

GE1318: ARE WE SAFE?: RISKS IN OUR EVERYDAY LIFE

Effective Term

Semester A 2022/23

Part I Course Overview

Course Title

Are We Safe?: Risks in Our Everyday Life

Subject Code

GE - Gateway Education

Course Number

1318

Academic Unit

Architecture and Civil Engineering (CA)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

GE Area (Primary)

Area 3 - Science and Technology

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Generally none

Exclusive Courses

Nil

Part II Course Details

Abstract

We ask the question “Are we safe?” consciously and subconsciously all the time. In fact, we evaluate the hazards and risks of any situation, and then we make assumptions before we act. How do we evaluate hazards and assess risks to validate our assumptions? What are the underlying human-human, human-matter or matter-matter interactions in the realms of environment, health and technology? What are the economical, social and ethical issues involved? This course introduces students to risk situations in everyday living in aspects related to environment, health and technology. Students are expected to investigate risk perception in terms of technical, psychological and cultural aspects. Four elements constituting risk, namely hazard, consequences, exposure and probability will be explored in the course. Teaching and learning activities include formal lectures, scenario type tutorials, group discussions and guest seminars.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	investigate hazard and risk perception based on technical, psychological and cultural context.	10	x		
2	discover the underlying driving forces through investigation of incidents and accidents.	10	x		
3	apply preventive measures to reduce or eliminate the adverse health and safety effects.	20		x	
4	Provide solutions to mitigate accidents.	30		x	x
5	Analyze consequences of mitigation in terms of economic, social and ethical issues.	30		x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture and Tutorial	<p>- Lecture: Basic safety principles and risk assessment are introduced and discussed. Psychological and cultural factors affecting risk perception are discussed. The psychometric paradigm is introduced to investigate risk perception.</p> <p>- Tutorial: Students are divided into groups (4 to 5 students per group) and they can apply the knowledge presented in the lectures or doing some surveys to solve scenario type events under guidance of tutors and teaching staff. At these sessions students are also encouraged to discuss any questions which arise from the lectures and to read academic articles looking for factors affecting risk assessment.</p>	1	

2	Lecture, Guest Seminar & Tutorial	<p>- Lecture: The lectures detail the underlying driving forces (nature or manmade) to take in the event of an incident, accident or when a hazard has been identified. The risk assessment is based on the past experience, length of reoccurrence interval, probability, etc.</p> <p>- Guest seminar: experts in some specific fields in the society will conduct a relevant seminar to enrich students' learning experience.</p> <p>- Tutorial: Students are divided into groups (4 to 5 students per group) and they can apply the knowledge presented in the lectures to solve scenario type events under guidance of tutors and teaching staff. At these sessions students are also encouraged to discuss any questions which arise from the lectures and to compare their own finding and perception of risk to reality.</p>	2	
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3	Lecture, Guest Seminar & Tutorial	<p>- Lecture: Preventive measures for each topic of the potential hazards are introduced and discussed. Risk regulatory policy providing better protection from hazards and more efficient services from government is introduced for each specific topic.</p> <p>- Guest seminar: experts in some specific fields in the society will conduct a relevant seminar to enrich students' learning experience.</p> <p>- Tutorial: Students are divided into groups (4 to 5 students per group) and they can apply the knowledge presented in the lectures to solve scenario type events under guidance of tutors and teaching staff. At these sessions students are also encouraged to discuss any questions which arise from the lectures and to compare their own finding and perception of risk to reality.</p>	3	
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4	Lecture, Guest Seminar & Tutorial	<p>- Lecture: Three principles of mitigation, namely prevention, protection and containment are introduced and discussion for the proposed hazards.</p> <p>- Guest seminar: experts in some specific fields in the society will conduct a relevant seminar to enrich students' learning experience.</p> <p>- Tutorial: Students are divided into groups (4 to 5 students per group) and they can apply the knowledge presented in the lectures to provide the solutions to mitigate accidents for a case study under guidance of tutors and teaching staff. At these sessions students are also encouraged to discuss any questions which arise from the lectures and to compare their own finding and perception of risk to reality.</p>	4	
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5	Lecture, Guest Seminar & Tutorial	<p>- Lecture: Consequence analysis techniques are introduced to identify the likely impact on mitigation measures in terms of economic, social and ethical issues and discussion of their implications will be taken place for each proposed hazards.</p> <p>- Guest seminar: experts in some specific fields in the society will conduct a relevant seminar to enrich students' learning experience.</p> <p>- Tutorial: Students are divided into groups (4 to 5 students per group) and they can apply the knowledge presented in the lectures to provide the solutions to mitigate accidents for a case study under guidance of tutors and teaching staff. At these sessions students are also encouraged to discuss any questions which arise from the lectures and to compare socio-economic factors and perception of risk.</p>	5	
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Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Assignment 1: Self-study report	1, 2, 3, 4, 5	15	
2	Assignment 2: Discovery-based term project	1, 4, 5	15	
3	Assignment 3: Individual study and oral presentation	1, 4, 5	10	
4	Mid-term quiz	2, 3	10	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

To pass a course, a student must obtain minimum marks of 30% in both coursework and examination components, and an overall mark of at least 40%.

