



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

MODULE DIRECTORY

LEVEL 6

ACADEMIC DISCIPLINE OF BIRMINGHAM AND LONDON CAMPUS

BSc CLOUD COMPUTING

INSTITUTE OF INNER CITY LEARNING

2023-2024

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INTRODUCTION

This Module Directory includes all the modules for Level 6 within the Institute of Inner City Learning in the academic year 2023-2024.

This directory accompanies the Programme of Study Handbook, which will provide you with details of which modules you will be studying for your programme this year in the 'Programme of Study' section. This directory may include modules that are running on other programmes of study within your Academic Discipline/Institute. If you require assistance in identifying the modules for your programme of study, please contact the Programme Manager (whose name and contact details are provided in the accompanying Programme of Study Handbook), or the relevant Institute Office.

The University has made every effort to make the information as full and as accurate as possible, but you should note that minor changes in the organisation of modules between the planning stage and the actual teaching are inevitable. We shall try to keep any such changes to a minimum, and you will receive plenty of advance warning in the event of any alteration. We would also be grateful if you would let us know about any changes that you think might be helpful if introduced into future handbooks.

MODULES

Module Code	ACCB6000
Title	Advanced Cyber Security
Date	09/09/2020
Level	6
Credits	20
Pre-Requisites	None

AIM(S)

- To provide students with Cyber Security concepts and a deep understanding of how they are applied using Internet technologies. Students will gain a thorough understanding of up-to-date security threats and vulnerabilities posed to the Internet and an understanding of the legal, policy and technical approaches that are necessary to mitigate such risks.

LEARNING OUTCOMES

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

- Demonstrate a systematic understanding of a wide range of current research and technological advances in Cyber Security.
- Consistently apply the principles and practices of Cyber Security for mitigating the key technical internet security vulnerabilities and threats that organisations face.

INDICATIVE CONTENT

- Fundamentals of Computer Security.
- Networking Concepts.
- Cryptography.
- Internet Security Technologies.
- Security of Computer Communications.
- Wireless Security.
- Windows Security.
- Linux Security.
- Web Applications and Security.
- Defensive Network Infrastructure – Intrusion Detection/Firewalls.
- Malware, Virus and Worms.
- Network Traffic Analysis and Forensics using Wireshark.
- Data Loss Prevention.
- Penetration Testing.

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
Portfolio	5000 words equivalent	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCB6000	
Module Title	Advanced Cyber Security	
Classification	Reading List entry	Electronic*
Essential	The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws, 2ed. Author: D. Stuttard.	☒
Essential	Cisco CyberOps Associate CBROPS 200-201 Official Cert Guide By Omar Santos Published Dec 10, 2020 by Cisco Press. Part of the Certification Guide series. Copyright 2021 ISBN-10: 0-13-680783-6 ISBN-13: 978-0-13-680783-4	☒
Essential	Cracking the Coding Interview: 189 Programming Questions and Solutions 6th Edition. Author: Gayle Laakmann.	☒
Essential	Basic Security, Penetration Testing and How to Hack. Author: Isaac Sharpe.	☐
Essential	Cyber Insecurity: Navigating the Perils of the Next Information Age. Author: Richard Harrison.	☒
Essential	Counter Hack Reloaded: A Step-by-Step Guide to Computer Attacks and Effective Defenses (2nd Edition) 2nd Edition. Authors: Edward Skoudis, and Tom Liston.	☒
Essential	www.netacad.com username & password required	☒
Further	Applied Cryptography: Protocols, Algorithms and Source Code in C. Author: Bruce Schneir. (2015)	☒
Further	The Art of Exploitation, 2nd Edition. Author: Jon Erickson.	☐
Further	Beginner to Expert Guide to Computer Hacking, Basic Security, and Penetration Testing (Computer Science Series) Kindle Edition. Author: James Patterson.	☐

Further	Hacking for Beginners – Computer Virus, Cracking, Malware, IT Security (Cyber Crime, Computer Hacking, How to Hack, Hacker, Computer Crime, Network Security, Software Security), Author: Joseph Connor.	☐
Further	Journals IEEE/ACM, IEEE/ACM Transactions on Networking IEEE, IEEE Network Magazine Science Direct Scopus ACM Transactions on Database Systems ACM Transactions on Information Systems	☒
Further	Websites http://www.veracode.com/directory/owasp-top-10 http://www.vulnerabilityassessment.co.uk/Penetration%20Test.html http://www.softwaretestinghelp.com/penetration-testing-tools/ https://www.owasp.org/index.php/Main_Page DoD Cyber Crime Center (http://www.dc3.mil) http://www.digitalforensicsmagazine.com/ www.dvwa.co.uk	☒

Module Code	ACCB6019
Title	Emerging Trends
Date	25/03/2021
Level	6
Credits	20
Pre-Requisites	None

AIM(S)

- To enable students to demonstrate a theoretical or practical understanding of current technologies, concepts or practices.

