

### Summary Information

<b>Module Code</b>	7504PGSL
<b>Formal Module Title</b>	Water and Wastewater Treatment
<b>Owning School</b>	Civil Engineering and Built Environment
<b>Career</b>	Postgraduate Taught
<b>Credits</b>	20
<b>Academic level</b>	FHEQ Level 7
<b>Grading Schema</b>	50

### Module Contacts

#### Module Leader

Contact Name	Applies to all offerings	Offerings
Manolia Andredaki	Yes	N/A

#### Module Team Member

Contact Name	Applies to all offerings	Offerings
Edward Loffill	Yes	N/A

#### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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### Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

## Partner Teaching Institution

Institution Name
International College of Business and Technology

## Learning Methods

Learning Method Type	Hours
Lecture	18
Off Site	6
Seminar	18

## Module Offering(s)

Offering Code	Location	Start Month	Duration
JAN-PAR	PAR	January	12 Weeks

## Aims and Outcomes

<b>Aims</b>	To critically appraise current practice in the treatment of water and wastewater. To develop an understanding of the characteristics of wastewaters, and associated sludges, and the selection, process design and operation of treatment works to meet discharge standards. To contextualise water and wastewater treatment within the overall management of public water supply and sanitation.
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## Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Make intelligent use of engineering and scientific principles, develop and undertake the critical evaluation of alternative proposals and designs for water treatment, wastewater treatment and sludge treatment (utilisation and disposal).
MLO2	Critically appraise the current problems in water and wastewater treatment management and suggest improvements.

## Module Content

### Outline Syllabus

Organisational Framework: Global overview of levels of provision of water supply services. European and national policy on water supply. Variations between England, Wales, Scotland and Ireland. Drinking water quality standards and the standards to be achieved by water treatment. Water Sources: Relationship to water resource planning, licensing, drought control and water pollution prevention measures. The types and characteristics of water sources and the extent of treatment required. The quality of water for abstraction for use in public water supply. Quality of water for abstraction. Reservoir and raw water aqueduct management; safety, quantity, quality, recreation, amenity and environmental issues. Water Treatment Processes: The influence of WHO, EU and national legislation and regulations on water treatment processes. Design and operation of Water treatment plants to meet environmental standards. Private and industrial water supplies: outline of the treatment for small potable supplies. Process flow selection as a function of the quantity and quality of raw water to be treated and the final water quality to be achieved. Water treatment plant management: Operational and maintenance tasks. Water supply hygiene procedures and emergency procedures to protect water quality. Water sampling and examination: physical, chemical and biological Plant control data and records. Wastewater Treatment: European and national policy on wastewater treatment, the modern legal framework governing wastewater management, the responsible organisations and interaction with interested parties, including the variations between England, Wales, Scotland and Ireland. The types of trade effluent and the nature of raw wastewater. The design and operation of wastewater treatment plants to meet environmental standards and avoid nuisance. Physico-chemical and biological treatment processes. Wastewater treatment management. Engineering design of sedimentation tanks to meet the quality and quantity of influent requirement. The nature of wastewater sludges and the design and operation of treatment and disposal systems to meet environmental standards.

### Module Overview

#### Additional Information

The module provides a thorough grounding in the design and operation of water and wastewater treatment plants. It ensures the awareness, competencies and methodology for consideration of specific issues in water and wastewater management.

### Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Exam	Examination	60	2	MLO1, MLO2
Report	Design and evaluation	40	0	MLO1, MLO2