Mathematics 1 ASU_S_MA1

The module is designed to provide students with the mathematical knowledge and skills to support the study of engineering and to provide the requirement for entry into the BEng programmes at ASU. Therefore, it is a preparatory or foundation module building on the knowledge obtained at school.

Mathematics 2 ASU_S_MA2

The module is designed to provide students with the mathematical knowledge and skills necessary for transition to Level 4 study of engineering subjects. Students will attend lectures and tutorials where mathematical exercises are undertaken. Where possible, the statistical content will introduce the use of statistical packages and the presentation of real-life data sets. All students will keep a logbook of the problems tackled.
Besides the 36 contact hours, students are encouraged to spend additional time practicing mathematical concepts learned during lectures and solving extra problems.

Engineering Science 1 ASU_S_ES1

This module covers scientific principles of physics and chemistry at a level between secondary school and Advanced Level. It serves as a preparatory module for students intending to undertake engineering undergraduate degree programmes and introduces students to a range of skills required for the study of engineering.

Engineering Science 2 ASU_S_ES2

This module extends the science knowledge of engineering students in preparation for continuing their respective engineering degrees. It covers general applied physical principles, including dynamics, statics, fluids, heat, and energy.

Intermediate English ASU_S_IEN

A 10 CAT module running for one semester of 15 weeks for three hours per week. It is the first credit English module required for ASU undergraduate students. The module provides intensive practice in upper-intermediate reading, oral presentations, writing, and note-taking. Academic and study skills are embedded. It develops students' English language and analytical skills to pursue more advanced academic English modules and cope with literacy demands of specialised modules taught in English.

Module Descriptors

Advanced English ASU_S_AEN

A 10 CAT module running for one semester of 15 weeks for three hours per week. It is the second credit English module required for ASU undergraduate students. The module provides intensive practice in advanced reading, oral presentations, writing, and listening. Academic and study skills are embedded. It enhances students' English and analytical skills as preparation for academic and professional success.

Practical Electronics ASU_S_PRE

This module discusses electrical measurement equipment and practical circuit design and construction techniques. It combines theory and practical components where students become familiar with the basics of electrical and electronic engineering, particularly safe working practices in electronics.

Scientific Principles of Engineering ASU_S_SPE

This module develops students' understanding of essential physics and chemistry principles for engineering study. It introduces fundamentals of statics, dynamics, and electrical and mechanical properties of materials.

Study Skills and Professional Practice ASU_S_SSP

This module introduces study and professional skills, including individual and team-working skills, exam preparation, revision techniques, and question-answering strategies. It also introduces Personal Development Planning and safe working practices in engineering and industrial environments.

Laboratory and Workshop Skills ASU_S_LWS

This module consists of workshop exercises, practical experiments, and projects. Students work in small groups (2–5 members). It also introduces design skills and basic engineering drawing.

Computer Programming for Engineering ASU_S_CPE

This module introduces programming concepts including conditionals, iterations, block structures, structured programming, and data types. These are illustrated using simple engineering problems.

Human Rights ASU_S_HUR

This module covers basic principles of human rights, definitions, scope, and sources, focusing on international human rights law, including the Charter of the United Nations, the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, and the Convention against Torture and Cruel, Inhumane Punishments. It also addresses protection mechanisms and constitutional organisation of public rights and freedom in the Kingdom of Bahrain.

Bahrain Civilisation and History ASU_S_BCH

This module highlights the role of the Kingdom of Bahrain at local, regional, and international levels through various historical eras, from ancient times through the Islamic era to the modern era. It demonstrates the Arab and Islamic identity of Bahrain and its political and cultural significance.

Arabic Language ASU_S_ALA

A 10 CAT module running for one semester of 7 weeks (Summer Semester). It provides intensive practice in reading, oral presentations, writing, and note-taking.

Arabic Language for Non-Arabic Speakers ASU_S_ALN

This module of 10 CAT's runs for one semester of 7 weeks (Summer Semester). This Arabic module is required to be taken by non-Arabic speaking students in ASU undergraduate Engineering programmes. The module provides intensive practice for beginners in reading, oral presentations, writing, and note-taking.

Design and Practice ASU_4_DAP

This module introduces engineering practice and design, including hand and computer-aided drawing, sustainable design principles, project management, group work, and health and safety. It includes a lab component for practical application.

Engineering Mathematics and Modelling ASU_4_EMM

This module consolidates mathematical skills underpinning BEng degrees, including differentiation, integration, complex numbers, linear algebra, statistics, probability, and probability distributions. It includes practical use of Matlab and Excel.

Module Descriptors

Engineering Principles ASU_4_EPR
This module develops understanding of scientific principles including measurement systems, thermal physics, mechanical and electrical principles, and engineering materials.

Engineering Computing ASU_4_ENC
An introductory module to Object-Oriented Programming using Python. It develops programming skills for engineering design and simulation.

Introduction to Electrical and Electronic Engineering ASU_4_IEE
This module covers fundamentals of voltage, current, power, energy, Ohm's Law, Kirchhoff's Laws, circuit analysis techniques, DC and AC circuits, and semiconductor basics (diodes, BJTs, op-amps). It includes practical laboratory experiments.

Introduction to Digital Electronics ASU_4_IDE
This module covers Boolean logic circuits, CAD modelling, VHDL, sequential logic circuits, and programmable logic devices. A practical component allows students to apply theoretical concepts.

Advanced Engineering Mathematics and Modelling ASU_5_AMM
This module covers advanced techniques including vectors, differential equations, numerical methods, matrix computation, computational optimisation, and advanced statistical techniques.

Circuits, Signals and Systems ASU_5_CSS
This module introduces analysis of linear time-invariant systems, frequency content of signals, system dynamics, communication theory, signal processing, and control theory. It includes Matlab/Simulink practical work.

Principles of Control ASU_5_POC
An introduction to continuous-time feedback control systems, modelling of dynamical systems, and practical control applications including robotics and industrial systems.

Team Design Project ASU_5_TDP
Develops engineering design skills including requirements identification, standards compliance, teamwork, project management, and professional reporting.

Module Descriptors

Electrical Machines and Power Electronics ASU_5_EPE

This module covers electrical drives, machine design, power electronics, vector control of AC machines, and machine analysis using software. Includes laboratory experiments.

Analogue and Digital Circuit Design ASU_5_ADC

Provides knowledge of analogue, mixed-signal, and digital circuits, with practical experience in device-level and system-level design.

Internship ASU_5_INT

Provides industrial experience through real-world projects. The University assists students in securing suitable placements.

Digital Systems Design ASU_6_DSD

Covers modern digital system design using finite state machines, CPLDs, microcontrollers, synchronous/asynchronous systems, design for testability, and CAD tools. Includes practical labs.

Project ASU_6_PRO

An individual research project spanning two semesters. It develops planning, engineering competence, critical judgment, and communication skills.

Innovation and Enterprise ASU_6_IAE

This module develops entrepreneurial skills including idea generation, market research, intellectual property, financial planning, and business strategy development.

Control Engineering ASU_6_CEN

Builds on Principles of Control, introducing analogue and digital control methods to improve system stability and performance. Includes laboratory implementation.

Advanced Analogue and RF Electronics ASU_6_AAE

Covers RF system design, noise measurement, EMC, wave propagation, modulation techniques, and related circuits. Includes practical laboratory experiments.