LEARNING OUTCOMES

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

- Analyse the principles and concepts associated with an emerging field of computing such as the professional practices being adopted in industry, a novel technology or a new application of an existing technology.
- Evaluate the effectiveness, benefits, drawbacks or suitability of deploying appropriate technologies or approaches to the solution of a problem as part of a team and/or as an individual.

INDICATIVE CONTENT

- Current or emerging technologies within fields such as networking, web development, software applications, data analytics
- Software or network design methodologies
- Professional practices
- Testing approaches within programming, network implementations, usability, etc.
- Software tools and libraries such as network simulation tools, rootkits, graphics SDKs, game engines, software libraries, software development tools, testing tools, etc.
- Critical, analytical thinking and writing

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
Portfolio	May take the form of an essay, a presentation and/or an implementation 4000 words equivalent	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCB6019	
Module Title	Emerging Trends	
Classification	Reading List entry	Electronic*
Essential	The nature of this module requires up to date sources. These will be provided to the students during the module. Essential texts will change during the course of the module.	
Further	Bejtlich, R. (2015) The Tao of Network Security Monitoring: Beyond Intrusion Detection, Boston: Addison-Wesley	☒
Further	Stallings, W. (2017) Cryptography and Network Security: Principles and Practice (7th Edition), Pearson Education Limited	☒
Further	Sommerville, I. (2015), Software Engineering, , Pearson	☒

Module Code	ACCA6020
Title	Independent Project
Date	25/06/2020
Level	6
Credits	40
Pre-Requisites	None

AIM(S)

- To develop the ability of students to engage critically and innovatively with theory and/or practice relevant to their studied subject areas in order to produce a discipline specific in-depth project.

LEARNING OUTCOMES

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

- Demonstrate intellectual skills in the identification of an appropriate topic, problem or challenge for investigation pertinent to their field of study and formulate a suitable plan for further research utilising relevant investigative methods in order to produce a response.
- Evidence in-depth knowledge and critical understanding of principles necessary to underpin their education within their chosen field of study and problem solving techniques applicable to this.
- Evidence independence of thought and critical evaluation in the production of an independent piece of work, demonstrating transferable skills through exercising initiative and personal responsibility in planning own learning and self-management.
- Organise their knowledge and learning through use of a range of media, and present their work appropriately in a manner that can be understood by specialist and non-specialist audiences.

INDICATIVE CONTENT

- Research paradigms, methods, and techniques of research and enquiry.
- Conducting and writing literature reviews.
- Ethical concerns and the research process.
- Resource, project, and skills management processes and techniques.
- Presenting and illustrating data and information.
- Communication of general, specialist, technical ideas and results.
- Problem solving, creative, entrepreneurial thinking and approaches.
- Collaboration, adaptability and reflection.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	36	9%
Independent learning	364	91%
Placement learning	0	0%
TOTAL	400	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Portfolio	Minimum of 3 elements (equivalent to 10,000 words)	100%

Assessment Summary

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

INDICATIVE READING LIST

This will be guided by the student's individual project.

Module Code	ACCA6020	
Module Title	Independent Project	
Classification	Reading List entry	Electronic*
Essential	Cottrell S, (2015) <i>Skills for Success Personal Development and Employability, 3rd edition</i> , Palgrave. London.	☒
Essential	ASET, 2013 <i>Good Practice Guide for Workbased Learning and Placement Learning in Higher Education</i>	☒
Essential	Gray, D.E. (2018) <i>Doing Real World Research</i> , London: SAGE.	☐
Further	Gallagher K, (2016) <i>Essential Study and Employment Skills For Business and Management Students</i> , Oxford	☐
Further	Gottschall, Jonathan (2013), <i>The Storytelling Animal: How Stories Make Us Human</i> , Houghton Mifflin	☐
Further	Storr, Will (2020), <i>The Science of Storytelling</i> , William Collins	☐
Further	Cohen, L. Manion, L. and Morrison, K. (2017) <i>Research Methods in Education, 8th edition</i> London: Routledge.	☒

