MODULE SPECIFICATION

Part 1: Information			
Module Title	Technology 5 (Water Supply, Drainage, Sewage, Electrical, Hvac, Other)		
Module Code	UBLMX8-8-3	Level	Level 6
For implementation from	2019-20		
UWE Credit Rating	8	ECTS Credit Rating	4
Faculty	Faculty of Environment & Technology	Field	Architecture and the Built Environment
Department	FET Dept of Architecture & Built Environ		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Overview: This module will introduce the students to the new contemporary and emerging technologies and their implications on the design, servicing, construction, maintenance and management of middle and high rise buildings and complex of buildings for different usages in different situational contexts.

Educational Aims: See Learning Outcomes.

Outline Syllabus: The module will contribute to students' knowledge and understanding of:

Main Topic 1 : ADVANCED BUILDING SERVICES 1 – WATER SUPPLY,SEWERAGE & STORM WATER DISPOSAL (Term 1)

General Review – water supply:
Water quality and water treatment
Concepts of water supply, distribution and isolation for maintenance works
Water storage in building complexes, middle & high rise buildings and for a city/town
Water distribution in a building complex, middle & high rise building (different plumbing systems), city/town
Water Supply for special buildings – residential apartments; offices, recreation and sports complexes; theatres, concert halls and entertainment facilities; hospitals; hotels; factories and

industrial buildings

General Review – sewage disposal:
Sewage disposal and treatment for a building complex
Sewage disposal and treatment for middle & high rise buildings
Sewage disposal and treatment for a city/town
Sewage disposal in marshy, water logged areas
Sewage disposal for special buildings – residential apartments; offices, recreation and sports complexes; theatres, concert halls and entertainment facilities; hospitals; hotels; factories and industrial buildings
Sewage treatment plants – different types and uses, advantages and disadvantages

General Review – storm water disposal:
Storm water disposal for a building complex
Storm water disposal for middle & high rise buildings
Storm water disposal for a city/town
Storm water disposal in marshy, water logged areas

Main Topic 2 : ADVANCED BUILDING SERVICES 2 – ELECTRICITY SUPPLY, BUILDING AUTOMATION (Term 2)

General Review:
Electrical requirements of buildings – single and three phase systems
Electrical requirements of a complex of buildings – concepts for supply and distribution, isolation and maintenance
Electrical requirements for middle and high rise buildings - concepts for supply and distribution, isolation and maintenance
Electrical requirements for a city/town – concepts for supply and distribution, isolation and maintenance
Electrical requirements of special buildings – offices, recreation and sports complexes; theatres, concert halls and entertainment facilities; hospitals; factories and industrial buildings
Electrical main supply – electrical substations, transformers and generators
Energy efficiency in electrical consumption – concepts, fittings and accessories
Building automation systems (mechanised entries; car parking systems; vertical and horizontal movements of persons and goods; communications; security and access control; building management systems etc.) and related electrical implications
Lightening protection and building in electro statically sensitive areas (under high tension power lines etc.)
Responsiveness to disasters

Main Topic 3 : ADVANCED BUILDING SERVICES 3 – MECHANICAL VENTILATION & AIR-CONDITIONING (Term 2)

Comfort and health conditions of conditioned spaces:
Parameters that govern the comfort and health conditions in conditioned spaces – heat (sensible heat and latent heat), ventilation, pollutant control, draft control, sound control , understanding of energy exchange between body and space

Energy conservation:
Energy conservation – methods to be adopted in building elements in order to ensure that the parameters are controlled with minimal energy usage in installation and operation

Natural Ventilation , Induced or Forced Ventilation and Passive Cooling:
Natural and mixed mode ventilation ,passive cooling as alternative methods of ventilating and cooling spaces, related concepts and methods

Air conditioning systems:
Classification of mechanical air conditioning systems (primary and secondary systems)
Primary air conditioning systems : window and split systems; VRF systems; air cooled and water cooled package systems; their concepts, applications, advantages and disadvantages, special requirements and plants, fittings and accessories
Secondary air conditioning systems: air cooled chilled water systems; water cooled chilled water

systems; their concepts, applications, advantages and disadvantages, special requirements and plants, fittings and accessories

Environmental concerns of air conditioning:
Ozone depletion; green house effect and global warming; consequences of refrigerant changes – energy efficiency and cost

Air conditioning in special situations:
Middle & High rise buildings, building complexes, coastal areas, auditoriums, recording studios, operating theatres, industrial kitchens etc.

Main Topic 4: ADVANCED BUILDING SERVICES 5 – OTHER SERVICES & BUILDING MANAGEMENT (Term 3)

Concepts and methods of Solid waste management and requirements for special situations
Energy efficient Lighting – concepts
Piped Music - concepts and applications in special situations
Communications – voice – concepts and applications, special requirements and accessories
Data network – concepts, special requirements and accessories, applications
Security & Access Control- concepts, special requirements, advantages and disadvantages, applications
Mechanical conveyances – people, goods and vehicles – horizontal and vertical systems , concepts, advantages and disadvantages, applications, special requirements

Building Management Systems:
Concepts and methods – mechanical and automated; principles, applications, special requirements

Site Visits:
To building sites, manufacturing yards and vendor showrooms

Teaching and Learning Methods: Strategy:

Being a technical module where students are required to demonstrate key analytical and problem solving skills under time constraints, an unseen exam is deemed to be an appropriate assessment tool for the controlled element. The coursework requires the students to demonstrate, throughout the academic year, that they understand how these building services concepts introduced in the lectures will and can be applied in practice. Tutorials and studio projects will form the primary assessment.

Part 3: Assessment
Component A: Examination – The examination is used to concentrate students' attention on assimilating the knowledge and mastering the key subject areas contained within the module. Component B: Coursework Reports: The coursework is used integrate strands of knowledge presented as separate topics and to develop students' academic writing with particular emphasis being placed on the managing and referencing of evidence based work. Formative Feedback will be given to drafts of the coursework and to the final coursework piece prior to submission.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		40 %	Individual Written Coursework Submission which will cover Water Supply, Sewerage & Storm Water Disposal, Electricity, Air Conditioning and Other Services.
Examination - Component A	✓	60 %	Examination
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		40 %	Individual Written Coursework Submission which will cover Water Supply, Sewerage & Storm Water Disposal, Electricity, Air Conditioning and Other Services.
Examination - Component A	✓	60 %	Written Examination

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will achieve the following learning outcomes:

Module Learning Outcomes	**Reference**
Awareness of the innovative concepts of contemporary and emergent technologies and their influences on design, servicing, construction, maintenance and management of buildings	MO1
Awareness of new trends in time based architecture and their perceptions and influences on the design, servicing, construction, maintenance and management of buildings	MO2
Knowledge of the role of technology in the design and construction processes of buildings	MO3
Understanding services such as water supply, sewage and storm water disposal, electrical supply and automation, air conditioning and mechanical ventilation	MO4
Ability to integrate the understanding servicing aspects of building and their related choice of materials, process of assembly and maintenance aspects in the design of middle and high rise buildings and complex of buildings for different usages in different situational contexts	MO5

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	27
Total Independent Study Hours:	27
Scheduled Learning and Teaching Hours:	
Face-to-face learning	53

	Total Scheduled Learning and Teaching Hours:	53
	Hours to be allocated	80
	Allocated Hours	80
Reading List	*The reading list for this module can be accessed via the following link:* https://uwe.rl.talis.com/index.html	

Part 5: Contributes Towards
This module contributes towards the following programmes of study: