Diploma in Civil Engineering

2020 – 2021

Awarding Institution	A'Sharqiyah University	
College / Centre	College of Engineering	
Program Title	Civil Engineering	
Final Award	Diploma in Civil Engineering	
Credit hours	77	
Mode of Study	Full time - Part Time - Special Part Time	
Language of Study	English	
Benchmarks		
Entry requirements	A student - should have successfully completed the courses of all subjects of the general education diploma or equivalent; - should achieve the standards set for the subjects of the General Foundation Program; - should have studied subjects which qualify him/her to be enrolled in programs in the College of engineering, - Must be medically fit.	
Minimum period of registration	FULL-TIME: 5 Semesters	PART-TIME: 7 Semesters
Maximum period of registration	FULL-TIME: 9 Semesters	PART-TIME: 11 Semesters
Date specification produced	September 2013 (first version)	
Date specification last reviewed	(July 2018)	

1 THE COLLEGE OF Engineering

The College of Engineering at A'Sharqiyah University (ASU) opened in 2011 and has grown quickly to a current enrollment of over 300 students. The College will continue to grow at this rapid pace in order to accommodate over 1000 students in new classrooms and laboratories located in the new College of Engineering building that was completed in September 2017. With a first-rate building and state-of-the-art laboratories, the ASU Engineering College will continue to draw community members and prospective students to the growing campus. The College of Engineering at present offers undergraduate academic programs at Diploma/Degree levels in Civil Engineering, Environmental Engineering, Electronics and Communications Engineering and Construction Project Management.

The mission of the College is to educate creative professional engineers, technologists and technicians and to equip them to serve society in a globalized knowledge economy. Working in partnership with its stakeholders, the College is committed to the creation and transfer of new knowledge and technologies through the efforts of faculty, staff and students. The College vision is to achieve national and international stature as a College of Engineering through excellence in engineering education, research and innovation, outreach and external community engagement whilst contributing to the competitiveness, social and economic development and prosperity of the Sultanate of Oman.

2 PROGRAM OUTLINE

The ASU Civil Engineering Program teaches students about the technology and tools required to practice Professional Engineering during the engineering and design of structures, transportation systems, buildings, roads, and many other major facilities. The Civil Engineering program is designed to fulfill industry's need for licensed professional civil engineers. Emphasis of the ASU Civil Engineering Program is placed on engineering, scientific, and technical courses so that the requirements for professional-engineering licensure are met. The curriculum was chosen to concentrate on the application of engineering principles to the solution of real world civil-engineering problems.

3 PROGRAM AIM/S

The aims of this program are to:

a. Provide high quality instruction and opportunities to prepare graduates for civil engineering practice and to engage in life-long learning;
b. Provide opportunities for leadership and service;
c. Prepare students to uphold high ethical and professional standards; and
d. Prepare students to work effectively in a multi-disciplinary environment as parts of working teams.

4 LEARNING OUTCOMES (Definitive)

Upon successful completion of the program, students will be able to:

A. KNOWLEDGE AND UNDERSTANDING	1. Apply knowledge of mathematics, science, and engineering; 2. Conduct experiments, as well as to report and interpret data; 3. Participate in designing a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability; 4. Function on multidisciplinary teams.
B. SUBJECT-SPECIFIC INTELLECTUAL SKILLS	5. Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of science, consistent with the program educational objectives; 6. Introduction to: structural engineering, geotechnical engineering, environmental engineering, water resources engineering and transportation engineering.
C. PROFESSIONAL / PRACTICAL SKILLS	7. Conduct civil engineering experiments and report and interpret the resulting data; 8. Participate in designing a system, component, or process in more than one civil engineering context; 9. Explain basic concepts in management, business, public policy, and leadership; 10. Explain the importance of professional licensure.
D. GENERAL COMPETENCE	**Communication** • Communicate effectively. **Teamwork and interpersonal skills** • Function on multidisciplinary teams. **Leadership and entrepreneurship** • Lead group of employees • Establish companies in the field of interest

5 PROGRAM STRUCTURE

Students must achieve the required credit hours for the program by completing University Required and Elective courses listed in sections 5.1 to 5.5 below:

5.1 University Requirements: **Total Credit hours 12**

Course Code	Course Title	Pre-Requisites (P) Co-Requisites (C)	Credit hours
ISLM101	Islamic Civilization		3
ENGL101	English Communication Skills I		3
ENGL102	English Communication Skills II	ENGL101	3
MNGT313	Entrepreneurship		3
TOTAL			12

5.2 College Requirements: **Total Credit hours 27**

Course Code	Course Title	Pre-Requisites (P) Co-Requisites (C)	Credit hours
MATH101	Calculus I	FPPM002 (C)	3
MATH102	Calculus II	MATH101	3
PHYS101	Physics I		3
PHYS102	Physics II	PHYS101	3
CHEM101	Chemistry		3
MATH215	Linear Algebra		3
ENGR201	Engineering Drawing	FPIT002	3
ENGR202	Technical Writing and Presentation	ENGL102	3
ENGR111	Computer Applications		3

