



Prifysgol Cymru
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University of Wales
Trinity Saint David

MODULE DIRECTORY

LEVEL 7

COMPUTING

WALES INSTITUTE OF SCIENCE & ART

2021-2022

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INTRODUCTION

This Module Directory includes all the modules for Level 7 within Computing in the academic year 2021-2022.

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	ACCA7002
Title	Database Systems
Date	16/08/2018
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To provide students with a systematic theoretical and practical understanding of the design, implementation and application of database systems. Including more advanced concepts that underpin multi-user database architectures for business applications.

LEARNING OUTCOMES

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

- Apply well-established database analysis and design techniques to critically analyse and implement real-world database application scenarios.
- Critically evaluate selected database methods, tools and techniques and their deployment in a multi-user database environment.

INDICATIVE CONTENT

- Database models (e.g. relational, Object-oriented and Object relational)
- Database design and entity analysis techniques e.g. conceptual, logical and physical database design, entity relationship modelling, normalisation and indexes.
- Structured Query Language (SQL): data definition, data manipulation and data control languages.
- Database security and access control, e.g. database security threats and countermeasures, access control techniques.
- Multi-user database concepts e.g. transaction management, concurrency control and recovery and distributed databases, CAP Theorem.
- Non-SQL database systems and concepts e.g. NoSQL and NewSQL technologies.
- Professional, legal and ethical issues related to data management and data governance.
- Introduction to Big Data Concepts e.g. Hadoop

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		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Coursework	2,500 words	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Coursework	2,500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7002	
Module Title	Database Systems	
Classification	Reading List entry	Electronic*
Essential	Connolly, T., Begg, C., (2015), <i>Database Systems: A Practical Approach to Design, Implementation and Management</i> , 6 th Edition, Pearson (Int)	☒
Essential	Hernandez, M., (2013), <i>Database Design for Mere Mortals: A Hands-on Guide to Relational Database Design 3rd Edition</i> , Addison Wesley	☐
Essential	Hills, T., (2016), <i>NoSQL and SQL Data Modeling: Bringing Together Data, Semantics, and Software</i> , Technics Publications	☒
Further	Dayley, B., (2014), <i>NoSQL with MongoDB in 24 Hours</i> , Sams Teach Yourself, Sams Publishing	☒
Further	Harrison, G., (2015), <i>Next Generation Databases: NoSQL and Big Data</i> , Apress	☒

Further	Sullivan, D., (2015), <i>NoSQL for Mere Mortals</i> , Addison-Wesley Professional	☐
Further	Ricardo, C. M., Urban, S. D. (2015), <i>Databases Illuminated</i> , 3rd Edition, Jones & Bartlett Learning	☐
Further	IEEE Xplore	☒
Further	ACM Transactions	☒

Module Code	ACCA7003
Title	Object-Oriented Programming
Date	16/08/2018
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To provide the student with a conceptual understanding of abstract data types, data structures and algorithms used in computer science and software engineering and the ability to apply these concepts using object oriented development methods.

LEARNING OUTCOMES

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

- Critically evaluate the suitability of selected algorithms and data structures to solve given problems
- Design and develop OO applications to solve a given problem scenario.

INDICATIVE CONTENT

- Abstract data types (ADT)
- Simple data structures: stacks, queues
- Static and dynamic memory allocation for implementing data structures
- Files and record structures
- Containers and iterators
- Lists, linked lists, heaps, trees, binary trees, graphs
- sorting and searching algorithms
- Hashing: open addressing, chaining
- Complexity considerations
- Concepts of object orientation including objects, classes, encapsulation composition, inheritance, delegation, polymorphism, interfaces.
- Object oriented design methods
- UML
- Software frameworks, SDK, API programming
- Object oriented programming

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		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written exam	2 hours	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Coursework	2,500 words	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACCA7003	
Module Title	Object-Oriented Programming	
Classification	Reading List entry	Electronic*
Essential	Thottungal,F.J. (2017) Introduction to Algorithms: Quick & Easy, Amazon Media	☒
Essential	Sedgewick (2014) Algorithms 4 th edition (Deluxe), Amazon Media	☒
Essential	Meyers.S (2014) Effective Modern C++, O'Reilly Media	☒
Further	Stroustrup,B (2014) Programming: Principles and Practice Using C++	☐
Further	Gonnet, G. and Baeza-Yates, R., (1991) <i>Handbook of Algorithms and Data Structures</i> , Addison-Wesley	☐
Further	IEEE Xplore	☐
Further	ACM Transactions	☐

MODULE CODE: ACCA7004
TITLE: Web Development
DATED: 16/08/2018

LEVEL: 7
CREDITS: 20

JACS CODE: I200

AIM(S)

To provide students with a systematic theoretical and practical understanding of the web application languages and techniques.

LEARNING OUTCOMES

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

- Demonstrate a systematic understanding of the web application development process and the architecture of web applications.
- Select and critically evaluate the web development technologies, techniques and tools applied to the implementation of a web application.

INDICATIVE CONTENT

- Client-side development languages and techniques. HTML, CSS, SASS, etc.
- Applications of JavaScript including AJAX and the role of web services in application development. Data exchange using JSON.
- Virtualisation of developer environments e.g. using Docker, etc.
- Server-side development
- Database programming including ORM tools.

LEARNING AND TEACHING STRATEGY

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
Report	2500 words	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report	2500 words	50%

Assessment Summary

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

READING LIST

Module Code	ACCA7004	
Module Title	Web Development	
Classification	Reading List entry	Electronic*
Essential	Nixon, R., (2018), <i>Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5, 5th Edition</i> , O'Reilly	☒
Essential	Flanagan, D., (2011), <i>JavaScript: The Definitive Guide: Activate Your Web Pages</i> , O'Reilly	☒
Essential	Freeman. A., (2017), <i>Pro ASP.NET Core MVC 2, 7th Edition</i> , Apress	☒
Further	Welling, L., Thomson, L., (2016), <i>PHP and MySQL Web Development, 5th Edition</i> , Addison-Wesley Professional	☒
Further	Mead, A., (2018), <i>Learning Node.js Development: Learn the fundamentals of Node.js, and deploy and test Node.js applications on the web</i> , Packt Publishing	☒
Further	Meloni, J.C., (2014), <i>HTML, CSS and JavaScript All in One, Sams Teach Yourself: Covering HTML5, CSS3, and jQuery, 2nd Edition</i> , Sams Publishing	☒
Further	Miell, I., Sayers, A. H., (2016), <i>Docker in Practice</i> , Manning Publishing	☐
Further	IEEE Xplore	☒
Further	ACM Transactions	☒

MODULE CODE: ACCA7005
TITLE: Web Services
DATED: 16/08/2018

LEVEL: 7
CREDITS: 20

JACS CODE: I200

AIM(S)

To provide students with a systematic theoretical and practical understanding of the design and implementation of cloud-based applications and services.

LEARNING OUTCOMES

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

- Deploy cloud-based technologies, design principles and patterns to build web services and applications.
- Critically evaluate technologies, tools, patterns and methods for cloud application development.

INDICATIVE CONTENT

- Web services, REST Web Services, etc.
- Cross-Origin Resource Sharing (CORS)
- Serverless applications.
- Cloud computing, ethos of the public cloud, cloud related design patterns e.g. Stability patterns such as the Bulkhead and Circuit Breaker patterns
- Concurrency including race conditions, semaphores, mutexes, async, etc.

LEARNING AND TEACHING STRATEGY

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
Report	2500 words	50%

Assessment Component 2

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Exam	2 hours	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	0%
TOTAL	100%

READING LIST

Module Code	ACCA7005	
Module Title	Web Services	
Classification	Reading List entry	Electronic*
Essential	Balachandar, B. M., (2017), <i>RESTful Java Web Services: A pragmatic guide to designing and building RESTful APIs using Java, 3rd Edition</i> , Packt Publishing	☒
Essential	Gilbert, J., (2018), <i>Cloud Native Development Patterns and Best Practices: Practical architectural patterns for building modern, distributed cloud-native systems</i> , Packt Publishing	☒
Essential	Stojanovic, S., (2018), <i>Serverless Applications with Node.js: Using AWS Lambda and Claudia.js</i> , Mannings Publications	☐
Further	Wittig, A., Wittig, M., (2018), <i>Amazon Web Services in Action, 2nd Edition</i> , Mannings Publications	☐
Further	Kalin, M., (2013), <i>Java Web Services: Up and Running: A Quick, Practical, and Thorough Introduction, 2nd Edition</i> , O'Reilly	☒
Further	Burns, B., (2018), <i>Designing Distributed Systems: Patterns and Paradigms for Scalable, Reliable Services</i> , O'Reilly	☒
Further	Zambrano, B., (2018), <i>Serverless Design Patterns and Best Practices: Build, secure, and deploy enterprise ready serverless applications with AWS to improve developer productivity</i> , Packt Publishing	☒
Further	Sreeram, P. K., (2017), <i>Azure Serverless Computing Cookbook: Build applications hosted on serverless architecture using Azure Functions</i> , Packt Publishing	☒
Further	IEEE Xplore	☒
Further	ACM Transactions	☒

MODULE CODE: ACCA7006
TITLE: Major Project
DATED: 16/08/2018

LEVEL: 7
CREDITS: 60

JACS CODE: I200

AIM(S)

- To deepen students' critical faculties and powers of expression providing them with practice in the organisational skills necessary to pursue a research project using appropriate research methodologies to investigate and analyse relevant issues.
- To allow the student to advance their knowledge and understanding by undertaking and managing a significant project of their own choice, related to the major themes of their MSc programme.

LEARNING OUTCOMES

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

- Critically evaluate technical and other literature and to apply the evidence gathered to solve a complex problem
- Demonstrate a professional and systematic approach to the solution of complex problems
- Demonstrate high level professional skills to present information both orally and in a written form
- Demonstrate the ability, as an individual, to plan a complex project and to produce a convincing artefact as a solution to the problem
- Understand and effectively apply the legal ethical and professional issues in the development of a project

INDICATIVE CONTENT

- Research principles and approaches
- Research methodologies - historical, descriptive, correlational, comparative, experimental.
- Developing a proposal - research statement, research outline and design research schedule
- Collation and communication - recording and organising information, analysis of results, communicating the results, referencing, plagiarism.
- Project planning - project time scale control
- Establishing and justifying metrics, analysis of test results, including software benchmarking,
- Contingency planning
- Development of documentation for academic projects
- Presentation of work produced to an academic audience
- Subject-specific content as required
- Intellectual property - copyright, trademarks, patents.

- Social and cultural context, and ethical issues

LEARNING AND TEACHING STRATEGY

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	15	3%*
Independent learning	585	97%
Placement learning	0	0%
TOTAL	600	100%

(*Note: regular contact with project supervisor will also be required, and is included in the hours above)

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Project Proposal	2,000 words	10%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Final Report	11,000 words max	70%

Assessment Component 3

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
Final Presentation	20 minutes	20%

The Major Project module deviates from the standard assessment recommendations given in the quality handbook due to its special role within the programme. This module has been developed and perfected over many years and it was found that without several levels of intermediate assessment then students tended to fall behind on this module.

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	80%
Practical	20%
TOTAL	100%

READING LIST

Module Code	ACCA7006	
Module Title	Major Project	
Classification	Reading List entry	Electronic*
Essential	McCormac, C. and Davis, J. (2015) <i>Research Project Success: The Essential Guide for Science and Engineering Students</i> , Cambridge: Royal Society of Chemistry	☒
Essential	Greenfield, T. (2016) <i>Research Methods for Postgraduates</i> , London: Arnold	☒
Further	O'Leary, Z. (2015) <i>The Essential Guide to Doing Your Research Project</i> , Newcastle upon Tyne: Sage	☒
Further	Kranzler, J. H. (2017) <i>Statistics for the Terrified</i> , Upper Saddle River: Prentice Hall	☒
Further	Maylor H. (2010) <i>Project Management</i> , Boston: Pearson	☐
Further	Avison, D. and Fitzgerald, G. (2007) <i>Information Systems Development: Methodologies, Techniques and Tools, 4th Edition</i> , New York: McGraw-Hill	☐
Further	Highsmith J. (2009) <i>Agile Project Management: Creating Innovative Products, 2nd Edition</i> , Boston: Addison-Wesley	☒
Further	Hughes, B. and Cotterell, M. (2009) <i>5th Software Project Management</i> , New York: McGraw-Hill	☐
Further	Phillips, J. (2010) <i>IT Project Management: On Track from Start to Finish</i> , New York: McGraw-Hill	☐
Further	Yeates, D, Cadle (2008), <i>Project Management for Information Systems (5th Edition)</i> , Upper Saddle River: Prentice Hall	☐
Further	Baase, S. (2012) <i>A Gift of Fire: Social, Legal, and Ethical Issues for Computing and the Internet: International Edition, 4th Edition</i> , Boston: Pearson	☐
Further	Collis, J. and Hussey, R. (2009) <i>Business Research: a Practical Guide for Undergraduate and Postgraduate Students</i> , 3rd Edition, London: Palgrave Macmillan	☐
Further	Cottrell, S. (2011) <i>Critical Thinking Skills: Developing Effective Analysis and Argument - Palgrave Study Guides</i> , 2nd Edition, London: Palgrave Macmillan	☐
Further	Davies, M. B. (2007) <i>Doing a Successful Research Project</i> , London: Palgrave Macmillan	☐
Further	Dawson, C. W. (2009) <i>Projects in Computing and Information Systems: a Student's Guide</i> , 2nd Edition, Boston: Addison-Wesley	☐
Further	Denscombe, M. (2010) <i>The Good Research Guide</i> , Oxford: OUP	☐
Further	Few, S. (2012) <i>Show Me the Numbers: Designing Tables and Graphs to Enlighten</i> , Burlingame: Analytics Press	☐
Further	Quinn, M. J. (2010) <i>Ethics for the Information Age: International Edition - 4th Edition</i> , Boston: Pearson	☐
Further	Yin, R. K. (2008) <i>Case Study Research: Design and Methods</i> , 4th Edition, Newcastle upon Tyne: Sage	☐

Further	Journals ACM Transactions on Information Systems Behaviour and Information Technology Communications on the ACM International Journal of Electronic Commerce Journal of Strategic Information Systems Journal of Systems Management	☒
Further	Websites http://www.acm.org http://www.bized.co.uk http://www.managers.org.uk http://www.cbronline.com http://www.eeVL.ac.uk http://juno.emeraldinsight.com http://www.ft.chadwyck.co.uk http://www.itwales.com http://www3.gartner.com http://www.silicon.com http://www.mckinseyquarterly.com http://www.zdnetweek.co.uk http://projectmanagement.ittoolbox.com/ http://www.ics.ltsn.ac.uk/resources/projman/index.html http://www.niwotridge.com/Resources/PM-SWEResources/PMResources.htm http://www.tickit.org/international.htm http://www.bcs.org/ http://www.uml.org/ http://www.omg.org/	☒

MODULE CODE: ACCA7008
TITLE: Advanced Artificial Intelligence & Machine Learning
DATED: 22/08/2018

LEVEL: 7
CREDITS: 20

JACS CODE: I320

AIM(S)

To develop the student's ability to apply suitable artificial intelligence principles, methods and techniques.

