

# CS924-15 Agent Based Systems

24/25

**Department**

Computer Science

**Level**

Taught Postgraduate Level

**Module leader**

Paolo Turrini

**Credit value**

15

**Module duration**

10 weeks

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

Agent-based systems offer a new paradigm for computer science, based around a strong theoretical foundation and with a large number of practical deployed applications.

[Module web page](#)

### Module aims

This module will provide a context for agent-based systems in terms of the recent and developing computing landscape of distributed information and processing resources, and will describe fundamental techniques and systems, illustrating them with real-world applications.

### 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.

Overview: definitions of agents, distributed AI and agents, intelligent agents, multi-agent systems, cooperation, agent application areas.

Logic-based agents: actions, goals and strategies.

Decision-making agents: expected utility and decisions.

Game-theoretic agents: equilibria and rationality.

Learning-agents: Markov Decision Processes, policy approximation and opponent modelling.

Social-agents: Cooperative decision-making, matching and networks.

## Learning outcomes

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

- Students will learn the basic methodologies for the design and the analysis of multi-agent systems, in competitive and cooperative interaction, both from the theoretical and the practical point of view.

## Indicative reading list

Please see Talis Aspire link for most up to date list.

[View reading list on Talis Aspire](#)

## Subject specific skills

Logical reasoning;  
Problem Solving;

## Transferable skills

Problem Solving;  
Logical reasoning;  
Self-directed learning.

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## Study

### Study time

Type	Required
Lectures	30 sessions of 1 hour (20%)
Seminars	10 sessions of 1 hour (7%)
Private study	110 hours (73%)
Total	150 hours

### Private study description

Inclusive of private study, coursework, background reading and revision.

## Costs

No further costs have been identified for this module.

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## Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

### Assessment group D1

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
Programming and report	25%		No
Programming and report. Approximately 30 pages. This assignment is worth more than 3 CATS and is not, therefore, eligible for self-certification.			
In-person Examination CS924 examination	75%		No

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- Answerbook Pink (12 page)
- Students may use a calculator

### Assessment group R3

	<b>Weighting</b>	<b>Study time</b>	<b>Eligible for self-certification</b>
On-campus Examination - Resit CS924 resit paper	100%		No

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- Answerbook Pink (12 page)
- Students may use a calculator

## Feedback on assessment

Written feedback with mark breakdown for programming assignment and report.

[Past exam papers for CS924](#)

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## **Availability**

### **Pre-requisites**

Knowledge of Python programming.

### **Courses**

This module is Optional for:

- Year 1 of TCSA-G5PD Postgraduate Taught Computer Science
- Year 1 of TCSA-G5PA Postgraduate Taught Data Analytics
- Year 1 of TMAA-G1PF Postgraduate Taught Mathematics of Systems