COURSE SPECIFICATION DOCUMENT

Academic School / Department: Science, Innovation & Technology

Programme: MSc Project Management for Sustainability

***FHEQ* Level:** 7

Course Title: Intelligent systems for Project Management

Course Code: PMG 7003

Total Hours: 100
Timetabled Hours: 26
Guided Learning Hours: 4
Independent Learning Hours: 70

Semester: Fall, Spring
Credits: 10 UK CATS credits
5 ECTS credits
2 US credits

Course Description:
This course introduces students to the theoretical foundations, principles, and practical applications of intelligent systems in the context of project management. It explores the integration of artificial intelligence (AI), machine learning (ML), data analytics, and decision support systems to enhance the efficiency, effectiveness, and decision-making capabilities of project managers. The course equips students with the knowledge and skills necessary to leverage intelligent systems for optimizing project planning, execution, monitoring, and control.

Prerequisites:
N/A

Aims and Objectives:
To provide students with a comprehensive understanding of the concepts, theories, and technologies underpinning intelligent systems in project management. To enable students to critically assess the role of intelligent systems in addressing project management challenges and enhancing project success. To equip students with practical skills for implementing and utilizing intelligent systems in real-world project management scenarios.

Programme Outcomes:
A2, A3, B2, C2, D3.

A2. Have a comprehensive understanding of sustainability metrics and the legislative frameworks of Project Management.

A3. Identify the risks associated with complex systems that can lead to unintended consequences or negative cumulative effects.

B2 Skills to analyse, synthesise and evaluate data, information and chosen methodology in a project to reach well-reasoned conclusions and solutions, testing them against relevant criteria and standards.

C2 Have an excellent command of subject-specific IT and professional skills relevant to project management.

D3. Effective oral and written communication in a range of traditional and electronic media for diverse audiences.

A detailed list of the programme outcomes are found in the Programme Specification.

This is located at the archive maintained by Registry and found at:
https://www.richmond.ac.uk/programme-and-course-specifications/

Learning Outcomes:
By the end of this course, successful students should be able to:

1. Demonstrate a deep understanding of the theoretical foundations and key concepts related to intelligent systems in project management.
2. Evaluate the potential benefits and limitations of intelligent systems in the context of various project management processes.
3. Apply relevant AI and ML techniques to analyse project data and support decision-making.
4. Design and implement intelligent systems to optimize project planning, scheduling, and resource allocation.
5. Assess ethical and societal implications associated with the use of intelligent systems in project management.
6. Communicate effectively and present the results of intelligent system applications in project management.

Aims and Objectives:

1. To provide students with a comprehensive understanding of the concepts, theories, and technologies underpinning intelligent systems in project management.
2. To enable students to critically assess the role of intelligent systems in addressing project management challenges and enhancing project success.
3. To equip students with practical skills for implementing and utilizing intelligent systems in real-world project management scenarios.
1. Communicate effectively and present the results of intelligent system applications in project management.

Indicative Content:

1. Introduction to Intelligent Systems in Project Management
    - Definitions and scope of intelligent systems
    - Historical development and trends
    - Ethical considerations of environmental and societal impacts
2. Foundations of Artificial Intelligence and Machine Learning
    - Machine learning algorithms and techniques
    - Data pre-processing and feature engineering
    - Model training and evaluation
3. Data Analytics for Project Management
    - Data collection and pre-processing in project management
    - Descriptive and predictive analytics
    - Visualization of project data
4. Decision Support Systems in Project Management
    - Decision-making processes in project management
    - Expert systems and knowledge-based decision support
    - Case studies of decision support system applications
5. Optimizing Project Planning and Execution
    - Project scheduling and optimization algorithms
    - Resource allocation and optimization techniques
    - Risk assessment and mitigation using intelligent systems
6. Implementation and Ethical Considerations
    - Practical implementation of intelligent systems in project management
    - Ethical environmental, societal and responsible AI use in project management
    - Regulatory compliance and data privacy

Assessment:

This course conforms to the University Assessment Norms approved at Academic Board and located at: https://www.richmond.ac.uk/university-policies/

Teaching Methodology:

Teaching will be a combination of lectures, seminar discussions and Lab workshops, using case studies and drawing on students' own experiences where appropriate. Lectures will be designed to cover the fundamental issues and build upon the recommended book chapters from the reading list and additional recommended readings. Students will be advised to supplement lecture notes by reading the relevant indicative text(s). Weekly discussions and learning reviews will support and enhance student learning through the exploration and application of their understanding of business strategies. This is supported by a proactive use of Blackboard VLE to support guided, independent and online learning.

Indicative Text(s):

Chui, M., Manyika, J., & Miremadi, M. (2016). Where machines could replace humans—and where they can't (yet). Article in McKinsey Quarterly

Russel, S. J., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach. Pearson.

Provost, F., & Fawcett, T. (2013). Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking. O'Reilly Media.

Schwalbe, K. (2018). Information Technology Project Management. Cengage Learning

Taylor, P. (2021) AI and the Project Manager: How the Rise of Artificial Intelligence Will Change Your World. Routledge.

Journals

Journal of Modern Project Management

Journal of Artificial Intelligence Research (JAIR) Publisher: AI Access Foundation Website: JAIR

Operations Research Perspectives

Systems and Soft Computing

Web Sites

Project Management Institute (PMI)**:** Project Management Institute (PMI)

IEEE Computational Intelligence Society:: IEEE Computational Intelligence Society

Harvard Business Review (HBR):: Harvard Business Review

Kaggle: Website: Kaggle

Towards Data Science**:** This Medium publication contains numerous articles and tutorials on data science, machine learning, and AI, which can be relevant to intelligent systems in project management. Website: Towards Data Science

See syllabus for complete reading list

Change Log for this CSD:

Nature of Change	Date Approved & Approval Body	Change Actioned by Registry Services

	(School or AB)	
Programme outcomes updated	Nov 2023	
First edition	Dec 2023	
Total Hours Updated	April 2024	