

# WM950-15 Systems Thinking and Systems Engineering

**26/27**

**Department**

WMG

**Level**

Taught Postgraduate Level

**Module leader**

David Wright

**Credit value**

15

**Module duration**

4 weeks

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## 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

[Specific reading list for the module](#)

## 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 (14%)
Total	147 hours

<b>Type</b>	<b>Required</b>
Seminars	10 sessions of 1 hour (7%)
Online learning (independent)	60 sessions of 1 hour (41%)
Assessment	57 hours (39%)
Total	147 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 A4

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
Written assessment	70%	42 hours	Yes (extension)
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.			
In Module Assessment	30%	15 hours	No
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.			

### Assessment group R3

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
Individual Presentation	30%		No
This resit presentation will be given by the individual student via video in live or pre-recorded form. It will revise and enhance their contribution to the group's original presentation in line with feedback given by the marker(s).			
Written assessment	70%	42 hours	No

## **Feedback on assessment**

Written feedback for summative assessment will be issued via Virtual Learning Environment (Moodle, Tabula and/or Turnitin). Additional verbal feedback for summative assessment (IMA) will be given in class. Verbal feedback for formative assessment will be given in class.

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## **Availability**

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