

Liverpool John Moores University

Title: WATER AND WASTEWATER TREATMENT
Status: Definitive
Code: **7006BEPG** (102415)
Version Start Date: 01-08-2021

Owning School/Faculty: Civil Engineering and Built Environment
Teaching School/Faculty: Civil Engineering and Built Environment

Team	Leader
Geoffrey Parker	Y

Academic Level: FHEQ7
Credit Value: 20
Total Delivered Hours: 40
Total Learning Hours: 200
Private Study: 160

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	16
Off Site	5
Seminar	16

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	open book	60	3
Essay	AS2	Design and evaluation task	40	

Aims

*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.*

Learning Outcomes

After completing the module the student should be able to:

- 1 By 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).
- 2 Critically appraise the current problems in water and wastewater treatment management and suggest improvements.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

EXAM	1	2
ESSAY	1	2

Outline Syllabus

Organisational Framework:

1. *Global overview of levels of provision of water supply services.*
2. *European and national policy on water supply.*
3. *Variations between England, Wales, Scotland and Ireland.*
4. *Drinking water quality standards and the standards to be achieved by water treatment.*

Water Sources:

1. *Relationship to water resource planning, licensing, drought control and water pollution prevention measures.*
2. *The types and characteristics of water sources and the extent of treatment required.*
3. *The quality of water for abstraction for use in public water supply.*
4. *Quality of water for abstraction.*
5. *Reservoir and raw water aqueduct management; safety, quantity, quality, recreation, amenity and environmental issues.*

Water Treatment Processes:

1. *The influence of WHO, EU and national legislation and regulations on water treatment processes.*
2. *Design and operation of Water treatment plants to meet environmental standards.*
3. *Private and industrial water supplies: outline of the treatment for small potable supplies.*
4. *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:

1. *Operational and maintenance tasks.*
2. *Water supply hygiene procedures and emergency procedures to protect water quality.*
3. *Water sampling and examination: physical, chemical and biological.*

4. Plant control data and records.

Wastewater Treatment

- 1. 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.*
- 2. The types of trade effluent and the nature of raw wastewater.*
- 3. The design and operation of wastewater treatment plants to meet environmental standards and avoid nuisance*
- 4. Physico-chemical and biological treatment processes.*
- 5. Wastewater treatment management*
- 6. Engineering design of sedimentation tanks to meet the quality and quantity of influent requirement.*
- 7. The nature of wastewater sludges and the design and operation of treatment and disposal systems to meet environmental standards.*

Learning Activities

Lectures, seminars and field visits.

Notes

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.