



Program Matrix

Faculty		Engineering									
Program		Civil Engineering									
Award		Bachelor of Engineering in Civil Engineering									
Credit Hours		133									
Academic Year		Cohort 2026/2027 Onwards									
Year	Semester 1					Semester 2					Semester 3
	Course Code	Course Name	Pre-requisite	Core/Elective	Credit Hours	Course Code	Course Name	Pre-requisite	Core/Elective	Credit Hours	
1	CHEM1020	General Chemistry	None	Core	4	ELEC1100	Principles of Electrical Circuits	MATH1010	Core	4	The student is allowed to register 2 courses (not exceeding 9 credit hours)
	COMP1500	Introduction to Programming	IC3M2	Core	4	ENGG1010	Applied Mechanics	MATH1010	Core	4	
	ENGG1013	Engineering Drawing and Computer Drafting	None	Core	2	ENGG1023	Engineering Materials	None	Core	4	
	MATH1010	Calculus I	SET3	Core	4	MATH1200	Calculus II	MATH1010	Core	4	
	UNIR1100	Communication Skills (1)	None	Core	3	UNIR1003	Oman the State and People	IC3M1A	Core	2	
2	CIVE2610	Introduction to Civil Engineering and Environmental Issues	None	Core	4	CIVE2320	Introduction to Structural Analysis and Design	ENGG1010	Core	4	The student is allowed to register 2 courses (not exceeding 9 credit hours)
	CIVE2710	Surveying	None	Core	4	CIVE2210	Fundamentals of Engineering Geology and Soil Mechanics	None	Core	4	
	CIVE2310	Strength of Materials	ENGG1010	Core	4	CIVE2120	Fundamentals of Fluid Mechanics	None	Core	4	
	MATH2200	Differential Equations and Statistics	MATH1200	Core	4	UNIR2001	Entrepreneurship	None	Core	2	



	UNIR1002	Arabic Language Skills	SET 1A	Core	2	UNIR2100	Communication Skills (2)	UNIR1100	Core	3	
	Diploma Internship										
3	CIVE3340	Structural Analysis	CIVE2320	Core	4	CIVE3350	Design of Reinforced Concrete Structures	CIVE2320	Core	4	The student is allowed to register 2 courses (not exceeding 9 credit hours)
	CIVE3360	Structural Steel Design	CIVE2320	Core	4	CIVE3220	Geotechnical Engineering	CIVE2210	Core	4	
	CIVE3110	Hydrology	None	Core	4	CIVE3410	Traffic and Transportation Engineering	None	Core	4	
	ENGG3700	Numerical Analysis and Optimization	MATH2200	Core	4	UNIR3100	Communication Skills (3)	UNIR2100	Core	3	
	Bachelor Internship										
4	CIVE4510A	Civil Engineering Design	CIVE3350	Core	4	CIVE4420	Highway Engineering and Road Safety	None	Core	4	The student is allowed to register 2 courses (not exceeding 9 credit hours)
	CIVE4130	Water Resources Engineering	None	Core	4	CIVE4140	Waste Treatment Processes	None	Core	4	
	CIVE4810	Project Management	None	Core	4	CIVE4510B	Civil Engineering Design	CIVE3350	Core	4	
	ENGG4801A	Final Year Project (A)	75% of Level 3 courses	Core	4	ENGG4801B	Final Year Project (B)	ENGG4801A	Core	4	
Bachelor Award: Internship course (or an equivalent) is a mandatory requirement for students exiting at Bachelor level (and haven't completed it at Diploma level). The internship course is non-credit-bearing and must be successfully completed to fulfill program requirements.											

Level 1

CHEM1020:

This introductory course in general chemistry covers the fundamental principles of chemistry, including the conversion of units, naming compounds, and writing chemical formulas. Students will learn how to balance chemical equations and apply stoichiometry to solve problems related to chemical reactions. The course also introduces the concepts of molarity and molality for solution concentration calculations. Throughout, emphasis is placed on developing a strong foundation in the mathematical and theoretical aspects of chemistry, providing students with the skills necessary for further study in chemistry and related fields.

COMP1500:

This course introduces students to C++ programming for solving a well-defined engineering problem through algorithmic and structured coding. Students will gain practical experience in developing programs using variables, selection, loops, arrays, functions, and mathematical expressions. Emphasis is placed on hands-on computer lab activities that enhance problem-solving skills, and program design. The course provides a strong foundation for applying C++ in engineering and computational applications.

