Engineering and Instrumentation. Later, HCC offered three bachelor's degree programs in Applied Electrical Engineering, Computer Science, Management Information Systems. The University of Ha'il was officially established by Royal Decree on 7 June 2005. The university consists of fourteen colleges, among them: College of Engineering (COE), College of Medicine & Medical Sciences, College of Sciences, College of Computer Science & Engineering, College of Education, College of Arts and Letters, and Community College. As for the College of Engineering (COE), it consists of 7 Departments which are: Civil Engineering, Mechanical Engineering, Chemical Engineering, Electrical Engineering, Industrial Engineering, Architectural Engineering, Decoration, and Interior Design Engineering. Recently, a program of renewable energy has been initiated under the responsibility of the Electrical Department. The Civil Engineering (CE) Department was established in 2008 within the College of Engineering (COE). The CE department was operated under the auspices of King Fahd

University of Petroleum & Minerals (KFUPM), Kingdom of Saudi Arabia (KSA) and offered the same Civil Engineering Bachelor curriculum as KFUPM, which is accredited by ABET-EAC. The Civil Engineering Program at UOH received accreditation by ABET from October 1st, 2020.

The demand for highly competent civil engineering graduates is steadily increasing in industry as well as in academia. One of the best opportunities available to our graduates is the possibility of continuing their graduate studies either as full-time or part-time graduate students. Our graduates get admission to graduate programs at top ranking universities in the kingdom and abroad. The CE program has currently six (06) graduates who have been admitted to graduate studies at prestigious institutions in countries such as USA, UK, and Australia.

Program Context

In 2030, the population of Saudi Arabia will reach 39.1 million, an increase of 24.1% from 2015 (http://www.euromonitor.com/saudi-arabia-in-2030-the-future-demographic/report).
Therefore, there will be huge demand for infrastructure including residential buildings, roads, bridges etc. which are all civil engineering projects. Despite the massive increase in building projects, Saudi's rapidly expanding population continues to put pressure on existing infrastructure. As a result, the government – which accounts for 67 per cent of construction investment – has initiated a number of large-scale projects in the sector for the coming years valued at $800 billion (£523 billion) (Ref: http://www.theworldfolio.com/news/800-billion-of-megaprojects-to-boost-infrastructure-and-spur-development/3765/). Saudi Arabia is likely to spend $1.1 trillion on infrastructure projects from 2019-2038, a new report by Strategy& has found (http://gulfbusiness.com/saudi-likely-spend-1-1-trillion-infrastructure-projects-next-20-years/).

It has undertaken mega projects, e.g., NEOM - a $500 billion business and industrial zone extending into Egypt and Jordan which will require lots of Civil engineering graduates. The boom of Saudi Arabia's construction sector – its second largest industry behind hydrocarbons – has seen the rapid expansion of the country's infrastructure over the past two decades. Today, the industry contributes approximately 8 per cent of Saudi Arabia's total GDP and is the largest construction market in the Middle East.

The CE program was established to educate and train students to meet the local and national demand for Civil Engineering professionals. The Civil Engineering program is designed to provide a thorough knowledge and skills needed in the various sectors of Civil Engineering with emphasis on Structures, Geotechnical Transportation, and water resources.

Program Overview

CE Program requires students to be enrolled as full-time on-campus students. On-campus courses are offered for two main semesters (fall semester and spring term) and a requirement-based summer semester. All classes are provided during the daytime. There are no weekend classes, distance learning or web-based education. All classes run on a full-time basis from Sunday through Thursday. The courses are offered with a mixed flavor of active learning and traditional lectures / laboratory work. One theory credit hour is equivalent to one contact hour while each laboratory credit hour is equivalent to 3 contact hours. Instruction is assisted by smart classrooms, multimedia audiovisuals, online courses, and the Blackboard platform. Each semester covers 15 weeks of course work followed by scheduled final examinations. The department currently offers an undergraduate program (requires 133 credit hours) leading to the Degree of Applied Civil and Environmental Engineering.

After completing the core courses, students start cooperative training at an appropriate company for a period of 28 weeks to acquire valuable industrial experience and develop professional skills. The program culminates with students working on a full final semester design project, (CE413) to apply all the knowledge and skills that they have acquired earlier.

Program vision

The Vision of the Civil Engineering Department is to establish itself as a center of excellence for higher education, research, and related activities in all sub-areas of Civil Engineering, and in service to the public with emphasis on national relevance, international recognition through innovation and creativity.

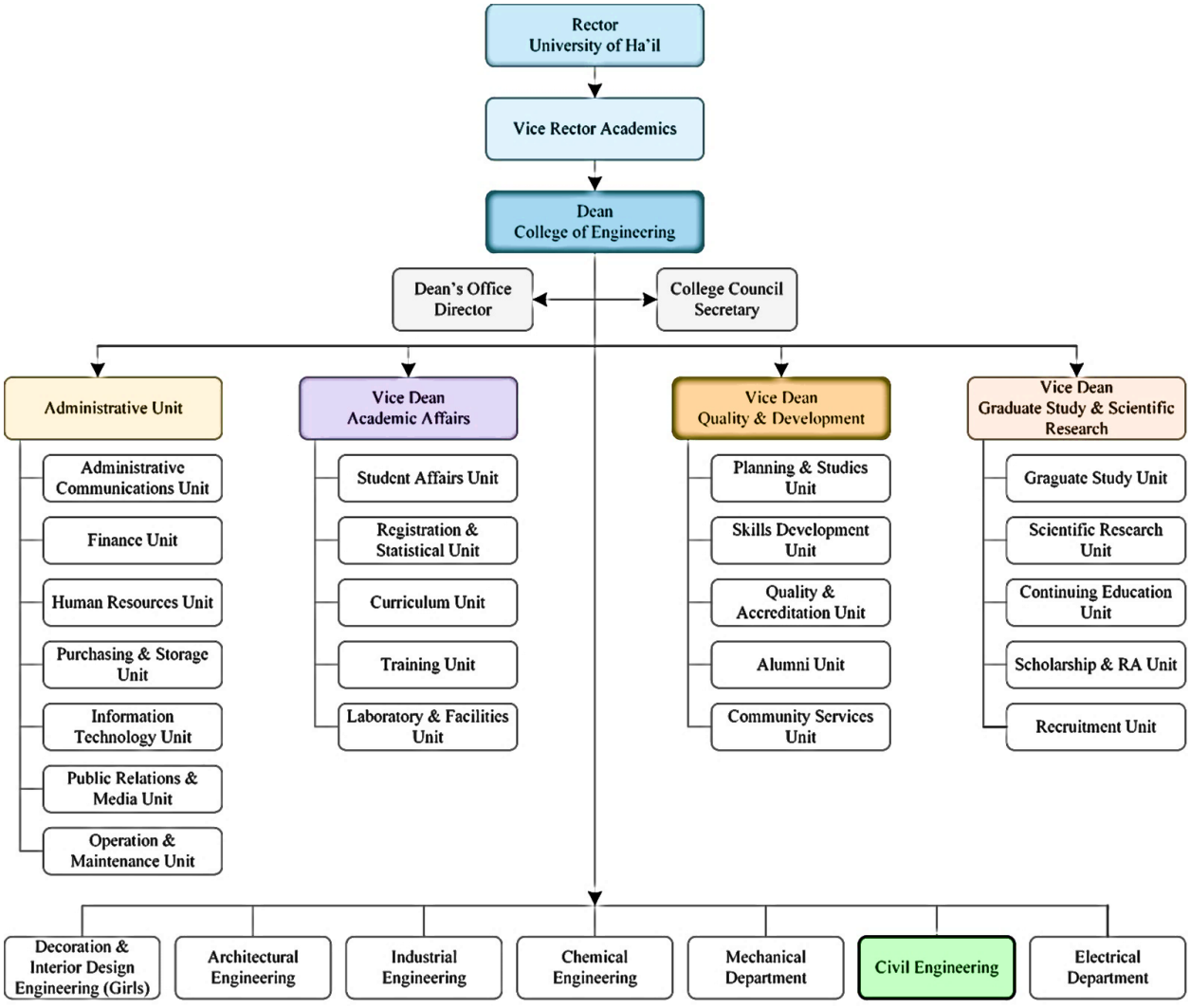
Program mission

To provide excellent Engineering Education that is conductive to talent and creativity and based on scientific knowledge, state of the art research, and expertise to serve the community in a professional and ethical manner.

Program objectives

- **PEO 1**
  Graduates will be able to practice in the field of Civil Engineering and pursue postgraduate studies.
- **PEO 2**
  Graduates will be able to meaningfully contribute to the needs of various organizations to solve real world problems economically and conduct themselves in an ethical manner.
- **PEO 3**
  Graduates will be able to function effectively in engineering activities and attain leadership careers in engineering practice.
- **PEO 4**
  Graduates will be able to continue to develop professionally and obtain licensure where appropriate.

