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

MODULE DIRECTORY

LEVEL 7

ACADEMIC DISCIPLINE OF APPLIED COMPUTING

WALES INSTITUTE OF SCIENCE AND ART

2024-2025

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INTRODUCTION

This Module Directory includes all the modules for Level 7 within the Academic Discipline of Applied Computing (WISA) in the academic year 2024-2025.

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

Further	Sullivan, D., (2015), *NoSQL for Mere Mortals*, Addison-Wesley Professional	☐
Further	Ricardo, C. M., Urban, S. D. (2015), *Databases Illuminated*, 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 4th 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) *Handbook of Algorithms and Data Structures*, Addison-Wesley	☐
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) *Data Mining for the Masses, 3rd Ed.: With Implementations in RapidMiner and R.* CreateSpace Independent Publishing	☒
Essential	Witten, I. H., Frank, E., Hall, M. A. and Pal, C. J. (2016) *Data Mining: Practical Machine Learning Tools and Techniques, 4th Edition,* Burlington: Morgan Kaufmann	☒
Further	Tuffery, S. (2011) *Data Mining and Statistics for Decision Making,* Hoboken: Wiley	☒
Further	Kranzler, J.H. (2017) *Statistics for the Terrified*, Pearson	☒
Further	Few, S. (2012), *Show Me The Numbers*, Analytics Press, Burlingame, CA.	☒
Further	Websites: http://www.kdnuggets.com/	☒

	http://www.kdd.org/	

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) *The Art of R Programming*, No Starch Press	☒
Essential	Spiegelhalter, D. (2019) *The Art of Statistics: Learning From Data.* Pelican Books, Penguin Random House.	☒
Further	Kranzler, J.H. (2010) *Statistics for the Terrified*, Pearson	☒
Further	Cotton, R (2013) *Learning R*, O'Reilly	☒
Further	Alvaro, F (2016) *R: Easy R Programming for Beginners*, Pearson	☒
Further	Spiegel, M.R (2014) *Shaum's Outline of Statistics, fifth ed.*, McGraw Hill Education Limited	☒
Further	Gonick, L & Smith, W. (2000) *Cartoon Guide to Statistics*, 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, 2nd 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	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 (2nd 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 (3nd 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 (3nd 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 and 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	**ACCA7031**
Title	**Digital Forensics Analysis**
Date	**25/04/2023**
Level	**7**
Credits	**20**
Pre-Requisites	**None**

AIM(S)

- To establish concepts relating to essential procedures and corresponding techniques involved in computer forensics process, in correlation to real-world scenarios.

- Students will gain understanding of the process of finding evidence related to a digital crime to find the culprits and initiate legal action against them. They will understand the methodological procedures and techniques 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 digital and cyber security incidents and defensive techniques;

- perform computer forensics, to assess, investigate and analyse digital and cyber security crimes of an organisation with effective usage of security tools and methodologies.

INDICATIVE CONTENT

- 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.

- Computer and digital Forensics Investigation Process.

- The investigation process includes but not limited to:
  - Searching and Seizing Computers.
  - Presenting Digital Evidence.
  - First Responder Procedures.
  - Understanding Hard Disks and File Systems.
  - Data Acquisition and Duplication.
  - Defeating Anti-Forensics Techniques.

- Recovering Deleted Files and Deleted Partitions.
- Operating System Forensics.
- Network Forensics.
- Investigating web attacks.
- Database Forensics.
- Cloud Forensics.
- Malware Forensics.
- Investigating Email Crimes.
- Mobile Forensics.
- Information Security and Forensic Tools.

- Forensics Report Writing and Presentation.

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	5000 words	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	**ACCA7031**	
Module Title	**Digital Forensics Analysis**	
Classification	**Reading List entry**	**Electronic***
Essential	Essential Sachowski, J. (2021). *Digital Forensics and Investigations*. 2nd Edition. CRC Press.	☒

Essential	Chuck, W. (2021). *Penetration Testing Fundamentals*. 2nd Edition. Pearson IT Certification.	☒
Further	Blunden, B. (2014). *The Rootkit arsenal: escape and evasion in the dark corners of the system*. 2nd Edition. Burlington, Ma Jones & Bartlett Learning.	☒
Further	Pfleeger, C. P., Pfleeger, S. L., & Margulies, J. (2015). *Analyzing computer security: a threat / vulnerability / countermeasure approach*. 3rd Edition. Prentice Hall.	☒
Further	Johansen, G. (2021). *Digital Forensics and Incident Response: An intelligent way to respond to attacks*. 2nd Edition. Packt Publishing Limited.	☐
Further	Holt, T. J., Bossler, A. M., & Seigfried-Spellar, K. C. (2019). *Cybercrime and Digital Forensics: An Introduction*. 3rd Edition. Routledge.	☒
Further	Gogolin, G., Ciaramitaro, B. L., Emerick, G., Otting, J., & Pavlov, V. (2017). *Digital forensics explained*. 2nd Edition. Boca Raton, FL: CRC Press.	☒
Further	IEEE Transactions on Computers. (2021). IEEE Security & Privacy, 19(1)	☒
Online	OWASP Foundation. (n.d.). Open Web Application Security Project (OWASP). [online] Available at: https://owasp.org/.	☒
Online	EC-Council. (n.d.). Computer Hacking Forensic Investigator (CHFI). Retrieved from https://www.eccouncil.org/programs/computer-hacking-forensic-investigator/	
Online	Online IEEE Transactions on Information Forensics and Security. (2023). IEEE Xplore. [online] Available at: https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=10206 [Accessed 22 Mar. 2023].	☒
Online	Online ACM Digital Library. (n.d.). [online] Available at: https://dl.acm.org/.	☒
Online	Elsevier. (2023). ScienceDirect.com | Science, Health and Medical journals, Full Text Articles and books. [online] Available at: https://www.sciencedirect.com/.	☒
Online	TryHackMe.com https://www.eccouncil.org/ https://aspen.eccouncil.org/ https://codered.eccouncil.org/?utm_source=aspen&utm_medium=header&utm_campaign=navigation&logged=false	☒

