Module Specification

Assessment and Mitigation of Natural and Anthropogenic Hazards

Version: 2026-27, v2.0, 28 Jul 2023

Contents

Module Specification **1**

Part 1: Information **2**

Part 2: Description **2**

Part 3: Teaching and learning methods **3**

Part 4: Assessment **4**

Part 5: Contributes towards **8**

Part 1: Information

Module title: Assessment and Mitigation of Natural and Anthropogenic Hazards

Module code: UBGL66-15-3

Level: Level 6

For implementation from: 2026-27

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Architecture and Environment

Partner institutions: None

Field:

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 equips students with the knowledge and skills needed to assess and mitigate the impacts of natural and anthropogenic hazards. The primary objective of the module is to provide students with a deep understanding of theoretical frameworks, risk analysis, and communication methods. They learn to conduct quantitative vulnerability and risk assessments, develop mitigation strategies, and evaluate their effectiveness. The module explores uncertainty management, scenario mapping, and cost-benefit analysis.

The assessment includes a group project analysing a real-world case study, individual reflections on contributions, and a group presentation with peer evaluation.

Features: Not applicable

Educational aims: The aim of this module is to equip students with the knowledge and skills required to assess and mitigate natural and anthropogenic hazards, with a particular focus on both social and physical vulnerability. This includes understanding the basic definitions, concepts, and theories/frameworks used to conceptualise, analyse, and communicate risk, as well as conducting quantitative vulnerability and risk assessments, dealing with uncertainty, creating and mapping scenarios for decision-making, and developing and implementing mitigation strategies. The module will also cover how to evaluate the effectiveness, feasibility, and potential trade-offs of different mitigation strategies, and how to apply cost-benefit analysis to determine the economic feasibility of different mitigation strategies. By the end of the module, students will be able to develop and communicate well-informed decisions and solutions for mitigation and risk reduction, taking into account the social, environmental, and economic implications of their recommendations.

Outline syllabus: 1. Hazard and Risk: basic definitions, concepts, and theories/frameworks used to conceptualise, analyse and communicate risk
2. Social vulnerability
3. Physical vulnerability
4. Mapping vulnerability and risk outputs
5. Evacuation modelling
6. Climate resilience and flood risk management
7. Vulnerability mitigation
8. Cost-benefit analysis

Part 3: Teaching and learning methods

Teaching and learning methods: Traditional lectures will be used to introduce fundamental concepts and theories related to hazard assessment and mitigation, risk

analysis, vulnerability and resilience, decision-making, and cost-benefit analysis. Real-world case studies will be used to illustrate how different hazards and disasters have been assessed and mitigated in various settings and to examine the effectiveness of different approaches and strategies. Students will be encouraged to work in small groups to discuss relevant literature, analyse and work in real-world case studies.

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

MO1 Recognise relevant theories, frameworks, and tools to analyse and communicate vulnerability and risk.

MO2 Conduct quantitative vulnerability and risk assessments, interpret the results and identify appropriate mitigation strategies.

MO3 Evaluate appropriate vulnerability and hazard-focused mitigation strategies and assess their effectiveness.

MO4 Develop effective decision-making methodologies and/or tools.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/4F650515-50D3-D569-2B60-1B096412A148.html?lang=en&login=1

Part 4: Assessment

Assessment strategy: The module assessment is centred around a group project that requires students to apply their theoretical and practical knowledge gained in the module to a real-world case study. The project entails identifying and analysing

hazards associated with the case study, estimating their potential impacts, and evaluating risk mitigation strategies.

The group project is assessed through two assessment tasks:

1. Portfolio (80%), which includes a group report and a reflective piece, as detailed below.

a. Group Report (70%)
Each group of 5 to 7 students is assigned a real-world case study. Collaboratively, students conduct a comprehensive risk analysis that includes hazard analysis, vulnerability assessment of exposed elements, and the potential social, physical, and environmental impacts. Based on this analysis, the group develops an informed risk mitigation strategy, considering factors like feasibility, effectiveness, and trade-offs.

