

MSc. Building Services Engineering

F A C U L T Y O F E N G I N E E R I N G A N D I T

الجامعة
البريطانية في
دبي



The
British University
in Dubai

ENTRY REQUIREMENTS

- A relevant Bachelor's degree equivalent to an Upper Second Class or with a Good GPA (3.0 or above on a 4.0 scale or its equivalent) from an accredited university.
- English language proficiency equivalent to EmSat 1400 , IELTS 6.0 or TOEFL 550.
- Applicants who do not meet the standard entry qualifications may be considered for conditional admittance. <http://www.buid.ac.ae/Entry-requirements-BSE>

WHY STUDY MSc. IN BUILDING SERVICES ENGINEERING

This programme responds to the worldwide demand for building services' engineers who have up-to-date knowledge of Building Services Engineering (BSE) principles and the ability to apply this knowledge within the BSE industry. BSE is a major element in the strive to build and operate buildings/facilities that are green, cost effective and energy efficient while creating an indoor environment that enhances the well being of the occupants; all of which are major elements in the UAE's 2021 vision. The role of the building services engineer is becoming increasingly important, as an interdisciplinary profession that involves the specification, design, installation and management of all the engineering services. These services also need to be integrated, managed and optimised.

To this end, this programme was developed to address the knowledge and skill requirements of professionals working in the field of BSE as identified by The Chartered Institution of Building Services Engineers-UK (CIBSE). The structure and content of the programme was also refined based on discussions with the CIBSE UAE Region Committee as well as major stakeholders in the UAE BSE industry.

The programme can be studied as a Dissertation- based or a Project-based. For more details, please check our website <http://www.buid.ac.ae/Building-Services-Engineering-Modules>

CORE MODULES

HVAC Systems & Plumbing

The Module covers the principles of psychometrics and the various maintenance strategies, requirements and models including preventive and corrective maintenance. Emphasis is placed on the properties of humid air, thermal comfort, inside and outside design conditions. HVAC Systems design includes air and water, all water systems and unitary equipment.

Electrical Services, Lift & Fire Systems

The module covers aspects of electrical energy supply, electricity tariffs, switchgear and the design of electrical installations to satisfy Wiring Regulations. Also are covered the principles of electrical machines and power electronic devices used in building services applications. It also covers Fire Safety Engineering and smoke control, Escalators, Lifts & Vertical Transportation design, space allowance for building services, commissioning & testing and alarm systems.

Building Acoustics and Illumination

The module covers the basic terms and physical principles, sound power and intensity, propagation of noise, legal requirements and noise standards, room acoustics, sound generation in services systems, and vibration isolation. It covers human visual system, the nature and control of light, photometric units, lighting calculations, interior lighting design, lamps and luminaires and energy efficiency aspects of lighting systems.

Building Management System

The module considers the basic principles of building management, components and controls, applications, integration, operation and maintenance. The module also covers the different types of commissioning: basic, advanced and continuous. The roles of the commissioning teams at the different phase of the building design, construction, handover and operation will also be discussed.

Climate and Comfort

The module focuses on the study and modeling of the thermal, luminous and ventilation performance of buildings within the context of the Built Environment. It will examine the basic scientific principles underlying these phenomena and introduce students to a range of technologies and analysis skills for designing comfortable indoor environments.

ELECTIVE MODULES

(Choose one)

Reliability Engineering and Maintenance Management

The Module covers detailed knowledge of the theories, principles and practices of reliability engineering and apply these principles in the design, operation and maintenance of engineering systems. Also, explore advance probabilistic concepts / theorems, define important reliability measures and introduce related

computational algorithms and software tools for the reliability analysis of engineering systems models. Practical skills in methodologies applied to life failure.

System and Maintenance Management

The module provides the students with understanding of the principles of engineering system maintenance management, the various maintenance strategies, requirements and models including preventive and corrective maintenance. It introduces simulation methods for maintenance; condition monitoring principles and diagnostics and real time fault detection.

Energy Management 1

The module introduces the concepts and applications of modern energy management practices. Topics covered will include the need and impact of energy management, types and equipment used in energy auditing. The economic aspects of energy sourcing, purchase and use. Economic assessment of alternative decision-making approaches based on present worth, payback period and Life Cycle Costing. The range of available financing options.

Energy Management 2

Identification, evaluation and improving systems that are the major energy users. This includes: Lighting, building envelop, HVAC, Electric motors & drives, Boiler and thermal systems, Industrial system, Thermal energy storage, CHP & renewable energy systems, building controls & automation and maintenance & commissioning. Principles of Measurement & Verification.

Risk Analysis and Management

The module helps the students to acquire a deep understanding of concepts and principles of risk analysis and management and its interaction with other activities and directly apply them in a range of product and services industries.

Skins and Spaces

The module aims to provide students with an understanding of a good overall environmental design. In order to achieve successful design for comfort, health and energy efficiency, architects, urban planners and services engineers need to have a common understanding of the basic principles and techniques involved in integrating the environmental performance of the envelope, surrounding enclosure and space.

BIM “Building Information Modelling”

The module covers Building Information Modelling (BIM) and its use in various application areas within the Architecture, Engineering, Construction and Facilities Management (AEC/FM) industry. This module focuses on the information and skills needed for effective use of BIM concepts throughout the lifecycle of building projects, and with an emphasis on architectural and structural design, mechanical, electrical, and plumbing (MEP), construction engineering and management applications.

Modelling Methods and Applications

The module is designed to enable students to understand dynamic modelling and simulation methods for power, process and general engineering systems. Specific instruction on the use of commercially available software suites will be presented. Application studies will be considered.

Renewable and Sustainable Resources

The module focuses on the energy resources needed to operate buildings and their significance for a sustainable future. The module emphasizes the links between sustainability, improved performance and resource management in terms of what resources (energy, water and materials) are used with emphasis on the different types of renewable energy.

Intelligent Building Design

The module provides an overview of all aspects of intelligent buildings including history, design, components, construction, management strategies, economic implications, effects on the environment and future trends. The module covers building automation systems and building management systems.

Sustainable Indoor Environment

The module gives an overview of general requirements needed for achieving healthy indoor environment and investigates the role of sustainability within indoor environment design. The module teaches students the principles guiding the creation of acceptable indoor environmental quality that supports users' health, comfort, performance and productivity, and use of resources.

Control Engineering Analysis Methods

The module is designed to revise and strengthen students understanding of system analysis and the effect of feedback control using CAD and simulation software. Time domain approaches to the analysis/design problems investigated will be the principal procedure.

Sustainable Built Environments

The module emphasizes the need for a symbiotic and functional relationship in which ecology, culture and technology evolve and adapt. The module introduces the fundamental principles guiding sustainable development of the built environment. It introduces tools for measuring and evaluating the impact of urban development on the environmental as well as the social, economic wellbeing of the urban system.

Inspection, Repair & Rehabilitation

The module enables students to gain knowledge and understanding and provide scientific and practical information on the process of inspecting of deteriorated concrete structures and discussing of different methods of repair, retrofit, and protection.

Advanced Engineering Materials

The module enables students to gain knowledge and understanding on a wide range of high performance engineering materials. The module covers materials, including concrete, steel, fiber reinforced cement, fiber-reinforced plastics, polymeric materials, geosynthetics, masonry materials and coatings. It discusses the scientific bases for the manufacture and use of these high performance materials. Testing and application examples are also included.

Special Topics in Building Engineering Services