Module Code	ACCA7032
Title	Enterprise Network Security
Date	25/04/2023
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:

- demonstrate a systematic understanding of a wide range of current research and technological advances in network security underpinning the key elements of unified security management architecture in managing and monitoring network traffic;

- apply the principles and practices of network security for mitigating the key technical security vulnerabilities that organisations face and gain insight on how security features are enabled, and policies applied.

INDICATIVE CONTENT

- Current and emerging security related web-based technologies e.g. 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.

- Security: Web Server, Operating System, Wireless, Mobile.

- Firewalls and their architectures:
  - Policy Layers.
  - Application Control & URL Filtering.
  - Managing User Access.
  - Network Address Translation.
  - Traffic Visibility.
  - Monitoring System States.
  - Threat Prevention.

- 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, blockchain.

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 (eg CBT, Written Report, Implementation and/or Presentation)	3 elements or equivalent. Students will produce a portfolio of work. Portfolio elements may include a selection of the following: ○ Computer Based Test ○ Written Report ○ Implementation ○ Demonstration of their work e.g. written or presentation	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	**ACCA7032**	
Module Title	**Enterprise Network Security**	
Classification	**Reading List entry**	**Electronic***
Essential	Stallings, W. (2022). *Cryptography and network security 8th Edition*. Pearson	☒
Essential	Yakovlev, V. and Welch, D.D. (2022). *Check Point Firewall Administration R81.10+*. Packt Publishing Ltd.	☒
Further	Stallings, W. (2016). *Network Security Essentials: Applications and Standards*. Boston: Pearson Education, Inc.	☒
Further	Brotherston, L. and Berlin, A. (2017). *Defensive Security Handbook*. O'Reilly Media, Inc.'	☒

Further	Sanders, C. and Smith, J. (2014). *Applied network security monitoring: collection, detection, and analysis*. Amsterdam; Boston: Syngress, An Imprint of Elsevier.	☒
Further	Manuj Aggarwal (2018). *Network security with pfSense: architect, deploy, and operate enterprise-grade firewalls*. Birmingham, Uk: Packt Publishing.	☒
Further	Hooper, H. (2012). *CCNP Security VPN 642-648 Official Cert Guide*. Cisco Press.	☒
Further	Gilman, E. and Barth, D. (2017). *Zero trust networks: building secure systems in untrusted networks*. Sebastopol, CA: O'Reilly Media.	☒
Further	Karame, G. and Androulaki, E. (2016). *Bitcoin and blockchain security*. Norwood, MA: Artech House.	☒
Further	Elad Elrom and Springerlink (Online Service (2019). *The Blockchain Developer: A Practical Guide for Designing, Implementing, Publishing, Testing, and Securing Distributed Blockchain-based Projects*. Berkeley, Ca: Apress.	☒

Module Code	ACCA7033
Title	Ethical Hacking
Date	25/04/2023
Level	7
Credits	20
Pre-Requisites	None

AIM(S)

- To establish concepts relating to the understanding of how malicious hackers attack and exploit systems. This includes essential procedures and corresponding techniques involved in ethical hacking activities, in correlation to real-world scenarios. Students will gain understanding of security threats, information security, vulnerability, penetration testing 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 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;

- 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 included 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.
  - Mobile platform.
  - Internet of Things (IoT).

- Security Assessment – Processes and Methodologies included but not limited to:
  - Open-Source Intelligence (OSINT).
  - Social Engineering Campaigns.
  - Network Penetration Testing.
  - Web Application Penetration Testing.
  - Mobile Penetration Testing.
  - Wireless Penetration Testing.

Study Time Allocation

The study time for the module is divided as follows:

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

ASSESSMENT

Assessment Component 1
(Tick one)

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

Mode of assessment	Volume	Weighting
Report	5000 words	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	**ACCA7033**	
Module Title	**Ethical Hacking**	
Classification	**Reading List entry**	**Electronic***
Essential	Diogenes, Y. and Erdal Ozkaya (2019). *Cybersecurity - Attack and Defense Strategies; Counter Modern Threats and Employ State-Of-The-Art Tools and Techniques To Protect your Organization against cybercriminals*. Packt Publishing	☒
Essential	Whitman, M.E. and Mattord, H.J. (2022). *Principles of information security*. Boston, Ma: Cengage.	☒
Essential	Rafay Baloch (2017). *Ethical hacking and penetration testing guide*. Boca Raton: Auerbach Publications.	☒
Further	Blunden, B. (2016). *The Rootkit arsenal: escape and evasion in the dark corners of the system*. Burlington, Ma Jones & Bartlett Learning.	☒
Further	Mcclure, S., Scambray, J. and Kurtz, G. (2012). *Hacking exposed: network security secrets and solutions*. Emeryville, Calif.: Mcgraw-Hill/Osborne; London.	☒
Further	Charles Paul Pfleeger and Shari Lawrence Pfleeger (2012). *Analyzing computer security: a threat/vulnerability/countermeasure approach*. Upper Saddle River, New Jersey; Toronto: Prentice Hall.	☒
Further	Tadayoshi Kohno, Niels Ferguson and Schneier, B. (2010). *Cryptography engineering: design principles*	☒

