

### Summary Information

Module Code	7325BEPG
Formal Module Title	River Basin Management
Owning School	Civil Engineering and Built Environment
Career	Postgraduate Taught
Credits	10
Academic level	FHEQ Level 7
Grading Schema	50

### Teaching Responsibility

LJMU Schools involved in Delivery
Civil Engineering and Built Environment

### Learning Methods

Learning Method Type	Hours
Lecture	8
Seminar	8

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

### Aims and Outcomes

Aims	To provide a thorough grounding in river basin management within the context of the EU Water Framework Directive (WFD).To explore the WFD, the development of monitoring programmes within water bodies, the 'programmes of measures' for them and River Basin management Plans.To consider the sustainable use of water and critically evaluate developments in measures for sustainable use.To explore current developments in pollution control and the determination of consents for the discharge of polluted water and water impoundment.
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Critically review the scientific, economic and risk assessment methodologies used in the characterization of the River Basins and the water bodies within them.
MLO2	2	Critically appraise the existing procedures for water pollution prevention and control and suggest improvements.
MLO3	3	Perform relevant hydraulic calculations, and assess the limitations of the hydraulic models used.
MLO4	4	Critically appraise the process leading to, and the content, of 'programmes of measures' and 'river basin district management plans' including the mechanisms for public participation.

### Module Content

Outline Syllabus	<p>Historical Perspective - the development of the WFD. Legal and institutional framework - the detail of the WFD, identification of the River Basin Districts (RBDs): the River Basin District Management Planning process: arrangements for management of international RBDs. WFD daughter directives: groundwater quality and priority substances. Other European and national policy and legislation on the control of the water pollution. Assessment of Current Status - determination of the characteristics of the RBDs, economic analysis of water use, Protected Areas and the identification of 'heavily modified water bodies' and 'artificial water bodies'. Assessment of risk of failure to meet 'good status' under WFD. The assessment of ecological status. Hydraulics - calculations of water depths and velocities. Energy and hydraulic jumps. Froude number. River modelling. Pollution sources, impacts and pollution prevention - natural variations in water quality. Pollution causes, fate of pollutants in the aquatic environment; 'oxygen sag'; eutrophication; Impact of toxic substances: Pollution prevention measures. Water Use - assessment of the impact of water abstraction: the abstraction licensing process. The economic analysis of water use. Setting Environmental Standards - the WFD classification system, the classification of water bodies in RBDs. Discharge Consents - the process of application, consideration, consultation and granting of consents to discharge. Public registers, prosecution procedures. The control of trade effluent discharges. Monitoring Programmes - determination of WFD physicochemical and biological parameters to assess the status of water bodies: risk assessment studies. Gap Analysis - Determination of the differences between the existing status of water bodies comprising the RBDs and that needed to meet Directive requirements. The Programme of measures. The River Basin District Management Plan. River Engineering works and their impacts. Interaction between rivers and groundwater.</p>
Module Overview	<p>This module provides a thorough grounding in river basin management within the context of the EU Water Framework Directive (WFD). It explores the WFD, the development of monitoring programmes within water bodies, the 'programmes of measures' for them and River Basin Management Plans. It will:</p> <p>consider the sustainable use of water and critically evaluate developments in measures for sustainable use</p> <p>explore current developments in pollution control and the determination of consents for the discharge of polluted water and water impoundment</p> <p>provide a thorough grounding in holistic river basin management and the application of the Water Framework Directive</p>
Additional Information	<p>The module provides a thorough grounding in holistic river basin management and the application of the Water Framework Directive.</p>

## Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	100	2	MLO1, MLO2, MLO3, MLO4

## Module Contacts

### Module Leader

Contact Name	Applies to all offerings	Offerings
Iacopo Carnacina	Yes	N/A

### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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