ENGG1013:

The course covers a broad range of engineering drawings utilizing free-hand sketching, engineering drawing, and computer-aided drafting and solid modelling. The fundamental principles of orthographic projection as well as the topics of dimensioning, sectional views, isometric and perspective pictorial views. In addition, Computer Aided Drafting is also covered and practiced using AutoCAD.

MATH1010:

This course covers basic mathematics, including functions, limits, derivatives, integration, complex numbers, vectors, and applicable methods. Furthermore, this course also includes theories and applications of integration, derivatives, complex numbers, and vectors.

UNIR1100:

In this course, students learn to employ reading strategies while reading faculty related texts, use paraphrasing techniques, produce a short project proposal and make a poster presentation related to their specialization.

ELEC1100:

This course introduces students to a wide range of DC electrical circuit analysis techniques, which will provide the necessary foundation for electrical engineering courses. In this course, students apply Kirchhoff's laws, and nodal and mesh analysis techniques to solve electrical circuit parameters. Students will also be taught how to use important theorems such as superposition, Thevenin, and Norton in circuit analysis. In addition, it teaches the student to calculate the quantities of alternating current AC signals. It introduces the course to the analysis of alternating current circuits which include resistors, inductors, and capacitors.

MATH1200:

This course offers a foundational study of basic linear algebra and vector calculus, with emphasis on mathematical methods and techniques that are broadly applicable across various scientific and engineering fields. Students will develop a strong understanding of core mathematical concepts and gain the ability to apply these tools to solve problems from a wide range of real-world applications. The course also includes an introduction to series topics, enhancing analytical skills, and mathematical reasoning.

ENGG1010:

This course is designed primarily for all engineering students. It provides comprehensive knowledge and insight into the study of Mechanics. Topics to be covered include Vectors, operations with forces, resultants of coplanar force systems. Equilibrium and coplanar force systems. Newton's laws of motion and their applications, Friction and its applications. Kinetic energy. Kinematics of a particle, composition and resolution of velocities and

accelerations, relative velocity and acceleration, representation by vectors. Plane Kinematics of rigid body, angular velocity diagrams applied to simple mechanisms.

ENGG1023:

This course covers a broad range of fundamental principles of material sciences and its key role in the selection and utilization of materials for various engineering applications. Course topics include crystal structure and defects, mechanical and electrical properties, phase diagram, corrosion and materials processing. Overall, engineering materials is an important course that lays the foundation for several other courses in engineering and provides students with essential knowledge for their higher levels.

UNIR1003:

يشتمل هذا المقرر على نطاق عريض من المعارف والمهارات والقيم التي تعزز وعي الطلبة بهوية المجتمع العماني وقيمته، وفهم دور المتغيرات التراثية والتاريخية والديمقراطية والثقافية والمؤسسية في تشكيل الهوية العمانية وتحديد سماتها. ويركز المقرر على التنظيم الإداري للدولة، ومنطلقات النهضة العمانية المعاصرة ومؤشراتها من خلال تسليط الضوء على فكر حضرة صاحب الجلالة السلطان هيثم بن طارق المعظم، ويركز المقرر أيضا على تعزيز قيم الانتماء والولاء والمواطنة وعلاقتها بحقوق الإنسان، والتعريف بعلاقة السلطنة بمحيطها الخليجي والعربي والإقليمي والدولي بما في ذلك المواثيق الدولية، بالإضافة إلى تسليط الضوء على الأمن الفكري والتحديات المعاصرة، ودور مؤسسات الدولة المدنية والعسكرية في خدمة الوطن.

Level 2

CIVE2610:

This course introduces the students to the practice of civil engineering and its branches, types and selection of construction materials for civil engineering purposes, construction techniques, civil engineering drawing, quantity surveys and team working skills. Also introduces the students to environmental issues & their management, the environmental population, and the adverse effects of the environment on civil engineering projects and vice versa.

CIVE2710:

This is an introductory course in understanding the scope and nature of surveying equipment use and surveying computations. Identification and applying the main methodologies and appropriate tools of Practical components include significant knowledge of taking survey field notes, levelling, using an automatic level, and traversing using total station instrument.

CIVE2310:

This course describes the relationship between stress and strain in deformable solids. Analysis is applied to axially loaded members, circular shafts, beams and columns. Statically indeterminate systems, properties of structural materials, Stress analysis, principal stresses, Mohr's Circle and combined loading are included. Thin wall cylinder analysis, torsion, beam bending and transfer shear in beam are also covered.

