

WM950-15 Systems Thinking and Systems Engineering

24/25

Department

WMG

Level

Taught Postgraduate Level

Module leader

David Wright

Credit value

15

Module duration

4 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module provides an overview of systems thinking and Systems Engineering approaches required to help understand and design complex engineered systems.

Module aims

To establish key principles and methods of systems thinking to help students address complex problems and consider the needs of Enterprises. This will include identifying stakeholders, capturing and managing requirements and translating these into appropriate solutions. Students will be given an appreciation of whole lifecycle views and approaches and selected Systems Engineering management processes essential to deliver successful, complex programmes.

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.

- Systems thinking and Systems Engineering concepts

- Prioritising goals, stakeholders and requirements
- Designing solutions to meet stakeholder requirements
- System lifecycle and system development lifecycles approaches
- Systems Engineering modelling approaches

Learning outcomes

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

- Critically evaluate the role of systems thinking and Systems Engineering methodology when used to design complex, multi-stakeholder systems
- Explain how Systems Engineering can support the prioritisation of a programme's goals and stakeholders
- Plan effective development, delivery, in-service support and retirement for products and systems using the principles of Systems Engineering
- Evaluate Systems Engineering development processes individually and as part of a group, including requirements management, verification, validation and integration.

Indicative reading list

[View reading list on Talis Aspire](#)

Subject specific skills

Systems Thinking, Systems Development Lifecycle Models, Systems Engineering processes, tools and techniques, Requirements Elicitation

Transferable skills

Systems Thinking, Communications, Leadership, Organisation, Teamwork, Team Development, Problem Solving.

Some of the skills developed during this module form part of Warwick University's 12 Core Skills (see <https://warwick.ac.uk/services/skills/warwickaward/coreskills/>).

Study

Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Seminars	10 sessions of 1 hour (7%)
Online learning (independent)	60 sessions of 1 hour (40%)
Total	150 hours

Type	Required
Assessment	60 hours (40%)
Total	150 hours

Private study description

No private study requirements defined for this module.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A3

	Weighting	Study time
Written assessment	60%	40 hours
A written assessment in which a Systems Engineering analysis is conducted for an suitable example system using a range of applicable methods introduced during the module.		
Self guided learning assessment	20%	12 hours
A self-assessment test launched at the beginning of the module which is designed to test the student's grasp of the key principles of Systems Engineering acquired from recommended reading resources and classroom-based learning. This test is normally facilitated via the University VLE (Moodle).		
Group Presentation	20%	8 hours
Tutor-directed and self-guided activities conducted in groups and culminating in a group presentation. The topic of this presentation will be based on certain aspects of the work done during the taught week of the module. The mark awarded to each member of the group will be informed by a peer adjustment marking process.		

Feedback on assessment

Written feedback on the essay, of approximately 300 - 400 words, will be provided 4 weeks after the date of submission. The feedback will be focussed on the strengths and weaknesses of the work with regards to the module learning objectives and the assessment's marking guidelines. Suggestions for improvement will also be provided.

Feedback on the group presentation will be given verbally during the module and supplemented with written comments provided separately.

Availability

Courses

This module is Optional for:

- Year 1 of TWMS-H1S4 Postgraduate Taught e-Business Management (Full-time)