LEARNING OUTCOMES

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

1. Demonstrate and critically apply and justify the application of a range of AI methods and techniques to enhance, for example, the realism of visual effects, the quality of computer game experience and the effectiveness of software applications.
2. Systematically evaluate the validity of the methods and techniques employed with respect to their suitability and effectiveness.

INDICATIVE CONTENT

- Definition and review of Artificial Intelligence, General History, Computer Games AI and AI in VFX.
- Trigger systems, terrain analysis, obstacle evasion, movement, influence maps
- Decision making and the development of methods for controlling and implementing behaviour of agents (bots). For example, fuzzy logic, knowledge representation, rule based systems, decision trees, etc.
- Local search methods, evolutionary computing.
- Machine Learning and Pattern Recognition: unsupervised/ supervised learning, Regression Classification – e.g. Naïve Bayes, Clustering – e.g. K-means, Function approximation/neural nets, Bayesian networks.
- Complexity and Emergent Behaviour including swarming, flocking and particle systems
- Agent Based Modelling
- Camera Systems

LEARNING AND TEACHING STRATEGY

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
Essay	2500 words	50%

Assessment Component 2

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Exam	2 hours	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	0%
TOTAL	100%

READING LIST

Module Code	ACCA7008	
Module Title	Advanced Artificial Intelligence & Machine Learning	
Classification	Reading List entry	Electronic*
Essential	Russell, S. and Norvig, P. (2013) <i>Artificial Intelligence: A Modern Approach, 3rd Edition</i> , Boston: Pearson	☐
Essential	Bishop, C. M. (2007) <i>Pattern Recognition and Machine Learning</i> , New York: Springer	☐
Essential	Lee, R. (2015) <i>Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing</i> : Springer	☐
Further	Millington, I. (2009) <i>Artificial Intelligence for Games, 2nd Edition</i> , London: CRC	☐
Further	Rabin, S. (2013) <i>Game AI Pro: Collected Wisdom of Game AI Professionals</i> , London: CRC	☐
Further	Schwab, B. (2008) <i>AI Game Engine Programming, 2nd Edition</i> , Hingham: Charles River Media	☐
Further	Mark, D. (2009) <i>Behavioral Mathematics for Game AI</i> , New York: Delmar	☐
Further	Barber, M. (2012) <i>Bayesian Reasoning and Machine Learning</i> , Cambridge: Cambridge University Press	☐
Further	IEEE Transactions on Computational Intelligence and AI in Games	☐
Further	Journal of Games Development	☐
Further	Artificial Intelligence	☐

Further	International Journal of Intelligent Games and Simulation	☐
Further	http://www.acm.org	☒
Further	http://www.aigamedev.com	☒
Further	http://www.ieee.org	☒
Further	http://www.mathcentre.ac.uk	☒
Further	http://www.aiwisdom.com	☒

MODULE CODE: ACCA7009
TITLE: Data Security
DATED: 22/08/2018

LEVEL: 7
CREDITS: 20

JACS CODE: I111

AIM(S)

- To provide students with the concepts and an understanding to recognise the threats and vulnerabilities present in existing systems. They must learn how to manage the use of information assets securely and support the goals and objectives of their organizations through effective information security governance, risk management, and regulatory compliance.

LEARNING OUTCOMES

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

1. Demonstrate a systematic understanding of a wide range of current research and technological advances in network security.
2. Consistently apply the principles and practices of Data security with skills and experiences to administer and manage the more secure computing environment that organisations need.

INDICATIVE CONTENT

- Introduction to Management of Information Security.
- The need for Security.
- Compliance: Law and Ethics.
- Governance and Strategic Planning for Security.
- Information Security Policy.
- Developing the Security Program.
- Risk Management: Identifying and Assessing Risk.
- Risk Management: Controlling Risk.
- Security Management Models.
- Security Management Practices.
- Planning for Contingencies.
- Security Maintenance and the Management of Digital Forensics.
- Protection Mechanisms.
- Cryptography.
- Physical Security.
- Implementing Information Security.
- Security and Personnel.
- Information Security Maintenance.
- Intrusion Detection, Prevention Systems and Other Security Technology.
- Access Controls, Firewalls and VPNs.

LEARNING AND TEACHING STRATEGY

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
Exam	2 hours	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Report	2500 words	50%

Assessment Summary

Activity type	Percentage
Written exam	50
Coursework	50
Practical	
TOTAL	100%

READING LIST

Module Code	ACCA7009	
Module Title	Data Security	
Classification	Reading List entry	Electronic*
Essential	Management of Information Security 5th Ed by Michael E Whitman, Herbert	☐
Essential	Principles of Information Security 6 th Ed by Michael E. Whitman	☐
Further	The Management of Network Security, Technology, Design and Management Control, by Houston, H. Carr, Charles A. SNYDER and Bliss N. Bailey	☐
Further	Cryptography and Network Security: Principles and Practice, Global Edition, 7/E William Stallings	☐
Further	Network Security Essentials: Applications and Standards, Global Edition, 6/E William Stallings	☐

Further	Fundamentals of Information Systems Security, by David Kim and Michael G. Solomon	☐
Further	IEEE/ACM, IEEE/ACM Transactions on Networking	☒
Further	IEEE, IEEE Network Magazine	☒
Further	Science Direct	☒
Further	Scopus	☒
Further	ACM Transactions on Database Systems	☒
Further	ACM Transactions on Information Systems	☒
Further	CISCO Academy Website, cisco.netacad.net (password access only)	☒

Module Code	ACCA7014
Title	Agile Web Services
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To provide students with a systematic theoretical and practical understanding of the design and implementation of cloud-based applications and services within an agile software development environment.

LEARNING OUTCOMES

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

- Deploy, develop and critically evaluate cloud-based technologies, design principles and patterns to build web services and applications.
- Show a mastery of contemporary agile software engineering principles including software development methods, tools and techniques used in the development of a software artefact.

INDICATIVE CONTENT

- Web services, REST Web Services, etc.
- Cross-Origin Resource Sharing (CORS)
- Serverless applications.
- Cloud computing, ethos of the public cloud, cloud related design patterns e.g. Stability patterns such as the Bulkhead and Circuit Breaker patterns
- Concurrency including race conditions, semaphores, mutexes, async, etc.
- Unified Process (UP), Agile Methodologies (XP, Scrum etc.)

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

(Tick one)

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Exam	2 hours	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report	2500 words	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	0%
TOTAL	100%

READING LIST

Module Code	ACCA7014	
Module Title	Agile Web Services	
Classification	Reading List entry	Electronic*
Essential	Balachandar, B. M., (2017), <i>RESTful Java Web Services: A pragmatic guide to designing and building RESTful APIs using Java</i> , 3 rd Edition, Packt Publishing	☒
Essential	Gilbert, J., (2018), <i>Cloud Native Development Patterns and Best Practices: Practical architectural patterns for building modern, distributed cloud-native systems</i> , Packt Publishing	☒
Essential	Stojanovic, S., (2018), <i>Serverless Applications with Node.js: Using AWS Lambda and Claudia.js</i> , Mannings Publications	☐
Essential	Laster, B (2018) <i>Jenkins 2: Up and Running: Evolve Your Deployment Pipeline for Next Generation Automation</i> , Boston: O'Reilly	☒
Further	Wittig, A., Wittig, M., (2018), <i>Amazon Web Services in Action</i> , 2 nd Edition, Mannings Publications	☐
Further	Kalin, M., (2013), <i>Java Web Services: Up and Running: A Quick, Practical, and Thorough Introduction</i> , 2 nd Edition, O'Reilly	☒
Further	Burns, B., (2018), <i>Designing Distributed Systems: Patterns and Paradigms for Scalable, Reliable Services</i> , O'Reilly	☒
Further	Zambrano, B., (2018), <i>Serverless Design Patterns and Best Practices: Build, secure, and deploy</i>	☒

	<i>enterprise ready serverless applications with AWS to improve developer productivity</i> , Packt Publishing	
Further	Sreeram, P. K., (2017), <i>Azure Serverless Computing Cookbook: Build applications hosted on serverless architecture using Azure Functions</i> , Packt Publishing	☒
Further	Rosenberg, D. and Stephens, M. (2013) <i>Use Case Driven Object Modeling with UML Theory and Practice</i> , New York: Apres	☐
Further	IEEE Xplore	☒
Further	ACM Transactions	☒

Module Code	ACCA7015
Title	Data Mining and Visualisation
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To develop the student's ability to apply suitable statistical and data mining techniques using a variety of supervised and unsupervised data mining methods.

LEARNING OUTCOMES

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

- Apply and justify the application of a range of statistical methods and data mining techniques to the extraction of information from data.
- Critically evaluate the validity of the techniques employed with respect to the relevant data and to their intended use.
- Interpret the intelligence provided by the data mining process within the context of the data set investigated.
- Effectively communicate the data mining process and its results to a decision maker.

INDICATIVE CONTENT

- Data mining methodologies such as CRISP-DM and SEMMA
- Data preparation, visualisation and exploration
- Basic techniques: statistical modelling, decision trees, rulesets, association rules, linear models, regression, instance-based learning, clustering, multi-instance learning, text mining, sentiment analysis
- Credibility of data mining solutions; training and testing, information loss, cost curves; minimum description length principle
- Machine learning; classification, association, perceptrons, numeric prediction, Bayesian networks, semi-supervised and unsupervised learning
- Data transformations; attribute selection, discretisation, projection, sampling, cleansing
- Applications of data mining
- Software tools for data mining

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
Presentation	8 minutes	25%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report	4,500 words	75%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7015	
Module Title	Data Mining and Visualisation	
Classification	Reading List entry	Electronic*
Essential	North, M. (2018) <i>Data Mining for the Masses, 3rd Ed.: With Implementations in RapidMiner and R</i> . CreateSpace Independent Publishing	☒
Essential	Witten, I. H., Frank, E., Hall, M. A. and Pal, C. J. (2016) <i>Data Mining: Practical Machine Learning Tools and Techniques, 4th Edition</i> , Burlington: Morgan Kaufmann	☒
Further	Tuffery, S. (2011) <i>Data Mining and Statistics for Decision Making</i> , Hoboken: Wiley	☒
Further	Kranzler, J.H. (2017) <i>Statistics for the Terrified</i> , Pearson	☒
Further	Few, S. (2012), <i>Show Me The Numbers</i> , Analytics Press, Burlingame, CA.	☒
Further	Websites: http://www.kdnuggets.com/	☒

	http://www.kdd.org/	
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Module Code	ACCA7016
Title	Emerging and Future Trends
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To give students both a theoretical and a practical understanding of the design, operation and applications of the most important emerging and future technologies in the field of information technology.

LEARNING OUTCOMES

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

- Consistently apply a systematic understanding of the emerging technologies.
- Design, test and critically analyse real world network scenarios using state of the art modelling and simulation of emerging and advanced technologies.

INDICATIVE CONTENT

- Current and emerging web-based technologies.
- Internet of Things & Cloud Computing
- Artificial intelligence
- Digital ethics and privacy
- Software development
- Virtualisation – server, operating system
- Containerisation
- Mobile/Social Internet
- Blockchain
- Mobile technologies
- Wireless Power
- Nanotechnology
- Quantum Computing
- New Screens
- CX – Customer Journey, Experience, Commerce & Personalisation

- New Touch Interfaces
- Collaborative Technologies
- Big Data
- Automation
- Robots
- Immersive media

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

(Tick one)

☐ 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	
Coursework	100%
Practical	
TOTAL	100%

READING LIST

Module Code	ACCA7016	
Module Title	Emerging and Future Trends	
Classification	Reading List entry	Electronic*
Essential	Stallings, W. (2017) Cryptography and Network Security: Principles and Practice (7th Edition), Pearson Education Limited	☒
Essential	Bejtlich, R. (2005) The Tao of Network Security Monitoring: Beyond Intrusion Detection, Boston: Addison-Wesley	☐
Essential	McClure, S. (2012) Hacking Exposed 7: Network Secrets and Solutions, New York: McGraw-Hill Osborne	☒
Further	Anderson, R. (2008), Security Engineering: A Guide to Building Dependable Distributed Systems, 2nd Edition, Hoboken: Wiley	☐
Further	Blunden, W. (2013) The Rootkit Arsenal: Escape and Evasion in the Dark Corners of the System, 2nd Edition, Burlington: Jones and Bartlett Learning	☐
Further	Stallings, W. (2010), Network Security Essentials (4th Edition), Upper Saddle River: Prentice Hall	☐
Further	Gollmann, D. (2006) Computer Security, 3rd Edition, Hoboken: Wiley	☐
Further	Pfleger, C. P. (2011), Analyzing Computer Security: A Threat / Vulnerability / Countermeasure Approach, Upper Saddle River: Prentice Hall	☐
Further	Galbreath, N. (2002) Cryptography for Internet and Database Applications: Developing Secret and Public-Key Techniques with Java, Hoboken: Wiley	☐
Further	Stinson, D. R. (2005) Cryptography: Theory and Practice, 3rd Edition, London: CRC	☐
Further	Provos, N. and Holz, T. (2008), Virtual Honeypots from Botnet tracking to Intrusion Detection, Boston: Addison-Wesley	☐
Further	Stallings, W. (2013) Cryptography and Network Security: Principles and Practice, Boston: Pearson	☐
Further	Ferguson, N., Schneier, B. and Kohno, T. (2010) Cryptographic Engineering: Design Principles and Practical Applications, Hoboken: Wiley	☐
Online	IEEE Transactions on Security & Privacy	☒
Online	IEEE Transactions on Information Forensics and Security	☒
Online	ACM Digital Library	☒
Online	Science Direct	☒

Module Code	ACCA7017
Title	Implementing IP Routing
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To study in depth the technical issues related to advanced routing protocols and switching. To have a detailed knowledge of internal and external routing protocols and to understand the fundamental technical principles underlying autonomous systems.

