

WM141-18 Discrete Structures for Cyber Security

22/23

Department

WMG

Level

Undergraduate Level 1

Module leader

Henry Caushi

Credit value

18

Module duration

30 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Discrete structures are the foundation of digital computing. Although relatively few people work primarily on discrete structures, almost all cyber security professionals work with the techniques and concepts covered in this module to provide a foundation for their own specialist areas.

Material from Discrete Structures for Cyber Security will give greater insight into the reasoning behind much of the more applied cyber security material throughout the programme.

Module aims

- 1 – Perform relevant abstract operations on a range of discrete structures to support reasoning.
- 2 – Apply the tools and techniques associated with discrete structures to solve cyber security problems.

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.

Outline content

The content of this module will be taught from a cyber security perspective.

- Sets
- Relations
- Functions
- Logic
- Proofs
- Graphs
- Discrete probability

Learning outcomes

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

- 1 – Perform relevant abstract operations on a range of discrete structures to support reasoning.
- 2 – Apply the tools and techniques associated with discrete structures to solve cyber security problems.

Indicative reading list

Johnsonbaugh Richard, "Discrete mathematics", 8 Ed, Pearson Education Limited (2019)

Balakrishnan, V. K., "Schaum's Outline of Combinatorics", McGraw-Hill (1995)

Karumanchi, Narasimha, "Data Structures and Algorithms Made Easy: Data Structure and Algorithmic Puzzles", 2 Ed, CareerMonk (2011)

Subject specific skills

- 1 – Perform relevant abstract operations on a range of discrete structures to support reasoning.
- 2 – Apply the tools and techniques associated with discrete structures to solve cyber security problems.

Transferable skills

problem solving

Study

Study time

| Type | Required |
|------------------------------|------------------------------|
| Supervised practical classes | 18 sessions of 3 hours (30%) |
| Private study | 41 hours (23%) |
| Assessment | 85 hours (47%) |
| Total | 180 hours |

Private study description

Independent activity between workshops.

Costs

No further costs have been identified for this module.

Assessment

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

Assessment group D3

| | Weighting | Study time | Eligible for self-certification |
|---------------------|------------------|-------------------|--|
| Test 1 | 10% | 8 hours | Yes (waive) |
| Test 2 | 10% | 8 hours | Yes (waive) |
| Test 3 | 10% | 8 hours | Yes (waive) |
| Test 4 | 10% | 8 hours | Yes (waive) |
| Online Examination | 60% | 53 hours | No |
| Written Examination | | | |
| ~Platforms - AEP | | | |

- Online examination: No Answerbook required

Assessment group R1

| | Weighting | Study time | Eligible for self-certification |
|---------------------|------------------|-------------------|--|
| Written examination | 100% | | No |

- Online examination: No Answerbook required

Feedback on assessment

Written feedback for each assignment

Verbal feedback during tutorial sessions

Solutions provided to selected tutorial questions

Summative feedback on assignments and exam

[Past exam papers for WM141](#)

Availability

Courses

This module is Core for:

- Year 1 of UWMA-H651 Undergraduate Cyber Security