

Module Details	
Module Title:	Risk Assessment and Management
Module Code:	ENB7007-B
Academic Year:	2019-20
Credit Rating:	20
School:	Engineering and Informatics (Faculty-wide)
Subject Area:	Engineering Business
FHEQ Level:	FHEQ Level 7 (Masters)
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	Hours
Independent Study	58
Lectures	24
Seminar	12
Tutorials	12
Directed Study	94

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims
Acquire a deep understanding of the concepts, principles and tools of Risk Assessment and Management (RAM) and apply them in a range of engineering applications.

Outline Syllabus
Risk, Uncertainty and Opportunity. Risk Analysis: Qualitative, Quantitative, Quasi-probabilistic. Risk Assessment Attributes and Models. Risk Assessment Tools: Delphi, Checklists, PHA, HAZOP, HACCP, What-If, Scenario Analysis, BIA, RCA, RCM, FMECA, FTA, ETA, CCA, LOPA, Decision Tree

Analysis, Analytic Hierarchy Process (AHP), Human Reliability Analysis. Risk/Deviation Assessment and Control: Lamda-Tau methodology. Risk Control: Protective Systems and devices. Risk strategies with online and offline repair. Risk Prediction and Total Productive Maintenance (TPM). Corporate Risk Management: Governance, Ethical Leadership, Integrity, Risk Appetite, Risk Portfolios, Risk Tolerances. Turnbull. COSO: Enterprise Risk Management. Risk Analysis and Management for Projects (RAMP). Project Portfolio Risk Management. Construction Design Management (CDM) and Risk Management. Asset Risk Management. Risk Communication. Business Continuity Management (BCM). Disaster Management. Contractual Risk Management (indemnification, limitation of liability and subrogation). RAM Standards: Management Principles (ISO 31000), Information Security Management (ISO27001) and Sarbanes-Oxley compliance.

Learning Outcomes

1	Critically evaluate and apply the tools and methodologies of Risk Assessment and Management respectively and appraise the conditions for their successful implementation for managing complex situations in a variety of engineering applications.
2	Apply Risk Assessment and Management Tools in complex engineering environments to manage Corporate, Project, Information and Asset Risk, and Business Continuity Management.
3	Demonstrate ability to manage, present and analyse data using scientific methods as well as interpret data. Work as part of a team to solve problems systematically and creatively, and demonstrate leadership.

Learning, Teaching and Assessment Strategy

Lectures deliver core content in RAM concepts, principles and associated international standards providing students with the opportunity to acquire the information to enhance their knowledge and understanding of the subject (LO 1&2). This will be complemented by tutorials and video presentations of case studies to deepen understanding in line with the requirements of the profession, and bring to life practical issues relating to RAM in a holistic way. Tutorials will consist of questions requiring quantitative analyses including past examination papers. Industrial speakers will be invited to enhance experiential learning.

Practical, cognitive, personal and discipline skills will be developed in open-ended problem solving seminars consisting of case studies discussed in small groups supported by the tutor, allowing students to apply learning to specific issues (LO 2&3). In terms of TEL, students will be using PollEverywhere (for discussion) and TeamMates for peer review.

Directed study (case studies on RAM applications) provides students with the opportunity to undertake guided reading and develop their own portfolio of learning to enhance transferable skills and knowledge, and will enhance their critical thinking and collaborative learning. Whereas independent study (wider reading on the subject areas also required for the coursework) enables students to pursue and research the subjects in more depth and in an independent way. Both directed and independent studies achieve LO 1&2&3.

Oral feedback is given during tutorials and seminars and in a dedicated formative assessment session. The directed study required for the coursework and associated group work will provide further opportunities for critical thinking and collaborative learning. Students will be encouraged to explore online resources and software suites available.

The examination part of the assessment will be on the quantitative part of RAM (LO 2&3). Past exam papers will be practiced in tutorial sessions (LO 2&3).

The coursework part of the assessment will be on the qualitative part of RAM (LO 1&3). It will

consist of a case study and the formulation of detailed lessons learned from it, which includes group and individual work assessed by peers (via TeamMates) and the tutor. Findings will be presented by each group to all students with the view to further enhancing experiential learning. Presenters will respond to challenging questions from peers and this will enhance critical thinking and enquiry based learning.

This module satisfies the below Learning Outcomes as specified by the Accreditation of Higher Education Programmes: Third Edition (AHEP3) as published by The Engineering Council in-line with the UK Standard for Professional Engineering Competence (UK-SPEC). These outcomes specify six key areas of learning: Science and Mathematics (SM), Engineering Analysis (EA), Design (D), Economic, Legal, Social, Ethical and Environmental Context (EL), Engineering Practice (P) and Additional General Skills (G).

SM2m, EA1m, D1, D2, EL1m, EL2, EL3m, EL5m, EL6m, EL7m, P1, P4, P5, P6, P8, P9m, P10m, P11m, G1, G2, G4, SM8M, EL8M, EL9M, EL10M, EL11M, EL12M, EL13M.

Further details of these learning outcomes can be found at <https://www.engc.org.uk/>.

Mode of Assessment				
Type	Method	Description	Length	Weighting
Summative	Examination - closed book	Closed book focussing on Risk Assessment	2 hours	50%
Summative	Coursework	Coursework on Risk Management. Group and individual work assessed by peers and academic staff	-2000 words	50%
Formative	Classroom test	Coursework on Risk Assessment and Management	2 hours	%

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html .

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.