5.3 Program Requirements: **Total Credit hours 38**

Course Code	Course Title	Pre-Requisites (P) Co-Requisites (C)	Credit hours
ENGR220	Statics	MATH102	3
ENGR321	Dynamics	ENGR220	3
CVEN310	Surveying		3
CVEN231	Engineering Geology	CHEM101	2
CVEN332	Civil Engineering Materials		3
CVEN333	Mechanics of Materials	ENGR220	3
CVEN362	Transportation Engineering		3
CNMN405	Building Information Modelling	ENGR201	3
ENGR110	Engineering Laboratories		3
CVEN340	Analysis of Structures I	CVEN333 (C)	3
CVEN301	Design of Concrete Structures I	CVEN340	3
CVEN324	Integrating Group Project		3
ENGR301	Managing Engineering Organization		3

5.4 Program Electives: **Total Credit hours xx**

Choose from the following:

Course Code	Course Title	Pre-Requisites (P) Co-Requisites (C)	Credit hours

6 PROGRAM REFERENCE POINTS

The courses and their contents have been designed to mimic those currently offered by Civil Engineering Programs offered in USA and Canada. The Civil Engineering Program was first constructed by a team of faculty under the direction of Dr. Ali Al-Harthi, Dean of Engineering of Sultan Qaboos University, and then refined by a team of faculty from Texas Tech University (TTU) as described below.

These teams benched marked the Civil Engineering program against their home university programs to construct an ASU program that can achieve ABET accreditation. This curriculum has also been compared to ABET-accredited Civil Engineering programs at Rensselaer Polytechnic Institute in New York State, the University of Puerto Rico Mayaguez, the University of Ottawa, Canada, and Western University, London, Canada.

7 TEACHING AND LEARNING METHODS (indicative)

Lecturers, seminars, laboratory experiments, site visits, self-study, projects.

8 ASSESSMENT METHODS (Indicative)

Quizzes, midterm exams, final exams, practical assessment in labs, project evaluation, viva questions.

9 CAREER and STUDY OPPORTUNITIES

The program facilitates entries to job and work opportunities in a number of market and industrial settings such as:

1. Consulting firms
2. Municipalities and government organizations
3. Oil Companies
4. Industry

The graduate from this course can also pursue further study and can improve their academic qualification by doing a Bachelor degree.

10 STUDENT SUPPORT

Students attend an orientation program at the start of their studies. They are supported by a Course Coordinator and the Head of Department is also available to advice on program-related queries.

Academic advising is an essential element of the educational process. Students are assigned academic advisors who help them in selecting their course of study and in

planning their schedules. Academic advisors also approve students' schedules each semester. The academic advisor assists students in obtaining a well-balanced education and in interpreting university policies and procedures, it is ultimately the students' individual responsible for selecting their courses, meeting course prerequisites, and adhering to university policies and procedures. Students may also consult faculty, department or program chairs, program coordinators, and deans.

Students have access to the University's library with a range of reading materials, online resources and study support.

The University's Student Affairs Office supports students in adjusting to university life and advises on issues such as finance, regulations, legal matters, accommodation, transportation, disabilities and career guidance. Opportunities are also provided for students to participate in various extra-curricular activities.

The Student Council is also an important source of support and guidance.

The University has a Student Fund, which considers applications on a case-by-case basis.

11 PROGRAM STRUCTURE DIAGRAM (Indicative)

Year 1		Year 2		Year 3
FALL	**SPRING**	**FALL**	**SPRING**	**FALL**
ENGL101 English Communication Skills I	ENGL102 English Communication Skills II Pre-R: ENGL101	CVEN310 Surveying	CVEN231 Engineering Geology Pre-R: CHEM101	CVEN301 Design of Concrete Structure I Pre-R: CVEN340
ENGR111 Computer Applications	ENGR110 Engineering Laboratories	ENGR201 Engineering Drawing Pre-R: FPIT002	CVEN333 Mechanics of Material Pre-R: ENGR220	MNGT 313 Entrepreneurship
MATH101 Calculus 1 Pre-R: FPPM002	MATH102 Calculus II Pre-R: MATH101	CVEN332 Civil Engineering Materials	CVEN362 Transportation Engineering	CNMN405 Building Information Modelling ENGR201
PHYS101 Physics I	PHYS102 Physics II Pre-R: PHYS101	ENGR220 Statics Pre-R: MATH102	CVEN340 Analysis of Structures I CVEN333 (C)	CVEN324 Integrating Group Project
ISLM101 Islamic Civilization	CHEM101 Chemistry	ENGR202 Technical Writing and Presentation ENGL102	ENGR321 Dynamics Pre-R: ENGR220	ENGR301 Managing Engineering Organization
		MATH215 Linear Algebra		**Diploma Over**