LEARNING OUTCOMES

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

- Consistently apply a comprehensive and detailed knowledge of IP Routing within enterprise network environments.
- Implement advanced routing protocols in the administration of WAN and LAN internetworks.

INDICATIVE CONTENT

- IP routing: static, dynamic and on-demand routing.
- Classful and classless routing.
- Distance vector and link state routing protocols.
- EIGRP, DUAL algorithm, load balancing, and authentication.
- OSPF, area types, network types, and authentication.
- BGP: IBGP, EBGP, single homed, dual homed, and multi homed.
- Route manipulation and implementing path control.
- IPv6 in an enterprise network
- Router security
- Routing protocol authentication

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

(Tick one)

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
In class test	2 hours	50%

Assessment Component 2

(Tick one)

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
In-class test	2 hours	50%

Assessment Summary

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

READING LIST

Module Code	ACCA7017	
Module Title	Implementing IP Routing	
Classification	Reading List entry	Electronic*
Essential	CCNP Routing and Switching ROUTE 300-101 Official Cert Guide (2014), Kevin Wallace by Cisco Press	☒
Essential	CISCO Academy Website, www.netacad.com (password access only)	☒
Further	Chris Bryant's CCNP ROUTE 300-101 Study Guide ISBN: 1517583942 ISBN-13: 9781517583941	☒
Further	Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide: (CCNP ROUTE 300-101), D Teare, B Vachon and R Graziani, (2015) Cisco Press	☒

Module Code	ACCA7018
Title	IP Switched Networks
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To study in depth the technical details related to switching within an enterprise network. To have a detailed knowledge of multilayer switching and VLANs and to understand the underlying principles of their deployment in enterprise networks.

LEARNING OUTCOMES

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

- Consistently apply a comprehensive and detailed knowledge of IP switching techniques within an enterprise networks.
- Select and deploy various switching techniques to design, implement and troubleshoot complex switch networks using Layer 2 and 3 switches on Enterprise networks.

INDICATIVE CONTENT

- Enterprise campus architecture
- Layer 2, layer 3, layer 4, and layer 7 switching
- Switch Configuration
- Switch Port Configuration
- Implementing VLANs in campus networks
- VLAN trunking, Private VLANs, link aggregation and Etherchannel
- Spanning tree protocol (STP), Rapid STP, and multiple spanning tree (MSTP).
- Inter-VLAN routing
- DHCP in a multilayer switched environment
- Securing Switched networks

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

(Tick one)

☒ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
In-class test	2 hours	50%

Assessment Component 2

(Tick one)

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
In-class test	2 hours	50%

Assessment Summary

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

READING LIST

Module Code	ACCA7018	
Module Title	IP Switched Networks	
Classification	Reading List entry	Electronic*
Essential	CCNP Routing and Switching SWITCH 300-115 Official Cert Guide (2014), David Hucaby by Cisco Press	☒
Essential	CISCO Academy Website, www.netacad.com (password access only)	☒
Further	Chris Bryant's CCNP SWITCH 300-115 Study Guide ISBN: 1517351227 ISBN 10: 9781517351229	☒
Further	Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide: (CCNP SWITCH 300-115), R Froom & E Frahm, (2015) Cisco Press	☒

Module Code	ACCA7019
Title	Network Security
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To provide students with an appreciation of information 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 posed to networks 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:

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

INDICATIVE CONTENT

- Current and emerging security related web-based technologies eg Intranet, ecommerce
- Use of the Security Policy and Security Management in an organisation eg roles and responsibilities, security policies
- Cryptography and Digital Identification: PKI, Signatures, Certificates
- Cyber security
- Web server security
- Operating system security
- Firewalls and their architectures e.g. packet filtering, proxies and stateful-packet inspection
- Virtual Private Networks (VPNs) concepts
- Implementing Defence-in-Depth strategies: eg tools for scanning system weaknesses
- The future of Information Security eg m-commerce, ID theft, biometrics
- Wireless Security

- Intrusion detection
- Honeypots/Honeynets

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
Report	6,000 words	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7019	
Module Title	Network Security	
Classification	Reading List entry	Electronic*
Essential	Stallings, W. (2017) Cryptography and Network Security: Principles and Practice (7th Edition), Pearson Education Limited	☒
Essential	Stallings, W. (2017), Network Security Essentials (6th Edition), Pearson Education Limited 2017	☒
Essential	Stallings, W. (2018), Computer Security: Principles and Practice, Global Edition 4th Edition	☐
Further	Blunden, W. (2013) The Rootkit Arsenal: Escape and Evasion in the Dark Corners of the System, 2 nd Edition, Burlington: Jones and Bartlett Learning	☒
Further	McClure, S. (2012) Hacking Exposed 7: Network Secrets and Solutions, New York: McGraw-Hill Osborne	☒
Further	Pfleger, C. P. (2012), Analyzing Computer Security: A Threat / Vulnerability / Countermeasure Approach, Pearson Education Ltd	☒

Further	Ferguson, N., Schneier, B. and Kohno, T. (2010) Cryptographic Engineering: Design Principles and Practical Applications, Hoboken: Wiley	☒
Further	Provos, N. and Holz, T. (2008), Virtual Honeypots from Botnet tracking to Intrusion Detection, Boston: Addison-Wesley	☒
Further	Bejtlich, R. (2005) The Tao of Network Security Monitoring: Beyond Intrusion Detection, Boston: Addison-Wesley	☒
Further	Galbreath, N. (2002) Cryptography for Internet and Database Applications: Developing Secret and Public-Key Techniques with Java, Hoboken: Wiley	☒
Online	IEEE Transactions on Security & Privacy	☒
Online	IEEE Transactions on Information Forensics and Security	☒
Online	ACM Digital Library	☒
Online	Science Direct	☒

Module Code	ACCA7020
Title	User Experience Design
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To support students in the development of pervasive and engaging user experiences, in particular those focussed on media-rich multi-modal interaction with ubiquitous and personal computing devices.

LEARNING OUTCOMES

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

- Critically reflect upon current design practice, selecting appropriate techniques and technologies for a wide range of media-rich and multi-modal interactions.
- Research user needs within both personal and social interactivity spheres for complex loosely-defined problems.
- Select and apply appropriate UX methodologies and good practices to prototype innovative interaction within a social context.
- Critically analyse and reflect upon the results of UX testing.

INDICATIVE CONTENT

- Principles and techniques of UX/user-centred design; best practices; criticisms
- Human beings; ergonomics, psychophysics, psychology, perception and cognition
- UX Elements; visual design, information architecture, interaction design, usability, multimodality
- Interaction requirements; social and emotional requirements; single-user and multi-user interactions
- Prototyping, modeling, patterns, personae; scenarios; gamification
- UX testing; designing and running testing workshops
- Ubiquitous computing; Internet of Things devices.

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

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report and prototype	3000 words	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report and prototype	3000 words	50%

Assessment Summary

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

READING LIST

Module Code	ACCA7020	
Module Title	User Experience Design	
Classification	Reading List entry	Electronic*
Essential	Benyon, D. (2018) <i>Designing User Experience: A guide to HCI, UX and Interaction Design</i> . Pearson.	☐
Essential	Krug, S. (2013), <i>Don't Make me Think Revisited</i> . Voices That Matter.	☒
Further	Norman, D. (2013), <i>The Design of Everyday Things (revised & expanded edition)</i> . MIT Press.	☒
Further	Bergstrom, J. R. (Ed) (2014) <i>Eye Tracking in User Experience Design</i> . Morgan Kaufman	☒
Further	Gothelf, J. and Seiden, J. (2016) <i>Lean UX: Designing Great Products with Agile Teams</i> . O'Reilly	☐
Further	Websites: https://www.nngroup.com/ https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed	☐

Further	Journals: ACM Transactions on Computer-Human Interaction ACM Transactions on Graphics IEEE Explore IEEE Spectrum IEEE Transactions on Human-Machine Systems IEEE Transactions on Systems, Men & Cybernetics IEEE Transactions on Visualisation & Computer Graphics	☐
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Module Code	ACCA7021
Title	Web Technologies
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	N/A

AIM(S)

- To equip the student with a conceptual and practical understanding of web languages and standards and their application in the development of web sites which conform to usability guidelines.

LEARNING OUTCOMES

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

- Develop a conceptual understanding of the essential principles and techniques required in an effective, well designed web site, using appropriate web standard languages.
- Develop web applications using client- and server-side programming language(s) to solve a range of web-based problem scenarios.

INDICATIVE CONTENT

- Understand the rationale and semantics of Web Standard languages;
- User needs analysis;
- Theory of WWW structure and hypertext navigation;
- File size constraints regarding quality vs download times;
- Procurement and processing of media for web use
- Human, social and cultural factors relevant to web authoring;
- Information architectures such as website tree diagrams, wire-frames, site maps, storyboards;
- Usability and Accessibility guidelines;
- Format web pages using markup language (eg HTML5)
- Presentation and positioning of information using CSS, layout techniques eg responsive sites
- Scripting and site interactivity using DOM scripting eg JavaScript;
- Interaction of websites with server-side languages and databases
- Practical security consideration for websites

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

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Implementation with supporting documentation	5,000 words equivalent	100%

Assessment Summary

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

READING LIST

Module Code	ACCA7021	
Module Title	Web Technologies	
Classification	Reading List entry	Electronic*
Essential	Nixon, R. (2016) <i>Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5</i> , 4 th Edition, O'Reilly Media	☐
Further	Krug, S. (2013) <i>Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability</i> , 3 rd Edition, San Francisco: Voices That Matter/New Riders	☐
Further	Welling, L. (2016) <i>PHP and MySQL Web Development</i> , 5th Edition, Addison Wesley	☐
Further	Clark-Salt, J. (2012) <i>SQL Injection Attacks and Defense</i> , 2nd Edition, Syngress	☐
Further	DuBois, P. (2013) <i>MySQL</i> , 5th Edition, Addison Wesley	☐

Module Code	ACCA7022
Title	Advanced Statistical Programming
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To develop the knowledge and skills required to perform more advanced statistical analysis of experimental and informatics data.
- To develop the knowledge and skills required to perform basic statistical programming in an appropriate programming language.

LEARNING OUTCOMES

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

- Select and apply appropriate statistical methods for the analysis of experimental data
- Manipulate data and implement statistical programming techniques on large datasets
- Select and apply appropriate visualisation methods for the presentation of analytical data
- Perform data exploration using appropriate visualisation tools.

INDICATIVE CONTENT

- Data input and output in multiple formats, including graphical plots.
- Scripts and functions.
- Performing basic statistical analyses including correlation analysis and statistical tests.
- Building packages with suitable documentation and examples.
- Data preparation for import into analysis and visualisation tools.
- Interactive data exploration.

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
Essay	2,500 words	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Essay	2,500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7022	
Module Title	Advanced Statistical Programming	
Classification	Reading List entry	Electronic*
Essential	Matloff, N. (2013) <i>The Art of R Programming</i> , No Starch Press	☒
Essential	Spiegelhalter, D. (2019) <i>The Art of Statistics: Learning From Data</i> . Pelican Books, Penguin Random House.	☒
Further	Kranzler, J.H. (2010) <i>Statistics for the Terrified</i> , Pearson	☒
Further	Cotton, R (2013) <i>Learning R</i> , O'Reilly	☒
Further	Alvaro, F (2016) <i>R: Easy R Programming for Beginners</i> , Pearson	☒
Further	Spiegel, M.R (2014) <i>Shaum's Outline of Statistics, fifth ed.</i> , McGraw Hill Education Limited	☒
Further	Gonick, L & Smith, W. (2000) <i>Cartoon Guide to Statistics</i> , William Morrow Paperbacks	☒

Module Code	ACCA7023
Title	Agile Development and Software DevOps
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To enable students to critically evaluate and deploy agile software development methods, tools, patterns and techniques in the design and implementation of software
- To provide a systematic understanding of the critical role that Software development operations (DevOps) and tool chains play within agile development environments

LEARNING OUTCOMES

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

- Critically evaluate the practices and tools used by agile development teams to efficiently develop reliable software
- Demonstrate a deep understanding of the importance of agile software development and the Software DevOps processes for automation, monitoring, testing and collaboration

INDICATIVE CONTENT

- Agile Software development process and approaches e.g. SCRUM
- Software development methods e.g. Feature Driven Development
- Software design methods e.g. User Stories, User Story Mapping
- Continuous Integration (CI) e.g. automated software building and testing using Jenkins
- Configuration Management for the automation of system changes e.g. Ansible, Puppet etc.
- Continuous Delivery (CD), version control tools e.g. using Git for branching and merging
- Continuous Monitoring and Testing e.g. the automation of testing
- Continuous Deployment e.g. using Ansible or Terraform to deploy a build
- Software design principles e.g. cohesion vs coupling
- Software design patterns e.g. Singleton, Factory Pattern

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	5,000 words or 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 • Documented application of tools or processes • Software implementation • Demonstration of their work e.g. written or presentation Team based assessment (this would only ever form a part of the assessment)	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7023	
Module Title	Agile Development and Software DevOps	
Classification	Reading List entry	Electronic*
Essential	Sommerville, I. (2015), Software Engineering, Pearson	☒
Essential	Krief, M., (2019) Learning DevOps: The complete guide to accelerate collaboration with Jenkins, Kubernetes, Terraform and Azure DevOps, Packt Publishing	☒

Further	Leszko, R., (2019) Continuous Delivery with Docker and Jenkins: Create secure applications by building complete CI/CD pipelines, 2 nd Edition, Packt Publishing	☒
Further	Gamma, E., Helm, R. Johnson, R., Vlissides, J., (1994), Design patterns : elements of reusable object-oriented software, Addison Wesley	☒
Further	Crispin, L., (2008), Agile Testing: A Practical Guide for Testers and Agile Teams, Addison-Wesley	☒
Further	Sutherland, J., (2015) Scrum: The Art of Doing Twice the Work in Half the Time, Random House Business	☒
Further	Laster. B., (2018) Jenkins 2 - Up and Running, O'Reilly	☒
Further	Keeting, J., Freeman, J., (2019) Mastering Ansible: Effectively - automate configuration management and deployment challenges with Ansible 2.7, Packt Publishing	☒

Module Code	ACCA7024
Title	Analytics and Visualisation for Data Science
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To develop the knowledge and skills required to perform basic statistical analysis of experimental and business data.
- To introduce students to a wide variety of techniques used to display different types of data effectively.

