

We use cookies to ensure we provide you with the best user experience. If you continue without changing your settings, we'll assume that you are happy to receive cookies from our site.

[Learn more](https://www.abertay.ac.uk/legal/cookies/)

Close

Module details for Water and Environmental Engineering 1

Module Details

SCQF Level:

10

Module Code:

EEM410

Credit Value:

20

Year:

2020/1

Term:

Term 2

School:

School of Applied Sciences

[A-Z of all Modules](https://modules.abertay.ac.uk/)

[Search by School](#)

[Search by Term](#)

[Search by SCQF Level](#)

Description

This module provides students the opportunity to apply the fundamental principles of fluid dynamics and enables them to analyse and design water infrastructure.

Aims

The aim of this Module is to enable students apply the principles of hydraulics relevant to water engineering.

Learning Outcomes

By the end of this module the student should be able to:

1. Analyse and design pipeline systems for fluid flow.
2. Analyse and design simple foul and storm runoff drainage networks.
3. Understand basic concepts in hydraulic machines and design and analyse pump-pipe systems.
4. Analyse and design open channel and hydraulic infrastructures.

Indicative Content

1 Fluid Dynamics

Review of basic concepts of fluid motion. Continuity equations, conservation of mass, steady flow; the Bernoulli equations: application to devices; the momentum equation.

2 Pipeline

Pipe flow and Reynolds number. Frictional effects in pipe flow and Darcy head loss equation. Analysis of pipe systems - use design aids: flow charts, computational packages.

3 Drainage systems

Combined and separate sewer systems. Urban storm water pollution control. CSOs. Sustainable Urban Drainage Systems. Estimation of foul and storm flows. Design of simple systems for foul and surface water.

4 Hydraulic Machines

Types of hydraulic machines. Selection and installation of pumps, using pump and system performance curves. Cavitation and associated issues.

5 Open channels uniform flow

Frictional resistance formulae for steady uniform flow in open channels. Channel design considerations, including optimum shape of cross-section for uniform flow in open channels.

6 Non-uniform flow in open channels

Specific energy and alternative depths of flow. Occurrence of critical flow conditions. Flow over a broad-crested weir. Classification of water surface profiles. The hydraulic jump and the use of critical depth in flow measurements. Design of spillways.

Teaching and Learning Work Loads

For session 2020/21 the expectation is that the teaching and learning hours stated in this descriptor will form a mix of synchronous and asynchronous student/staff activity, with the majority of this being online. The exact pattern of this activity is likely to vary from the standard face-to-face hours listed below but the overall student effort remains the same. Up-to-date information on the delivery of the module can be found on the relevant module MLS site and on your student timetable.

TEACHING AND LEARNING METHOD	HOURS
Lecture	24
Tutorial/Seminar	20
Practical Activity	10
Assessment	55
Independent	86
Total	195

Guidance notes

SCQF Level - The Scottish Credit and Qualifications Framework provides an indication of the complexity of award qualifications and associated learning and operates on an ascending numeric scale from Levels 1-12 with SCQF Level 10 equating to a Scottish undergraduate Honours degree.

Credit Value – The total value of SCQF credits for the module. 20 credits are the equivalent of 10 ECTS credits. A full-time student should normally register for 60 SCQF credits per semester.

Disclaimer

We make every effort to ensure that the information on our website is accurate but it is possible that some changes may occur prior to the academic year of entry. The modules listed in this catalogue are offered subject to availability during academic year 2020/21, and may be subject to change for future years.

```
.visually-hidden { clip: rect(0 0 0 0); clip-path: inset(50%); height: 1px; overflow: hidden; position: absolute; white-space: nowrap; width: 1px; } #olark-wrapper .olark-launch-button { background-color: #C95014; } .f-accreditations { display: none; } .grid{display:flex;flex-wrap:wrap;margin-left:-20px;margin-bottom:20px}.grid .tile{width:calc(33.333333% - 20px);margin-left:20px;margin-bottom:20px}.grid .tile-image{height:140px;background-size:cover;background-position:center}.grid .tile a{display:block;max-width:95%;margin:-30px auto 0;background:none;background-color:#ffffff;color:#333333;box-shadow:0 0 20px 0 rgba(0, 0, 0, 0.1);position:relative;z-index:10}.grid .tile a .tile-text{padding:10px 20px}.grid .tile a .tile-text p{font-family:"source_sans_proregular",arial,sans-serif;color:#555555;margin:5px 0 0;font-size:1.4rem;line-height:1.3}.grid .tile a .tile-text p .tile-title{margin:0;font-size:1.7rem;font-family:"source_sans_prosemibold",arial,sans-serif;color:#333333}@media screen and (max-width:1229px){.grid .tile{width:calc(50% - 20px)}}@media screen and (max-width:991px){.grid{margin-top:20px}.grid .tile{width:calc(33.333333% - 20px)}}@media screen and (max-width:767px){.grid .tile{width:calc(50% - 20px)}}@media screen and (max-width:439px){.grid{margin:20px 0}.grid .tile{width:100%;margin:0 0 20px}.grid .tile-image{height:100px}}nav.n-rightnav ul li a,nav.n-rightnav ul li span{font-size:20px;font-size:2rem;line-height:28px;color:#000;background:none;font-family:"tex_gyre_adventorbold",arial,sans-serif}nav.n-rightnav ul li ul{display:block!important}.l-breadcrumb ul li a{position:relative;font-size:14px;font-size:1.4rem;line-height:20px;font-family:"source_sans_probold",arial,sans-serif;float:left;margin-right:45px;text-transform:uppercase}.l-breadcrumb ul li a:after{position:absolute;right:-25px;display:inline-block;font:normal normal normal 14px/1 FontAwesome;font-size:inherit;line-height:16px;text-rendering:auto;-webkit-font-smoothing:antialiased;-moz-osx-font-smoothing:grayscale;content:"\f105";color:#555}.l-breadcrumb ul li a:last-child{color:#333333}.l-breadcrumb ul li a:last-child:after{content:""}}
```