MATH2200:

This course aims to introduce four major topics to engineering students namely: 1st order and 2nd order basic differential equations, Laplace Transform and partial differential equations (PDEs), descriptive statistics and data presentation, and probability concepts.

UNIR1002:

يتناول هذا المقرر عددا من القضايا النحوية والصرفية والإملائية والبلاغية التي تسهم في إكساب المهارات اللغوية. هذه القضايا تتعلق بأقسام الكلام، وأنواع الإعراب، والجملة الاسمية، والجملة الفعلية، ومكملات الجملة، والخبر والإنشاء. ويعقب هذا القضايا نصوص تطبيقية مختارة، مع التركيز على تنمية المهارات اللغوية الأساسية (الاستماع، والقراءة، والكتابة، والتحدث).

CIVE2320:

The students taking this course will demonstrate basic knowledge of the essential structural analysis techniques, understanding of the scope of statistically determinate beams, trusses, frames, structural loading, structural instability deflections by integration method, moment area method and conjugate beam method. The students will also apply the main methodologies of structural design.

CIVE2210:

The course Introduces students to the basics of engineering geology, such as geological structures, rocks/soil formation, types and their physical characteristics. The study of the soil will be the second part of this course, in which the students will be able to classify the soil and identify their engineering properties. The effects of compaction, permeability, seepage, and soil stresses are also within the scope of this course. This course also includes experimental work related to soil properties.

CIVE2120:

This is an introductory course on the fundamentals of fluid mechanics and their applications to engineering problems. The lessons that covered in this course include dimensional analysis, viscosity, shear stress and shear strain, pressure, conservation of mass, ideal and viscous fluid in a pipe, pumps and net positive suction head.

UNIR2001:

This course is an introductory course in entrepreneurship and innovation. The course aims to expose undergraduate students of various academic backgrounds to business venturing and entrepreneurial activity. The course focuses on boosting the concept of entrepreneurship which leads the small businesses. Students will apply themselves through developing their own business ideas and assessing them using knowledge and skills acquired during the course.

UNIR2100:

The aim of this English for Academic Purposes (EAP) course is to introduce students to topics from various disciplines of Engineering, Computer & Information Technology and Business, as offered in the faculties, using authentic reading texts and videos. The course also aims to enhance students' Academic English skills with a particular focus on academic reading and writing. In addition, the course focuses on developing academic and technical vocabulary, core grammatical structures, and summarizing skills.

Level 3

CIVE3340:

This course will emphasize developing students' ability to analyze a structure and to provide realistic applications encountered in professional practice. The students taking this course will be introduced to elementary structural analysis techniques, influence lines diagrams, deflections by virtual work method, analysis of indeterminate structures using method of consistent deformations, slope deflection method and moment distribution method, introduction to matrix method and structural analysis software.

CIVE3360:

This course focuses on steel structures, layout of steel structures, calculation of loads and forces in steel members, steel material properties, steel cross-section properties, design of steel tension members, design of steel compression members, design of laterally unrestrained and restrained steel beams, design of steel base plates, design of steel members subjected to combined axial and flexural loads and design of steel connections. Students use British Standards BS5950 for structural steel design.

CIVE3110:

Demonstrate a command of the concepts governing the occurrence, distribution, and movement of water and contaminant substances in watershed systems. Understanding new knowledge in meteorological considerations, precipitation, evaporation, transpiration, infiltration, stream flow, hydrograph analysis, flood routing, groundwater flow, and frequency analysis is developed. Understanding the relationship between Principle and mathematical models describing the propagation of contaminants in rivers, lakes, soils, and groundwater.

ENGG3700:

This course introduces the student to the use of numerical methods for solving engineering problems with the aid of a digital computer. The course contains numerical methods for solving non-linear equations, optimization, curve fitting and interpolation, integration of data and functions, and solving ordinary and partial differential equations. MATLAB will be used as the programming language.

CIVE3350:

Introduce the students to structures and loading systems, reinforced concrete theory for flexure, shear, and compression; strength. Ultimate & serviceability limit states. Code provisions and detailing. Design of beams, solid slabs, Flat slabs, stair slabs, columns and footings. Use STAAD Pro. to design a continuous beam.