LEARNING OUTCOMES

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

- Select and apply appropriate statistical methods for the analysis of well-defined problems.
- Demonstrate an ability to present nominal, ordinal, categorical, time series, and network data in forms that enable the easy understanding of the data
- Demonstrate an ability to rearrange data in order to extract hidden information from it
- Apply colour, position, size, shape and icons to encode information creatively and effectively to solve well-defined problems in information visualisation.

INDICATIVE CONTENT

- Frequency distributions, descriptive statistics, the normal curve, percentiles and standard scores, hypothesis development, significance levels, confidence limits.
- Correlation coefficients, regression, the t test, analysis of variance tests, chi-square test.
- Software for statistical analysis and data visualisation.
- Different types of data; nominal, ordinal, categorical, network data; univariate, bivariate, trivariate, hypervariate data.
- Appropriate display methods for differing data types; graphs, tables, icons.
- Histograms, boxplots, scatterplots, barcharts, mosaic plots, parallel coordinate plots, maps.
- Rearranging data to extract meaning from it; introducing distortion to provide clarity.
- Identifying problems with visualisations.

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		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Essay	2,500 words	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Essay	2,500 words	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7024	
Module Title	Analytics and Visualisation for Data Science	
Classification	Reading List entry	Electronic*
Essential	Spiegelhalter, D. (2019) <i>The Art of Statistics: Learning from Data</i> , Pelican Books, Penguin Random House.	☒
Essential	Few, S. (2012), <i>Show Me The Numbers</i> , Analytics Press, Burlingame, CA.	☒
Further	Kranzler, J.H. (2010) <i>Statistics for the Terrified</i> , Pearson	☒
Further	Spiegel, M.R (2014) <i>Shaum's Outline of Statistics, fifth ed.</i> , McGraw Hill Education Limited	☒
Further	Gonick, L & Smith, W. (2000) <i>Cartoon Guide to Statistics</i> , William Morrow Paperbacks	☐
Further	Spence, R. (2006), <i>Information Visualization: Design for Interaction</i> . Prentice Hall	☐

Module Code	ACCA7025
Title	Application of Machine Learning
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To develop in students a systematic understanding of modern machine learning and deep learning principles and practice

LEARNING OUTCOMES

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

- Critically analyse and justify the application of selected machine learning methods and techniques used to solve complex problems.
- Apply and evaluate a range of machine learning methods used to solve given problems
- Analyse given problems and subsequently synthesise and evaluate appropriate solutions using deep learning methods

INDICATIVE CONTENT

- History and Context of ML and Deep Learning
- Machine learning workflows and methodologies
- Datasets, data preparation, feature selection and engineering; training, testing and validation datasets
- Gradient descent, learning rate, loss, stochastic gradient descent
- Generalisation: Underfitting and overfitting, regularisation
- Supervised and unsupervised methods for classification and regression (eg linear regression, polynomial regression, logistic regression, decision trees, SVMs, naïve Bayes, k-means, etc)
- Accuracy, precision and recall, ROC, AUC
- Dimensionality reduction, principle component analysis
- Ensemble Learning
- Neural Networks(NN) and Deep Learning
- Perceptrons, deep neural networks, activation functions
- Training

- Convolutional NN, recurrent NN, autoencoders
- Reinforcement Learning
- Python, virtual environments (eg conda) Scikit-Learn, Pandas, Tensorflow and Keras

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		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written/programming Assignment	3,000 words equivalent	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written/programming Assignment	3,000 words equivalent	50%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7025	
Module Title	Application of Machine Learning	
Classification	Reading List entry	Electronic*

Essential	Geron, A. (2019) Hands-on Machine Learning with Scikit-Learn, Keras, and TensorFlow (2 nd edition), O'Reilly	☒
Essential	Goodfellow. I, Bengio. Y, Courville. A and Bach. F (2017), Deep Learning, MIT Press	☒
Further	Burkov, A (2019) The Hundred-Page Machine Learning Book, Burkov, A	☒
Further	Chollet, F. (2017) Deep Learning with Python Paperback , Manning Publications	☒
Further	Russell, S. and Norvig, P. (2009) Artificial Intelligence: A Modern Approach (3rd edition), Prentice Hall	☒
Further	Barber, M. (2012) Bayesian Reasoning and Machine Learning, Cambridge University Press	☒
Further	Bishop, C.M. (2007) Pattern Recognition and Machine Learning, Springer	☐

Module Code	ACCA7026
Title	Artificial Intelligence
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To develop the students' ability to solve complex problems using modern AI principles and practice

LEARNING OUTCOMES

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

- Critically analyse, evaluate and justify selected AI methods and techniques used to solve complex problems.
- Analyse given problems and subsequently synthesise and evaluate appropriate solutions using selected AI methods and techniques.

INDICATIVE CONTENT

- Definitions of Strong and Weak AI
- Ethics and Risks of developing AI
- Agent Based Learning
- Problem solving as search: Informed and un-informed search; Global and Local search; Optimisation and constraints
- Population based search: Genetic Algorithms and Particle Swarm Optimisation
- Knowledge representation, reasoning and inference; propositional and predicate logic
- Rule based systems, expert systems, fuzzy logic
- Natural Language Processing
- Perception and Vision: Image processing, object recognition and reconstruction of the 3D world.
- Machine Learning: Supervised, unsupervised methods for classification and regression (eg Decision trees, SVMs, Naïve Bayes, k-means, Neural Networks, etc.)
- Reinforcement Learning

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		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Assignment	3,000 words	50%

Assessment Component 2

☒ Written exam ☐ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Exam	2 hours	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACCA7026	
Module Title	Artificial Intelligence	
Classification	Reading List entry	Electronic*
Essential	Russell, S. and Norvig, P. (2009) Artificial Intelligence: A Modern Approach (3rd edition), Prentice Hall	☒
Essential	Goodfellow, I; Bengio, Y; Courville, A; Bach, F (2017), Deep Learning, MIT Press	☒
Further	Cormen, T; Leiserson, C; Rivest, R; Stein, C (2009) Introduction to Algorithms (3rd edition), MIT Press	☒
Further	McKinney.W (2017) Python for Data Analysis (2nd edition), O'Reilly	☒
Further	Barber, M. (2012) Bayesian Reasoning and Machine Learning, Cambridge University Press	☒
Further	Bishop, C.M. (2007) Pattern Recognition and Machine Learning, Springer	☐

Module Code	ACCA7027
Title	Cloud Engineering Principles and Practice
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To enable students to critically evaluate cloud related systems, technologies, applications, software development process, administration techniques and principles
- To be able to implement, configure or work within a virtualised environment that can either be deployed to the cloud or implemented within the cloud computing providers platform

LEARNING OUTCOMES

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

- Critically evaluate the cloud computing related technologies and the applications of cloud services
- Implement virtual systems and/or applications that can be deployed to the cloud and demonstrate an understanding of the features of platforms provided by cloud computing providers

INDICATIVE CONTENT

- Containerization using Docker and Kubernetes, building and running images, Docker compose
- Big data. Principles of distributed file systems (Hadoop, AWS EFS), NoSQL e.g. Redis, AWS S3, MongoDB, AWS DynamoDB, Cassandra, CAP Theorem, etc.
- Infrastructure components of cloud computing provider platforms e.g. virtual networks, virtual machines (e.g. EC2 instances), containers (e.g. AWS ECS), gateways, etc.
- Availability and scalability e.g. Load balancing and scaling groups.
- Web service and microservice deployment, message and event queues e.g. RabbitMQ, Kafka, AWS Simple Queue Service
- Security of virtualized systems, authorization, firewalls, security groups, etc.
- Applications e.g. web servers, Node.js web services, IoT, etc.

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		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Portfolio	5,000 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 • Documented application of tools or processes • Administration of virtualized systems • Implementation of cloud computing related applications • Discussion or demonstration of cloud computing platform features or functionality • Demonstration of their work e.g. written or presentation	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7027	
Module Title	Cloud Engineering Principles and Practice	
Classification	Reading List entry	Electronic*

Essential	Kane, S.P., Matthias, K., (2018) Docker: Up & Running: Shipping Reliable Containers in Production, O'Reilly Media	☒
Essential	Laszewski, T., Arora, K., Farr, E., Zonooz, P., (2018) Cloud Native Architectures: Design high-availability and cost-effective applications for the cloud. Packt Publishing	☒
Essential	Perkins, L., Redmond, E., Wilson, J., (2018) Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement, Second Edition. Pragmatic Bookshelf	☒
Further	Burns, B., Beda, J., Hightower, K., (2019) Kubernetes: Up and Running: Dive into the Future of Infrastructure, O'Reilly Media	☒
Further	Bradshaw, S., Brazil, E., Chodorow, K., (2019) MongoDB: The Definitive Guide: Powerful and Scalable Data Storage, O'Reilly Media	☒
Further	Sarkar, A., Shah, A., (2018) Learning AWS, Second Edition. Packt Publishing	☒
Further	Ganesan, K., Skaria, R., Vos, F., (2020) Hands-On Linux Administration on Azure: Develop, maintain, and automate applications on the Azure cloud platform. Packt Publishing	☒
Further	Morris, K., (2016) Infrastructure as Code: Managing Servers in the Cloud. O'Reilly Media	☒

Module Code	ACCA7028
Title	Data Security, Governance and Compliance
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	

AIM(S)

- To provide students with sound principles of information systems security, governance and compliance for organisation goals and objectives. They must learn how to support, manage and make effective use of Information Technology (IT) frameworks, models, new regulations and standards of good practice for security management. Student must be able to assess and recognises emerging threats and vulnerability present in existing systems.

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 data security, governance and compliance.
- Consistently apply the principles and practices of data security with skills and experiences to administer and manage the more secure information and communications technology environment that organisations need.

INDICATIVE CONTENT

- Introduction to Management of Information Security.
- The need for Security.
- Compliance: Law and Ethics.
- Governance and Strategic Planning for Security.
- Security Management Models.
- Security Management Practices.
- Planning for Contingencies.
- Information Security Policy.
- Developing the Security Program.
- Risk Management: Identifying and Assessing Risk.
- Risk Management: Controlling Risk.
- Security Maintenance and the Management of Digital Forensics.

- Protection Mechanisms.
- Cryptography.
- Physical Security.
- Implementing Information Security.
- Security and Personnel.
- Information Security Maintenance.
- Intrusion Detection, Prevention Systems and Other Security Technology.
- Access Controls, Firewalls and VPNs.

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
Exam	2 hours	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Written Report	3,000 words	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACCA7028	
Module Title	Data Security, Governance and Compliance	
Classification	Reading List entry	Electronic*
Essential	Management of Information Security 6th Ed by Michael E Whitman, Herbert	☒
Essential	Principles of Information Security 6th Ed by Michael E. Whitman	☒
Further	The Management of Network Security, Technology, Design and Management Control, by Houston, H. Carr, Charles A. SNYDER and Bliss N. Bailey	☐
Further	Cryptography and Network Security: Principles and Practice, Global Edition, 7/E William Stallings	☐
Further	Network Security Essentials: Applications and Standards, Global Edition, 6/E William Stallings	☐
Further	Fundamentals of Information Systems Security, by David Kim and Michael G. Solomon	☐
Further	IEEE/ACM, IEEE/ACM Transactions on Networking	☒
Further	IEEE, IEEE Network Magazine	☒
Further	Science Direct	☒

Module Code	ACCA7029
Title	Enterprise Core Networking
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To develop in depth the knowledge and skills needed to configure, troubleshoot, and manage enterprise wired and wireless networks. To have a broader architectural understanding and deep implementation skills required by enterprise networks.

LEARNING OUTCOMES

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

- Demonstrate a comprehensive and detailed theoretical and practical knowledge of IP Switching and Routing within enterprise network environments.
- Analyse and apply advanced technologies to support a secure and scalable enterprise network architecture.