Organization chart of program



Departmental Committees and Coordinators

No	Committee Name	Committee Coordinator	Members
1	Academic Program Development	Dr. Belkacem Achour	Dr. Walid Khalifa Dr. Mustapha Boukendakdji
2	Scientific Research	Dr. Tayyab Butt	Dr. Abderrahmane Ouazir Dr. Enaam Latifee
3	Laboratories	Dr. Enaam Latifee	Dr. Abderrahmane Ouazir Dr. Nasser Al-Anzi
4	Exams	Dr. Enaam Latifee	Dr. Abderrahmane Ouazir Dr. Nasser Al-Anzi
5	Website	Dr. Cirus Mirza	Dr. Nawaf Alnoumasi Dr. Nasser Al-Anzi
6	Academic Registration	Dr. Mustapha Bouknedakji	Dr. Abderrahmane Ouazir Dr. Omar Alshammari
7	Cooperative Training	Dr. Nawaf Alnoumasi	Dr. Hatem Gasmi Dr. Nasser Al-Anzi
8	Academic Advisory & Failing Students Support	Dr. Abderahmane Ouazir	Dr. Mustapha Boukendakji Dr. Ahmed Al-Naghi
9	Senior Projects	Dr. Enaam Latifee	Dr. Belkacem Achour Dr. Mabrouk Touhamia
10	Academic Program Assessment	Dr. Walid Khalifa	Dr. Belkacem Achour Dr. Tayyab Butt
11	ABET	Dr. Walid Khalifa	Dr. Belkacem Achour Dr. Tayyab Butt
12	Measurement and evaluations	Dr. Cirus Mirza	Dr. Enaam Latifee Dr. Walid Khalifa
13	Graduates	Dr. Hatem Gasmi	Dr. Omar Algasem Dr. Emad Akroush
14	Skills Development Unit	Dr. Emad Akroush	Dr. Nawaf Alnoumasi Dr. Cirus Mirza
15	Community Services	Dr. Omar Algasem	Dr. Mabrouk Touhamia Dr. Ahmed Al-Naghi
16	Faculty Affairs (Recruitment and promotion)	Dr. Mabrouk Touahamia	Dr. Belkacem Achour Dr. Mustapha Boukendakji
17	Planning and institutional excellence unit	Dr. Walid Khalifa	Dr. Belakcem Achour Dr. Nawaf Alnoumasi
18	Student Activities	Dr. Ahmed Al-Naghi	Dr. Hatem Algasem Dr. Omar Algasem

Departmental Faculty Members

NAME	Academic Rank	Specialty	Email	EXT. Tel.	Office Room Number	Pictures
Dr. Belkacem Achour (Head of the Department)	Associate Professor	Structures	b.achour@uoh.edu.sa	1382	S-087	
Dr. Mabrouk Touahmia	Associate Professor	Geotechnical Engineering	m.touahmia@uoh.edu.sa	2550	S-063	
Dr. Mustapha Boukendakdji	Associate Professor	Materials	m.boukendakdji@uoh.edu.sa		S-149	
Dr. Abderrahmane Ouazir	Associate Professor	Structures	a.ouazir@uoh.edu.sa	2608	S-134	
Dr. Enamur Latifee	Associate Professor	Materials	e.latifee@uoh.edu.sa		S-062	

NAME	Academic Rank	Specialty	Email	EXT. Tel.	Office Room Number	Pictures
Dr. Walid Khalifa	Assistant Professor	Environmental Hydrology & Water Resources	w.khalifa@uoh.edu.sa	2605	S-068	
Dr. Hatem Gasmi	Assistant Professor	Transportation	h.gasmi@uoh.edu.sa	2671	S-133	
Dr. Tayyab Butt	Assistant Professor	Environmental Engineering	Ta.butt@uoh.edu.sa		S-069	
Dr. Raza Mirza	Assistant Professor	Water Resources	Cy.mirza@uoh.edu.sa		S-074	
Dr. Ahmed Alnaghi	Assistant Professor	Structure	a.alnaghi@uoh.edu.sa		S-063	
Dr. Nawaf Alnoumasi	Assistant Professor	Transportation	n.alnawmasi@uoh.edu.sa			

NAME	Academic Rank	Specialty	Email	EXT. Tel.	Office Room Number	Pictures
Dr. Naser Alanazi	Assistant Professor	Structure	n.alanazi@uoh.edu.sa			
Dr. Omar Algasem	Assistant Professor	Structure	om.algassem@uoh.edu.sa			
Dr. Emad Alshammari	Assistant Professor	Structure	emad.alshammari@uoh.edu.sa			
Dr. Omar Alshammari	Assistant Professor	Structure	og.alshammari@uoh.edu.sa			

Admission requirements

All new students admitted into the Civil Engineering program must initially undergo a one – year Foundation program within the Faculty of Engineering. After successful completion of the Foundation year the students join the Freshman year.

During the Foundation year the students are required to undertake 30 – credit hours spanning over 2 Semesters. The Foundation year program aims at preparing the newly admitted students for undergraduate study and university life to achieve the following goals:

a) Improve the proficiency of students in English before they undertake undergraduate study

b) Develop and improve the students' knowledge of mathematical and analytic techniques through the medium of English.

c) Familiarize students with the various majors available at the College of Engineering.

d) Familiarize students with the requirements of undergraduate study, including study skills and discipline in all its forms.

Admissions & Registration decides the number of students to be admitted for each academic year according to the recommendation of the College. The deanship of admissions and registration implements all policies in coordination with the colleges. Admission takes place only once each year at the beginning of the academic year.

Admission to the Foundation Year Program:

Admission to the University Foundation Year

Admission requirements to the College of Engineering Foundation Year differ for each of the following groups:

- **Group I**: Saudi citizens and applicants subject to the same rules and regulations as Saudi citizens; namely international applicants born to a Saudi citizen mother, and international female applicants who are mothers of at least one Saudi son. The admission requirements for this group are listed below under the heading “Admission to the College Foundation Year: Requirements and Criteria”.

- **Group II**: International applicants who do not belong to the first group, but who are lawful residents of Saudi Arabia. Admitted applicants from this group are selected according to the same criteria as the applicants from Group I, with the exception that the admission decision of students from this group is subject to final approval by the Ministry of Education[1].
- **Group III**: International applicants who do not belong to the first two groups. Admitted students in this group are selected according to the rules and regulations approved by the Ministry of Education.

Admission to the College Foundation Year: Requirements and Criteria

The requirements and criteria for the admission into the College of Engineering Foundation year are as mentioned below:

1. The applicant must have graduated from high school and obtained the "General Secondary Education Certificate" (GSEC) or its equivalent. The certificate should have been obtained within the last Five years.
2. The applicant must have had good behavior and conduct and must present a certificate to that effect.
3. The applicant should not have been dismissed from University of Ha'il or from any other university for disciplinary reasons. If it appears at any time after admission has been granted that the student had previously been dismissed for disciplinary reasons from an institution of higher education, the admission shall be considered void.
4. Students are enrolled on a full-time basis only. Prospective students holding an employment position must present a written permission from their employer allowing them to register in the university on a full-time basis.
5. The student should not be registered for another academic degree at the University of Ha'il or at any other university.

[1] More information regarding International Students is available at: ttps://moe.gov.sa/en/education/ResidentsAndvisitors/Pages/PublicUniversitiesScholarships.aspx

6. Applicants must take two standardized tests administered by the "National Center for Assessment"[2]:
    a) The "General Aptitude Test" (GAT)"[3].
    b) The "Scholastic Achievement Admission Test (Science)" (SAAT)[4].
7. Admission to the Foundation Year at the College of Engineering is competitive. Offers of admission are extended based on the program capacity, and the ranking of applicants according to the following weighted score:

$$\text{Weighted Score} = 0.35 \times \text{CGPA} + 0.35 \times \text{GAT} + 0.3 \times \text{SAAT}$$

where:

CGPA is the student Cumulative Grade Point Average in the last three years of high school.

GAT is equal to the student's score in the General Aptitude Test.

SAAT is equal to the student's score in the Scholastic Achievement Admission Test (Science).

Semester System

The College follows the semester system of teaching. An academic year consists of two teaching semesters. Modules are offered in either the first semester, with final examinations normally in January, or in the second semester, with final examinations normally in May. Each semester normally has 15 weeks. A limited number of modules may be offered during the summer vacation.