	and practical applications. Indianapolis, In: Wiley Pub., Inc.	
Further	Niels Provos and Holz, T. (2007). *Virtual Honeypots*. Pearson Education.	☒
Further	Bejtlich, R. (2010). *The Tao of network security monitoring: beyond intrusion detection*. Boston: Addison-Wesley.	☒
Further	IEEE Transactions on Computers. (2020). *IEEE Security & Privacy*, 18(1), pp.7–7.	
Online	owasp.org. (n.d.). *OWASP Foundation | Open-Source Foundation for Application Security*. [online] Available at: http://owasp.org.	☒
Online	EC-Council. (n.d.). Certified Ethical Hacker (CEH). Retrieved from https://www.eccouncil.org/programs/certified-ethical-hacker-ceh/	
Online	www.acm.org. (n.d.). *ACM Digital Library*. [online]Available at:https://www.acm.org/publications/digital-library	☒
Online	Elsevier (2022). *ScienceDirect.com | Science, Health and Medical journals, Full Text Articles and books.* [online] Sciencedirect.com. Available at: https://www.sciencedirect.com/.	☒

Module Code	**ACCA7036**
Title	**Advanced Studio Workflow and Techniques**
Date	**17/05/2024**
Level	**7**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To broaden students' knowledge and skills in studio production by emphasising advanced techniques, critical analysis, and professional workflows. The aim is to develop students' abilities to work effectively in professional studio contexts through practical exercises and critical examination of industry-standard projects.

LEARNING OUTCOMES

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

- critically analyse advanced studio projects to obtain a better understanding of professional approaches and procedures;

- showcase capacity for critical thought and problem-solving in the context of advanced studio techniques.

INDICATIVE CONTENT

- Understanding the VFX production pipeline and its integration into the overall production process.

- Exploring the various types of visual effects, such as compositing, 3D modelling, animation, and simulation.

- Sound FX, sound design, sound mixing and sound editing, Foley recording.

- Collaboration between VFX and other departments, including concept art, storyboarding, and previsualisation.

- VFX budgeting, scheduling, and resource allocation considerations, techniques for capturing live-action footage for integration with visual effects, including green screen shooting and motion tracking.

- Working with virtual cameras, motion capture, and other specialised acquisition techniques.

- Best practices for data administration, file organisation, and version control in VFX production.

- Colour grading, captions/titles, title sequences, trailers, resolution gates, safety, rendering through different media.

- On-set supervision and coordination of VFX elements during production.

- The fundamentals of 3D modelling, such as subdivision surfaces, NURBS, and polygonal modelling.
- Overview of compositing software and tools, such as Adobe After Effects, Nuke, or Blackmagic Fusion.
- On-set supervision and coordination of VFX elements during production.
- Best practices for data management, file organisation, and version control in VFX production.
- Green screen keying, rotoscoping, and matte painting techniques.
- Creating realistic lighting and shadows to enhance the integration of VFX elements.
- Simulating natural phenomena, such as fire, water, smoke, or destruction, use of AI within simulation.
- Advanced 3D rendering techniques, including global illumination and physically based rendering (PBR).
- Quality assurance and quality control procedures for VFX shot.
- Emerging technologies.
- Sustainable technologies within the creative field.

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	Reel portfolio of creative work with associated showcase presentation of reel (8 elements equivalent, including the 15 minute showcase)	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	**ACCA7036**	
Module Title	**Advanced Studio Workflow and Techniques**	
Classification	**Reading List entry**	**Electronic***
Essential	Okun, J (2020) The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures, Routledge	☒
Essential	Gilland, J. (2015), Elemental Magic: The Art of Special Effects Animation. Routledge.	☒
Further	Birn, J. (2013). Digital Lighting and Rendering (3rd edition). New Riders.	☒
Further	Lang, M. (2019). The Art of Game Design: A Book of Lenses. CRC Press.	☒
Further	Johnson, J. (2014). VFX Artistry: A Visual Tour of How the Studios Create Their Magic. Watson-Guptill.	☐

Module Code	**ACCA7037**
Title	**Animated World Building**
Date	**17/05/2024**
Level	**7**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To gain an advanced appreciation of pre-production methods and approaches in devising characters, scenarios, shots and visual material that follows classical conventions and are at new digital frontiers of animated design.

LEARNING OUTCOMES

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

- showcase a comprehensive comprehension of advanced research and creative methodologies during the conceptual and pre-production phases of animation production;

- utilise a diverse array of cutting-edge visualisation techniques effectively to generate and deliver original pre-production materials for a self-conceived sequence.

INDICATIVE CONTENT

- Film history, genre, and structure.

- Life drawing and observation (via poses, photography, film etc).

- Principles of animation/character animation as applied to character design and staging.

- Classical and digital animation techniques in devising shots and scenes.

- Conceptual and Production Design.

- Technical composition and design principles for animated film.

- Motion studies and scene development through digital drawing, traditional media, camera, digital techniques.

- Mood boards, lighting, sound, character model sheets, scripts, production bible.

- Digital/3D storyboarding and pre-visualisation methods.

- Digital design methods in the manufacture of film sequences.