INDICATIVE CONTENT

- The hierarchical network design model and architecture using the access, distribution, and core layers.
- Troubleshoot Layer 2 connectivity using VLANs and trunking
- Implementation of redundant switched networks using Spanning Tree Protocol
- Troubleshooting link aggregation using Etherchannel
- Features, metrics, and path selection concepts of Enhanced Interior Gateway Routing Protocol (EIGRP)
- Implementation and optimization of Open Shortest Path First (OSPF)v2 and OSPFv3, including adjacencies, packet types, and areas, summarization, and route filtering for IPv4 and IPv6.
- Implementing External Border Gateway Protocol (EBGP) interdomain routing, path selection, and single and dual-homed networking
- Implementing network redundancy using protocols including Hot Standby Routing Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP)
- Implementing internet connectivity within Enterprise using static and dynamic Network Address Translation (NAT)
- virtualization technology of servers, switches, and the various network devices and components

- Implementing overlay technologies such as Virtual Routing and Forwarding (VRF), Generic Routing Encapsulation (GRE), VPN, and Location Identifier Separation Protocol (LISP)
- the components and concepts of wireless networking including Radio Frequency (RF) and antenna characteristics, and define the specific wireless standards
- the various wireless deployment models available, include autonomous Access Point (AP) deployments and cloud-based designs within the centralized Cisco Wireless LAN Controller (WLC) architecture
- Troubleshooting Enterprise networks using services such as Network Time Protocol (NTP), Simple Network Management Protocol (SNMP), Cisco Internetwork Operating System (Cisco IOS®) IP Service Level Agreements (SLAs), NetFlow, and Cisco IOS Embedded Event Manager
- scalable administration using Authentication, Authorization, and Accounting (AAA) and the local database, while exploring the features and benefits
- The concepts and features of Quality of Service (QoS), and describe the need within the enterprise network

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
Exam	2 hours	50%

Assessment Component 2

☐ **Written exam** ☐ **Coursework** ☒ **Practical**

Mode of assessment	Volume	Weighting
In-class test	3 hours	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	0%
Practical	50%
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACCA7029	
Module Title	Enterprise Core Networking	
Classification	Reading List entry	Electronic*
Essential	B Edgeworth, R G Rios, J Gooley and D Hucaby, (2020) CCNP and CCIE Enterprise Core ENCOR 350-401 Official Cert Guide by Cisco Press	☒
Essential	Cisco Academy Website, www.netacad.com (password access only)	☒
Further	CCNP Routing and Switching ROUTE 300-101 Official Cert Guide (2014), Kevin Wallace by Cisco Press	☒
Further	CCNP Routing and Switching SWITCH 300-115 Official Cert Guide (2014), David Hucaby by Cisco Press	☒

Module Code	ACCA7030
Title	Security Analysis, Techniques and Procedures
Date	31/07/2020
Level	7
Credits	20
Pre-Requisites	

AIM(S)

- To establish concepts relating to essential procedures and corresponding techniques involved in security analysis activities, in correlation to real-world scenarios. Students will gain understanding of security threats, information security procedures and methodologies using up-to-date tools that will allow them to facilitate assessments and technical approaches that are necessary to analyse and mitigate risks, threats, vulnerabilities and attacks relating to cyber incidents which could occur across various industries.

LEARNING OUTCOMES

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

- Provide a systematic understanding of a wide range of current research and technological advances in cyber security incidents and defensive techniques.
- Perform information security assessments, investigate, analyse, and support cyber security activities of an organisation with effective usage of security tools and methodologies.

INDICATIVE CONTENT

- Security Threats, Attack Vectors and Defense Technologies including but not limited to:
 - Elements of Information Security (CIA Triad, Defense in Depth, IDS, etc.)
 - Cryptography
 - Malware Threats
 - Threats to Hosts, Networks and Web Applications
- Security Assessment – Processes and Methodologies including but not limited to:
 - Open-Source Intelligence (OSINT)
 - Social Engineering Campaigns
 - Network Penetration Testing
 - Web Application Penetration Testing
 - Wireless Penetration Testing
- Incident Response and Handling Process including but not limited to:
 - Cyber Kill Chain & Threat Intelligence
 - Security Auditing & Policies
 - Role of SOC in Incident Response
- Forensic Science – Procedures and Methodology
- Information Security and Forensic Tools

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
Report	5,000 words	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7030	
Module Title	Security Analysis, Techniques and Procedures	
Classification	Reading List entry	Electronic*
Essential	Cybersecurity – Attack and Defense Strategies - 2 nd Edition by Yuri Diogenes and Erdal Ozkaya	☒
Essential	The InfoSec Handbook - An Introduction to Information Security by Umesh Hodeghatta Rao and Umesha Nayak	☒
Essential	Computer Forensics: Computer Crime Scene Investigation by John R. Vacca	☒
Essential	Ethical Hacking and Penetration Testing Guide by Rafay Baloch	☒
Further	Digital Forensics and Incident Response Incident Response Techniques and Procedures to Respond to Modern Cyber Threats, 2 nd Edition By: Gerard Johansen	☒
Further	The Open Web Application Security Project (OWASP): https://owasp.org/ , https://owasp.org/www-project-top-ten/	☒
Further	Blunden, W. (2013) The Rootkit Arsenal: Escape and Evasion in the Dark Corners of the System, 2 nd Edition, Burlington: Jones and Bartlett Learning	☒

Further	McClure, S. (2012) Hacking Exposed 7: Network Secrets and Solutions, New York: McGraw-Hill Osborne	☒
Further	Pfleger, C. P. (2012), Analyzing Computer Security: A Threat / Vulnerability / Countermeasure Approach, Pearson Education Ltd	☒
Further	Ferguson, N., Schneier, B. and Kohno, T. (2010) Cryptographic Engineering: Design Principles and Practical Applications, Hoboken: Wiley	☒
Further	Provos, N. and Holz, T. (2008), Virtual Honeypots from Botnet tracking to Intrusion Detection, Boston: Addison-Wesley	☒
Further	Bejtlich, R. (2005) The Tao of Network Security Monitoring: Beyond Intrusion Detection, Boston: Addison-Wesley	☒
Further	Galbreath, N. (2002) Cryptography for Internet and Database Applications: Developing Secret and Public-Key Techniques with Java, Hoboken: Wiley	☒
Online	IEEE Transactions on Security & Privacy	☒
Online	IEEE Transactions on Information Forensics and Security	☒
Online	ACM Digital Library	☒
Online	Science Direct	☒

Module Code	ACFA7003
Title	Masters Project
Date	11/04/2019
Level	7
Credits	60
Pre-Requisites	None

AIM(S)

- To allow the student to advance their knowledge and understanding by undertaking and managing a significant project of their own choice, related to the major themes of their MSc programme.

LEARNING OUTCOMES

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

- critically identify and develop an advanced research topic
- review appropriate literature by contextualising and integrating the study into the continuing development of knowledge and understanding of chosen research topic
- critically formulate a series of research objectives and devise strategies to support these
- demonstrate and display advanced critical, analytic and creative thinking
- demonstrate advanced professional skills to present information both orally and in a written form

INDICATIVE CONTENT

The Masters Project is an essential part of the degree; it is the culmination of the Masters programme. As such, it has been designed and conceived as an integral part of the programme. Preparation for the Masters Project begins early in the programme, and students acquire analytical and other research skills throughout part 1. This underpins and enhances the student's ability to undertake research.

- Formulation and rationale for suitable post-graduate research objectives
- Application of an appropriate methodology for the investigation.
- Collation and communication - recording and organising information, analysis of results, communicating the results, referencing, plagiarism.
- Critical review of appropriate literature within a conceptual/theoretical framework.
- Determination of research results.
- Critical appraisal of the results/solutions of the investigation.
- Project planning - project time scale control
- Oral/visual critique and presentation of the results of the investigation.

- Written and verbal critique of the research
- Intellectual property - copyright, trademarks, patents.
- Social and cultural context, and ethical issues
- Intellectual property - copyright, trademarks, patents.
- Social and cultural context, and ethical issues

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	15	2.5%
Independent learning	585	97.5%
Placement learning	0	0%
TOTAL	600	100%

ASSESSMENT

Assessment Component 1

☐	Written exam	☒	Coursework	☐	Practical
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Mode of assessment	Volume	Weighting
Masters Project	15,000 words equivalent Students will produce a research portfolio of work appropriate to the nature of their project. This will vary slightly according to the nature of the project undertaken. Portfolio elements may include a selection of the following, to be agreed with the external examiner: • Written Report (all students) • Exhibition Board (all students) • Presentation slides • Hardware and/or software implementation	80%

Assessment Component 2

☐	Written exam	☐	Coursework	☒	Practical
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Mode of assessment	Volume	Weighting
Viva voce	15 mins (before questions)	20%

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	80%
Practical	20%
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACFA7003	
Module Title	Masters Project	
Classification	Reading List entry	Electronic*
Essential	McCormac, C. and Davis, J. (2015) <i>Research Project Success: The Essential Guide for Science and Engineering Students</i> , Cambridge: Royal Society of Chemistry	☒
Essential	Greenfield, T. (2016) <i>Research Methods for Postgraduates</i> , London: Arnold	☒
Essential	Cottrell, S. (2011) <i>Critical Thinking Skills: Developing Effective Analysis and Argument - Palgrave Study Guides, 2nd Edition</i> , London: Palgrave Macmillan	☒
Essential	Cottrell, S. <i>Dissertations and Project Reports: A Step by Step Guide</i> (Palgrave Study Skills, 2014)	☒
Essential	O'Leary, Z. (2013) <i>Doing Your Research Project (2nd Edition)</i> , SAGE Publications Ltd	☒
Further	O'Leary, Z. (2015) <i>The Essential Guide to Doing Your Research Project</i> , Newcastle upon Tyne: Sage	☒
Further	Kranzler, J. H. (2017) <i>Statistics for the Terrified</i> , Upper Saddle River: Prentice Hall	☒
Further	Dawson, C. W. (2009) <i>Projects in Computing and Information Systems: a Student's Guide, 2nd Edition</i> , Boston: Addison-Wesley	☒
Further	Dipankar, D. (2019) <i>Engineering Research Methodology: A Practical Insight for Researchers</i> . Springer	☐
Further	Fellows, R. and Liu, A. <i>Research Methods for Construction</i> (Blackwell Oxford, 2015)	☐
Further	Few, S. (2012) <i>Show Me the Numbers</i> , Burlingame: Analytics Press	☒
Further	Hughes, B. and Cotterell, M. (2009) <i>5th Software Project Management</i> , New York: McGraw-Hill	☐
Further	Phillips, J. (2010) <i>IT Project Management: On Track from Start to Finish</i> , New York: McGraw-Hill	☐
Further	Gregoire, T.G. & Valentine, H.T. (2008) <i>Sampling strategies for natural resources and the environment</i> . Chapman, London	☐
Further	Baase, S. (2012) <i>A Gift of Fire: Social, Legal, and Ethical Issues for Computing and the Internet: International Edition, 4th Edition</i> , Boston: Pearson	☐
Further	Collis, J. and Hussey, R. (2009) <i>Business Research: a Practical Guide for Undergraduate and Postgraduate Students</i> , 3rd Edition, London: Palgrave Macmillan	☐

Further	Cottrell, S. (2011) Critical Thinking Skills: Developing Effective Analysis and Argument - Palgrave Study Guides, 2nd Edition, London: Palgrave Macmillan	☐
Further	Davies, M. B. (2007) Doing a Successful Research Project, London: Palgrave Macmillan	☐
Further	Dawson, C. W. (2009) Projects in Computing and Information Systems: a Student's Guide, 2nd Edition, Boston: Addison-Wesley	☐
Further	Hewson, C. , Vogel, C. & Laurent, D. (2015) Internet research methods. Sage: London.	☐
Further	Few, S. (2012) Show Me the Numbers: Designing Tables and Graphs to Enlighten, Burlingame: Analytics Press	☐
Further	Quinn, M. J. (2010) Ethics for the Information Age: International Edition - 4th Edition, Boston: Pearson	☐
Further	Yin, R. K. (2008) Case Study Research: Design and Methods, 4th Edition, Newcastle upon Tyne: Sage	☐
Further	Spence, R. (2014) <i>Information Visualization: an Introduction</i> , Boston: Addison-Wesley	☐
Further	Thiel, D.V. (2014) Research methods for engineers. Cambridge UP	☒
Further	Wheater, C.P. & Cook, P.A. (2015) Using statistics to understand the environment Routledge	☐
Further	Journals ACM Transactions on Information Systems Behaviour and Information Technology Communications on the ACM International Journal of Electronic Commerce Journal of Strategic Information Systems Journal of Systems Management	☒
Further	Websites http://www.acm.org http://www.bized.co.uk http://www.managers.org.uk http://www.cbronline.com http://www.eevl.ac.uk http://juno.emeraldinsight.com http://www.ft.chadwyck.co.uk http://www.itwales.com http://www3.gartner.com http://www.silicon.com http://www.mckinseyquarterly.com http://www.zdnetweek.co.uk http://projectmanagement.ittoolbox.com/ http://www.ics.ltsn.ac.uk/resources/projman/index.html http://www.niwotridge.com/ Resources/PM-SWEResources/PMResources.htm http://www.tickit.org/international.htm http://www.bcs.org/ http://www.uml.org/ http://www.omg.org/	☒

Module Code	ACFA7004
Title	Research Methods and Professional Development
Date	11/04/2019
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- The aim of this module is for students to develop a problem solving approach to research to facilitate their production of a valid and reliable postgraduate dissertation.

LEARNING OUTCOMES

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

- Generate a project proposal that meets a given domain research requirements.
- Identify and visualise a complex research problem within a specific research domain, outline the investigative approach and comprehensively consider appropriate methods and solutions.
- Critically appraise the research process and its outcomes.

