

Module Information

2022.01, Approved

Summary Information

Module Code	5503ICPDCE
Formal Module Title	Civil Engineering Hydrology and Environmental Science
Owning School	Civil Engineering and Built Environment
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

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	24
Practical	6

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	September	12 Weeks

Aims and Outcomes

Aims	This unit enables learners to develop an understanding of the hydrological cycle and the importance of hydrological influences for civil engineering projects. Learners will also cover water supply, water treatment, and wastewater and apply hydrological design to civil engineering projects.
------	--

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Identify the importance of hydrological influences for civil engineering projects and precipitation calculations.
MLO2	2	Apply hydrological design to civil engineering projects.
MLO3	3	Identify quality control methods for water supply and discharge & assess the environmental impact of water and wastewater.
MLO4	4	Perform a laboratory experiment including the production of a risk assessment, and present and communicate appropriate findings.

Module Content

Outline Syllabus	Hydrological influences: hydrological cycle, surface water, groundwater, human influences, hydrological budget at the catchment scale, water balance calculations, reservoir storage requirements Precipitation calculations: different methods of precipitation measurements, rain gauges, rain gauge network design criteria, recording of rain-fall data, missing value estimation Quality control methods: infiltration, Horton's equation, phi index, SCS method, factors affecting infiltration and theories of evaporation (evapotranspiration and estimation). pan- evaporation, Penman's equation Hydrological design: catchment characteristics (area, length, slope, runoff coefficients, land use and cover, stream flow) Principles of hydrological design: surface runoff, measurement of runoff, catchment characteristics (area, length, slope, runoff coefficients) Water collection and distribution: surface water collection, groundwater collection, water transmission systems, water distribution systems Wastewater collection systems: collection of sewage and stormwater, sewer materials Pollution: surface and groundwater pollution control, types and sources of pollution, effects of water pollution and control measures, solid and hazardous waste management, air pollution, noise control Water treatment and standards: water treatment processes, environmental quality. Water quality (concepts, need of water quality studies and standards, physical/chemical/biological characteristics of water, water related diseases).
Module Overview	
Additional Information	

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Portfolio	Portfolio	30	0	MLO4
Exam	Examination	70	2	MLO1, MLO2, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Alison Cotgrave	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
--------------	--------------------------	-----------