UNSW Course Outline

ZEIT8236 System Safety Engineering - 2024

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General Course Information

Course Code : ZEIT8236
Year : 2024
Term : Semester 2
Teaching Period : Z2
Is a multi-term course? : No
Faculty : UNSW Canberra
Academic Unit : School of Systems and Computing
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : UNSW Canberra at ADFA
Campus : UNSW Canberra
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

System Safety Engineering provides an understanding of the management and technical aspects inherent in of developing safe systems. The course also introduces the analytical tools, plans, and documents commonly used in system safety and details how system safety interacts with

other disciplines (particularly systems and software engineering, human factors and project management). System safety is the planned application of management and analysis techniques to a technological system throughout its lifecycle.

System safety engineering firstly identifies hazardous scenarios, and their causes, that may result in a mishap or accident. Having done so, management practices are applied to eliminate or, if that is not possible, to constrain the risk associated with these hazards to achieve an acceptable level of safety that is consistent with the systems purpose and societal expectations. To assure this is achieved prior to commencing operation of a system requires the progressive and timely application of analytical and management techniques as the system passes through its lifecycle, to avoid costly and time-consuming modifications of the system design late in the life cycle. System safety engineering as a discipline draws upon many of the same techniques as systems engineering but also involves the consideration of the ethical and legal aspects of decisions made about safety and societal risk.

Course Aims

This course aims to develop in students a deep knowledge of the basis on which system safety can be analysed, quantified and improved.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Understand the fundamentals of risk theory and practice as it relates to the safety management of safety critical systems.
CLO2 : Understand the use of core analytical techniques and be able to apply these techniques to the analysis of safety critical systems.
CLO3 : Plan a safety management program for the acquisition or modification of a complex system.
CLO4 : Develop and critically review key safety program artefacts including management plans

Course Learning Outcomes	Assessment Item
CLO1 : Understand the fundamentals of risk theory and practice as it relates to the safety management of safety critical systems.	• Quiz • Online Test 1 • Online Test 2 • Assignment
CLO2 : Understand the use of core analytical techniques and be able to apply these techniques to the analysis of safety critical systems.	• Online Test 1 • Online Test 2 • Assignment
CLO3 : Plan a safety management program for the acquisition or modification of a complex system.	• Assignment
CLO4 : Develop and critically review key safety program artefacts including management plans	• Assignment

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams

Learning and Teaching in this course

The teaching strategies utilised in this course are fully aligned with the course's learning outcomes and are designed to maximize students potential to achieve these outcomes and to complete the course's assessment tasks. In the distance mode, students must complete the study schedule independently following the detailed week-by-week course study handbook, to develop knowledge of, and skills in, system safety engineering.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Quiz Assessment Format: Individual	10%	Due Date: 29/09/2024 11:55 PM
Online Test 1 Assessment Format: Individual	25%	Due Date: 13/10/2024 11:55 PM
Online Test 2 Assessment Format: Individual	25%	Due Date: 17/11/2024 11:55 PM
Assignment Assessment Format: Individual	40%	Due Date: 29/11/2024 11:55 PM

Assessment Details

Quiz

Assessment Overview

The quiz is short (20 mins) and covers the first three (3) topics of the semester. The quiz is intended to provide early feedback on the course material.

Course Learning Outcomes

- CLO1 : Understand the fundamentals of risk theory and practice as it relates to the safety management of safety critical systems.

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Online Test 1

Assessment Overview

Test 1 covers the first six (6) topics of the course material. Test 1 is one-hour, open-book on-line test. Calculators will be required for some questions. Test questions will require familiarity with the course material, methods and techniques in order to complete all questions within the time limit.

Course Learning Outcomes

- CLO1 : Understand the fundamentals of risk theory and practice as it relates to the safety management of safety critical systems.
- CLO2 : Understand the use of core analytical techniques and be able to apply these techniques to the analysis of safety critical systems.

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Online Test 2

Assessment Overview

Test 2 covers the content of all topics of course material. Test 2 is 75mins, open-book on-line test. Calculators will be required for some questions. Test questions will require familiarity with the course material, methods and techniques in order to complete all questions within the time limit.

Course Learning Outcomes

- CLO1 : Understand the fundamentals of risk theory and practice as it relates to the safety management of safety critical systems.
- CLO2 : Understand the use of core analytical techniques and be able to apply these techniques to the analysis of safety critical systems.

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Assignment

Assessment Overview

The assignment will be submitted via Moodle. It will assess students' overall grasp of material and ability to bring together the different topics studied in the course. Submissions should

demonstrate clarity of expression and precision of thought. Students will be required to prepare a report on performing a system analysis for a plant safety system, including but not limited to a Fault Tree Analysis, an Event Tree

Analysis, etc. It is not required that safety assessments be carried out for activities and systems outside the assignment defined scope of the analysis

Course Learning Outcomes

- CLO1 : Understand the fundamentals of risk theory and practice as it relates to the safety management of safety critical systems.
- CLO2 : Understand the use of core analytical techniques and be able to apply these techniques to the analysis of safety critical systems.
- CLO3 : Plan a safety management program for the acquisition or modification of a complex system.
- CLO4 : Develop and critically review key safety program artefacts including management plans

Detailed Assessment Description

The assignment is available on Moodle. It will assess students' overall grasp of material and ability to bring together the different topics studied in the course. Submissions should demonstrate clarity of expression and precision of thought. It is not required that safety assessments be carried out for activities and systems outside the assignment defined scope of the analysis.