Further	Flick, U. (2014) <i>An Introduction to Qualitative Research</i> , London: SAGE.	☐
Further	Aubrey, K. & Riley, A. (2017) <i>Understanding and Using Challenging Education Theories</i> , London: SAGE.	☒
Further	Brinkmann, S. and Kvale, S. (2018) <i>Doing Interviews (Qualitative Research Kit)</i> . Sage	☐
Further	Gibbs, G. (2018) <i>Analysing Qualitative Data (Qualitative Research Kit)</i> . Sage	☒
Further	Creswell, J. W. (2012). <i>Qualitative inquiry and research design: Choosing among five approaches</i> . Sage	☐
Further	Obschonka, M., Hakkarainen, K., Lonka, K. <i>et al.</i> Entrepreneurship as a twenty-first century skill: entrepreneurial alertness and intention in the transition to adulthood. <i>Small Bus Econ</i> 48 , 487–501 (2017). https://doi.org/10.1007/s11187-016-9798-6	☒
Further	https://ec.europa.eu/jrc/en/entrecomp	☒

Module Code	ACCA6022
Title	Switching, Routing and Wireless
Date	09/09/2020
Level	6
Credits	20
Pre-Requisites	None

AIM(S)

- To study the technical issues related to routing and switching techniques, to have an in-depth knowledge of architecture, components, and operations of routers and switches in a larger and more complex network.

LEARNING OUTCOMES

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

- Demonstrate a detailed understanding of theoretical and practical knowledge relating to routing and switching concepts.
- Implement routing and switching techniques within a network infrastructure, configure routing protocols, VLANs and perform network maintenance.

INDICATIVE CONTENT

- Switching concepts – layer 2 & 3
- Routing concepts – Static and dynamic, implementation and troubleshooting
- Routing Information Protocol v1 & v2
- Virtual Local Area Networks (VLANs)
- Inter VLAN routing
- Spanning tree protocols
- VLAN Trunking protocols and Dynamic Trunking protocols
- LAN Security concepts and implementation
- Wireless LAN

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
Practical portfolio	Students will complete practical works as an in-class tests or as a workshop journal	75%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Online test	1 hours	25%

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	25%
Practical	75%
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACCA6022	
Module Title	Switching, Routing and Wireless	
Classification	Reading List entry	Electronic*
Essential	www.netacad.com username and password is required	☒
Essential	Switching, Routing, and Wireless Essentials Companion Guide (CCNAv7) Published Aug 18, 2020 by Cisco Press . Part of the Companion Guide series. ISBN-10: 0-13-672935-5 ISBN-13: 978-0-13-672935-8	☒
Further	Scaling Networks Essentials v6 Companion Guide by Cisco Networking Academy, Cisco Press. Published Aug 3, 2017	☒
Further	W Odom (2019) CCNA 200-301 Official Cert Guide Library, Cisco Press part of the Official Cert Guide series	☐

Module Code	ACCA6025
Title	Cloud Computing Administration
Date	09/09/2020
Level	6
Credits	20
Pre-Requisites	None

AIM(S)

- To provide students with a systematic understanding of the major concepts and technologies upon which service-level cloud computing is built. The module will expose students to some of the more advanced cloud computing concepts that underpin more sophisticated cloud computing implementations.

LEARNING OUTCOMES

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

- Demonstrate a systematic understanding of cloud computing concepts, principles and practice in the analysis and design of a robust solution from end user perspective.
- Exercise effective judgment in the analysis, planning, deployment and evaluation of core cloud design principles with respect to best practice

INDICATIVE CONTENT

- Design, deployment, and operation of cloud services and distributed systems
- Understanding roles, access requirements and availability
- Application and Server management, server OS – Windows, Linux & Unix, Virtual Machines
- Application architecture and services, load balancing, resiliency and scalability
 - Amazon web services, MS Azure, Google Cloud, IBM Cloud Services
- Cloud security management
- Financial planning, costing metrics and pricing models
- Quality of service and service level agreements
- Disaster recovery strategy, redundancy

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
Portfolio	6000 words equivalent Students will produce a portfolio of work appropriate to the nature of their area of study. Portfolio elements may include a selection of the following: • Written Report • Presentation slides • Software/hardware implementation • Demonstration of work	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA6025	
Module Title	Cloud Computing Administration	
Classification	Reading List entry	Electronic*
Essential	Thomas Erl, Ricardo Puttini, Zaigham Mahmood (2013) Cloud Computing: Concepts, Technology & Architecture Prentice Hall	☒
Essential	Christina J. Hogan, Strata R. Chalup, Thomas A. Limoncelli (2015) Practice of Cloud System Administration, The: DevOps and SRE Practices for Web Services, Volume 2, Addison-Wesley Professional ISBN: 9780133478549	☒
Further	Ray Rafaels (2015) Cloud Computing: From Beginning to End, CreateSpace Independent Publishing Platform	☒
Further	IEEE Transactions on Cloud Computing	☒
Further	IEEE, IEEE Cloud Magazine	☒
Further	Science Direct	☒
Further	Scopus	☒
Further	ACM Transactions on Internet Technology (TOIT) Systems	☒