More information about the center may be found at https://etec.gov.sa/en/Pages/default.aspx

Further information about this test is available at:
ttps://etec.gov.sa/en/productsandservices/Qiyas/Education/generalabilities/Pages/default.aspx

Further information about this test is available at:
ttps://etec.gov.sa/en/productsandservices/Qiyas/Education/ScientificSpecialists/Pages/default.aspx

Credit System

Every module for a qualification has a credit rating. Credit ratings are given for each module in the Module section of this Handbook. Unless specially exempted, students obtain the credit points indicated for a module by passing the assessments for that module with an average mark of not less than 60%. Such credits are also known as Degree Credits as they accumulate towards the award of the Degree.

Each program is made up of a few modules, and each module is given a credit rating based on the number of lectures, tutorials and practical in the module. One lecture hour equivalent is equal to 1 credit point. A lecture hour equivalent can be: one 2 or 3 hours of practical work; or industrial training.

Undergraduate Degree Requirements

A minimum of credits is required for a Bachelor of Engineering (BEng) degree for those that enter into the First Year of the Five-Year program. Some majors may, however, impose different requirements and actual degree credit requirements for graduation are specified for each program. In their first-year students take modules from the basic science disciplines, but at higher years students must select modules which are required for their program of study.

Industrial Training (Co-operative work)

Engineering students at the College of Engineering undergo a phase of Industrial Training as part of graduation requirements. This component of industrial training requires all students to be exposed to some level of work experience by taking the practical 9-credit module; the module duration is 28 weeks.

Overall Module Grade

Overall performance in a module shall be assessed on a percentage scale, a letter grade and a grade point.

Cumulative Grade Point Average (CGPA)

A student's weighted GP score is calculated for a module by multiplying the credits with the grade point achieved from the percentage mark awarded. The cumulative GPA is given by the total weighted score (from the addition of the GP scores of all the modules) divided by the total number of credits. The GPA and CGPA are calculated in two decimal places.

Mark (Out of 4)	Grade Code	Grade	Percentage
4	A+	Exceptional	95-100
3.75	A	Excellent	90- less than 95
3.5	B+	Superior	85- less than 90
3	B	Very Good	80- less than 85
2.5	C+	Above Average	75- less than 80
2	C	Good	70- less than 75
1.5	D+	High Pass	65- less than 70
1	D	Pass	60- less than 65
0	F	Fail	Less than 60

General Regulations

General regulations of all programs in the College follow the general regulations of UOH.

DEFINITION OF TERMS

Academic advisor: A faculty member who is in charge of guiding a certain number of students in all matters related to their academic, social and health care affairs since their admission to the department.

Academic exclusion: It means termination of a student's registration on academic grounds, resulting in exclusion from the university.

Academic level: It indicates the study level according to the approved study plan.

Academic load: It is the total credit hours that the student is allowed to register per semester. The minimum and maximum study load is determined by implementation rules of the University.

Academic probation: It is a notification given to students with a cumulative GPA below the minimum acceptable limit mentioned in the University regulations.

Academic semester: It is a fifteen-week study-period excluding registration and final examination periods.

Academic year: It consists of two main regular studying semesters and a summer semester if any.

Admission: means the act by which the university admits a person to study, after acceptance by an applicant of an offer of a place at the university.

Assessment: means the evaluation and grading of work, supervised or unsupervised, carried out by a student in satisfying the requirements of a module, program or degree. A module may be assessed through continuous assessment or a written examination or both.

Co-requisite module: It means a module for which a student must register in the same semester as the proposed module.

Course: It is a subject of study within a certain academic level of the approved degree plan in each major. Each course has a number, code, title and a detailed description of its contents which distinguishes it from the other courses. A special file of each course is kept in the corresponding department for follow-up, evaluation and updating purposes. Some of the courses may have pre-requisite or co-requisite requirement(s).

Course grade: It is the expressed result in percentage or letter grade of the final grade in any course

Course work: It means assessable work produced by the student (also may be called classwork or continuous assessment)

Credit hour: It is a weekly theoretical lecture with duration of not less than fifty minutes, or clinical session of not less than fifty minutes, or field, laboratory or practical lesson of not less than a hundred minutes.

Credit point or credits: It means a value assigned to module to indicate its weighting within a qualification.

Curriculum: It means the combination of modules which together comprise the program of study leading to a qualification. An individual student's curriculum refers to the specific

selection of modules within the broad framework of the curriculum prescribed for a qualification, which enables the student to meet the requirements for the qualification.

Degree plan: It is a collection of general, core, compulsory, elective, internship, training, and preparatory courses whose total credit hours form the graduation requirements, that must be completed to obtain a scientific degree in a specified major.

Elective: A module which the student may choose

Examination: It means a formal assessment, conducted within an officially designated examination session, usually invigilated, and bound by time constraints.

External examination: It means examination by a person, external to the university.

Internal examination: It means examination by a person or persons involved with the teaching of the relevant module in that semester or, in the case of postgraduate qualifications, is a member of the University academic staff including persons who hold honorary appointments in the University other than the supervisor(s).

Major: A major in a discipline consists of at least 12 credits at the exit-level

Module: It means any separate course of study for which credits may be obtained.

Qualification: It means a degree.

Prerequisite module: It means a module which must have been passed, with at least the minimum mark required by the relevant College, before registration for the proposed module is permitted.

Project: It means a substantial assignment, whether comprising a single module or part of a module, and which requires research or equivalent independent work by a student.

Registered student: It means a student who is registered to study in one or more modules offered by the University. Such registration will lapse on the date of the following registration session or earlier should the student cease to be an admitted student.

Registration: It means completion by a student, and acceptance by the University, of a registration form, and compliance with such other conditions as are required for entitlement to a current student card.

Student: It means a person who has been admitted to the University for the purpose of studying

or who has registered for a qualification. A student remains a student until such time as that person graduates or otherwise completes studies, or withdraws from the University, or fails to attend or register in any semester, or is excluded and all appeal processes for readmission have been exhausted."

Summer semester: It is an intensive eight weeks study period excluding registration and final examination periods, in which course studying duration is doubled.

Graduation requirements

To become eligible for a Bachelor of Science degree in civil engineering a student must fulfill the following requirements:

- Cumulative and major GPAs of 1.00 or higher on a 4.00 scale.
- Completion of the number of semester-credit-hours required by the department.
- Completion of the prescribed and elective academic work required by the department (Total of 133 credit hours are required)

The Civil Engineering program at the University of Hail provides depth and breadth in the subject area. In addition, it offers a broad undergraduate education to develop analytical skills and practical design knowledge that ensures long-term career flexibility. Throughout its duration, the program delivers design and laboratory experiences as well as enhancing teamwork and communication skills.

Students begin with interesting and challenging core courses in structure mechanics and dynamics, fluid mechanics, environmental engineering, Hydraulics engineering, geotechnical engineering, materials, reinforced concrete and steel structures design, and transportation and highways design. After completing the core courses, students start cooperative training at a relevant company in order to acquire valuable industrial experience and make professional contacts. After completing the Co-op training, students can then select more advanced courses in four major areas. The first is in structural engineering, the second transportation engineering, the third is geotechnical engineering, and the fourth is water resources & environmental engineering. The program culminates with students working on a full semester design project to apply all of the knowledge and skills that they have acquired.

Every student follows a degree plan to monitor progress through his program and to certify that all graduation requirements are fulfilled.

Deanship of Admission & Registration prepares a document called degree audit for every student. The degree audit is a summary of the individual student's graduation status. It contains a list of all courses that must be completed by the student to meet the graduation requirements of his chosen major. The student indicates which of those courses have actually been completed, which are left to be completed, and an estimated graduation time, given

normal semester course loads. In summary, the Academic Department Head and the Registrar are jointly responsible to ensure that all students meet the program requirements.

The student must attain a cumulative GPA and major GPA of 2.00/4.00 or above to graduate.

Academic reference standards of program

The National Qualifications Framework (NQF):

Introduction:

The system for accreditation and quality assurance in the Kingdom of Saudi Arabia is designed to ensure that the quality of higher education is equivalent to high international standards and is widely recognized as such in the international academic and professional communities. The National Qualifications Framework (NQF) is an important element in this system. It is intended to ensure consistency within the Kingdom in the standards of student learning outcomes regardless of institution attended, and to make clear the equivalence of those standards with those for equivalent awards granted by higher education institutions in other parts of the world. The Framework will help to provide appropriate points of comparison in academic standards for institutions in their planning and self-review processes, for external reviewers involved in program accreditation processes and institutional reviews, and for employers, in understanding the skills and capabilities of graduates they may employ.

Credit Hours:

For the purposes of the NQF, 15 credit hours is taken as a measure of the amount of teaching and instruction normally expected for a full-time student at undergraduate levels in a semester and 30 credit hours in an academic year[5].