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
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General Assessment Information

Late Submission of Assessment

- The penalty for late submission will be 5% per calendar day, or part thereof, unless prior special consideration has been granted.
- All requests for special consideration must be formally submitted via MyUNSW prior to the assessment due date.
- Late assignments will only be accepted if prior arrangement is made with the lecturer, or a formal application for special consideration is submitted.

- Unless prior arrangement is made with the lecturer or a formal application for special consideration is submitted, a penalty will apply for each day that an assessment item is late.
- Late assignments will be accepted provided they are received prior to the start of the examination period. Students requiring an extension must let me know by email prior to the published due date. Note: Penalties for late submission should apply from the original submission date, unless that date is formally varied by agreement. If a late submission is allowed, the extra time granted should be viewed solely as a period of grace. If this delayed date is not met, the penalty should apply from the original date of submission, not from the end of the period of grace.

Referencing

In this course, students are required to reference following the APA 6 / Chicago NB referencing style. Information about referencing is available at: Support for Referencing Assignments | UNSW Current Students

Use of Generative AI in Assessments

As this assessment task involves some planning or creative processes, you are permitted to use software to generate initial ideas. However, you must develop or edit those ideas to such a significant extent that what is submitted is your own work, i.e., only occasional AI-generated words or phrases may form part of your final submission. It is a good idea to keep copies of the initial prompts to show your lecturer if there is any uncertainty about the originality of your work.

If the outputs of generative AI, such as ChatGPT form a part of your submission, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension, and exclusion.

** To cite: OpenAI (Year Accessed). ChatGPT. OpenAI. **https://openai.com/models/chatgpt/***

* Please note that the outputs from these tools are not always accurate, appropriate, or properly referenced. Before submission, you should ensure that you have moderated and critically evaluated the outputs from generative AI tools such as ChatGPT.

Grading Basis

Standard

Requirements to pass course

To pass the course, students must achieve at least 50 marks out of a total 100.

All marks obtained for assessment items during the session are provisional.

The final mark as published by the university following the assessment review group meeting is the only official mark.

Course Schedule

Attendance Requirements

Not Applicable - as no class attendance is required

General Schedule Information

A detailed Week-by-Week Study guideline is available for students on Moodle. Please use this guideline to create your course work plan.

Course Resources

Prescribed Resources

Students are required to study the set of course notes made available through Moodle, as well as the compulsory text.

Compulsory Text:

Clifton A Erikson, *Hazard Analysis Techniques for System Safety*, 2nd edn, 2015, Wiley.

Recommended Resources

A range of supporting material is available on Moodle as well as a suggested list of references for further reading.

Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of each course.

Students can also provide feedback during the semester via: direct contact with the lecturer, the “On-going Student Feedback” link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups (where applicable). Student opinions really do make a difference.

Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct: https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Emiliya Suprun					No	No
Lecturer	Shadi Darwish				Available for consultation (online) during normal working hours. Please email me to make an appointment.	No	Yes

Other Useful Information

School-specific Information

The Leaning Management System

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester. Please find all help and documentation (including Blackboard Collaborate) at the Moodle Support page.

UNSW Moodle supports the following web browsers:
• Google Chrome 50+
• Safari 10+
Internet Explorer is not recommended. Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:
• Windows 10,
• Mac OSX Sierra,
• iPad IOS10

Further details:
Moodle System Requirements
Moodle Log In

If you need further assistance with Moodle:

For enrolment and login issues please contact:

IT Service Centre

Email: itservicecentre@unsw.edu.au

Phone: (02) 9385-1333

International: +61 2 9385 1333

For all other Moodle issues please contact:

External TELT Support

Email: externalteltsupport@unsw.edu.au

Phone: (02) 9385-3331

International: +61 2 938 53331

Opening hours:

Monday – Friday 7:30am – 9:30 pm

Saturday & Sunday 8:30 am – 4:30pm

Study at UNSW Canberra

Study at UNSW Canberra has lots of useful information regarding:

• Where to get help

• Administrative matters

• Getting your passwords set up

• How to log on to Moodle

• Accessing the Library and other areas.

UNSW Canberra Student Hub

For News and Notices, Student Services and Support, Campus Comminity, Quick Links, Important Dates and Upcoming Events

School Contact Information

Deputy Head of School (Education): Dr Erandi Hene Kankanamge

E: e.henekankanamge@adfa.edu.au

T: 02 5114 5157

Syscom Admin Support: syscom@unsw.edu.au

T: 02 5114 5284

Syscom Admin Office: Building 15, Level 1, Room 101 (open 10am to 4pm, Mon to Fri)