



Module Specification

Hydrology and Flood Risk Estimation

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Part 1: Information

Module title: Hydrology and Flood Risk Estimation

Module code: UBGMTQ-15-2

Level: Level 5

For implementation from: 2024-25

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module will introduce you to the fundamentals of hydrology and flood risk estimation.

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: You will cover:

Interpretation and assessment of each element of the hydrological cycle (precipitation, evaporation, interception, infiltration and soil moisture redistribution, groundwater, runoff).

Streamflow analysis techniques (flow duration curves, flood frequency analysis, unit hydrographs).

Modelling terminology, concepts and processes. Types of hydrological modelling.

Flooding and flood estimation in gauged and ungauged catchments (simple methods, evolution of approaches, Flood Estimation Handbook statistical and rainfall-runoff methods, greenfield runoff estimation).

Practical application of methods/models in engineering hydrology.

Part 3: Teaching and learning methods

Teaching and learning methods: This module will be taught through a series of lectures, supported by tutorial sessions where students will apply the theory learnt to engineering problems.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Source, analyse and interpret meteorological and hydrological data

MO2 Provide estimates of design rainfall

MO3 Explain and quantify the processes involved in the hydrological cycle, particularly runoff generation and flooding

MO4 Analyse streamflow data to determine flow characteristics (flow duration curves, unit hydrographs)

MO5 Perform flood frequency analysis on recorded flow data

MO6 Undertake flood estimation in ungauged catchments, including use of FEH methods and estimation of greenfield discharge

MO7 Use hydrological techniques to solve engineering problems

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 102 hours

Face-to-face learning = 48 hours

Total = 0

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ubgmtg-15-2.html) via the following link <https://uwe.rl.talis.com/modules/ubgmtg-15-2.html>

Part 4: Assessment

Assessment strategy: Assessment Task Portfolio (3000 words). Learning outcomes 1 - 7. The portfolio consists of a series of practical activities completed throughout the module and a synoptic report that tests the student's ability to undertake fundamental hydrological analysis and contextualise this in relation to catchment scale processes. The rationale for this approach is to keep the student engaged and represents an assessment for learning approach as they receive formative and summative feedback throughout the learning.

Assessment tasks:

Portfolio (First Sit)

Description: Portfolio (3000 words)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

Portfolio (Resit)

Description: Portfolio (3000 words)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil and Environmental Engineering [Sep][PT][Frenchay][5yrs] - Not Running BEng (Hons) 2021-22

Civil Engineering [Sep][PT][Frenchay][5yrs] BEng (Hons) 2021-22

Civil Engineering [Frenchay] BEng (Hons) 2023-24

Civil Engineering [Frenchay] MEng 2023-24

Civil Engineering [Frenchay] MEng 2023-24

Civil Engineering {Apprenticeship-UWE} [Sep][FT][Frenchay][5yrs] BEng (Hons) 2021-22

Civil Engineering [Sep][PT][Frenchay][7yrs] MEng 2021-22

Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2022-23

Civil and Environmental Engineering {Foundation} [Sep][SW][Frenchay][5yrs] - Not Running BEng (Hons) 2022-23

Civil Engineering {Foundation} [Frenchay] BEng (Hons) 2022-23