UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Project Management And Six Sigma
Module Code	ENB6010-B
Academic Year	2024/5
Credits	20
School	School of Engineering
FHEQ Level	FHEQ Level 6

Contact Hours	
Type	Hours
Directed Study	160
Lectures	20
Seminars	10
Tutorials	10

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims

This module explores the challenges typically encountered in the implementation of Project Management and Six Sigma in engineering applications and the tools used to address these challenges, including quantitative methods and management systems
This module will enable students to acquire a sound understanding of the theories and practices of integrated Project Management and Six Sigma for business excellence, and apply these principles for decision-making, control and management purposes in a variety of engineering applications.

Outline Syllabus
Project management framework and lifecycle, The project charter and stakeholder analysis. Project scope: Work Breakdown Structure (WBS) and Statement of Work (SoW). Project time management: scheduling and sequencing, Critical Path Analysis, PERT, Project cost management and estimating Methods, Cost budgeting and cashflow, Earned value concepts, Project procurement, Capital investment appraisal, PRINCE2 fundamentals. ISO 21500, Case studies of successful and unsuccessful large-scale engineering projects. Six Sigma process: Define, Measure, Analyse, Improve and Control (DMAIC) methods. Statistical Process Control (SPC). Control Charts for Variables: Mean and Range Charts. Process capability indices (Cp and Cpk). Control Charts for Attributes: np, p, c and u Charts. Value Stream Mapping. Quality Function Deployment (QFD). Balance Score Cards. Quality Management theories (Deming, Juran, Crosby). Leadership and people management. Professional responsibility and Ethics. Quality Standards (IS O 9001. ISO/TS 16949) and Benchmarks. Continuous Improvement (Kaizen) for business excellence. Six Sigma Organisation (Belts). Case studies of successful and unsuccessful projects in Engineering.

Learning Outcomes	
Outcome Number	Description
01	Evaluate and explain the qualitative and quantitative aspects of Project Management and Six Sigma Management to help them make appropriate management decisions in complex situations.
02	Apply Project Management and Six Sigma tools including PERT, SPC, DMAIC, QFD, Costing and associated international standards in variety of engineering applications
03	Demonstrate ability to manage, present and analyse data (network and SPC) 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

Key lectures will deliver core content, 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. Tutorials will consist of questions requiring quantitative analyses including past examination papers. Industrial speakers will be invited to enhance experiential learning. All lectures, tutorials and seminars will be delivered online. Face to face meetings with individual groups will be set up to provide further support and guidance, as appropriate.

Practical, cognitive, personal and discipline skills will be developed in open-ended problemsolving seminars consisting of case studies discussed in small groups supported by members of academic staff, allowing students to apply learning to specific issues (LOs 2&3).

Directed study (case studies on project management and six sigma applications) provides students with the opportunity to undertake guided reading and develop their own portfolio of learning to enhance transferable skills and knowledge. Whereas independent study (wider reading on the subject areas 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 LOs 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 focuses on the quantitative aspects of Project Management and Six Sigma (LOs 2&3). Past exam papers will be practiced in tutorial sessions. The coursework part of the assessment focuses on the qualitative aspects of integrated Project Management and Six Sigma (LOs 1&3). Thiswill include group work with peer and tutor assessment. The coursework will relate to a detailed analysis of a case study and the formulation of detailed lessons learned from it. The coursework will enhance experiential learning, critical thinking and enquiry-based learning.

This module satisfies the below Learning Outcomes as specified by the Accreditation of Higher Education Programmes: Fourth Edition (AHEP4) as published by the Engineering Council in-line with the UK Standard for Professional Engineering Competence (UK-SPEC). These outcomes specify five key areas of learning which partially (C) or fully (M) meet the academic requirement for CEng registration: Science and Mathematics (1), Engineering Analysis (2-4), Design and Innovation (5-6), The Engineer and Society (7-11), and Engineering Practice (12-18). Further details of these learning outcomes can be found at https://www.engc.org.uk/ahep/

M4, C4, M5, C5, M6, C6, M7, C7, M8, C8, M9, C9, M11, C11, M13, C13, M14, C14, M15, C15, M16, C16, M17, C17.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Examination - Closed Book	Closed book examination focussing on quantitative aspects of Project Management and Six Sigma (2.5 Hrs)	50%
Summative	Coursework - Written	Integrated Group Project Management and Six Sigma Management. Group coursework assessed by academic staff and peers	50%
Formative	Coursework - Written	Integrated Project Management and Six Sigma Management (Formative) (0-2000 words)	N/A

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.

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