A minimum of 120 credit hours for a bachelor's degree is required. For the purposes of the NQF and quality reviews conducted by the National Commission for Academic Accreditation & Assessment, 18 credit hours is the maximum that can be recognized for studies in any one semester. In the USA the numbering system is similar to that used in the Kingdom of Saudi Arabia with 30 credit hours normally allocated for one full time academic year at undergraduate level.

[5] Credit hour calculations are based on a formula in which one 50-minute lecture, or two or three 50-minute laboratory or tutorial sessions over a 15-week teaching semester are regarded as one credit hour.

Characteristics of Graduates:

Holders of a bachelor's degree should have demonstrated:

- Knowledge of a comprehensive, coherent and systematic body of knowledge in a field of enquiry and of the underlying theories and principles associated with it.
- The ability to investigate complex problems and develop creative solutions with limited guidance, using insights from their own and other related fields of study.
- The ability to identify and use appropriate mathematical and statistical techniques in the analysis and resolution of complex issues and select and use the most appropriate mechanisms for communicating the results to a variety of audiences.
- Capacity to provide leadership and willingness to cooperate fully with others in joint projects and initiatives.
- In the case of a professional program the full range of knowledge and skill required for effective practice in the profession concerned.
- In the case of an academic program not geared to professional practice, in depth knowledge and understanding of research literature in a field, and ability to interpret, analyze and evaluate the significance of that research in extending knowledge in the field.
- Graduates at this level should:
- Take initiative in identifying and resolving problems and issues both individually and in group situations exercising leadership in pursuit of innovative and practical solutions.
- Apply the theoretical insights and methods of inquiry from their field of study in considering issues and problems in other contexts.
- Recognize the provisional nature of knowledge field and take this into account in investigating and proposing solutions to academic or professional issues.
- Participate in activities to keep up to date with developments in their academic or professional field and continue to enhance their own knowledge and understanding.
- Consistently demonstrate a high level of ethical and responsible behavior and provide leadership in academic professional and community environments

- Behave in ways that are consistent with Islamic values and beliefs, and reflect high levels of loyalty, responsibility, and commitment to service to society.

General Criteria for Accreditation of Engineering Programs by ABET, Inc. – General Criteria for Baccalaureate Level Programs:

All programs seeking accreditation from the Engineering Accreditation Commission of ABET must demonstrate that they satisfy all of the General Criteria for Baccalaureate Level Programs: Criterion 1: Students.

Criterion 2: Program Educational Objectives.

Criterion 3: Student Outcomes.

Criterion 4: Continuous Improvement.

Criterion 5: Curriculum.

Criterion 6: Faculty.

Criterion 7: Facilities.

Criterion 8: Institutional Support.

Criterion 1 Students:

Student performance must be evaluated. Student progress must be monitored to foster success in attaining student outcomes, thereby enabling graduates to attain program educational objectives. Students must be advised regarding curriculum and career matters.

The program must have and enforce policies for accepting both new and transfer students, awarding appropriate academic credit for courses taken at other institutions, and awarding appropriate academic credit for work in lieu of courses taken at the institution. The program must have and enforce procedures to ensure and document that students who graduate meet all graduation requirements.

Criterion 2 Program Educational Objectives:

The program must have published program educational objectives that are consistent with the mission of the institution, the needs of the program's various constituencies, and these criteria. There must be a documented, systematically utilized, and effective process, involving program

constituencies, for the periodic review of these program educational objectives that ensures they remain consistent with the institutional mission, the program's constituents' needs, and these criteria.

Criterion 3 Student Outcomes:

The Student Outcomes (SOs) for CE are identical to the ABET SOs. They may be found at:

https://www.uoh.edu.sa/en/faculties/type%3Dscientific/college-of-engineering-13/faculty_page%3Dsections/civil-engineering-17/section_page%3Dstudent_outcomes

From Fall 2020 semester (S-201), CE program has adopted the following Student Outcomes:

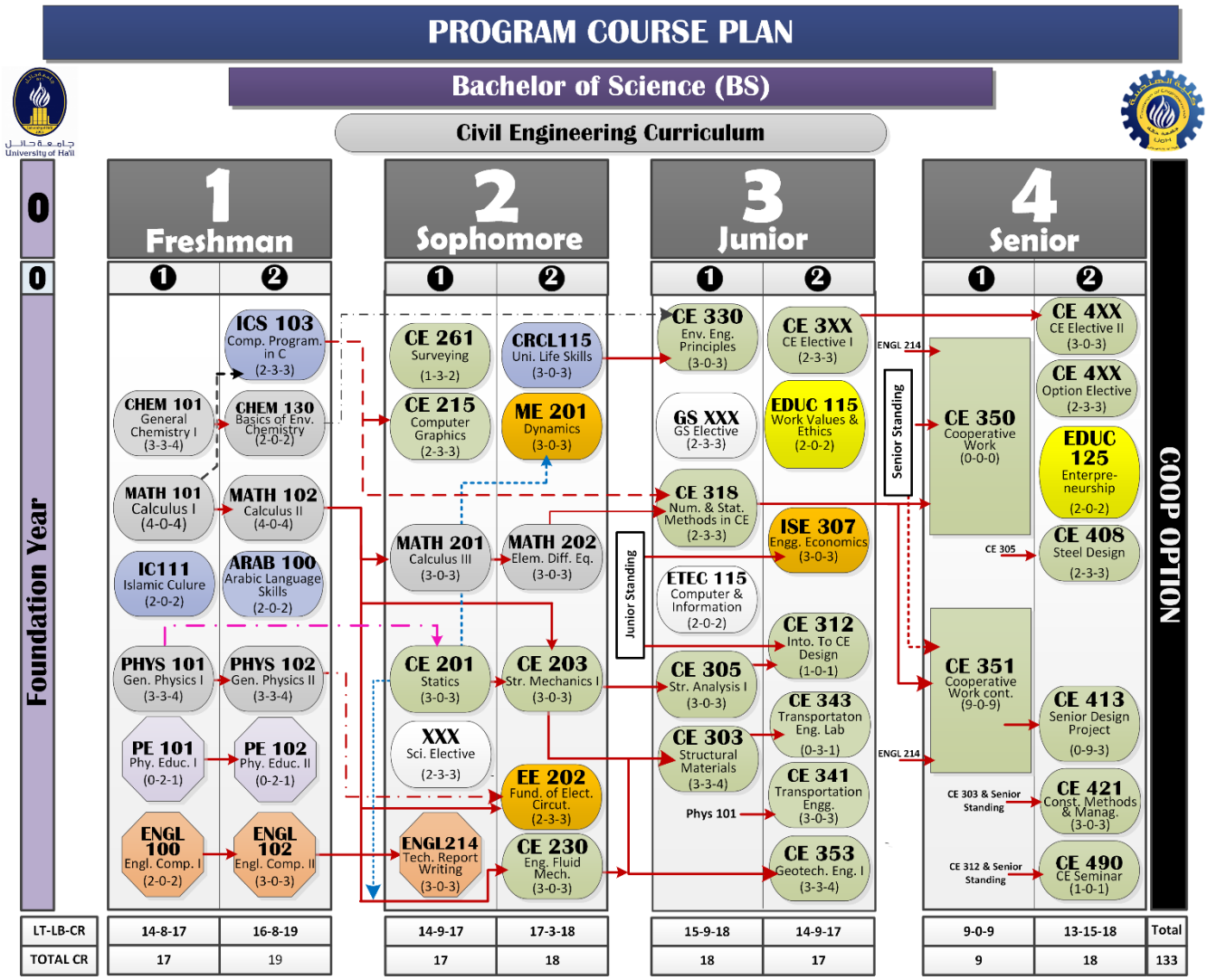
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze, and interpret data and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program intended learning outcomes (PLO's)

Domains of Learning Outcomes:

Knowledge and understanding	
K1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
Skills	
S1	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
S2	An ability to communicate effectively with a range of audiences
S3	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
Values	
V1	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
V2	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
V3	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Study plan of program



FIRST YEAR (FRESHMAN)

FIRST SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
MATH	**101**	Calculus I	4	0	4	-	PHYS 101
PHYS	**101**	General Physics I	3	3	4	-	MATH 101
ENGL	**100**	Elementary English	2	0	2	-	-
CHEM	**101**	General Chemistry I	3	3	4	-	-
IC	**111**	Islamic Culture	2	0	2	-	-
PE	**101**	Physical Education I	0	2	1	-	
TOTAL (CREDIT)			**17**				
SECOND SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
MATH	**102**	Calculus II	4	0	4	MATH 101	PHYS 102
PHYS	**102**	General Physics II	3	3	4	PHYS 101	MATH 102
ICS	**103**	Computer Programming in C	2	3	3	MATH 101	-
ENGL	**102**	English Composition II	3	0	3	ENGL 100	-
ARB	**100**	Arabic Languages Skills	2	0	2	-	-
CHEM	**130**	Basics of Environment Chemistry	2	0	2	CHEM 101	-
PE	**102**	Physical Education II	0	2	1	PE 101	-
TOTAL (CREDIT)			**19**				