INDICATIVE CONTENT

- Core lectures on the principles of postgraduate research :
 - Research principles and approaches (e.g. the research process, purpose, sources of data including primary/secondary research, quantitative/qualitative data, objective/hypothesis formation, reliability, validity)
 - Research methodologies - historical, descriptive, correlational, comparative, experimental
 - Field data - survey design, questionnaires, sampling, statistical techniques, interviews, case studies, observation
 - Developing a proposal - research statement, research outline and design research schedule
 - Project planning - project time scale control
 - Intellectual property - copyright, trademarks, patents
 - Social and cultural context, and ethical considerations
- Writing up and publishing
- Domain specific research methods:
 - Research for engineering
 - Project planning for computing
 - Advanced Quantitative research methods
 - Advanced Qualitative research methods

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
Research Proposal	4,000 words	70%

Assessment Component 2

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
Presentation	10 mins (plus questions)	30%

Assessment Summary

Activity type	Percentage
Written exam	0%
Coursework	70%
Practical	30%
TOTAL	100%

INDICATIVE READING LIST

Module Code	ACFA7004	
Module Title	Research Methods and Professional Development	
Classification	Reading List entry	Electronic*
Essential	Cottrell, S. (2011) Critical Thinking Skills: Developing Effective Analysis and Argument - Palgrave Study Guides, 2 nd Edition, London: Palgrave Macmillan	☒
Essential	Cottrell, S. (2014) Dissertations and Project Reports: A Step by Step Guide, Palgrave Study Skills	☒
Essential	O'Leary, Z. (2013) Doing Your Research Project (2 nd Edition), SAGE Publications Ltd	☒
Further	Dawson, C. W. (2009) Projects in Computing and Information Systems: a Student's Guide, 2 nd Edition, Boston: Addison-Wesley	☒
Further	Dipankar, D. (2019) Engineering Research Methodology: A Practical Insight for Researchers. Springer	☐

Further	Fellows, R. and Liu, A. (2015) Research Methods for Construction, Oxford: Blackwell	
Further	Few, S. (2012) Show Me the Numbers, Burlingame: Analytics Press	☐
Further	Gregoire, T.G. & Valentine, H.T. (2008) Sampling strategies for natural resources and the environment. London : Chapman	☐
Further	Hart, C. (1998) Doing a Literature Review, Sage	☒
Further	Hewson, C., Vogel, C. & Laurent, D. (2015) Internet research methods. London: Sage	☐
Further	Kranzler, J. H. (2011) Statistics for the Terrified, 5 th Edition, Upper Saddle River: Prentice Hall	☐
Further	Leedy. P. D. and Ormrod, J. E. (2012) Practical Research Planning and Design, 10 th Edition, Boston: Pearson Education	☒
Further	Maylor, H. (2010) Project Management, Boston: Pearson Education	☐
Further	Oppenheim, A. (1992) Questionnaire Design, Interviewing and Attitude Measurement, London: Continuum	☒
Further	Spence, R. (2014) Information Visualization: an Introduction, Boston: Addison-Wesley	
Further	Thiel, D.V. (2014) Research Methods for Engineers. Cambridge UP	☒
Further	Wheater, C.P. & Cook, P.A. (2015) Using Statistics to Understand the Environment, Routledge	☒

MODULE CODE: ADGD7001
TITLE: 3D Computer Animation Elements
DATED: 26/04/2018

LEVEL: 7
CREDITS: 20

JACS CODE: W614

AIM(S)

To provide students with a systematic knowledge and understanding of computer generated animation styles and technique some of which are at the forefront of contemporary knowledge by examining principles of the control of motion and the use of timing during execution of animated sequences. To provide students with knowledge of the most common methods of motion, including natural forces, weight, inertia, friction, linear and non-linear motion. To provide students with knowledge of animation grammar including anticipation and theatrical projection.

LEARNING OUTCOMES

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

- Demonstrate originality and expertise in the ability to calculate and optimise levels of animation control to create professional quality animated representations of persona, animal behavior and natural forces.
- Demonstrate advanced contemporary knowledge and mastery of the development tools necessary for the creation of animation.

INDICATIVE CONTENT

- Using Pre-built rig systems
- Custom controls & constraints
- Linear and Nonlinear motion
- Cycling, circular and reciprocating
- Motion control by using and editing function curves
- Motion using code and mathematical functions
- Control of pivot points for rotation and scaling
- Natural forces including gravity, inertia, friction and elasticity
- Generating basic living entities
- The human figure lifting and acting
- Control of human or animal eyes
- The human figure walking
- Camera work and camera grammar

LEARNING AND TEACHING STRATEGY

The theoretical content of the module is communicated through demonstrations and lectures. The supervised workshops enable the student to further investigate techniques, methodology and procedure demonstrated, to create functional animated sequences.

Implementation:

This encourages the students to develop an advanced library of motion work and 3D animation skills to allow for ambitious and evocative computer-generated animation.

Through experimentation and tutorial guidance the student will develop a mastery of the technical requirements in the production of 3D Animation. The approach is systematic and requires each student to experience a wide range of animation tasks which pose specific problems which are normally encountered in animation production workflows.

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

Coursework assessed by around 9 assignments, each one designed to demonstrate their expertise in one particular area of animation, motion or timing. The student is required to present 9 animated sequences to tutors and peers by way of a presentation and explain how creative issues were dealt with and how technical problems were overcome.

Assessment Component 1

(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Presentation	Individual Presentation (10 minutes); Individual Video Portfolio	100%

Assessment Summary

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

READING LIST

Module Code	ADGD7001	
Module Title	3D Computer Animation Elements	
Classification	Reading List entry	Electronic*
Essential	Module Guide: 3D Computer Animation (pdf)	☒

Essential	http://www.learninganimation.co.uk/animation/	☒
Essential	Hooks, E., 2017. Acting for Animators: 4th Edition, 2 edition. ed. Routledge, New York.	☐
Essential	Palamar, T., 2015. Mastering Autodesk Maya 2016: Autodesk Official Press, 1 edition. ed. Sybex, Indianapolis, Indiana.	☐
Essential	Univ, P.S.T.P., 2017. Autodesk Maya 2018: A Comprehensive Guide, 10 edition. ed. CADCIM Technologies.	☐
Further	O'Hailey, T., 2013. Rig it Right! Maya Animation Rigging Concepts, 1 edition. ed. Focal Press, New York.	☐
Further	Osborn, K., 2015. Cartoon Character Animation with Maya: Mastering the Art of Exaggerated Animation, 01 edition. ed. Fairchild Books, London.	☐
Further	Osipa, J., 2010. Stop Staring: Facial Modeling and Animation Done Right, 3rd Edition edition. ed. Sybex, Indianapolis, Ind.	☐

MODULE CODE: ADGD7002
TITLE: 3D Computer Animation Narrative
DATED: 26/04/2018

LEVEL: 7
CREDITS: 20

JACS CODE: W614

AIM(S)

To provide students with a systematic knowledge and understanding of computer generated animation styles and technique some of which are at the forefront of contemporary knowledge by examining principles of the control of motion and the use of timing during execution of animated sequences. To provide students with a knowledge and understanding of common rigging methods used in the preparation of modelled characters and the modelling, preparation and animation of lip synced human faces. To provide students with an opportunity to complete a whole narrative film based on a musical sound track.

LEARNING OUTCOMES

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

- Demonstrate originality and expertise in the ability to calculate and optimise levels of animation control and to prepare a sound track to create professional quality animated representations of persona
- Demonstrate advanced contemporary knowledge and mastery of the development tools necessary for the creation of animation set to music

INDICATIVE CONTENT

- Human Face modelling
- Texturing and image preparation
- Lip sync animation
- Facial expression & secondary motion
- Combining Dynamics & Simulations into animation
- Building Custom controls & constraints
- Analysing music in terms of mood
- Analysing music in terms of structure & rhythm (bar & time signature)
- Planning camera work and shot angles
- Planning the time line.
- Advanced Control of Camera
- Advanced lighting techniques
- Mental Ray rendering

LEARNING AND TEACHING STRATEGY

The theoretical content of the module is communicated through demonstrations and lectures. The supervised workshops enable the student to further investigate techniques, methodology and procedure demonstrated, to create functional animated sequences. Implementation:

It is envisaged that animation classes have helped students develop an advanced library of motion work and 3D animation skills to allow for ambitious and evocative computer-generated animation.

Through experimentation and tutorial guidance the student will develop a mastery of the technical requirements in the production of 3D Animation. The approach is systematic and requires each student to experience a wide range of animation tasks which pose specific problem which are normally encountered in animation production workflows.

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

Coursework assessed by 3 assignments, each one designed to demonstrate their expertise in a variety ways including rigging, lip sync animation and narrative film construction. The student is required to present 3 animated sequences to tutors and peers by way of a presentation and explain how creative issues were dealt with and how technical problems were overcome.

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Presentation	Individual Presentation (10 minutes); Individual Video Portfolio	100%

Assessment Summary

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

READING LIST

Module Code	ADGD7002	
Module Title	3D Computer Animation Narrative	
Classification	Reading List entry	Electronic*
Essential	Module Guide: 3D Computer Animation (pdf)	☒
Essential	Williams, R.E., 2009. The Animator's Survival Kit, Main-Revised Edition edition. ed. Faber & Faber, London.	☐

Essential	Lanier, L., 2015. Advanced Maya Texturing and Lighting, 3rd Edition edition. ed. Sybex, Indianapolis, IN.	☐
Further	http://www.learninganimation.co.uk/animation/	☒
Further	Thomas, F., Johnston, O., 1997. The Illusion of Life: Disney Animation, 1st Hyperion Ed edition. ed. Hyperion, New York.	☐
Further	Yot, R., 2011. Light for Visual Artists: Understanding & Using Light in Art & Design, Reprint edition. ed. Laurence King, London.	☐
Further	Publishing, 3dtotal (Ed.), 2016. Sculpting from the Imagination: ZBrush. 3dtotal Publishing.	☐

MODULE CODE: ADGD7003
TITLE: Production Methods Taught
DATED: 26/04/2018

LEVEL: 7
CREDITS: 10

JACS CODE: W614

AIM(S)

To enable the student to gain a systematic knowledge of contemporary industry standard media production software relevant to their chosen field of research.

LEARNING OUTCOMES

Upon the successful completion of the module the student will be able to:

- Have a systematic understanding of a range of contemporary industry standard media production software.
- Understand the creative and technical issues of the integration of software into production work flows.

INDICATIVE CONTENT

- Referencing & Building 3D assets
- Designing Surface attributes to 3D assets
- Planning 2D graphics assets
- Texturing & matte painting
- Choreographing 3D elements
- Choreographing 2D elements
- Compositing and layering imagery
- Editing and preparation of sound

LEARNING AND TEACHING STRATEGY

This module is designed to develop the student's ability to systematically understand the way in which different software applications are used in a single project. The each student is required to execute an instructional film which demonstrates a simple process (usually the wiring of a 13 amp plug). The instructional film requires the student to able to plan, use and integrate assets generated from different software applications and bring them together into a final animated film. The project involves the use and integration of a painting, 3D, compositing, editing and sound applications

The study time for the module is divided as follows:

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

ASSESSMENT

Coursework assessed by one assignment.

Assessment will consist of a presentation of their final instructional film.

The assessment will be entirely project based, with the student presenting his/her work to the peer group and lecturers for feedback and evaluation. Group discussion about the work should take place to encourage students to be articulate about the work and to promote the cross-fertilisation of ideas.

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Presentation	Individual Presentation (6 minutes); Individual Video Portfolio	100%

Assessment Summary

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

READING LIST

Module Code	ADGD7003	
Module Title	Production Methods Taught	
Classification	Reading List entry	Electronic*
Essential	Module Guide: Production Methods (pdf)	☒
Essential	Dunlop, R., 2014. Production Pipeline Fundamentals for Film and Games, 1 edition. ed. Focal Press, New York.	☐
Essential	http://www.learninganimation.co.uk/production_meth_P1/	☒
Further	Faulkner, A., Chavez, C., 2017. Adobe Photoshop CC Classroom in a Book, 01 edition. ed. Adobe, San Jose, California.	☐
Further	Fridsma, L., Gyncild, B., 2016. Adobe After Effects CC Classroom in a Book. Adobe, San Francisco, California.	

MODULE CODE: ADGD7004
TITLE: Production Methods Researched
DATED: 26/04/2018

LEVEL: 7
CREDITS: 10

JACS CODE: W614

AIM(S)

To orientate the student towards the on-going process of self-learning and development by exploring a relevant application of their choice.

LEARNING OUTCOMES

Upon the successful completion of the module the student will be able to:

- Have the ability to identify, analyse, evaluate and employ appropriate software techniques, some of which are at the forefront of their field of study.
- Identify and apply personal learning methods.

INDICATIVE CONTENT

- Research
- Exploration
- Experimentation
- Presentation of Findings

LEARNING AND TEACHING STRATEGY

This module is designed to develop the student's ability to systematically understand and employ a range of contemporary media software specific to their research needs. The student's needs may be different in each individual case and will be identified by the module leader from the outset of the module's delivery. The environment for this module should encourage the sense of a post graduate community that benefits from the crossover of ideas and techniques at an advanced level.

The study time for the module is divided as follows:

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

ASSESSMENT

Coursework assessed by one assignment.

Summative assessment will be a student led assignment encouraging student exploration of conventional and/or alternative production methods using industry standard digital media software.

The assessment will be entirely project based, with the student presenting his/her work to the peer group and lecturers for feedback and evaluation. Group discussion about the work should take place to encourage students to be articulate about the work and to promote the cross-fertilisation of ideas.

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Presentation	Individual Presentation (6 minutes); Individual Video Portfolio	100%

Assessment Summary

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

READING LIST

Module Code	ADGD7004	
Module Title	Production Methods Researched	
Classification	Reading List entry	Electronic*
Essential	Module Guide: Production Methods (pdf)	☒
Essential	Zwerman, S., Okun, J.A. (Eds.), 2014. The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures, 2 edition. ed. Focal Press, New York.	☐
Further	Qureshi, M.F., 2013. VFX and CG Survival Guide for Producers and Filmmakers: Volume 1, 001 edition. ed. CreateSpace Independent Publishing Platform, s.l.	☒

MODULE CODE: ADGD7005
TITLE: Production Management
DATED: 26/04/2018

LEVEL: 7
CREDITS: 10

JACS CODE: W614

AIM(S)

This module is designed to foster students' critical awareness of computer generated imagery (CGI) industry standard production practices in the rapidly evolving field of computer animation including team and time management.

LEARNING OUTCOMES

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

- Demonstrate a systematic and comprehensive understanding of the techniques and roles associated with a production team for CGI.
- Demonstrate self-direction and originality in applying solutions to problems in production management.

INDICATIVE CONTENT

- The understanding and interpretation of client's needs and expectations.
- Client management, communication and conventions.
- Production Scoping
- Production Scheduling
- Budgeting
- Gantt Chart Preparation & Analysis
- Team communication, resource & file management
- Team building and cooperation strategies for computer animation
- Social, ethical and legal matters

LEARNING AND TEACHING STRATEGY

The theoretical content of the module is communicated through illustrated examples and lectures.

