

Module Details	
Module Title:	Open Channel Hydraulics
Module Code:	CSE6008-A
Academic Year:	2019-20
Credit Rating:	10
School:	Department of Civil and Structural Engineering
Subject Area:	Civil and Structural Engineering
FHEQ Level:	FHEQ Level 6
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	Hours
Lectures	16
Tutorials	6
Laboratory	2
Directed Study	76

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1 (Sep - Jan)

Module Aims
(1) To understand general hydraulic principles of free surface flows; (2) To solve practical engineering problems related to free surface flows.

Outline Syllabus
Hydraulic principles including: (1) Concepts of free surface flows: hydraulic radius; flow resistance and Froude number); (2) Uniform flow hydraulics: Manning equation and basic uniform flow calculations; (3) Gradually varied flow: Flow transitions and regimes (critical, sub-critical and super-critical flows); specific energy; critical depth and water surface profiles; (4) Rapidly varied flow: Hydraulic jump and hydraulic drop; (5) Hydraulic control structure

calculations: Weir and sluice flows; (6) Hydraulic design rules and concepts; (7) Elementary sediment mechanics: Bed load; suspended load; inception motion of sediment; sediment transport capacity and total load transport; (8) Case studies and simple design practice.

Learning Outcomes

1	Understand and review general hydraulic principles and flows with free surfaces, and their applications to common engineering fields.
2	Interpret and justify laboratory experimental data by using available information and propose solutions to problems arising from that analysis.

Learning, Teaching and Assessment Strategy

Theoretical understanding and problem solving through large lectures, staff-led tutorial/example class and directed study, practical skills of data interpretation and justification gained from lab sessions, assessed by examination.

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Examination - closed book	Examination - closed book	2 hours	100%

Reading List

To access the reading list for this module, please visit <https://bradford.rl.talis.com/index.html>.

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.