- Sustainability within the animation industry

- Emerging design methods and new digital frontiers

- Narrative and storytelling conventions and structures.
- National identities, diversity, political viewpoints and meaning in interpreting and planning animation and film.
- Visual metaphors, signs and symbols in animated film.
- Animation innovators and auteurs, movements and styles.
- Genre and auteur approaches.
- Avant-garde, independent movements and commercial short (animated) film varieties.
- Categorisations of class, race, gender, age, social representation and stereotyping.

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	6-7 elements which may include a production bible (inc. research) on a proposed animation / sequence (8-10 slides / images).	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7037	
Module Title	Animated World Building	
Classification	Reading List entry	Electronic*
Essential	Studio Binder: https://www.studiobinder.com/catergory/directing /cinematography	☒
Essential	World Building in Animation: https://the-artifice.com/world-building-in-animation	☒
Essential	Fox, T. (2022), Anatomy for Artists: Drawing Form & Pose. 3D Total Publishing.	☐
Essential	(Ed) 3D Total Publishing, (2020), Fundamentals of Creature Design: How to create successful concepts using functionality, anatomy, colour, shape and scale. 3D Total Publishing.	☐
Essential	Holmes, M. T. (2016), Designing Creatures & Characters: How to build an artist's portfolio for video games, film, animation and more. 3D Total Publishing.	☐
Essential	Murdock, K. L. (2022), Autodesk Maya 2023 Basics Guide. SDC Publications.	☐
Essential	Glebas, F. (2018), Directing the Story: Professional Storytelling Techniques for Live Action and Animation. Routledge.	☐
Essential	Doyle, B. F (2019) Understanding Design in Film Production: Using Art, Light & Locations to Tell Your Story, Routledge	☐
Further	Blazer, L (2019), Animated Storytelling. Peachpit Press	☐
Further	Shaw, A, (2019) Design for Motion: Fundamentals & Techniques of Motion Design. Routeledge.	☐
Further	(Ed) 3DTotal Publishing, (2020), Fundamentals of Character Design: How to create engaging characters for Illustration, Animation & Visual Development. 3D Total Publishing.	☐
Further	Dinur, E. (2017), The Filmmakers Guide to Visual Effects: The art and Techniques of VFX for Directors, Producers, Editos and Cinematographers. Routledge.	☐
Further	Li, J. Arevalo, K. Tovar, M. (2021), Creating Games with Unreal Engine, Substance Painter & Maya: Models, Textures, Animation & Blueprint. CRC Press.	☐
Further	Williams, E (2021), Virtual Reality Cinema: Narrative Tips and Techniques, Routledge	☐
Further	Johnson, O and Thomas, F. (1995). The Illusion of Life: Disney Animation, Hyperion Press.	☐
Further	FX Guide: https://www.fxguide.com	☒
Further	Short of the Week: https://www.shortoftheweek.com	☒
Further	Character Design: https://characterdesignreferences.com	☒

Module Code	**ACCA7038**
Title	**Animation Alchemy and Motion**
Date	**17/05/2024**
Level	**7**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide students with the underpinning knowledge and essential forms in approaching animation, across a wide variety of techniques and software, by examining the principles and their use in the creation and interpretation within animated sequences.

LEARNING OUTCOMES

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

- demonstrate originality and animation proficiency to create professional and engaging representation of the principles, character persona, animal behaviour and natural forces;

- demonstrate advanced mastery and control of the development tools necessary for the creation of modern animation and motions.

INDICATIVE CONTENT

- Observational analysis and life drawing (via poses, photography, film etc).

- Principles of Animation/Character Animation (e.g. pose to pose, slow-in, slow-out, etc).

- Classical animation methods + 2D/3D digital techniques (e.g. via the production studio system roles).

- Sound design for VFX and animation

- Model sheets and expression sheets.

- Key poses/gestures and acting/staging ideas and storyboarding.

- Animated cycles, key poses/gestures and acting/staging ideas.

- Timing for animation; screen/interactive timing.

- An appreciation of forces and Newton’s laws of motion.

- Environmental conditions and forces (e.g. gravity, friction, inertia).

- Scene / environmental considerations and their influence upon the action of characters in scenes.

- An adoption of displaying weight and force and gravity – and how they influence performance/styles of character.
- Human and creature body mechanics, and animated turntables/moves in 3D space.
- Timing for animation; screen/interactive planning, co-ordination and timing.
- Body mechanics, and animated turntables/moves in 3D space.
- Anatomical studies and illustrations; human and animal biophysical motion studies.
- Theoretical input will also cover topics related to the underpinning science and biophysical foundations of motion across life.
- Use of emerging technologies in animation

