# Solent University Module Descriptor

## **Module Code: COM412 Module title: Introduction to Networks and Security**

### **Why is this module important?**

If you think digital networks are important now, soon there will be over 50 billion connections between people, places and things. Get a VIP pass to your future.

Networking knowledge will enhance your career in any field, because every organization relies on connectivity for success. With the right skills, you can embark on a well-paid career in information and communications technology. You can choose to join a high-tech firm or bring these skills to a different field that you love, or even start your own company.

### **What you will learn on the module**

Firstly we will explore networks by using a network simulator to learn what devices and connections are used. We will then understand and apply the principles of networking, protocols and associated technologies by doing various online activities. We will learn the structure and contents of network models by reading online materials and testing knowledge with mini online quizzes. You will then practise the maths required to be a network engineer by calculating addressing schemes. We will Investigate compare and contrast transport protocols, discover what network services are necessary and apply them. You will also learn how to install and configure network components, including switches and routers and firewalls by doing practical activities with real equipment. You will apply structured approaches to troubleshooting network issues and repair faults in hardware, software products and the network and communicate effectively with your colleagues in a variety of situations. You will also apply diagnostic tools and techniques to identify the causes of network performance issues developing analytical skills. You will also manage network devices and apply configurations for management access control. You will identify attacks concepts techniques and the approach of cybersecurity and compare types of malware, you will learn how to protect your data, privacy and the cybersecurity domain and compare the tools and methods for incident response, prevention and detection.

### **How you will learn**

You will learn about this technical subject by doing activities, you will learn by actually creating networks. Both in a network simulation environment and with physical laboratory equipment that allows you to create a network with an almost unlimited number of devices, encouraging open practice, discovery, trouble-shooting and the use of analysis tools

This is reflected in the laboratory sessions where you will use physical network devices and interconnect them with computer hardware configure them, investigate and solve problems, monitor performance. You will progress from structured, easy-to-follow tasks to more advanced activities that build critical thinking and problem-solving skills and encourage exploration and research.

The online learning environment for this course includes highly interactive e-doing activities that help stimulate learning and increase knowledge retention. Consisting of rich multimedia content, including interactive graphical activities, videos, games and quizzes these address a variety of learning styles and will help you prepare for and extend the activities undertaken in formal teaching sessions.

### **How much time the module requires**

For a 20 Credit module you are expected to study for 200 hours (which equates to 10 hours per credit.  This total learning time is made up of contact time, directed learning tasks, independent learning and assessment activity. Your tutor will offer you guidance on how you should best manage your study time on this module.

### **How you will be assessed**

**Tasks which help you to learn and prepares you for summative tasks (Formative):**

Throughout the module there will be quizzes, e-activities, classroom interaction and computer lab work to provide formative feedback opportunities allowing you to gauge and monitor your progress through the learning experience. The questions in quizzes will be in the same format and on the same topics as the Multiple Choice Answer test (MCA).

The practical lab work will prepare you for the Time Constrained Assignment (TCA) and also using a simulator with feedback on progress for structured activities.

**Tasks which count towards your degree (Summative):**

1. Complete a Multi-choice answer (MCA) test in class to assess your knowledge of the models of computer networking. To specify the various network protocol uses, structures of data, and methods of addressing. To assess your ability to calculate ranges of addresses using the appropriate mathematics. To identify relevant network applications and services. To give examples of configuration of network devices and how you monitor and manage network device configuration and operation.
2. Complete a time constrained assignment (TCA) in class which will include designing and configuring a medium sized network with network devices applying network routing optimisation and access control.

#### **When assessment does not go to plan**The reassessment will be retaking the MCA test and TCA in the same format

### **What you will be able to do after the module**

1. Understand and apply the principles of networking, protocols and associated technologies
2. Understand and apply the maths required to design an addressing scheme
3. Design install and configure a simple computer network using routers and switches
4. Recognise any risks or safety issues associated with the safe operation of computing and network systems
5. Recognise legal, social, ethical & professional issues related to computer networks
6. Demonstrate knowledge of information security issues, security threats, firewalls and vulnerabilities

### **How this relates to the dimensions of Solent’s Real-world curriculum framework**

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| --- | --- | --- |
| Dimensions | How students learn | How students are assessed |
| Students are challenged to think in critical, creative and applied ways | Learning the module material will allow you to apply it to interesting and engaging scenarios. | The skills assessment will assess creative and applied skills for constructing computer networks |
| Students are inspired to do research through inquiry, curiosity and problem-solving | The online activities are based around solving problems and the classroom activities are related to connecting real networks with real equipment. | Feedback is provided for formative assessment of skills based activities.  |
| Students experience an intellectually stimulating curriculum which inspires them to learn for life | The certification program is part of a lifelong learning strategy created by network professionals endorsed | The MCA assessment is preparation for industry based certifications with similar questions |

### **Summative assessment details**

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| --- | --- | --- |
| AE1 | Weighting: | 50% |
|  | Assessment type: | MCA Tests |
|  | Aggregation: | Aggregated to AE2  |
|  | Length/duration: | 90mins |
|  | Online submission: | No |
|  | Grade marking: | No |
|  | Anonymous marking: | Yes |

|  |  |  |
| --- | --- | --- |
| AE2 | Weighting: | 50% |
|  | Assessment type: | TCA |
|  | Aggregation: | Aggregated to AE1  |
|  | Length/duration: | 120mins |
|  | Online submission: | No |
|  | Grade marking: | No |
|  | Anonymous marking: | Yes |

### **Module Author**: Warren Earle

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| Module Title: Introduction to Networks and Security |
| Credit Points: | 20 | Module Code: | COM412 |
| FHEQ Level: | 4 | School/Service | SMAT |
| Module Delivery Model: | CD | Max/Min student numbers | 25 |
| Module Leader: | Warren Earle |
| HECOS code | 100365 |

### **Module change history:**

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| --- | --- | --- | --- |
| Module Approved/Year Implemented/Code | July 2019 | 2020/21 | COM412 |
| Module modified/Year Implemented/Code |  |  |  |
| Add extra rows as required |  |  |  |