CIVE3220:

This course develops fundamental soil mechanics theory and its application to geotechnical analysis and design. Topics covered include stress distribution in soils, compressibility and consolidation of soils, 1D-consolidation theory and characteristics, slope stability, modes of slope failure, and analysis of infinite slope. Students are also introduced to site investigations, bearing capacity and geotechnical design of shallow and deep foundations, a brief introduction about the lateral earth pressure and the calculation of safety factors for retaining walls. This course also includes laboratory investigations to determine the physical and mechanical properties of soil.

CIVE3410:

This course introduces students to the specialized knowledge of transportation and traffic engineering. It demonstrates a command of the concepts for good planning, design, and operation of transport facilities in order to improve their understanding of the relation between safety, efficiency, cost effectiveness and minimize their adverse impacts. This course deals primarily with analytical and extensive understanding of the principles of road transport systems and the traffic analysis process. Topics include specialized problems related to the basic traffic flow theories, traffic management and operations and the travel demand forecasting.

UNIR3100:

The purpose of the course is to enhance students' performance-based competence, and equip them with the necessary academic research writing skills required to undertake an independent research project. It further develops academic writing skills including paraphrasing, summarizing, synthesizing, direct quotation and APA style citation.

Level 4

CIVE4510A:

In this course, students are required to work in groups to undertake complete design work on a given civil engineering project and to submit some reports to show the project design progress. Briefing seminars regarding good professional practice will be conducted to enhance the students' capabilities and performance.

CIVE4130:

This course is oriented to review advanced specialized practices of water resources engineering within civil engineering program including analyses and design elements. There is an extensive understanding of four major topics covered in this course including water resources planning and water demand/supply analysis and design, urban sewage drainage systems design, flood damage mitigation and hydraulic structures design such as dams, culverts and irrigation systems design.

CIVE4810:

The course includes the study of project components, construction contract and tendering, project closeout, planning and scheduling of project by critical path method, least cost scheduling, cost estimation and the role of engineering economics in civil construction.

ENGG4801A:

Students from the four engineering disciplines, Chemical, Civil, Mechanical and Mechatronic, and Electrical and Computer Engineering, undertake a two-part Final Year Project consisting of ENGG4801A (the initial phase) and ENGG4801B (the final phase). These supervised projects allow students to investigate practical engineering problems and apply the knowledge and skills gained throughout their studies. ENGG4801A provides the foundation for the research sequence. In this phase, students identify a problem, review relevant literature, define research objectives, and

outline suitable research methods. They also conduct preliminary analyses and planning as required for their project. Alongside technical tasks, students develop skills in teamwork, communication, ethics, creativity, and independent learning. The phase concludes with the submission of the ENGG4801A report and an oral presentation that meets academic requirements.

CIVE4420:

A study of the advanced specialized concepts required to demonstrate a general understanding for design construction and management of roads with extensive understanding of the principles of highway engineering. In addition, general knowledge of the essential fundamentals of road safety will be addressed. Also, applying established concepts with advanced technologies on the highway planning and management also will be discussed.

CIVE4140:

The course introduces students to the fundamental theories that govern water and wastewater. It covers the application of a selected set of design and analysis methods to the calculation of drinking water and wastewater systems, as well as the treatment of wastewater.

CIVE4510B:

In this course, students are required to work in groups to undertake complete design work on a given civil engineering project and to submit some reports to show the project design progress. Briefing seminars regarding good professional practice will be conducted to enhance the students' capabilities and performance.

ENGG4801B:

ENGG4801B builds on the groundwork established in ENGG4801A by focusing on the complete execution of the research plan. Students conduct experiments, collect and analyze data, and interpret their findings through structured results, discussions, and evidence-based conclusions. Beyond the technical outputs, ENGG4801B fosters creativity, ethical practice, teamwork, and entrepreneurial awareness by encouraging students to link their research outcomes to real-world engineering applications. By the end of the sequence, students gain deep research capabilities and the confidence to tackle complex engineering challenges, contribute to innovation, and continue growing professionally. They produce the ENGG4801B report and deliver oral presentations aligned with academic expectations.

Internship Course:

This course provides students with the opportunity to apply the knowledge and skills acquired during their studies in a workplace environment, enhance their career readiness, and develop their professional and practical competencies in alignment with the program learning outcomes and labour market requirements. The course is a compulsory component of the academic program, where applicable, depending on the nature of the program. It is governed by the University's approved policies and procedures and is supervised by academic staff in collaboration with the host training organisations. The specific requirements, duration, and assessment methods vary according to the academic program.