12 MAPPING of ASSESSMENT of LEARNING OUTCOMES YEAR 1

KEY: **F** = Formative assessment **S** = Summative assessment **FS** = Formative AND Summative assessment

Upon completion of the program, students will be able to:

	REQUIRED COURSES:	ENGR111	ISLM101	ENGL101	MATH101	PHYS101	ENGR110	ENGL102	MATH102	PHYS102	CHEM101
	KNOWLEDGE AND UNDERSTANDING										
1	An ability to apply knowledge of mathematics, science, and engineering.	FS		S	S	S	FS	S	S	S	S
2	An ability to design and conduct experiments, as well as to report and interpret data.	FS		F	F	F	F	F	F	F	F
3	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	FS			S		FS				
4	An ability to function on multidisciplinary teams.		F				FS				
	SUBJECT-SPECIFIC INTELLECTUAL SKILLS										
5	Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of science, consistent with the program educational objectives.	F			S	S	S		S	S	S

6	Introduction to: structural engineering, geotechnical engineering, environmental engineering, water resources engineering and transportation engineering.	F					FS				
	PROFESSIONAL / PRACTICAL SKILLS										
7	Conduct civil engineering experiments and report and interpret the resulting data.						F				
8	Participate in designing a system, component, or process in more than one civil engineering context	F					F				
9	Explain basic concepts in management, business, public policy, and leadership.		F				FS				
10	Explain the importance of professional licensure.						FS				
	GENERAL COMPETENCE (INCLUDING FOR EMPLOYABILITY)										
	Communication Skills	FS	FS	S			FS	S			
	Teamwork and interpersonal skills		FS	S			FS	S			
	Leadership and entrepreneurship		FS				FS				

12 MAPPING of ASSESSMENT of LEARNING OUTCOMES YEAR 2

	REQUIRED COURSES:	CVEN231	CVEN362	CVEN332	ENGR220	CVEN340	ENGR202	CVEN333	CVEN310	ENGR201	MATH215	ENGR321
	KNOWLEDGE AND UNDERSTANDING											
1	An ability to apply knowledge of mathematics, science, and engineering.	FS	FS			F			S		S	FS
2	An ability to design and conduct experiments, as well as to report and interpret data.	FS	FS			FS		FS			F	
3	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	FS		FS		FS		FS	FS		S	
4	An ability to function on multidisciplinary teams.					F				FS		
	SUBJECT-SPECIFIC INTELLECTUAL SKILLS											
5	Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of science, consistent with the program educational objectives.	F	FS			F		FS	S		S	FS
6	Introduction to: structural engineering, geotechnical engineering, environmental engineering, water resources engineering and transportation engineering.	F		S	FS	FS		FS	S	FS		FS

	PROFESSIONAL / PRACTICAL SKILLS											
7	Conduct civil engineering experiments and report and interpret the resulting data.		FS	FS		F						FS
8	Participate in designing a system, component, or process in more than one civil engineering context	F			FS	FS			S	FS		FS
9	Explain basic concepts in management, business, public policy, and leadership.					F						
10	Explain the importance of professional licensure.											
	GENERAL COMPETENCE (INCLUDING FOR EMPLOYABILITY)											
	Communication Skills	FS					FS			FS		
	Teamwork and interpersonal skills						FS			FS		
	Leadership and entrepreneurship											

12 MAPPING of ASSESSMENT of LEARNING OUTCOMES YEAR 3

	REQUIRED COURSES:	ENGR301	MNGT313	CNMN405	CVEN324	CVEN301
	KNOWLEDGE AND UNDERSTANDING					
1	An ability to apply knowledge of mathematics, science, and engineering.	FS		FS	FS	S
2	An ability to design and conduct experiments, as well as to report and interpret data.	F		FS	F	F
3	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	FS	FS	FS	FS	FS
4	An ability to function on multidisciplinary teams.	FS	FS	FS	FS	F
	SUBJECT-SPECIFIC INTELLECTUAL SKILLS					
5	Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of science, consistent with the program educational objectives.	S		FS	S	FS
6	Introduction to: structural engineering, geotechnical engineering, environmental engineering, water resources engineering and transportation engineering.	FS		FS	FS	S

	PROFESSIONAL / PRACTICAL SKILLS					
7	Conduct civil engineering experiments and report and interpret the resulting data.	F			F	FS
8	Participate in designing a system, component, or process in more than one civil engineering context	F		FS	F	FS
9	Explain basic concepts in management, business, public policy, and leadership.	FS	FS	FS	FS	
10	Explain the importance of professional licensure.	FS	FS		FS	
	GENERAL COMPETENCE (INCLUDING FOR EMPLOYABILITY)					
	Communication Skills	FS	FS	FS	FS	
	Teamwork and interpersonal skills	FS	FS	FS	FS	
	Leadership and entrepreneurship	FS	FS	FS	FS	