Module Specification

Network Monitoring and Diagnostics

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Contents

Part 1: Information

Module title: Network Monitoring and Diagnostics

Module code: UFCE55-30-2

Level: Level 5

For implementation from: 2024-25

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Field:

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: The ability to select and use tools to analyse network activity to monitor, diagnose and isolate faults is a essential skill for any network professional. This module will equip students with the knowledge and skills to use a range of tools and analyse traffic and identify erroneous patterns and begin to make recommendations for fixes or remedial action.

Features: Not applicable

Educational aims: This module aims to teach students with the skills required to identify and isolate network faults. Students will be equipped with a practical toolkit to capture, log and analyse common network faults, and use these to make informed corrective actions.

Outline syllabus: This module will cover core networking theory before continuing to explore a wide range of technical fault finding. Practical emends will be delivered in a lab environment.

TCP/IP stack and typical associated protocols and technolgies

7 layer OSI, and typical associated protocols

-Firewalls, eg NAT/DNAT

-Network simulation, eg Cisco Packet Tracer, Microtik Virtual Appliances, Sophos UTM VA

-Network monitoring tools, eg SNMP, PRTG, TheDUDE

-Capture tools, eg Wireshark

-Wireless fault finding

-Network capacity eg, bottlenecks, throughput, latency, overheads

Part 3: Teaching and learning methods

Teaching and learning methods: This module will the delivered through introductory lectures covering the fundamentals and technical underpinning of the module before progressing onto practical delivery through a series of lessons, workshops and practical tasks in a Network Lab to develop the tools and techniques required to complete the assessment for this module.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Collate and analyse traffic, logs and diagnostic data to diagnose network faults or errors to formulate a strategy for remedial actions.

MO2 Apply corrective measures to resolve faults and configure mentoring and testing to confirm effective resolution.

MO3 Evaluate network performance to identify bottlenecks and recommend improvements

MO4 Evaluate the TCP/IP stack and identify common areas and protocols for investigation.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link

Part 4: Assessment

Assessment strategy: This module is supported through two assessments:

The first is a series of three, one hour, in class tests that will be conducted in a suitable network lab environment covering the awareness of the tools available, the setup and configuration of network monitoring/capture and finally, the ability to effectively analyse captured data to form a diagnostic/conclusion. One of these assessments could be completed in pairs or small groups to facilitate discussion, agree action and work collaboratively to achieve a common goal.

The second and final assessment is a practical portfolio in which students will be required to analyse a given scenario , develop a strategy and identify remedial actions.

The resit strategy should follow the same format as the first assessment. Group tasks may be taken individually and scaled appropriately.

Assessment tasks:

Laboratory Report (First Sit)

Description: Evaluate a provided case study to complete a 2000 word lab report.

Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

In-class test (First Sit)

Description: In this assessment students will undertake three, one-hour in-class tests

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested:

Laboratory Report (Resit)

Description: Evaluate a provided case study to complete a 2000 word lab report.

Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

In-class test (Resit)

Description: In this assessment students will undertake three, one-hour in-class tests

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Digital and Technology Solutions (Network Engineer) {Apprenticeship-UCW} [UCW] BSc (Hons) 2023-24