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
Coursework	Individual Presentation (15 minutes) showcasing animation reel portfolio.	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7038	
Module Title	**Animation Alchemy and Motion**	
Classification	**Reading List entry**	**Electronic***
Essential	Murdock, K. L. (2022), Autodesk Maya 2023 Basics Guide. SDC Publications.	☐
Essential	John Lasseter, (1987) "Principles of Traditional Animation Applied to 3D Computer Animation", Computer Graphics, pp. 35-44, 21:4, July 1987 (SIGGRAPH 87).	☒
Essential	Parr, P. (2018), Sketching for Animation: Developing Ideas, Characters and Layouts for your Sketchbook. Bloomsbury Academic.	☐
Essential	Legasi, C. (2015), Anatomy for 3D Artists: The Essential Guide for CG Professionals. 3D Total Publishing.	☐
Essential	Gilland, J. (2015), Elemental Magic: The Art of Special Effects Animation. Routledge.	☐
Essential	Williams, R. (2012), The Animator's Survival Kit: Expanded Edition. Faber & Faber.	☐
Essential	Beiman, N (2015) Animated Performance: Bringing Imaginary Animal, Human and Fantasy Characters to Life, Fairchild Books	☐
Further	Kothenschulte, D. (2022), The Walt Disney Film Archives: The Animated Movies 1921 – 1968. Taschen.	☐
Further	Meyer, T. & Meyer C. (2018), Creating Motion Graphics with After Effects: Essential and Advanced Techniques. Routledge.	☐
Further	Roberts, S. (2021), Animation Techniques. The Crowood Press.	☐
Further	Kundert-Gibbs, J., (2009) Action! Acting Lessons for CG Animators, John Wiley & Sons.	☐
Further	Mattesi, M (2017) FORCE: Dynamic Life Drawing, CRC Press.	☐
Further	Ed Hooks (Acting for Animation): http://www.edhooks.com/archives.html	☒
Further	Living Lines Library: https://livlily.blogspot.com/	☒
Further	50 most influential Animators: https://50mostinfluentialdisneyanimators.wordpress.com/	☒
Further	Animation World Network: https://www.awn.com/	☒

Module Code	**ACCA7041**
Title	**Imaginary Realms: Creating Story Universes**
Date	**17/05/2024**
Level	**7**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To analyse, evaluate, and synthesize storytelling techniques to develop immersive and sophisticated story universes. Through the exploration of storytelling techniques and the application of fundamental narrative principles, students will develop the skills necessary to construct immersive and captivating story universes.

LEARNING OUTCOMES

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

- evaluate and critically analyse the fundamental elements of storytelling in animation and computer games to inform their own narrative creation;

- synthesize narrative techniques and principles to design and construct cohesive and immersive story universes for fictional entertainment.

INDICATIVE CONTENT

- Introduction to the principles and theories of storytelling in animation and computer games.

- Critical analysis of narrative structures, character development, and plot construction.

- Exploration of different genres and their influence on storytelling in animation and computer games.

- Application of advanced techniques for world-building and the creation of immersive story universes (visual and audio).

- Utilisation of storyboarding and visualisation techniques to effectively communicate narrative ideas.

- Collaboration and effective communication skills in a team-based storytelling environment, in person and via online collaborations.

- Ethical considerations in storytelling and the impact of narrative choices on the audience.

Study Time Allocation

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

Assessment Component 1
(Tick one)

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

Mode of assessment	Volume	Weighting
Portfolio (world-building/character development)	4-5 elements	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	**ACCA7041**	
Module Title	**Imaginary Realms: Creating Story Universes**	
Classification	**Reading List entry**	**Electronic***
Essential	Vogler, C. (2020). The Writer's Journey: Mythic Structure for Writers 25th Anniversary edition. Michael Wiese Productions.	☒
Essential	Weiland, K.M. (2017). Creating Character Arcs: The Masterful Author's Guide to Uniting Story Structure. PenForASword Publishing.	☒
Essential	Glassner, A. (2022). Interactive Storytelling: Techniques for 21st Century Fiction. A K Peters.	☒
Further	McKee, R. (1997). Story: Substance, Structure, Style, and the Principles of Screenwriting. HarperCollins.	☐
Further	Schell, J. (2019). The Art of Game Design: A Book of Lenses. CRC Press.	☒
Further	Lebowitz, J., & Klug, C. (2020). Interactive Storytelling for Video Games: A Player-Centered Approach to Creating Memorable Characters and Stories. Routledge.	☒

Module Code	**ACCA7042**
Title	**Immersive Worlds**
Date	**17/05/2024**
Level	**7**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To offer an extensive exploration of production techniques in graphic design, animation, video production, virtual reality (VR), augmented reality (AR), mixed reality (MR), projection mapping, sensor integration, and AI production tools.

- To equip students with the knowledge and skills to design and create immersive virtual experiences that engage users in interactive environments, delving into the principles and techniques of spatial sound design, analysing its impact on user engagement and presence, and learning how to integrate spatial audio into VR environments.

LEARNING OUTCOMES

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

- conduct a comprehensive analysis of the far-reaching impact and multifaceted applications of immersive experiences across a spectrum of professional fields and industries;

- demonstrate a high level of competence in effectively utilising and adapting industry-standard tools and cutting-edge technologies for the purpose of immersive world development, showcasing proficiency in both technical implementation and creative innovation.

INDICATIVE CONTENT

- Understanding the types of immersive experiences: virtual reality, augmented reality, mixed reality.

- User experience design in immersive environments, narrative and storytelling in immersive worlds and spatial sound design and environmental considerations.

- Ethical considerations in the development and use of immersive world.

- Conceptualising and prototyping immersive world designs, asset creation and optimization for immersive environments.

- Hardware and software requirements for immersive experiences, VR headsets, input devices, and tracking systems and Development platforms and engines for immersive world creation.

- AR and mixed reality platforms and tools.

- Spatial audio authoring software and plugins, headphones and HRTF-based audio devices.