Assessment Rubrics (AR)

Assessment Task

Assignment 1: Self-study report

Criterion

The principles of discovery of unsafe situations, underlying forces of interactions creating the hazards and identification of the consequences and exposure of the risks will be assessed. (of about 10 pages with figures and references) by individual students from their own learning experiences in the course. Students are required to demonstrate the ability of conducting an investigation for potential hazards in their own interested topic related to environment aspect and provide suitable solutions to mitigate the incidents or their related hazards. Class participation and debates will be assessed for each student. The raised questions and solutions shall be addressed in the report.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Assignment 2: Discovery-based term project

Criterion

During the small group meetings in tutorials, students will be divided into a few groups (tentatively 4-5 students per group) to quantify the risks on specific tasks (related to health and technology, etc.) and their impact on economic, social and ethical issues. The final report (can be in the format of print, any media or web) will document the findings of the specific topic through class discussions (including identification of the hazards and risk assessment, suggestion of prevention, protection and containment and discussion of economic, social and ethical issues). Class participation and debates will be assessed during the tutorials. The raised questions and solutions shall be addressed in the report.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Assignment 3: Individual study and oral presentation

Criterion

After submission of the term project report, each student will orally present his/her findings to other classmates at the end of the semester. Students are required to make use of the Gateway Education (GE) Discovery Laboratory to prepare for the presentation. Peer evaluation will be conducted during the oral presentation.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Mid-term quiz

Criterion

Short question /multiple choice on environment, health and technology topics should be assessed.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Examination

Criterion

Formal examination including text-writing questions relating to health, safety and risk analyses topics.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information**Keyword Syllabus**

- Risk perception: voluntariness, controllability, familiarity and habituation, and social and culture setting; the psychometric paradigm.
- Four elements constituting risk: hazard, consequence, exposure and probability.
- Risk and policy: Regulatory process to protect citizens from social and environmental risks.
- Principles of mitigation: prevention, protection and containment; post incident or accident.
- Consequence analysis techniques for mitigation measures: economic, social and ethical issues.
- Wind effect: offshore and onshore wind; built environment, i.e. residential, commercial, industrial and infrastructure.
- Fire disasters: natural and human-generated firestorms; hill fire.
- Water pollution: surface water; oxygen depletion; microbiological; chemical.
- Nuclear power: radiation; reactor accidents; radioactive waste.
- Electrical and electromagnetic hazards: electrical shocks; electrocution; fire; explosion.
- Foodborne illness: foodborne pathogenic microorganisms; chemical toxins; natural toxins.
- Air pollution: natural environment; built environment; pollutants; greenhouse gaseous.
- Sports injury: symptoms; diagnosis; rehabilitation.
- Privacy risks: financial privacy; political privacy; identity theft; globe positioning systems.
- Networking risks: social networking; internet; network security.

Reading List**Compulsory Readings**

Title	
1	Risk Assessment - HSE: http://www.hse.gov.uk/risk/controlling-risks.htm
2	Richard W. (1979), Analyzing the Daily Risks of Life, Technology Review, Feb, 1979.

Additional Readings

Title	
1	Ropeik, D. & Grey, G. (2002), RISK - A Practical Guide for Deciding What's Really Safe and What's Really Dangerous in the World Around You. Houghton Mifflin Company, Boston, New York. (Electronic Resource)
2	Mambretti, S. (2012), Flood Risk Assessment and Management, WIT Press: Southampton; Boston. (TC530.F576 2012)
3	Hancock, D.C. (2000), Fire Risk Assessment: A Practical Guide, Chubb Fire Ltd, Middlesex. (TH9145.H36 2000)
4	Hughes, P, & Ferrett, E. (2010). Introduction to International Health and Safety at Work : The Handbook for the NEBOSH International General Certificate, Butterworth-Heinemann; Oxford, Burlington, MA. (T55.H85 2010)
5	Hutter, B.M. (2011), Managing Food Safety and Hygiene : Governance and Regulation as Risk Management, Edward Elgar.
6	Video Education Australasia. (2009), Sports Injury Prevention and Assessment, Video Education Australasia: Bendigo, Vic. (video-recording)
7	Mansfield, K.C. & Antonakos, J.L. (2010), Computer Networking from LANs to WANs: Hardware, Software, and Security, Cengage Learning: Boston, MA. (TK5105.5.M35775 2010)
8	Harvard Center for Risk Analysis, Harvard School of Public Health: http://www.hcra.harvard.edu/perspective.html

Annex (for GE courses only)

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)

PILO 1: Demonstrate the capacity for self-directed learning

1, 2

PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology

1, 2

PILO 3: Demonstrate critical thinking skills

1, 2

PILO 4: Interpret information and numerical data

3

PILO 5: Produce structured, well-organised and fluent text

3, 4

PILO 6: Demonstrate effective oral communication skills

1, 4, 5

PILO 7: Demonstrate an ability to work effectively in a team

4, 5

PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues

1, 2

PILO 9: Value ethical and socially responsible actions

1, 5

PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation

4, 5

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task

Some samples will be collected at the end of semester.