Liverpool John Moores University

Title:	RIVER BASIN MANAGEMENT
Status:	Definitive
Code:	**7005BEPG** (102414)
Version Start Date:	01-08-2016
Owning School/Faculty:	Civil Engineering
Teaching School/Faculty:	Civil Engineering

Team	Leader
Edward Loffill	Y
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Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	43
Total Learning Hours:	200	**Private Study:**	157		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	20
Seminar	20

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	closed book	40	3
Report	AS2	assignment	30	
Reflection	AS3	learning journal	30	

Aims

To provide a thorough grounding in river basin management within the context of the EU Water Framework Directive (WFD).
To explore the logic behind the WFD, the designation of the river basin districts and the identification of water bodies within them, the establishment of monitoring programmes for each water body, the development of 'programmes of measures' to

achieve and maintain the environmental objectives set, the production of 'river basin district management plans', sustainable use of water, the arrangements for public participation and the progress monitoring requirements.
To consider the legal and institutional framework governing water pollution prevention and control, the natural quality of groundwater, surface water, estuarine and coastal water, water use and the related quality standards, pollution sources, impacts and pollution prevention, pollution control and the determination of discharge consents.

Learning Outcomes

After completing the module the student should be able to:

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

Learning Outcomes of Assessments

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

EXAM	1	2	3	4
REPORT	1	2	3	
LEARNING JOURNAL	1	2	3	

Outline Syllabus

Historical Perspective - review of river basin management and the principal changes to meet Directive requirements.
Legal and institutional framework - the detail of the WFD and the timetable for implementation. Translation of the WFD into UK law, 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 nember. 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 Dynamics - river flow and its variations (normal, drought and flood conditions).
River Engineering works and their impacts. Interaction between rivers and groundwater.

Learning Activities

Lectures and seminars.

Notes

The module provides a thorough grounding in holistic river basin management and the application of the Water Framework Directive.