Study Time Allocation

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

Assessment Component 1
(Tick one)

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

Mode of assessment	Volume	Weighting
Presentation	15-minute presentation of work produced	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	**ACCA7042**	
Module Title	**Immersive Worlds**	
Classification	**Reading List entry**	**Electronic***
Essential	Kerrison, M (2022) Immersive Storytelling for Real and Imagined Worlds: A Writer's Guide	☒
Essential	Bowman, D. A., McMahan, R. P., & Ragan, E. D. (2013). Virtual Reality: How to Build Immersive Worlds. Boca Raton, FL: CRC Press.	☒
Furtherl	Slater, M. (2018). Presence in Virtual Reality. Cambridge, MA: MIT Press.	☒
Further	Okparaeke, C (2023) 30 Days Guide to Augmented Reality Mastery: A Beginner's Guide to Developing Immersive AR Experiences. Independently Published.	☒
Further	Aukstakalnis, S., & Blatner, D. (2017). Augmented Reality for Developers: Build Practical Augmented Reality Applications with Unity, ARCore, ARKit, and Vuforia. Sebastopol, CA: O'Reilly Media.	☒
Further	Blascovich, J., & Bailenson, J. (2011). Infinite Reality: Avatars, Eternal Life, New Worlds, and the Dawn of the Virtual Revolution. New York, NY: HarperCollins.	☐
Further	Pimentel, K., & Texeira, C. (2019). Virtual Reality and Augmented Reality: Concepts, Methodologies, Tools, and Applications. Hershey, PA: IGI Global.	☒

Module Code	**ACCA7044**
Title	**Leadership, Management and Ethics**
Date	**17/05/2024**
Level	**7**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To develop students' advanced understanding of leadership, management, and ethics in professional practice.

LEARNING OUTCOMES

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

- demonstrate a deep and systematic understanding of leadership, management, and ethics, enabling critical analysis of an organisation;

- exhibit a commitment to continuing professional development, taking initiative and personal responsibility for their growth in leadership, management, and ethics.

INDICATIVE CONTENT

- Fundamental concepts, definitions, and historical perspectives related to leadership, management, and ethics in professional contexts.

- Leadership theories, styles, the role of emotional intelligence in effective leadership and application to organisation change.

- Leadership development: contemporary leadership development issues and initiatives e.g. Self-managed learning, talent management and succession.

- The increasing importance and widening debate on Leadership responsibilities in areas such as ethics, social responsibility, cultural diversity, sustainability, power and control.

- Management functions, classical and contemporary management theories, and how management practices vary in a global context.

- Analyse complex problems in leadership and management. Apply critical thinking and make insightful decisions, particularly in situations involving ethical dilemmas.

Study Time Allocation

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

Assessment Component 1
(Tick one)

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

Mode of assessment	Volume	Weighting
Coursework Assessment may take the form of: • Written Report. • Analyse a leadership or management scenario which requires students to simulate a role and make appropriate decisions. • Reflect upon a scenario(s) requiring consideration of management and leadership concerns. • Review or critique a report or simulated scenario from an ethical perspective. • Demonstration of their work such as a written report or presentation.	2,500 words equivalent	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	**ACCA7044**	
Module Title	**Leadership, Management and Ethics**	
Classification	**Reading List entry**	**Electronic***
Essential	DuBrin, A.J., (2012), Principles of Leadership, 7th Edition, Boston: Cengage	☒
Essential	Mullins, L., (2023), Management and Organisational Behaviour, 13th Edition, Pearson.	☒
Further	Wyatt, P., A., (2022), How to Lead for Daring New Leaders: The No-Nonsense Guide to Develop Basic Leadership Skills. Discover Your Power to Be In Charge, Eagle Ridge Books.	☒
Further	Laasch, O., Principles of Management: Practicing Ethics, Responsibility, Sustainability, 2nd Edition, SAGE Publications Ltd.	☒
Further	Docters, R., Gieskes, H., (2023) Ethics and Hidden Greed: Your Defense Against Unethical Strategies and Violations of Trust, Emerald Publishing Limited.	☒
Further	Evill, R., (2022), Bootstrapping Ethics: Integrity Risk Management for Real World Application, Wiley.	☒
Further	Hillson, D., (2023), The Risk Management Handbook: A Practical Guide to Managing the Multiple Dimensions of Risk, 2nd Edition, Kogan Press.	☒

Module Code	**ACCA7045**
Title	**Production Management**
Date	**17/05/2024**
Level	**7**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To advance production management principles, techniques, and methodologies within dynamic and evolving creative industries, tailored specifically to students' Master's degree pathway.

LEARNING OUTCOMES

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

- demonstrate an advanced understanding of production management principles, techniques, and methodologies specific to the film, VFX, CGI, and games industries. Apply this knowledge to effectively plan, execute, and deliver complex production projects;

- analyse and evaluate project requirements, market trends, and industry dynamics to develop comprehensive production strategies. Make informed decisions regarding resource allocation, scheduling, risk management, and budgeting to ensure project success;

- develop and implement robust quality assurance processes to maintain high production standards and deliver quality outputs. Continuously evaluate and optimize production processes, workflows, and methodologies to enhance efficiency, minimize waste, and improve overall project outcomes.

INDICATIVE CONTENT

- Advanced Knowledge:
  - Current and future production management principles and techniques specific to the film, VFX, CGI, and games industries.
  - Understanding the production life cycle, from pre-production to post-production.
  - Knowledge of industry standards, best practices, and emerging trends in production management.
  - Familiarity with production management software and tools used in the industry.

- Strategic Planning and Decision-Making:
  - Analysing project requirements, market trends, and diverse audience expectations to develop effective production strategies.
  - Creating comprehensive project plans, including resource allocation, scheduling, and risk management.
  - Making informed decisions on budgeting, financing options, cost control measures, and sustainability-informed decisions.
  - Identifying and mitigating potential risks and challenges in production projects.