SECOND YEAR (SOPHOMORE)

FIRST SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
MATH	**201**	Calculus III	3	0	3	MATH 102	-
CE	**201**	Statics	3	0	3	PHYS 101	-
CE	**261**	Surveying	1	3	2	Sophomore Standing	-
CE	**215**	Computer Graphics	2	3	3	ICS 103	-
XXX	**XXX**	Science Elective	2	3	3	-	-
ENGL	**214**	Technical Report Writing	3	0	3	ENGL 102	-
TOTAL (CREDIT)			**17**				
SECOND SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
ME	**201**	Dynamics	3	0	3	CE 201	-
CE	**230**	Eng. Fluid Mechanics	3	0	3	CE 201, MATH 102	-
MATH	**202**	Elem. Diff. Equations	3	0	3	MATH 201	-
CE	**203**	Structural Mechanics	3	0	3	CE 201, MATH 102	-
EE	**202**	Fund. of Elec. Circuit	2	3	3	MATH 102, PHYS 102	-
CRCL	**115**	University Life Skills	3	0	3	-	-
TOTAL (CREDIT)			**18**				

THIRD YEAR (JUNIOR)

FIRST SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
CE	**303**	Structural Materials	3	3	4	CE 203	-
ETEC	**115**	Computer and Information	2	0	2	-	-
CE	**330**	Environmental Eng. Principles	3	0	3	CHEM 130	-
CE	**305**	Structural Analysis I	3	0	3	CE 203	-
CE	**318**	Num. & Stat. Methods in CE	2	3	3	MATH 202, ICS 103	-
GS	**XXX**	GS Elective	2	3	3	-	-
TOTAL (CREDIT)			**18**				
SECOND SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
ISE	**307**	Engineering Economics	3	0	3	Junior Standing	-
CE	**312**	Introduction To CE Design	1	0	1	CE 305, Junior Standing	-
CE	**341**	Transp. Engineering	3	0	3	PHYS 101	CE 343
CE	**343**	Transp. Engineering LAB	0	3	1	CE 303	CE 341
CE	**353**	Geotechnical Engineering I	3	3	4	CE 203, CE 230	-
CE	**3XX**	CE Elective I	2	3	3	-	-
EDUC	**115**	Work Values and Ethics	2	0	2	-	-
TOTAL (CREDIT)			**17**				

SUMMER SESSION

CODE	COURSE TITLE	LECT	LAB	CRED	PRE-REQUISITE	CO-REQUISITE
CE 350	Cooperative Work	0	0	0	CE 318, ENGL 214 & Senior Standing	-
TOTAL (CREDIT)		**0**				

FOURTH YEAR (SENIOR)

FIRST SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
CE 351		Cooperative Work (Cont.)	9	0	9	CE 318, ENGL 214 & Senior Standing	-
TOTAL (CREDIT)			**9**				
SECOND SEMESTER							
CODE		**COURSE TITLE**	**LECT**	**LAB**	**CRED**	**PRE-REQUISITE**	**CO-REQUISITE**
CE	**421**	Construction Methods & Management	3	0	3	CE 303, Senior Standing	-
CE	**4XX**	CE Elective II	3	0	3	CE 3XX	-
CE	**408**	Steel Design	2	3	3	CE 305	-
CE	**490**	CE Seminar	1	0	1	CE 312, Senior Standing	-
CE	**413**	Senior Design Project	0	9	3	CE 351	-
CE	**4XX**	Option Elective	2	3	3	-	-
EDUC	**125**	Entrepreneurship	2	0	2	-	-
TOTAL (CREDIT)			**18**				

جامعة حائل
University of Ha'il

ELECTIVE COURSES WITH CATEGORIES

OPTIONS	COURSES
Option 1: Structures, Materials and Construction (CE 3XX and CE 4XX)	CE 315: Reinforced Concrete I (2-3-3)
	CE 401: Concrete technology (2-3-3)
	CE 402: Durability, Evaluation, and Repair of Concrete Structures (3-0-
	CE 405: Structural Analysis II (3-0-3)
	CE 406: Structural Mechanics II (3-0-3)
	CE 415: Reinforced Concrete II (2-3-3)
	CE 418: Steel Design II (3-0-3)
	ARE 459: Contracts and Specification (3-0-3)
	CE 439: Civil Eng. Systems Analysis (3-0-3)
Option 2: Transportation and Geotechnical Engineering (CE 3XX and CE 4XX)	CE 440: Highway and Airport Materials (3-0-3)
	CE 441: Pavement Design (3-0-3)
	CE 442: Construction and Maintenance of Highways & Airports (3-0-3)
	CE 444: Traffic Engineering. & Roadway Safety (3-0-3)
	CE 453: Geotechnical Engineering II (3-0-3)
	CE 454: Soil Stabilization and Site Improvement (3-0-3)
	CE 455: Foundation and Earth Structures Design (3-0-3)
	CE 456: Seepage Analysis & Its Control (3-0-3)
	CE 464: Project Surveying (3-0-3)
	CE 439: Civil Eng. Systems Analysis (3-0-3)
Option 3: Water Resources & Environmental Engineering (CE 3XX and CE 4XX)	CE 332: Engineering Hydrology and Hydraulics (2-3-3)
	CE 431: Hydrologic Engineering (3-0-3)
	CE 433: Groundwater Engineering (3-0-3)

OPTIONS	COURSES
	CE 436: Open Channel Hydraulics (3-0-3)
	CE 438: Hydraulic Systems Design (2-3-3)
	CE 473: Design and Operation of Water and Wastewater Treatment
	CE 439: Civil Eng. Systems Analysis (3-0-3)
	CE 471: Water and Wastewater: Treatment and Reuse (2-3-3)
	CE 474: Municipal Solid Waste Management (3-0-3)
	CE 476: Industrial Hazardous Waste Management and Treatment (3-0-3)
Science Elective Courses (XXX XXX)	GEOL 201: Physical Geology (2-3-3)
	GEOL 202: Applied Geosciences for Scientists & Engineers (2-3-3)
General Studies Elective Courses (GS-XXX)	MGT 301: Principles of Management (3-0-3)
	STAT 319: Probability and Statistics for Engineers and Scientists (2-3-3)
	ECON 403: Engineering Economics (3-0-3)
	GS 400: Energy efficiency (3-0-3)
	GS 321: Principles of Human Behavior Principles of Human Behavior (3-
	GS 423: International Relations (3-0-3)
	GS 424: Planning and Social Development (3-0-3)
	GS 427: Man and Environment (3-0-3)
	ISE 205: Engineering Probability & Statistics (3-0-3)

Courses description

CE Courses – Level 2

CE 201: Statics (credit hours: 3)

Prerequisite: PHYS 101

Basic concepts and principles of mechanics; vector algebra; equilibrium of particles in two and three dimensions; definition of moment and couples; reduction of systems of forces; equilibrium of rigid bodies; statically determinate structures including beams, trusses, frames, and machines; internal forces; shear force and bending moment diagrams in beams; friction and its applications, centroid and center of gravity of lines, areas, and volumes; moment of inertia and radius of gyration.

CE 215: Computer Graphics (credit hours: 3)

Prerequisite: ICS 103

The course focuses on the following topics: Introduction to Computer Aided Design and Drafting, (CADD), 2D Drawings with AutoCAD includes Multi-view Projection, Dimensions, Sections, Auxiliary Views, Free Hand Sketching, Metallic Members and their Connections, Bearing and Slope of Lines and Planes, Contour Map Lines, Cut and Fill, Blueprint Reading, and 3D Drawings.

CE 261: Surveying (credit hours: 2)

Prerequisite: Sophomore Standing

Introduction to measuring units, significant figures, direct distance measurement with tapes, tape corrections; electronic distance measurement; levels and leveling; longitudinal profiles and cross sections; contouring; area and volume computations; the theodolite and angular measurements; optical distance measurements; rectangular coordinates; traverse surveys and computations; mapping; introduction to GPS and GIS; Laboratory field practice.

CE 203: Structural Mechanics I (credit hours: 3)

Prerequisite: CE 201, MATH 102

Concepts of stress, strain, and constitutive relations; stress and deformation of axially loaded members; thermal stresses; pressure vessels; energy concepts; torsion of circular and thin-walled sections; shear and bending moment diagrams in beams; elastic bending and shear stresses in beams; compound stresses; stress transformation; bending moment-curvature equation; deflection of beams; singularity functions methods, analysis and design applications.