Information will be imparted by lectures, exercises and reinforced through role-play.

The study time for the module is divided as follows:

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

ASSESSMENT

Coursework assessed by a written assignment in the form of a report

The Assignment consists of a Scoping Case Study and a Scheduling & Communication Exercise of 2000 – 3000 words.

Each student is required to prepare a case study analysis of a CGI production, or part thereof, in the form of a descriptive and tabulated breakdown. This reverse engineered scoping exercise requires forensic analysis of images and sequences of varying complexity. The scheduling & communications requires the production of a budget, comprehensive, client, crew schedules and client, crew email communications. The student will also be expected to use their intuition in inserting and arranging the processes into a working schedule (usually as a Gantt Chart), to enable the production to run smoothly. He/she must also strategically task the crew to maximise quality and speed of production. The assignment provides the student with a compressive set of tables describing the clients, their needs, the crew, their skill sets, their daily charges for each skill, and a complete scope of around 40 processes, their durations, what review or project monitoring is required, start and final delivery dates.

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Writtnen Report	Individual Scoping, Scheduling and Communication Exercise (2000-3000) words	100%

Assessment Summary

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

READING LIST

Module Code	ADGD7005	
Module Title	Production Management	
Classification	Reading List entry	Electronic*
Essential	Module Guide: Production Management (pdf)	☒
Essential	http://www.learninganimation.co.uk/production_manage/	☒
Essential	Finance, C., Zwerman, S., 2009. The Visual Effects Producer: Understanding the Art and Business of VFX, 1 edition. ed. Focal Press, Amsterdam : Boston.	☐
Further	Rall, H., 2018. Animation: From Concept to Production, 1 edition. ed. CRC Press, Boca Raton, FL.	☐

MODULE CODE: ADGD7006
TITLE: Pre Production
DATED: 26/04/2018

LEVEL: 7
CREDITS: 20

JACS CODE: W614

AIM(S)

- To create pre-production material that reflects new insights into their field of study;
- To create and present original pre-production material that clearly communicates to specialist and non-specialist audiences.

LEARNING OUTCOMES

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

- Demonstrate a systematic understanding of advanced research methodologies and personal artistic development to creatively engage in the conceptual stages of animation production
- Critically analyse, evaluate and employ a range of advanced contemporary techniques to successfully create and present original pre-production materials to specific target audiences

INDICATIVE CONTENT

- Film history, genre, and structure.
- Diversity in animation voices and themes
- Structuralist analyses of narrative.
- Oral narrative.
- Screenwriting
- Story development
- Elements of visual studies for animation
- Composition, layout, and editing
- Cinematic conceptions of story, plot, and narrative.
- Film analysis: toward a cinematic language.
- Semiotics, Hermeneutics.
- Character and Environment development
- Concept artwork, lateral thinking
- Timing for animation & progression reel production
- Planning Storyboards
- Planning and testing production viability
- Structuring and Planning a Pitch Presentation
- Structuring and Planning a Group Presentation

LEARNING AND TEACHING STRATEGY

The theoretical content of the module is communicated through illustrated examples and lectures. The supervised workshops enable the student to further investigate the process of production development and planning.

Through experimentation and tutorial guidance the students will develop a mastery of the necessary techniques involved in the pre-production of exciting and ambitious production material. The delivery of the module will be split into two parts.

Each student is required to research and develop the necessary skills necessary to produce pre-production elements.

The first part requires each student to prepare a presentation which advocates their individual idea for an animated film production. Their idea is then “pitched” via a presentation, to tutors and the rest of the student cohort. The cohort, depending on cohort size, then choose, through a democratic voting system, which idea or ideas will be taken forward and further developed in the second part of the module. Each student will also submit a report (pitch document) describing their production concept.

In the second part of the module, students will be split into two equal groups. Under supervision they will identify an ambitious and challenging Part II Project which is academically rigorous and to be completed as a team project. The teams will break down the pre-production material so that every team member has a specialist area to work in. The material will be brought together at the end of the module, when the teams as a group, will present their pre-production material by demonstration and oral presentation. Each individual student will also submit a report describing their participation in this stage of the Project.

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

Coursework assessed by two assignments, each weighted at 50% of the total mark.

The module outcomes will be assessed by two coursework assignments, each comprising of 50% of the total module mark.

Assessment Component 1

(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Individual Presentation & Individual Report 1	(15 minutes) (800-1000 words)	50%

Assessment Component 2

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Group presentation & Individual Report 2	(15 minutes) (1800-2200 words)	50%

Assessment Summary

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

READING LIST

Module Code	ADGD7006	
Module Title	Pre Production	
Classification	Reading List entry	Electronic *
Essential	Module Guide: Pre-Production (pdf)	☒
Essential	Enevoldsen, M.M.S., Pindal, M.K., 2012. The Art of Short Films: Volume 1. CreateSpace Independent Publishing Platform.	☐
Essential	Brown, B., 2016. Cinematography: Theory and Practice: Image Making for Cinematographers and Directors, 3 edition. ed. Focal Press, New York London.	☐
Essential	Sullivan, K., Alexander, K., Mintz, A., Besen, E., 2013. Ideas for the Animated Short: Finding and Building Stories, 2 edition. ed. Focal Press, New York ; London.	
Further	http://www.learninganimation.co.uk/students/SMU_pre_pro_d.php	☒
Further	Brooks, J. "Jazza," 2016. Draw With Jazza - Creating Characters: Fun and Easy Guide to Drawing Cartoons and Comics. IMPACT Books, Cincinnati, Ohio.	☐
Further	Paez, S., Jew, A., 2013. Professional Storyboarding: Rules of Thumb, 1 edition. ed. Routledge, New York.	☐
Further	Polson, T., 2013. The Noble Approach, 01 edition. ed. Chronicle, San Francisco.	☐

MODULE CODE: ADGD7007
TITLE: Post Production
DATED: 26/04/2018

LEVEL: 7
CREDITS: 10

JACS CODE: W614

AIM(S)

This module is designed to provide students with a comprehensive knowledge and understanding of individual image manipulation and complex effects sequences.

LEARNING OUTCOMES

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

- Deal with complex post-production problems both systematically and creatively to aesthetically combine sophisticated animation with visual effects sequences in a multi-layered composition.
- Use self-direction and originality when combining a variety of live-action and computer-generated audio-visual material to create and layer images and sequences for (final) digital output.

INDICATIVE CONTENT

- Output Methods, File Formats Image Resolution & Compression
- RGBA Compositing Theory
- Environmental Simulations through Compositing
- Alpha Channel Manipulation and Render Layers/Passes
- Image Layers and Channels
- Sound Effects, Synchronisation, Editing and Manipulation
- Retouching
- Digital Filters and Effects
- Image Compositing Techniques- Masking and 2D layering

LEARNING AND TEACHING STRATEGY

The theoretical content of the module is communicated through demonstrations and lectures. The supervised workshops enable the student to further investigate techniques, methodology and procedure demonstrated, to create functional animated sequences.

The module develops key areas of 3D technical design and innovation that underpin the working practices of CG (Computer Generated) production facilities. Classes will cover each stage of the planning and structuring of effects based “shots” and progress through to the specific technical knowledge required to render and composite images and sequences.

Through experimentation and tutorial guidance the student will develop a mastery of the technical requirements in the production of effects-based 3D sequences and effects shots. The approach may vary from introducing objects or environmental conditions to pre-recorded live action, to the more ambitious combination of fantasy or imaginary characters within effects or locations

The study time for the module is divided as follows:

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

ASSESSMENT

The module outcomes will be assessed with a coursework assignment comprising 100% of the total module mark which will be used to test the academic content of the outcomes.

The assignment normally requires the student to produce a finished composited sequence from a combination of live action, still images and computer renders.

Assessment Component 1

(Tick one)

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Presentation	Individual Presentation; (5 minutes); Individual Video Portfolio	100%

Assessment Summary

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

READING LIST

Module Code	ADGD7007	
Module Title	Post Production	
Classification	Reading List entry	Electronic*
Essential	Module Guide: Post Production (pdf)	☒
Essential	Wright, S., 2017. Digital Compositing for Film and Video: Production Workflows and Techniques, 4 edition. ed. Focal Press, New York.	☐
Further	http://www.learninganimation.co.uk/	☒
Further	Brinkmann, R., 2008. The Art and Science of Digital Compositing: Techniques for Visual Effects, Animation and Motion Graphics, 2 edition. ed. Morgan Kaufmann, Amsterdam ; Boston.	☐
Further	Ganbar, R., 2014. Nuke 101: Professional Compositing and Visual Effects, 2 edition. ed. Peachpit Press, San Francisco.	☐
Further	Gress, J., 2014. [digital] Visual Effects and Compositing, 01 edition. ed. New Riders, San Francisco, California.	☐

MODULE CODE: ADGD7008
TITLE: Major Project
DATED: 26/04/2018

LEVEL: 7
CREDITS: 60

JACS CODE: W614

AIM(S)

The Part II Project provides an opportunity for the student to undertake a deep and systematic study into particular areas of the agreed team Project. The areas will require knowledge and understanding at the forefront of developments within the field of computer animation and to encourage further team cooperation. It will provide a vehicle to further advance the innovative and creative skills of the student and to integrate the material taught in Part 1. As such it aims to prepare the students for life-long learning, fostering an investigative and analytical approach to solving complex problems in an innovative manner.

LEARNING OUTCOMES

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

- **Role & Responsibility Definition:**
Clearly define their role within the team and their responsibilities towards the production along with definitions of their role categories. Categories should be one or more of the following which are Supervisory, Primary, Support, Standby, and Shadowing.
- **Plans & Methodology:**
Devise a sound, detailed methodology to creatively develop and apply by practice the solution/s to the identified problem/s, ensuring integration with the Project as a whole;
Develop a project plan, apply self-management skills and function as a constituent member of a professional production team
- **Design Creatively & Problem Solve:**
Demonstrate the ability to design and create complex elements suitable for inclusion in a 3D computer animated team production, based on coherent and advanced knowledge at the forefront of his/her practice.
Creatively develop the solution using ideas and techniques, some of which are at the forefront of 3D computer practice and reflect advanced scholarship in the discipline;
Solve problems creatively using linear and lateral thinking techniques and to explain the process and how they were solved.
Incorporate within the study all pertinent social, ethical, legal and professional issues.
- **Critical Analysis and Reflection:**
Undertake a critical review of audio/visual/textual material, analysing the key concepts and current research in their identified area,
Critically analyse and evaluate his/her solutions as part of the team Project, proposing where or how further improvements can be made;
- **Communication:**

Communicate, at a professional level, the findings of the study in a written report or video documentary, using oral presentation and in a written critical reflection document.

Present in a coherent and meaningful way, all documentation, written or otherwise in a well-constructed and well-presented format to a professional level.

INDICATIVE CONTENT

Students will undertake projects which will be innovative, academically demanding and which will require a sound theoretical knowledge. They will be expected to work with the minimum of direct supervision in the process leading to the solution of the identified problem based on the results of investigation.

Students will be expected to acquire new knowledge and familiarise themselves with new subject areas, depending on the nature of the project.

Normally, each student will remain a member of the team identified in Part I and in a Document of Intent (500 to 1000 words) and work on a single team project. The material they will be assessed on will be their practical contribution to the Project demonstrated via the Interim and Final Presentations, a 3,000 – 4,000 word report or a 6 to 8 minute video report in the form of a making of documentary film and a 1500 – 2000 word critical reflection.

LEARNING AND TEACHING STRATEGY

This module is undertaken by students on a team basis. It is the student that is responsible for the conduct and pace of the work. There will be team supervision and individual tutorial support on a weekly basis, (full time) and fortnightly basis, (part time) by the Part II Project Teaching Team, under the guidance of the Part II Project Co-ordinator.

Supervisors will provide technical guidance throughout the project and formal records of all meetings will be kept. Students are also required to maintain a log book or journal to enable the supervisor and the student to keep track of the work as it evolves. The supervisor will also advise on the presentation of the report.

It should be stressed that at all times it is the intention of the supervisors to guide the student to his/her own solution of the problem(s). It is also the intention of the supervisors to guide the teams towards the successful completion of the Project.

If a team member should drop out of the Programme, it will be the Part II Project Teaching Team's responsibility, under the guidance of the Part II Project Co-ordinator, to make sure that the remaining students are able to progress with their individual parts of the Project and not be disadvantaged. To facilitate progress in this situation, stock materials, models, etc. may be brought into the Project as substitutes for the missing student's work.

Should a student choose to suspend studies, the Project team will proceed as stated in the paragraph above and the said student will have the following options to proceed with his/her studies at a later date:

- a. Join another cohort team when they are about to embark on the Part II Project and relinquish his/her work up to the date of suspending studies;
- b. Resume his/her studies at a time that suits him/her personally, (providing it is within the University of Wales regulations) in order to continue with the project work originally identified on the understanding that it would probably not become part of the original team's film. In this situation, s/he would continue his/her studies without being a constituent member of a team. The student would be actively encouraged to continue with his/her studies through regular tutorial

support and the ongoing Production Methods module which brings together all the students on the MA pathway on a regular basis.

Students who suspend their studies are not disadvantaged in terms of the MA award. Students who have no option but to proceed with their Part II Project on their own can still fulfil the learning outcomes of the Part II Project. The elements that include reference to group working will be addressed by the student addressing self-management issues.

Students who have no alternative but to work independently are only disadvantaged in terms of not being part of a team and not working on a team show-reel, their academic assessment remains unaffected. The oral presentation of the artefact will still be a significant part of the assessment process but will only involve the student presenting his/her work to the assessors.

Implementation of Group Work Management.

Depending on the type of group project and the general characteristics of the cohort two main management models are employed. One is a pyramidal system where a project director and or project manager is chosen from the student cohort, by the student cohort. Other roles like departmental heads may also be chosen. This model is common in most industrial situations within film, TV and game production. The second is a more committee led model where most decisions are made by cohort consensus and where debate and constructive argument is used to form policy. Although this model would be considered rare within an industrial context, a combination of both models works well within the context of this project.