- Leadership and Team Management:
  - Effective communication and collaboration with interdisciplinary teams, including directors, producers, artists, and technicians.
  - Delegating tasks, setting clear goals and expectations, and monitoring progress throughout the production process.
  - Resolving conflicts and managing team dynamics to ensure a positive and productive work environment.
  - Motivating and inspiring team members from diverse backgrounds to achieve project objectives.

- Quality Assurance and Process Optimization:
  - Implementing quality assurance processes to maintain high production standards and deliver quality outputs.
  - Conducting regular quality control checks and audits to ensure adherence to established standards and specifications.
  - Identifying areas for process optimization and implementing improvements to enhance efficiency and productivity.
  - Continuously monitoring and evaluating production workflows, methodologies, and performance metrics

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**
Written Report / Illustration	Individual Scoping, Scheduling and Communication Exercise (5000-words equivalent)	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7045	
Module Title	**Production Management**	
Classification	**Reading List entry**	**Electronic***
Essential	Dinur, E (2022) The Complete Guide to Photorealism for Visual Effects, Visualization and Games, Routledge.	☒
Essential	Okun, J. VES and Zwerman, S. VES (2020) The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures. 17 July.	☒
Further	Rall, H. (2018) Animation: From Concept to Production. 1st ed. Boca Raton, FL: CRC Press.	☒
Further	Cohen, D S. (2012). Producing Games: From Business and Budgets to Creativity and Design. Routledge.	☐
Further	Finance, C. and Zwerman, S. (2009) The Visual Effects Producer: Understanding the Art and Business of VFX. 1st ed. Amsterdam : Boston: Focal Press.	☐
Further	Honthaner, E.L. (2020). The Complete Film Production Handbook. Elsevier/Focal Press.	☒
Further	Kogon, K., Blakemore, S., & Wood, J. (2024). Project Management for the Unofficial Project Manager (Updated and revised edition) Benbella Books.	☒
Further	Module Guide: Production Management (pdf). Available at: http://www.learninganimation.co.uk /production_manage/ [Accessed 5 July 2023].	☒
Further	Ulin, J. (2019) The Business of Media Distribution: Monetizing Film, TV, and Video Content in an Online World. Focal Press.	☐
Further	Winder, C., & Dowlatabadi, Z. (2020). Producing Animation. 3rd edition, CRC Press.	☒
Further	Zwerman, S., & Okun, J.A. (Eds.). (2020). The VES Handbook of Visual Effects: Industry Standard VFX Practices and Procedures. 3rd edition Routledge.	☒

Module Code	**ACCA7046**
Title	**Research-Led Practice**
Date	**17/05/2024**
Level	**7**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide the students with a comprehensive understanding of research methods and the ability to select appropriate methods for various research topics.

LEARNING OUTCOMES

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

- utilise a deep understanding of research design, including qualitative, quantitative, and mixed-method approaches, and choose the most appropriate methodology for specific research questions;

- conduct a comprehensive literature review, identifying gaps in existing research and formulate a clear and well-structured research proposal.

INDICATIVE CONTENT

- Philosophies, approaches, and strategies for research.

- Field data collection such as survey design, questionnaires, sampling, interviews, case studies, observation.

- Research and experimental design.

- Conducting a literature review.

- Interpreting and documenting research findings.

- Writing reports and papers, oral presentation techniques.

- Project planning.

- Social, cultural, legal and ethical considerations.

Study Time Allocation

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

Assessment Component 1
(Tick one)

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

Mode of assessment	Volume	Weighting
Coursework - Prepare research proposal for an appropriate research topic.	2,500 words equivalent	100%

Assessment Summary

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

INDICATIVE READING LIST

Module Code	ACCA7046	
Module Title	Research-Led Practice	
Classification	Reading List entry	Electronic*
Essential	Dawson, C. (2019) Introduction to Research Methods 5th Edition (Robinson).	☒
Essential	Lury, C. et al (Eds.) (2017) Routledge Handbook of Interdisciplinary Research. (Routledge International).	☐
Further	Crib, M. (2021) Research Methods for Undergraduate and Postgraduate Students.	☐
Further	Kranzler, J.H. (2022) Statistics for the Terrified 7th Edition (Rowman & Littlebridge).	☐

