# ES99C-15 Water and Environmental Management

## 26/27

**Department**
School of Engineering
**Level**
Taught Postgraduate Level
**Module leader**
Modupe Jimoh
**Credit value**
15
**Module duration**
1 week
**Assessment**
50% coursework, 50% exam
**Study location**
University of Warwick main campus, Coventry

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## Description

## Introductory description

This is a five-day intensive module including lectures, seminars, and tutorials.

Module web page

## Module aims

The main aim of this module is to present to students a global topic such as water in its complexity and to engage them so they can discover, research and experiment the great potentialities of an interdisciplinary approach to the matter.

## Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module will consist of 5 days sessions. The module leader will attend each session to integrate and stimulate interdisciplinary learning.

Each day the module leader and subject specialists will choose how they wish to deliver a combination of discipline or application grounded materials. Activities will allow the students to develop their learning in an interdisciplinary style and help them explore and deepen their knowledge of that day's theories and set texts/materials. Active learning methods (i.e. Team-Based Learning; Open Space Learning) will be implemented to heighten student engagement and understanding of the week's topic.

Daily topics
Here is an indicative description of topics to be covered each day of the week. There might be slight rearrangement during the delivery week.

Day 1: Water Supply
This day introduces students to the module, the SDGs linked with water and the environment. The session would also introduce students to Water, Sanitation, and Hygiene (WASH) concept from an Engineering standpoint.
The second part of the day would consider the theme: WATER SUPPLY, covering water use, source, and system; water quality and treatment; water conveyance and distribution; and gender, social and ethical issues around the water supply.

Day 2: Water and Environmental Sanitation
The day would cover lectures and activities on critical components of water and environmental sanitation. These include Sanitation (Faecal Management), Wastewater management and Solid waste management, giving a thought to concepts of waste to wealth, sustainability and the circular economy.

Day 3: Climate change
The day would focus on climate change, adaptation, and mitigation strategies. Lectures and activities would enable students to understand and analyse the impact of climate change on extreme events.

Day 4: Ecology and Engineering Solutions to Extreme Events.
In continuation of the discussion on climate change, the day would focus on its impact on ecology, socio-economic activities, and human health. A range of traditional hard-engineered solutions and soft nature-based infrastructures and their role in mitigating extreme events will also be discussed.

Day 5: Water and Sustainability
The day will focus more closely on issues linked to "water sustainability" and water pollution with a case study that will explore water issues connected to agriculture. The day covers a holistic view of the interdisciplinary nature of water and the need for proper water resources management to achieve sustainability.

## Learning outcomes

By the end of the module, students should be able to:

- Demonstrate advanced understanding of the interconnectivity of water and the environmental with technology, humanitarian services and sustainable development.
- Evaluate efficient and effective management of water resources for variety of uses, with a focus on interdisciplinarity and transdisciplinarity.

- Demonstrate comprehensive knowledge and understanding of sanitation and criticize the possible adverse effects.
- Evaluate the economics, engineering, social organisation, and environmental impact analysis of the best choice between competing technologies for any specific water or environmental challenge.
- Develop skills of communication and take part in informed interdisciplinary discussions with their peers and with academics.
- Effectively work on independent and collaborative projects.

## Indicative reading list

Reading lists can be found in Talis

## Research element

Develop research skills of evidence synthesis and critical appraisal.

## Interdisciplinary

The module adopts an interdisciplinary teaching approach. Students from a wide variety of disciplinary and professional backgrounds will attend this module, enabling them to explore topics from a range of different perspectives.

## Subject specific skills

1. Appreciate the value of adopting inter-disciplinary approaches and trans-disciplinary research methods for understanding global topics such as the water and for attempting solutions to difficult issues.
2. Reflect on the possibility to implement this more global approach to their studies in their own master disciplines, potential research work and practises.
3. Become integrative system thinkers - independently identify and/or devise interdisciplinary connections between all disciplines.
4. Reflect on the value of the use of different methodologies (i.e. field studies and archival research) for tackling issues related to a diverse range of disciplines and for expanding the approach to their own research.
5. Comprehend how to utilise the communicative and collaborative skills used in the module in their professional life.

## Transferable skills

1. Research skills
2. Communication skills (written and oral)

3. Presentation skills
4. Problem-solving skills
5. Team-working skills.
6. Apply problem solving skills, information retrieval, and the effective use of general IT facilities
7. Communicate (written and oral; to technical and non-technical audiences) and work with others
8. Exercise initiative and personal responsibility, including time management, which may be as a team member or leader
9. Awareness of the nature of business and enterprise in the creation of economic and social value
10. Overcome difficulties by employing skills, knowledge and understanding in a flexible manner
11. Ability to formulate and operate within appropriate codes of conduct, when faced with an ethical issue
12. Appreciation of the global dimensions of engineering, commerce and communication
13. Be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

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## Study

## Study time

| Type | Required |
|---|---|
| Lectures | 12 sessions of 1 hour (8%) |
| Seminars | 14 sessions of 1 hour (9%) |
| External visits | 4 sessions of 1 hour (3%) |
| Private study | 120 hours (80%) |
| Total | 150 hours |

## Private study description

Pre-module preparation and reading.
Reading of assigned texts
Assessment

## Costs

No further costs have been identified for this module.

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## Assessment

You must pass all assessment components to pass the module.

### Assessment group C

| | Weighting | Study time | Eligible for self-certification |
|---|---|---|---|
| **Assessment component** | | | |
| Design for People | 50% | | No |

Assessment is structured such that the student will be placed in groups and given a booklet showcasing real-life challenges in a particular community. Challenges will showcase all the themes covered in the module. Students will be free to select the area/theme they would like to design, and subsequently undertake their research utilising the methodologies and holistic approach presented throughout the course. The design will be presented as a 3-minute video and an A1-sized poster. Students will be marked on the quality of both elements of their work. As this is group work, peer assessment will be applied.

**Reassessment component is the same**

| | | | |
|---|---|---|---|
| **Assessment component** | | | |
| Written Exam | 50% | | No |

Closed Book Written Exam on Campus

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- Students may use a calculator

**Reassessment component is the same**

### Feedback on assessment

The module leader will provide detailed written feedback to individual students for the student devised assessment and cohort feedback for the examination.
As they devise and develop their assessments, formative oral or email feedback will also be given to students at relevant points, i.e. within seminars throughout the module and on request.

Past exam papers for ES99C

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## Availability

## Courses

This module is Core for:

- TESA-H1C1 Postgraduate Taught in Humanitarian Engineering
  - Year 1 of H1C1 Humanitarian Engineering
  - Year 1 of H1C3 Humanitarian Engineering (with Management)
  - Year 1 of H1C2 Humanitarian Engineering (with Sustainability)
- PgD in Humanitarian Engineering

This module is Optional for:

- Year 1 of TESA-H1C5 Postgraduate Taught in Humanitarian Engineering
- PgA in Humanitarian Engineering