Regardless of what management model is agreed, each individual student must have a fair balance of definable responsibilities and practical tasks to execute within the project. The balance and outcome of these are monitored by the member of staff responsible for the module thus making the performance of an individual student easily accessible for assessment scrutiny.

Production management meetings take place at regular intervals which usually involve the whole cohort. The weekly production management meetings include the whole cohort and the member of staff responsible for the module and are usually combined with a tutorial.

Implementation of Full Time and Part Time Project Cooperation.

The major project offers an opportunity for full time and part time students to work together on a common major project or to provide input or services between each other's major projects. This is possible because tutorials can be scheduled to be out of normal working hours and because of a shared three-month period where both modes of study converge. This period is a semester 3 which runs from the June exam board date (usually the middle of June) through to the middle of September. Within this period it is possible to timetable both modes of study so that they share part or all of their tutorial time.

Student progression leading up to and during the Part II Project can be charted as seen in the table below for full and part time students

Full time Week	Part time Week	Part I Pre-Production Module
24	31	There can be more than one project (group) depending on the size of the cohort

		Each group identifies a project that they will complete in Part 2 of the MA. Students carry out all pre-production necessary for identified project. Individual aims and objectives are identified by each individual student and negotiated with the group with supervision.
30	45	Pre-Production 2nd assessment. Oral Presentation & Report
		Part II Major Project
31	46	Project teams reviewed to account for progression.
32	47	Shortfall (if any) in team members identified and member aims and objectives re-negotiated and modified accordingly to cover the losses.
Weekly	Fortnightly	Team & individual supervision
37	59	Interim Oral Presentation of work in progress and submission of Document of Intent.
43	73	Final Oral Presentation of the artefact
45	75	Final Report and Critical Reflection submissions

The underlying concept for the Project is that it has to remain intact throughout Part II of the Programme. Students are only able to change details of the project specification in agreement with the Part II Project Co-ordinator.

At the outset of the Project each student will identify (with the support of the Part II Co-ordinator and Programme Director) their personal aims and objectives for the Part II Project. The supervisors will ensure that the aims and objectives identified by each student accommodate the aims and learning outcomes of the Part II Project module. The student will submit these aims and objectives in written form as a Document of Intent (500 to 1000 words) and s/he will be measured against them at the end of the Project.

The Document of Intent should clearly define their roles within the team and their categorisation which are listed below: -

- A Supervisory Role is classified as managerial and who tasks, schedules, monitors and/or mentor others. A Director or Project Manager are typical supervisory roles. Not all students would be expected to take a supervisory role.
- A Primary Role and or Responsibility is one that is critical to the successful completion of the project. All students would be expected to take on at least one primary role and or responsibility but some could have more than one.
- A Secondary or Support Role and or Responsibility is one that is not critical to the successful completion of the project but increases quality or reduces production time. All students would be expected to take on at least one secondary or support role and or responsibility depending on their commitment to the two categories above but some can could have more than one.
- A Standby Role and or Responsibility is one already allocated to other members of the team but could be replaced if absent or sick. All students would be expected to take on at least one Standby Role and or Responsibility depending on their commitment to the two categories above but some can have more than one.

Each student will submit a Final Report which clearly identifies how s/he has contributed to the Project in the form of a 3,000 – 4,000 word document with visuals OR a 6 to 8 minute making of documentary video and a 1500 - 2000 Critical Reflection which identifies how s/he has served the 'team' and has related to the group dynamic, two weeks after the final oral team presentation of the artefact.

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	8
Independent learning	552	92
Placement learning	0	0
TOTAL	600	100%

ASSESSMENT

The responsibility for the assessment of the project rests with the whole of the supervisory team. All oral presentations of preliminary work and the artefact will be judged by consensus marking where the projects will be displayed to all the tutors. The designated Part II Project Co-ordinator will act as chairperson when assessment is discussed and finalised. In the case of the report and critical reflection element of the Project the responsibility for assessment will be shared by the team members. As a check on the accuracy of assessment, sampling of the reports and double marking will be undertaken by the project coordinator and teaching team. As team marking is employed in all cases, there should be little doubt about the final grade, however the quality of the assessments will be regulated by the external examiner. All work will be available in digital form (DVD, etc) for evaluation by the external examiner.

The Interim Oral Presentation and the Final Oral Presentation will both involve each team presenting their work as a unified group. It is anticipated that the Interim Oral Presentation could take one and a half hours for a group of students and that the Final Oral Presentation could take at least three hours.

In all cases each student's role and contribution to the Part II Project will be clearly identified, and the work produced will be capable of being presented and assessed in isolation from the rest of the work as well as with it, in both the Interim and Final Oral Presentations.

Each student will be assessed on his/her contribution to the Part II Project, not the Part II Project as a whole. Should a student produce poor work, it will reduce the overall quality of the Project as a whole but will not disadvantage any other student, because the poor work will be directly attributable to the student concerned. This approach is to be found in industry where the responsibility for good and bad work has to be easily identified. In likewise fashion, should a student produce exceptionally good work, this will raise the overall quality of the Project but will not advantage any other student.

The fact that the students work together may suggest collusion, however the strategy of extended oral examinations, where each student is required to identify and discuss his/her contribution to the Project in front of his fellow team members will further enable the assessors to evaluate each student's contribution to the project. The tutorial supervision record will also be used as relevant material when considering each student's contribution to the team, as will the individual written submissions by each student.

Major Project Documentation.

The written element of this module is divided into three parts.

The first document is a short declaration of Intent, referred to in the following table as Stage 2: Document of Intent submission which is prepared on the launch of this module and is handed to the module supervisor on the day of the Interim Oral presentation. This declaration will list the individual roles that the student has elected to execute with regard to the implementation of the major project. These roles must have been negotiated and agreed with the rest of the team members and must include a reason why these roles were chosen. Reasons may include matching skill sets, matching aspirations, a need for further exploration or research in a certain area of creativity or technique. Each role has to be categorised into one of the four types specified earlier. These are Supervisory, Primary, Secondary and Standby.

The second document is the Final Report and describes the individual's process involvement and the contribution that these processes made to the final output of the project. A typical process could be or include modelling geometry, texturing geometry, testing animation, final choreography, render wrangling, compositing and others. An individual student may have had many processes to execute within the major project and so a description of how these processes were implemented, both in terms of the technical and creative aspects is the main content of this report. There is a choice of two modes of delivery for the Final Report. Each student can choose either writing a document of between 3000 and 4000 words and should include images, or can choose to produce a making of documentary film of between 6 and 8 minutes in duration.

Success or failure of process implementation and how best to rectify this in future can be documented in this report but not how success or failure affected the team and the project overall. This is covered in the Critical Reflection submission.

The third document is the Critical Reflection submission and as mentioned above, should cover how success or failure of certain processes implemented by the individual affected the team and the project output. The criticism of other team members in this submission is not encouraged but reference to failed or late delivery of processes by other team members may be reported here. The main thrust of this submission is how the individual student matched up to their roles described in their Document of Intent submission. Issues like the success or failure or process delivery, the effect on the project as a whole by the quality of an individual process. Reflective questions like, 'as a primary provider of a process subset (for example, all project texturing), did I do a good job or did I provide a poor service? Did I become demotivated at some point in the schedule? How can I improve my inter personal skills in future?' This submission is an opportunity to self-evaluate their gains in terms of knowledge, analysis, application and increased skills.

The written submissions will be assessed by two internal examiners (excluding the supervisor) and the external examiner will sample a range including all failed work and all distinction level work. Where the internal examiners' assessment differs by more than 10 marks, a third marker will assess the report and attempt to resolve the discrepancy by agreement.

The Project Co-ordinator will chair the meetings of the team when assessment is discussed and finalised.

Full time assessment date	Part time assessment date		Part II Project
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Week	Week		
37	59		• Stage 1: Interim oral presentation of work in progress
37	59		• Stage 2: Document of Intent submission (500 – 1,000 words)
43	73		• Stage 3: Final oral presentation of the artefact and all its constituent parts
45	75		• Stage 4: Report submission: Written (3000 – 4,000 words) • OR Documentary Video (6 – 8 minutes)
45	75		• Stage 5: Critical Reflection submission (1500-2000 words)

The table above shows the timing of the assessment stages for the full and part time Part II Project. The Stage number cross reference with 'Details of Outcome Assessment' tables below.

The Project Co-ordinator will ensure uniformity of marking standards.

General Part II Project Assessment Criteria:

The assessment procedure is split into five stages, each designed cover one or more of the Outcomes and assessment criteria. Together, all five stages cover all Outcomes and assessment criteria.

Assessment Component 1

(Tick one)

☐ Written exam
 ☒ Coursework
 ☐ Practical

Mode of assessment	Volume	Weighting
Document of Intent	(written submission 500 - 1,000 words)	100%
Interim Presentation	(5-10 minute PowerPoint presentation from each student)	
Final Presentation	(10-15 minute PowerPoint presentation from each student)	
Final Report	(illustrated written submission 3000 – 4000 words OR a Making Of Documentary Video 6 – 8 minutes duration)	
Document of Critical Reflection	(written submission 1,500 – 2000 words)	

Assessment Summary

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

READING LIST

Module Code	ADGD7008	
Module Title	Major Project	
Classification	Reading List entry	Electronic*
Essential	Module Guide: Major Project (pdf)	☒
Essential	Mitchell, B., 2016. Independent Animation: Developing, Producing and Distributing Your Animated Films, 1 edition. d. CRC Press, Boca Raton.	☐
Further	http://www.learninganimation.co.uk/	☒
Further	Mercado, G., 2018. The Filmmaker's Eye: Learning (and Breaking) the Rules of Cinematic Composition, 2 edition. ed. Focal Press	
Further	Sijll, J.V., 2005. Cinematic Storytelling: The 100 Most Powerful Film Conventions Every Filmmaker Must Know, 2nd Edition edition. ed. Michael Wiese Productions, Studio City, CA.	
Further	Thurlow, C., Thurlow, M., 2013. Making Short Films, Third Edition: The Complete Guide from Script to Screen, 3rd Revised edition edition. ed. Bloomsbury Academic, New York	

MODULE CODE: M7X01586
TITLE: Research Methods and Communication
DATED: 26/01/2016

LEVEL: 7
CREDITS: 20

JACS CODE: X210

AIM(S)

- To provide the theoretical and practical knowledge to enable the student to undertake research and develop critical thinking commensurate with the level of study.
- To develop the student's ability to formulate well-informed research strategies and to critically evaluate and interpret theoretical principles and methods for creative research.
- To facilitate the development of the student's research practice in relation to digital communication and industrial awareness.

LEARNING OUTCOMES

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

- Critically evaluate and comment upon a range of approaches to creative research in regard to a collaborative or commercial venture;
- Deploy systematic research methods appropriate to an organised and discipline specific inquiry;
- Critically apply the appropriate digital media/technologies to communicate in an explicit and informative manner to a professional audience.

INDICATIVE CONTENT

- The nature and importance of research in the creative industries.
- Research strategies, principles and approaches.
- Research ethics and philosophies.
- Best practices for advanced 2D|3D visual communication.
- Web based social/virtual environments.
- Referencing and data exchange management.
- Commercial awareness.

LEARNING AND TEACHING STRATEGY

The delivery of this module will be via formal lectures, seminars and tutorials, supplemented by a series of master classes, providing a structured workflow pattern to design information. The students will be expected to develop individual strategies in response to their personal philosophy and project direction necessary to drive their research activities. A high priority will be placed on referencing skills throughout the module to emphasise the importance of producing evidence-based research. Students are expected to work autonomously to supplement the taught module through private study and reflective practice, encouraging them to manage their own learning activities.

The allocation of teaching to deliver the module is:

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

ASSESSMENT

Assessment Component 1 – Coursework: Project Proposal & Research Methodology 50%

Coursework (3000 words).

Exemplar. A proposal detailing the aim(s) of the project and a rationale for the proposed work. This will be supported by specific and detailed needs requirements taking into account key stakeholders, the research following an established and justified methodology. Critical perspectives on contemporary practice within the field of choice should frame this work.

Assessment Component 2 – Practical: Communication of Project Context & Strategy 50%

Exemplar. A presentation outlining the cultural and commercial context in which the project exists and mapping out the intended plan of work. A minimum of two, but normally three lecturers are present for the assessment. The presentation lasts twenty minutes with a further ten minutes to explore the proposal more fully by questions and answers.

Assessment Summary

Activity type	Percentage
Coursework	50%
Practical	50%
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes
This module seeks to help the student develop the fundamental skills of research and academic inquiry. This forms part of the sustainable assessment/sustainable teaching agenda which sees the assessment process as developing skills that can be used beyond the end of the programme of study and also the skills the individuals need to know in terms of working learning and thriving in a future which is as yet unknown. It is the skill of Reflective Writing and the associated skill of Critical Reflection as described by Donald Schön that find the springboard to development in this module. Boud, D, Assessment 2020: <i>Creating Sustainable Assessment for Long-term Learning</i> University of Technology, Sydney (2010) Available at https://www.uts.edu.au/sites/default/files/davidboudKeynote.pdf Accessed 10:30, 17th October 2014 Schön, D. A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. <i>San Francisco</i>.	

BIBLIOGRAPHY

Essential

- Collins, H. (2010) *Creative Research*. AVA Publishing.
- Miller, V. (2011) *Understanding Digital Culture*. Sage.
- Wallace, M. & Wray, A. (2011) *Critical Reading and Writing for Postgraduates*. Sage.

Recommended

- Giddings, S. & Lister, M. (2011) *The New Media & Technocultures Reader*. Routledge.
- McCandless, D. (2010) *Information Is Beautiful*. Collins.
- Prosser, J. (Ed.) (1998) *Image-Based Research: A Sourcebook for Qualitative Researchers*. Falmer.
- Wardrip-Fruin, N. & Montfort, N. (2003) *The New Media Reader*. MIT.