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**

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**

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) *Research Project Success: The Essential Guide for Science and Engineering Students*, Cambridge: Royal Society of Chemistry	☒
Essential	Greenfield, T. (2016) *Research Methods for Postgraduates,* London: Arnold	☒
Essential	Cottrell, S. (2011) *Critical Thinking Skills: Developing Effective Analysis and Argument - Palgrave Study Guides, 2nd Edition,* London: Palgrave Macmillan	☒
Essential	Cottrell, S. Dissertations and Project Reports: A Step by Step Guide (Palgrave Study Skills, 2014)	☒
Essential	O'Leary, Z. (2013) *Doing Your Research Project (2nd Edition)*, SAGE Publications Ltd	☒
Further	O'Leary, Z. (2015) The Essential Guide to *Doing Your Research Project,* Newcastle upon Tyne: Sage	☒
Further	Kranzler, J. H. (2017) *Statistics for the Terrified,* Upper Saddle River: Prentice Hall	☒
Further	Dawson, C. W. (2009) *Projects in Computing and Information Systems: a Student's Guide, 2nd Edition,* Boston: Addison-Wesley	☒
Further	Dipankar, D. (2019) Engineering Research Methodology: A Practical Insight for Researchers. Springer	☐
Further	Fellows, R. and Liu, A. *Research Methods for Construction (*Blackwell Oxford, 2015)	☐
Further	Few, S. (2012) *Show Me the Numbers*, Burlingame: Analytics Press	☒
Further	Hughes, B. and Cotterell, M. (2009) *5th Software Project Management*, New York: McGraw-Hill	☐
Further	Phillips, J. (2010) *IT Project Management: On Track from Start to Finish*, New York: McGraw-Hill	☐
Further	Gregoire, T.G. & Valentine, H.T. (2008) *Sampling strategies for natural resources and the environment*. Chapman, London	☐
Further	Baase, S. (2012) *A Gift of Fire: Social, Legal, and Ethical Issues for Computing and the Internet: International Edition, 4th Edition,* Boston: Pearson	☐
Further	Collis, J. and Hussey, R. (2009) Business Research: a Practical Guide for Undergraduate and Postgraduate Students, 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) *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	☐
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, 2nd 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 (2nd Edition), SAGE Publications Ltd	☒
Further	Dawson, C. W. (2009) Projects in Computing and Information Systems: a Student's Guide, 2nd 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, 5th Edition, Upper Saddle River: Prentice Hall	☐
Further	Leedy. P. D. and Ormrod, J. E. (2012) Practical Research Planning and Design, 10th 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	**ACFB7003 / ACFB7003D**
Title	**Master's Project**
Date	**05/06/2024**
Level	**7**
Credits	**60**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

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 Master's 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, analytical, 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 including sustainability.
- 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
(Tick one)

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

Mode of assessment	Volume	Weighting
Masters Project 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	15,000 words equivalent.	80%

Assessment Component 2
(Tick one)

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

Mode of assessment	Volume	Weighting
Presentation (Viva Voce)	20 Minutes + Questions	20%

Assessment Summary

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

Professional, Statutory and regulatory Body (PSRB): This module aims to cover the following AHEP4 learning outcomes: M4, M16, M17

INDICATIVE READING LIST

Module Code	**ACFB7003 / ACFB7003D**	
Module Title	**Master's Project**	
Classification	**Reading List entry**	**Electronic***
Essential	McCormac, C., & Davis, J. (2015). *Research Project Success: The Essential Guide for Science and Engineering Students*. Royal Society of Chemistry.	☒
Essential	Greenfield, T. (2016). *Research Methods for Postgraduates*. Arnold.	☒
Essential	Cottrell, S. (2023). *Critical Thinking Skills: Effective Analysis, Argument and Reflection - Palgrave Study Guides* (4th ed.). Palgrave Macmillan.	☒
Essential	Cottrell, S. Dissertations and Project Reports: A Step by Step Guide (Palgrave Study Skills, 2014).	☒
Essential	O'Leary, Z. (2021). *The Essential Guide to Doing Your Research Project* (4th ed.). Sage.	☒
Further	Bell, J. (2018). *Doing Your Research Project: A Guide for First-Time Researchers* (7th ed.). Amacom.	☐
Further	Kranzler, J. H. (2022). *Statistics for the Terrified* (7th ed.). Prentice Hall.	☒
Further	Dawson, C. W. (2015). *Projects in Computing and Information Systems: A Student's Guide* (3rd ed.). Addison-Wesley.	☒
Further	Dipankar, D. (2019). *Engineering Research Methodology: A Practical Insight for Researchers*. Springer.	☐
Further	Tang, H. (2020). *Engineering Research: Design, Methods, and Publication*. Wiley.	☒
Further	Fellows, R., & Liu, A. (2015). *Research Methods for Construction* (4th ed.). Wiley & Sons, Inc.	☐
Further	Few, S. (2012) *Show Me the Numbers: Designing Tables and Graphs to Enlighten*, Burlingame: Analytics Press.	☒
Further	Hughes, B., & Cotterell, M. (2009). *Software Project Management* (5th ed.). McGraw-Hill.	☐

Further	Phillips, J. (2010). *IT Project Management: On Track from Start to Finish*. McGraw-Hill.	☐
Further	Gregoire, T. G., & Valentine, H. T. (2008). *Sampling Strategies for Natural Resources and the Environment*. Chapman.	☐
Further	Baase, S. (2017). *A Gift of Fire: Social, Legal, and Ethical Issues for Computing and the Internet* (5th ed.). Pearson.	☐
Further	Collis, J., & Hussey, R. (2021). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students* (5th ed.). Palgrave Macmillan.	☐
Further	Davies, M. B. (2014). *Doing a Successful Research Project: Using Qualitative or Quantitative Methods* (2nd ed.). Palgrave Macmillan.	☐
Further	Hewson, C., Vogel, C., & Laurent, D. (2016). *Internet Research Methods* (2nd ed.). Sage.	☐
Further	Quinn, M. J. (2017). *Ethics for the Information Age* (7th ed.). Pearson.	☐
Further	Yin, R. K. (2014). *Case Study Research: Design and Methods* (5th ed.). Sage.	☐
Further	Spence, R. (2014). *Information Visualization: An Introduction*. 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	Wallace, M., & Wray, A. (2021). *Critical Reading and Writing for Postgraduates* (4th ed.). 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	ebsites 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 /PMSWEResources/PMResources.htm http://www.tickit.org/international.htm http://www.bcs.org/ http://www.uml.org/	☒

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