WM9G8-15 Cyber-Manufacturing Design Project

22/23

Department
WMG
Level
Taught Postgraduate Level
Module leader
Helen Neal
Credit value
15
Module duration
3 weeks
Assessment
95% coursework, 5% exam
Study location
University of Warwick main campus, Coventry

Description

Introductory description

Predominantly working in teams, students will develop a cyber-manufacturing design and make justifications for its adoption based on technical and business considerations. This will provide an opportunity to apply all of the module learning to a substantive piece of work and then reflect on how methods and theories need to adapt to the needs of cyber-technologies in manufacturing. Assessment will be a mix of group assessment within the module and individual assessment after the module.

Module aims

This module will challenge the students to apply what they have learned in the course and working in teams solve an authentic manufacturing problem by selecting appropriate cyber-technologies, by integrating these in a system design, then validating this design using computer-based models and presenting a cogent justification. Students will gain confidence in tackling complex problems and develop competences and in working within a team-based engineering project.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Principles of effective Project Management;
Techniques for planning complex projects (PERT/CPA etc);
Project planning management and control for manufacturing systems;
Selecting and managing teams and team dynamics;
Manufacturing Systems specification and its interpretation;
The Winning Facilities model;
Developing a business case for cyber-manufacturing;
How to make effective presentations.

Learning outcomes

By the end of the module, students should be able to:

- Explain how typical manufacturing systems projects are planned and managed
- Evaluate how project management for cyber-manufacturing may differ from conventional methods
- Evaluate the effectiveness of your role in the team and compare this with theoretical frameworks and best practices.
- Design and validate a cyber-manufacturing proposal based on well-argued principles
- Justify a cyber-manufacturing proposal on business grounds

Indicative reading list

Project Management: Systems, Principles, and Applications, Badiru A.B., CRC Press 2019.
Project management : a systems approach to planning, scheduling, and controlling . Kerzner, Harold , Wiley 2017;
Project management demystified. Reiss, Geoff, Taylor & Francis, 2007;
Management teams: why they succeed or fail, R. M. Belbin, Butterworth-Heinemann, 2010;
Accounting and finance for non-specialists. Peter Atrill; E. J. McLaney, Pearson, 2019

Subject specific skills

Project Planning; project execution/control; building computer-based models of manufacturing systems

Transferable skills

Communicating effectively within a team, managing team relationships and resolving conflict; Presentation skills.
Dealing with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences;
Self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level;
Advance their knowledge and understanding, and to develop new skills to a high level;

The exercise of initiative, personal responsibility and time management;
and decision-making in complex and unpredictable situations.

Study

Study time

Type	Required
Lectures	8 sessions of 1 hour (5%)
Seminars	3 sessions of 1 hour (2%)
Project supervision	10 sessions of 30 minutes (3%)
Practical classes	1 session of 2 hours (1%)
Supervised practical classes	3 sessions of 1 hour (2%)
Online learning (independent)	12 sessions of 30 minutes (4%)
Other activity	10 hours (7%)
Assessment	113 hours (75%)
Total	150 hours

Private study description

No private study requirements defined for this module.

Other activity description

self-directed skills development in support of project activity: revision of preceding modules, online software tutorials, tutor-led problem sheets.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group D

	Weighting	Study time
Cyber-manufacturing design presentation	60%	80 hours

At least two academics will witness the presentation and independently assess it against a set of

	Weighting	Study time

technical and business criteria that will be published in advance. This will include questions from the academics and from an audience of the students' peers in other groups.

Reflections on personal effectiveness in team work	5%	2 hours

With a basis on recognisable theory of how people interact in teams, individuals will reflect on their performance during the group work and identify areas for self development.

A critical analysis of project management techniques for intelligent manufacturing systems development	30%	30 hours

Identify how a self-selected aspect of cyber-manufacturing challenges the way in which such projects should be managed from at least two different stakeholder perspectives.

Project Interview	5%	1 hour

Students will be asked unseen questions that probe their familiarity of the work being done by them and their team-mates and their own assessment of the extent and depth of their contribution.

Feedback on assessment

Immediate verbal feedback for the presentation and a tick-box rubric;
Written feedback for the reflective piece;
A short tick-box for the interview;
Written feedback for the essay.

Past exam papers for WM9G8

Availability

There is currently no information about the courses for which this module is core or optional.