This component is evaluated through a written report of approximately 2000 words. The report should have clear sections addressing objectives, methodology, findings, and conclusions of the group's analysis and mitigation strategy.

b. Individual Contribution Reflection (30%)
In addition to the report, each student writes a reflective essay of around 500 words, outlining their individual contributions to the hazard analysis and risk mitigation strategy. Students reflect on their specific roles, challenges encountered, and how their contributions align with the overall group objectives. The individual contribution reflection showcases critical thinking and self-assessment of student engagement and learning during the group project.

2. Group Presentation and Peer Evaluation (20%)
Each group delivers a 15-minute presentation summarising their analysis and proposed risk mitigation strategy to the class. A 5-minute question-and-answer session follows the presentation, allowing the teaching team and fellow students to seek clarifications and engage in discussion with the presenting group. Subsequently, each group member evaluates their peers' contributions using a structured peer evaluation form, considering teamwork, collaboration, and individual

engagement.

The group report provides an in-depth analysis of the risk analysis and mitigation strategy, enabling students to demonstrate their understanding and application of concepts. The individual contribution reflection adds a reflective element, emphasising individual engagement and learning within the group context. The group presentation and discussion foster communication and critical thinking skills, enabling students to articulate and defend their findings and recommendations.

Assessment tasks:

Portfolio (First Sit)
Description: This portfolio includes the two tasks described below:

a. Group Report (2000 words) (70%)
Each group of students is assigned a real-world case study. Collaboratively, students conduct a comprehensive risk analysis that includes hazard analysis, vulnerability assessment of exposed elements, and the potential social, physical, and environmental impacts. Based on this analysis, the group develops an informed risk mitigation strategy, considering factors like feasibility, effectiveness, and trade-offs. The report should have clear sections addressing objectives, methodology, findings, and conclusions of the group's analysis and mitigation strategy.

b. Individual Contribution Reflection (30%)
Reflective essay (500 words) outlining their individual contributions to the hazard analysis and risk mitigation strategy. Students reflect on their specific roles, challenges encountered, and how their contributions align with the overall group objectives. The individual contribution reflection showcases critical thinking and self-assessment of student engagement and learning during the group project.
Weighting: 80 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO4

Presentation (First Sit)
Description: 15-minute Group presentation summarising their analysis and proposed risk mitigation strategy to the class. A 5-minute question-and-answer session follows the presentation, allowing the teaching team and fellow students to seek clarifications and engage in discussion with the presenting group. Subsequently, each group member evaluates their peers' contributions using a structured peer evaluation form, considering teamwork, collaboration, and individual engagement.
Weighting: 20 %
Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO1, MO3

Portfolio (Resit)
Description: This portfolio includes the two tasks described below:

a. Group Report (2000 words) (70%)
Each group of students is assigned a real-world case study. Collaboratively, students conduct a comprehensive risk analysis that includes hazard analysis, vulnerability assessment of exposed elements, and the potential social, physical, and environmental impacts. Based on this analysis, the group develops an informed risk mitigation strategy, considering factors like feasibility, effectiveness, and trade-offs. The report should have clear sections addressing objectives, methodology, findings, and conclusions of the group's analysis and mitigation strategy.

b. Individual Contribution Reflection (30%)
Reflective essay (500 words) outlining their individual contributions to the hazard analysis and risk mitigation strategy. Students reflect on their specific roles, challenges encountered, and how their contributions align with the overall group objectives. The individual contribution reflection showcases critical thinking and self-assessment of student engagement and learning during the group project.
Weighting: 80 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO4

Presentation (Resit)
Description: 15-minute Group presentation summarising their analysis and proposed risk mitigation strategy to the class. A 5-minute question-and-answer session follows the presentation, allowing the teaching team and fellow students to seek clarifications and engage in discussion with the presenting group. Subsequently, each group member evaluates their peers' contributions using a structured peer evaluation form, considering teamwork, collaboration, and individual engagement.
Weighting: 20 %
Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO1, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil Engineering [Frenchay] BEng (Hons) 2024-25

Civil Engineering [Frenchay] MEng 2024-25