CE 230: Engineering Fluid Mechanics (credit hours: 3)

Prerequisite: CE 201, MATH 102

Properties of fluids, hydrostatics with applications to manometers, forces on plane and curved surfaces, buoyancy, equations of continuity, energy and linear momentum with applications, Bernoulli's equation and flow measuring devices, dimensional analysis, dynamic similarity, open channel flow, conduit flow.

CE Courses – Level 3

CE 303: Structural Materials (credit hours: 4)

Prerequisite: CE 203

Composition and properties of hydraulic cements; characteristics of local aggregates and water; properties of fresh concrete; production, handling and placement of cement and fresh concrete in the local environment; properties of hardened concrete; mix design; special concretes; introduction to pavement types; asphalt cement types, properties and usage; properties of aggregate for asphalt concrete mixes; asphalt concrete mix design concept; types, engineering properties, and usage of structural steel; introduction to aluminum, timber, glass, plastics and other structural materials. Laboratory sessions on tests of concrete constituents, fresh and hardened concrete, aggregate gradation and mix design, flexure behavior of reinforced concrete beams, physical properties and testing of asphalt binders, asphalt concrete mix design; hardness test, tensile and torsion tests on metals, measurement of Poisson's ratio and stress concentration, and bending tests on steel beams.

CE 305: Structural Analysis I (credit hours: 3)

Prerequisite: CE 203

Shear force and bending moment diagrams for frames; influence lines for beams, frames and 2D trusses; displacement of beams by moment area, and conjugate beam methods;

displacements of beams, frames and trusses by virtual work; analysis of statically indeterminate structures; method of consistent deformation, energy methods, slope-deflection and moment distribution; introduction to the flexibility and stiffness matrix methods and computer applications.

CE 318: Numerical & Statistical Methods in CE (credit hours: 3)

Prerequisite: ICS 103, MATH 202

Introduction to numerical methods; error analysis; solution of system of linear and nonlinear equations; numerical integration; numerical solutions of ordinary differential equations; curve fitting and interpolation; statistical methods, descriptive statistics, probability distributions, analysis of variance and regression; introduction to linear programming and optimization problems; development and application of computer programs to case studies derived from civil engineering practices.

CE 330: Environmental Engineering Principles (credit hours: 3)

Prerequisite: CHEM 130 or equivalent

Introduction to major environmental pollution issues; Analyses of water quality; Municipal solid waste management and disposal; Hazardous waste testing, management, and treatment; Air pollution characteristics, effects, measurements, control, meteorology, and dispersion; Noise pollution control; Introduction to wastewater testing, treatment and reuse; Environment Impact Assessment.

CE 312: Introduction to CE Design (credit hours: 1)

Prerequisite: CE 305, Junior Standing

A broad introduction of basic design concepts in different civil engineering disciplines; design landscape and requirements related to data, information, specification and codes, methods and tools, design considerations and constraints; issues related to safety, economy and impact; professional ethics and responsibility; design drawings; a small-scale project work to complement student's understanding.

CE 341: Transportation Engineering (credit hours: 3)

Prerequisite: PHYS 101, Co requisite: CE 343

Planning and evaluation of transportation systems; transportation in Saudi Arabia; characteristics of transportation systems and vehicles; introduction to design principles and transportation facilities including roadways and airports; flexible pavement design; application of computer software(s) related to transportation.

CE 343: Transportation Engineering Laboratory (credit hours: 3)

Prerequisite: CE 303, Co requisite: CE 341

Field studies for speed, traffic volume counts and delays; introduction and practice incapacity analysis, traffic signal design, pavement material testing and design; intersection, channelization and highway geometric design; introduction to transportation related software's.

CE 353: Geotechnical Engineering I (credit hours: 4)

Prerequisite: CE 203, CE 230

Soil formation and identification; index and classification properties of soils; clay minerals; soil compaction; capillarity, swelling, shrinkage and effective stresses; flow of water in soils; compressibility and consolidation; stress in soils; shear strength of cohesive and cohesion less soils; introduction to lateral earth pressure and shallow foundation; Laboratory study of soil properties and behavior.

CE 351: Continue Coop Work (credit hours: 9)

Prerequisite: CE 318, ENGL 110 and senior standing.

A continuous period of 28 weeks is spent in the industry to acquire practical experience in Civil Engineering under the supervision and guidance of the employer and the academic advisor. During this period the student gains an in-depth exposure and appreciation of the Civil Engineering profession. The student is required to write a detailed report about his training period under the regulation of the CE department.

CE 315: Reinforced Concrete I (credit hours: 3)

Prerequisite: CE 305

Review of properties of structural concrete and reinforcing steel; behavior and design of reinforced rectangular and T-section in flexure; Use of computers in beam design for flexure; behavior and design of beams for shear, bond, and development length including splices and

cut-off points; design; design of one-way slab, design of continuous beams with computer application for analysis; control of deflection and cracking; design of short columns; design of single footing; design project of a simple multistory building with one-way flooring system which integrates the design of the different structural components.

CE 332: Engineering Hydrology and Hydraulic (credit hours: 3)

Prerequisite: CE 201, MATH 102

Surface water hydrology, water cycle, precipitation, evaporation, stream flow. Principles of hydrologic systems and their analysis. Hydrologic simulation, reservoir planning and water supply studies. Analysis of rainfall and floods. Examination of flow in pipelines and pipe networks, pumps and pumping stations, hydrology, flow in open channels, groundwater hydraulics, and design of hydraulic structures.

CE Courses – Level 4

CE 413: Applied Design Project (credit hours: 3)

Prerequisite: CE351

CE students undertake a civil engineering design project under the supervision of a faculty member with the aim of achieving a comprehensive design experience through a coherent study of engineering and design principles. The student chooses the project in the field with which he is most familiar through his co-op work experience. The student is required to make an oral and written presentation of the design project to an examination committee.

CE 421: Construction Methods & Management (credit hours: 3)

Prerequisite: CE 303, Senior Standing

An overview of the construction industry, contracts, contract documents and professional liabilities, issues during construction phase, business ownership, cost estimation, equipment productivity; concrete form design; planning and scheduling using critical path method, resource leveling, cost control; introduction to pert, construction management aspects; materials management, bidding, construction productivity and safety.

CE 490: CE Seminar (credit hours: 1)

Prerequisite: CE 312, Senior Standing

Weekly presentation of lectures by the instructor and the invited speakers on topical issues in civil engineering, including contemporary issues, professional responsibilities, ethical issues and advances and challenges in civil engineering profession; each student will be required to make a presentation on a selected topic and participate in classroom discussion.

CE 415: Reinforced Concrete II (credit hours: 3)

Prerequisite: CE 315

Behavior and design of columns under axial load and bending including slenderness effects; design of wall footings; design of combined footings; ACI Code provisions for serviceability requirements; deflection of flexural members; design of two-ways slabs on beams using the ACI Direct Design Method; analysis and design of frames and continuous beams; design of one-way joist floor system; design of beam column joints; design of stairs behavior and design of retaining walls; introduction to pre-stressed concrete; design project of multistory building with two-way flooring system which integrates the design of different structural components; computer application in interactive design.

CE 405: Structural Analysis II (credit hours: 3)

Prerequisite: CE 305

Review of matrix algebra and solution of simultaneous equations; flexibility (force) method analysis; stiffness (displacement) method of analysis; 2-D trusses, beams and frames; development of computer programs using the stiffness method; use of available computer packages for applications in structural analysis; introduction to the Finite Element Method; introduction to Structural Stability.

CE 408: Steel Design (credit hours: 3)

Prerequisite: CE 305

Properties of structural steel; steel sections and introduction to load resistance factor design (LFRD), design of tension members, compression members and capacity calculations; laced columns width-thickness ratios; design of beams with and without lateral supports; design of members under combined axial and bending loads; design and details of simple bolted and welded connections, and an introduction to common building connections; use of software for design of elements and overall design of frames.

CE 455: Foundation and Earth Structures Design (credit hours: 3)

Prerequisite: CE353

Site investigation, including determination of soil properties for design; bearing capacity theory of shallow foundation; settlement of building foundations; design and analysis of retaining walls, sheet piles and braced excavations; design of pile and pier foundations.

CE 453: Geotechnical Engineering II (credit hours: 3)

Prerequisite: CE 353

Fundamental relations of elasticity and plasticity in soil masses; unsaturated soils behavior; deformation properties of cohesionless and cohesive soils; advanced strength concepts in soils and stress path; slope stability analysis; introduction to soil dynamics.

CE 441: Pavement Design (credit hours: 3)

Prerequisite: CE 341, CE 343

Pavement types and loading, behavior of pavements under dynamic loads, stresses in flexible and rigid pavements, pavement components, pavement design factors, flexible highway and airport pavement design, rigid highway and airport pavement design; overlay design and computer applications; practical pavement design project of a road and airport.

