



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

UNIVERSITY OF WALES: TRINITY SAINT DAVID
PRIFYSGOL CYMRU: Y DRINDOD DEWI SANT

BSc Cloud Computing

London Campus

Network Programmability
ACCA5029

Module Code	ACCA5029
Title	Network Programmability
Date	09/09/2020
Level	5
Credits	20
Pre-Requisites	None

AIM(S)

- To give students the ability to work with network programmability and automation tools, with a further focus on software devops.

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to:

- Demonstrate a robust understanding of the key principles of network programmability tools and languages to solve specific problems.
- Apply appropriate analysis, design, implementation and testing techniques for programming and automation of network devices.

INDICATIVE CONTENT

- Configuration management and orchestration tools, e.g. Chef, Puppet, Ansible, Saltstack, Terraform, Pulumi.
- Principles and practice of Infrastructure as Code (IaC).
- Key scripting languages for network programmability, e.g. Python, JavaScript, Bash, PowerShell.
- Software design principles for network engineers: devops, continuous integration, source control, etc.
- Necessary auxiliary technologies for network programmability, e.g. Linux, Mako, Ruby, XML, JSON, YAML.
- Data modelling languages, e.g. YANG.
- API programming for networking and automation, e.g. the NAPALM library.
- Programming for IoT implementation

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning	0	0%
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Implementation + report	2500 words equivalent	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Essay	2500 words	50%

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	100%
Practical	0%
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACCA5029	
Module Title	Network Programmability	
Classification	Reading List entry	Electronic*
Essential	Jason Edelman, Scott S. Lowe, Matt Oswalt. Network Programmability and Automation: Skills for the Next-Generation Network Engineer. 2018, O'Reilly Media	☐
Essential	Kief Morris. Infrastructure as Code: Managing Servers in the Cloud. 2016, O'Reilly Media	☐
Further	Betsy Beyer, Jennifer Petoff, Chris Jones, Niall Richard Murphy. Site Reliability Engineering. 2016, O'Reilly	☐
Further	Sam Washington & M.O Faruque Sarker. Learning Python Network Programming 2015, Packt Publishing	☐
Further	ACM	☒
Further	IEEE	☒
Further	Computer Networking	☒
Further	Data Communications	☒