CE 444: Traffic Engineering & Roadway Safety (credit hours: 3)

Prerequisite: CE 341, CE 343

Vehicle, roadway and driver characteristics; traffic engineering and safety studies; traffic flow theory and highway capacity analysis, and computer applications; traffic control methods and devices; operational considerations for safety; roadway lighting and highway traffic noise.

CE 440: Highway and Airport Materials (credit hours: 3)

Prerequisite: CE 303

Material types: asphalts, cement, aggregates and local materials; specifications: material selection and design; tests of asphalts and aggregates, mix design procedures for hot and cold mixes of flexible pavements and concrete mixes for rigid pavements; characterization techniques; modulus of resilience, fatigue, rutting and field control tests.

CE 438: Hydraulic Systems Design (credit hours: 3)

Prerequisite: CE 230

Fundamental principles and design of water supply, sanitary and storm sewer systems and their components, including pipes, pumps, storage facilities, open-channels, culverts; computer applications in the design and analysis of hydraulic systems.

CE 473: Design and Operation of Water and Wastewater Treatment Plants (credit hours: 3)

Prerequisite: CE 330

Water and wastewater characteristics, theory and practice in sanitary engineering including the concepts of processing, design, economic evaluation and computer analysis; class projects incorporating practical considerations in the design and operation of treatment units and the combining of unit processing in water and wastewater treatment plants; field trips to visit various types of treatment plants in operation.

CE 476: Hazardous & Solid Wastes (credit hours: 3)

Prerequisite: CE 330

Hazardous and solid waste quantities, properties and sources. Theory and design of several industrial hazardous waste management and treatment aspects including regulations, environmental audits, pollution prevention, risk assessment, chemical & biological process fundamentals, and industrial hazardous waste separation, handling, treatment, & disposal techniques.

Program key performance indicator (KPI's)

Standard	Code	Key Performance Indicators	Description
-1- Mission and Goals	**KPI-P-01**	Percentage of achieved indicators of the program operational plan objectives **(i8)**	Percentage of performance indicators of the operational plan objectives of the program that achieved the targeted annual level to the total number of indicators targeted for these objectives in the same year
	KPI-P-02	The awareness and support of the teaching staff and administrators of the mission of the program/institution **(i2)**	Percentage of faculty and program staff who are aware of the program / institution's mission using a questionnaire / interview to the total number of faculty and staff.
-3- Teaching and Learning	**KPI-P-03**	Students' Evaluation of quality of learning experience in the program **(i10)**	Average of overall rating of final year students for the quality of learning experience in the program on a five-point scale in an annual survey
	KPI-P-04	Students' evaluation of the quality of the courses **(i6)**	Average students overall rating for the quality of courses on a five-point scale in an annual survey
	KPI-P-05	Completion rate **(i12)**	Proportion of undergraduate students who completed the program in minimum time in each cohort
	KPI-P-06	First-year students retention rate **(i1)**	Percentage of first-year undergraduate students who continue at the program the next year to the total number of first-year students in the same year
	KPI-P-07	Students' performance in the professional and/or national examinations	Percentage of students or graduates who were successful in the professional and / or national examinations, or their score average and median (if any)
	KPI-P-08	Graduates' employability and enrolment in postgraduate programs **(i14,19)**	Percentage of graduates from the program who within a year of graduation were: a. employed b. enrolled in postgraduate programs

Standard	Code	Key Performance Indicators	Description
			during the first year of their graduation to the total number of graduates in the same year
	KPI-P-09	Average number of students in the class	Average number of students per class (in each teaching session/activity: lecture, small group, tutorial, laboratory or clinical session)
	KPI-P-10	Employers' evaluation of the program graduate's proficiency **(i26)**	Average of overall rating of employers for the proficiency of the program graduates on a five-point scale in an annual survey
	KPI-P-11	Student evaluation of the Value and Quality of Field Activities **(i15)**	Percentage of students' satisfaction with the presence and quality of field activities during the semester and the academic year at the program / college / university.
-4- Students	**KPI-P-12**	Students' satisfaction with the offered services **(i18,28)**	Average of students' satisfaction rate with the various services offered by the program (restaurants, transportation, sports facilities, academic advising, ...) on a five-point scale in an annual survey
-5- Teaching Staff	**KPI-P-13**	Ratio of students to teaching staff **(i9)**	Ratio of the total number of students to the total number of full-time and full-time equivalent teaching staff in the program
	KPI-P-14	Percentage of teaching staff distribution	Percentage of teaching staff distribution based on: a. Gender b. Branches c. Academic Ranking
	KPI-P-15	Proportion of teaching staff leaving the program **(i37)**	The proportion of teaching staff leaving the program annually for reasons other than age retirement to the total number of teaching staff.
	KPI-P-16	Percentage of publications of faculty members **(i36)**	Percentage of full-time faculty members who published at least one research during the year to total faculty members in the program
	KPI-P-17	Rate of published research per faculty member **(i42)**	The average number of refereed and/or published research per each faculty member during the year (total number of refereed and/or published research to the total number of full-time or equivalent faculty members during the year)

Standard	Code	Key Performance Indicators	Description
	KPI-P-18	Citations rate in refereed journals per faculty member **(i44)**	The average number of citations in refereed journals from published research per faculty member in the program (total number of citations in refereed journals from published research for full-time or equivalent faculty members to the total research published)
	KPI-P-19	Relevance of the qualifications and experience of faculty members to the courses they teach **(i17)**	Percentage of faculty members with qualifications and experience of the courses they are studying compared to the total number of courses offered during the academic year.
	KPI-P-20	The percentage of full-time teaching staff members and the others of administrative staff that participate in community services activities **(i49)**	Number of full-time faculty, other staff and administrators engaged in a community service activity during the academic year compared to the total number of faculty, other staff and administrators
-6- Learning Resources, Facilities, and Equipment	**KPI-P-21**	Satisfaction of beneficiaries with the learning resources **(i13,27,33)**	Average of beneficiaries' satisfaction rate with the adequacy and diversity of learning resources (references, journals, databases… etc.) on a five-point scale in an annual survey.

Facilities (Classrooms – Laboratories - Specialized equipment)

Offices:

Head of the department office:

The Head of the Civil Engineering department office is located on the second floor of the College of Engineering Building, room B14-S-090.

Faculty offices: The offices of the faculty members are located on the second floor. Every member of staff has his own office. The office has adequate furniture and is equipped with internet connection. The average office size is adequate to receive students to discuss all matters. When a need arises, there is a seminar and a meeting room 081, 082 with a round table to hold departmental meetings, thesis defenses and the like.

Classrooms

14 Classrooms are located in the same corridors on the first floor. 9 Classrooms are equipped with Smart Boards and others with white boards, multimedia projectors with a separate white screen to help faculty members conduct their classes and students to present their projects. Classrooms are fitted with central air conditioning. Internet access to students, faculty members and guests is available through a LAN network covering the whole College.

Fig. 1: Classroom

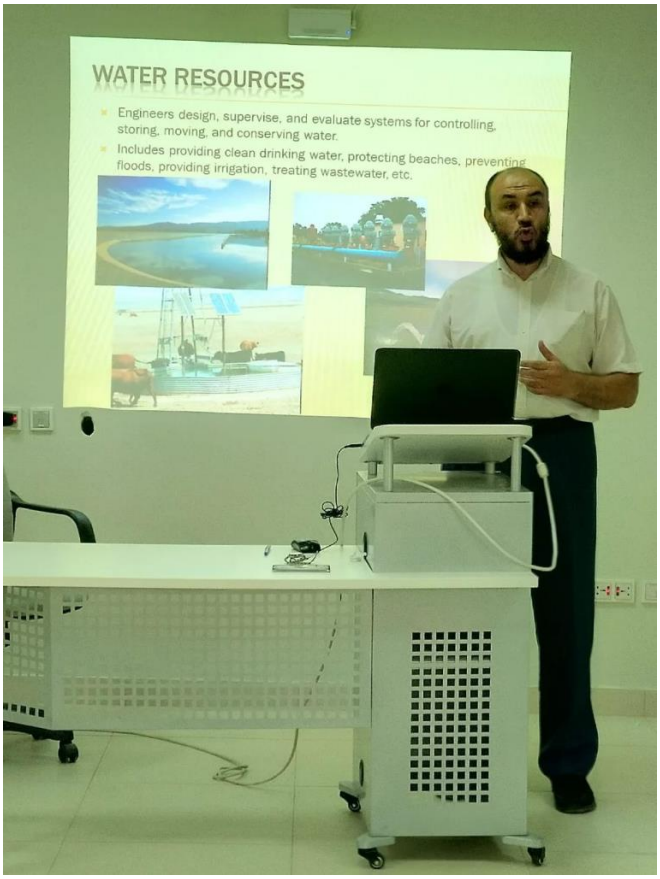


Fig. 2: Instructor in the classroom

Fig. 3: Briefing session for the Freshman students

Laboratories

According to CE Program outcomes, students will model, analyze, design, and experimentally evaluate components and systems. The department has 6 laboratories used for instructional activities. Instructional laboratories feature modern equipment and computer-aided design tools that are more than adequate for most undergraduates. Nevertheless, many students take advantage of state-of-the-art research facilities to support their project work.

All of the Civil Engineering Laboratory facilities are located on the ground floor:

- Geotechnical (Room No. G 150),
- Materials (Room No. G 158),
- Hydraulic (Room No. G 073),
- Survey (Room No. G 123),
- Asphalt Lab
- Statics Lab,
- Two Computer Labs are in Room No. G 167 and Room No. F 108

The laboratories as per the subject areas are as follows:

Geotechnical Lab: This lab serves the core course Geotechnical Engineering I. Here, the students learn how to do the Atterberg Limits test, Liquid Limit test, Plastic Limit, Compaction Test, Specific Gravity test, Permeability Test, etc.

Table: Geotechnical Lab Equipment's

Sl. No.	Equipment Name	Quantity
1	Drying Oven,	1
2	Liquid Limit device	2
3	Motorized Liquid limit device, 220V, 60Hz	3
4	Plastic Limit Test Set	3
5	Test Sieves of (8") and (12") dia.	2 sets
6	Sieve Shaker,	2
7	Standard and modified compaction moulds: 101.6 and 152.4 mm and rammer , 2.5 Kg, 4.5 kg	6
8	Automatic Soil compactor	1

Sl. No.	Equipment Name	Quantity
9	Sand cone apparatus	3
10	Constant Head Permeability apparatus	2
11	Falling head Permeability apparatus	1
12	Consolidation Apparatus	3
13	Dessicator	2
14	Direct Shear Test	1
15	Digital Triaxial testing apparatus	1
16	Digital laboratory C.B.R Test apparatus	

Photo: Direct Shear Test

Photo: Consolidation Apparatus

Motorized Liquid limit device, 220V, 60Hz

Standard and modified compaction moulds: 101.6 and 152.4 mm and rammer , 2.5 Kg, 4.5 kg

Drying Oven

Sieve Shaker

Automatic Soil compactor

Sand cone apparatus

Constant Head Permeability apparatus

Falling head Permeability apparatus

Direct Shear Test

Digital Triaxial testing apparatus

Figure: some of the Geotechnical Lab equipment's

Photos: Geotechnical Lab

Material Lab: This lab serves the core course CE 303: Structural Materials. Here, the students learn how to do standard tests regarding fine and coarse aggregates' sieve analysis, specific gravity, absorption, void content; Los Angeles Abrasion, consistency and setting time of hydraulic cements; properties of fresh concrete; and properties of hardened concrete; etc.

Table: Material Lab Equipment's

Sl. No.	Name	Quantity
1	Laboratory Mixer	2
2	Vicat Apparatus	4
3	Le chatelier mould	3
4	le chatelier water bath	1
5	motorized flow table	2
6	Blain Air permeability apparatus	3
7	Vebe Consistency Apparatus 220V 60Hz	2
8	Drying oven	1
9	Specific gravity frame	1
10	Los Angeles Abrasion Machine	1
11	Aggregate impact value apparatus	1
12	sample splitter	2
13	Slump Test apparatus	2
14	K- slump tester	2
15	Kelly Ball Apparatus	2
16	Concrete Flow table	1
17	compaction factor test	2
18	Digital Concrete air meter	1
19	Concrete air meter	1
20	Poker vibrator	2
21	Digital thermometer	3
22	vibrating table	1
23	Cementometer for water to cement ratio	2
24	Schmidt hammer (for concrete)	4

Sl. No.	Name	Quantity
25	Digital Schmidt hammer	1
26	Electric core drill	1
27	specimen cutting machine	1
28	Curing Tank with circulating Pump, Heater/thermostat unit 220V 60Hz	1
29	Ultrasonic Pulse Velocity Tester	4
30	Compression and Flexural testing Machine for Cement and Concrete (3000 kN)	1
31	Sieve shakers	2
32	Concrete water impermeability apparatus,	1
33	Test Sieves of (8") and (12") dia.	2 sets
34	Steel Testing Machine 220V 60Hz	1
35	Forced Stirring Concrete mixer 220V 60Hz	1

Compression and Flexural testing Machine for Cement and Concrete (3000 kN)

Los Angeles Abrasion Test Machine

Figure: some of the Material Lab equipment's

Fig.: Tri-axial compression machine used for Tri-axial Compression Test

Fig.: Material Lab

Fig.: Compression and Flexural testing Machine for Cement and Concrete (3000 kN) for testing Direct Compressive Strength of Cement Mortar, concrete cubes and Cylinders.

Asphalt Lab:

Table: Asphalt Lab Equipment's

Sl. No.	Name	Quantity
1	Automatic Digital Ring & Ball Apparatus	1
2	Rolling Thin Film Oven	1
3	REGO-Laboratory Mixer, 20 lt	1
4	Ductilometer	1
5	Troxler Superpave Gyratory Compactor, SHRP Package	1
6	Pressure Aging Vessel, 230V, 50/60Hz (applied test systems)	1
7	Cleveland open cap Flash & Fire Point Tester	2
8	Gilson Rotational Viscometer	1
9	Automatic Marshall Compactor	1
10	Water bath	1
11	Marshall Test System	1
12	Standard Asphalt Testing Device-compactor (Marshall and CBR)	1
13	Centrifuge extractor Rotates	1

Sl. No.	Name	Quantity
14	Gilson Vibro-Deaerator (Rice) with Vacuum Pycnometer, 2,000g,	1
15	Digital Viscometer	1

REGO-Laboratory Mixer, 20 liters

Troxler Superpave Gyratory Compactor, SHRP Package

Automatic Digital Ring & Ball Apparatus

Pressure Aging Vessel, 230V, 50/60Hz (applied test systems)

Digital Viscometer

Gilson Rotational Viscometer

Marshall Test System

Standard Asphalt Testing Device-compactor (Marshall and CBR)

Centrifuge extractor Rotatest

Gilson Vibro-Deaerator (Rice) with Vacuum Pycnometer, 2,000g

Figure: some of the Asphalt Lab equipment's

Fig.: Constant head and Falling Head Permeameter device for **Permeability Test for Granular Soil**

Fig.: Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact of the Los Angeles Machine

Surveying Lab:

Here is a list of all Equipment's in the surveying lab.

Item	Count of Items
Total Station	2
Theodolite	4
Digital level	2
Laser Level	2
Optical Level	5
Laser Distance Meter	5
Planimeter	10
Compass	2
Aluminium Tripod	3
Wooden Tripod	2
Aluminium Staff	7
Steel Tape 50m	5
Fiberglass Tape 50m	8

Photo: Surveying in the Field

Item/Description	Photo
Total Station	
Theodolite	
Digital level	

Computer Lab: This lab serves for core courses such as CE 215: Computer Graphics using AutoCAD and CE 318: Numerical & Statistical Methods in CE using MATLAB and MS Excel etc. 34 Computers are available equipped with the relevant software packages.

Fig.: Photos of the Computer Lab

Computing Resources: **T**here are two computers' labs (Room No. G 167 and Room No. F 108), available for academic purposes. It has 17 PCs in each lab, with relevant software packages, such as AutoCAD, SAP, MATLAB, MS Office etc. installed for students to use. Every session has less than 20 students present, which means the availability of at least one PC for each student in a session. In addition, a PC is available for the lab instructor. PCs got wired internet access and equipped with LCD monitors, optical mouse and keyboard. The computer lab is equipped with a projector. Access to computer lab is scheduled according to classes schedule at the beginning of each semester, free time slots are left for students to come in and work on their own projects.

The computer lab is strictly used for educational purposes; no administrative and/or managerial tasks are allowed to be performed in this lab.

These are free of charge for students to use and access the university portal, Monday-Thursday (8:00 – 16:00), to register, send/receive emails, check their classes and grades, join into group discussions and the like.

Graduates' employment opportunities

At the completion of B.Sc. Civil Engineering program, the graduates have excellent employment opportunities in different fields of the civil engineering such as:

- Management of construction projects
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Surveying
- Traffic and transportation Engineering
- Engineering of roads, railways and airports
- Water Resources Engineering
- Cement and concrete plants
- Soil and Concrete Laboratories
- Building materials industry
- Most private and government sectors

One of the best opportunities available to our graduates is the possibility of continuing their graduate studies. The demand for highly educated civil engineering students is steadily increasing. Our graduates get admission to graduate programs at top ranking universities in countries such as the USA and UK.