MSc Applied Computing and Digital Technologies

Open University of Mauritius

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Programme Specification

MSc Applied Computing and Digital Technologies - OUpm017

This specification provides a concise summary of the main elements of the programme and the learning outcomes that a learner might be expected to accomplish and demonstrate at the completion of the study.

Programme Overview

1. **Brief outline of the programme**

   This programme is a master degree, enabling learners to advance their specialist knowledge of areas such as Artificial Intelligence, Cyber Security, Software Engineering and Web Technology. The requirement is a Bachelor's degree in IT field with at least second class from a recognised university or alternative qualifications, including professional qualifications, acceptable to the Open University of Mauritius. This master's degree comprises of modules that cover state of the art techniques, technologies, and supporting tools, and expose learners to their applications in responding to evolving business and social needs, and solving challenging problems.

2. **Learning and Teaching**

   The modules will be taught in distance learning mode with the support of face-to-face classes, hands-on sessions as well as online materials. Learning and teaching methods are explained in the following sections covering the programme learning outcomes.

3. **Assessment**

   Assessment will be based on a written examination of 3 hours' duration which would account for 50% of the final module grade and continuous assessment would account for 50% of the final module grade. Assessment methods are explained in the following sections covering the programme learning outcomes.

Aims of the Programme

On successful completion of the programme, learners should be able to:

- Develop the skills to solve real-world industry related problems based on advanced knowledge of the principles and methodologies of a range of computer science specialisms such as Artificial Intelligence, Cyber Security, Data Science, Software Engineering and Web Technology
- Use appropriate techniques and tools in the management of IT projects
- Apply concepts and best practices in the IT industry
- Develop independent learning skills as required for continued professional development
- Disseminate the findings and conclusions of a research clearly and unambiguously to specialist and non-specialist audiences

Programme Learning Outcomes

1. Knowledge and Understanding

On successful completion of this programme you will possess the knowledge and understanding of:

A1. Scientific and technological principles underlying Software Engineering and Computer Science

A2. Advanced concepts in specialist areas of computer science such as Artificial Intelligence, Cyber Security, Software Engineering and Web Technology

A3. Specialist tools and state of the art techniques used to design, implement and verify software-based systems

A4. Methods of software design, development, project management and testing

A5. Applicable methods of research and enquiry within the discipline

Teaching and Learning Methods

You will have a variety of opportunities to achieve these learning outcomes. Most modules consist of a combination of lectures, practical work, directed reading, presentations, technical reports, coursework assignments and written examinations. At the end of the taught part of the course you will have undertaken an individual project.

Assessment Methods

Your achievement is assessed as follows. In the case of staff-led lectures and seminars, your knowledge and understanding (outcomes A-C) is assessed through written examinations and assessed coursework in the form of problem solving exercises and individual or small-group projects. Your understanding of research issues, and your ability to locate and present technical information (outcome C) is assessed through presentations, technical reports and written examinations, and additionally through your final year project. The research project (outcome C) is assessed through the Research Methods module and the applied project, which must include a significant literature survey to set the context for your work, implementation of the project, and a critical evaluation and reflection.

2. Subject Specific Intellectual and Research Skills

On successful completion of this programme you will be able to:

B1. Model, and design advanced and specialised software applications, information systems, and other computer-based solutions

B2. Test, evaluate, and maintain such applications and solutions

B3. Analyse problems to determine appropriate methods of design, testing and evaluation

B4. Acquire new knowledge and understanding through critical reading of research material.

B5. Find, read, understand and explain literature related to advanced and specialised areas of computer science, including scientific publications, industrial documentation, standards, ethical, legal and environmental guidance

B6. Apply such knowledge and understanding to specialist design problems.

B7. Formulate a research project involving an advanced and specialised software application, system, or other computer-based solution, using appropriate state of the art techniques, technologies and tools

Teaching and Learning Methods

Most modules consist of a combination of lectures and computer-based practical work including advanced software development tools, directed reading and coursework assignments. The applied project can accommodate different learning styles.

Assessment Methods

Your achievement is assessed as follows. Testing of the subject specific intellectual and research skills is through a combination of written examinations and assessed coursework in the form of problem solving exercises, presentations, technical reports and individual and small-group projects. Your ability to design and implement systems, perhaps using novel techniques is developed through your research projects. These reports are expected to include a rationale for your design and implementation decisions and evidence of verification activities. The Research Methods module and the applied project include a significant literature survey and peer review, and have assessment criteria related specifically to these skills. The applied project is centrally focussed on assessing software research and development skills.

3. Transferable and Generic Skills

On successful completion of this programme you will be able to:

C1. Use a range of sources, both conventional and electronic, to locate relevant information, and critically appraise that information

C2. Communicate effectively and present technical information concisely in written and verbal forms to a range of audiences

C3. Work efficiently and effectively as a member of a project team, managing you own contribution and the overall task

C4. Work independently on a significant research project, managing time and risk in an effective manner

C5. Recognise legal and ethical issues of concern to business, professional bodies, and society, including but not limited to information security, and follow relevant guidelines to address these issues

Teaching and Learning Methods

A coursework can vary from design work to essays and presentations resulting from directed reading and coursework assignments with a literature review component. The individual project includes independent research, project implementation and report writing. Most modules involve the use of the following methods: practical work, directed reading and coursework assignments. The applied project includes project management and the delivery of the project implementation via a presentation. The individual project includes independent research and report writing. Legal, ethical and professional issues are covered in one module.

Assessment Methods

Your achievement is assessed as follows. Your understanding of research issues, and your ability to locate and present technical information is assessed through presentations, technical reports and written examinations, and additionally your applied project. The Research Methods module is assessed via a literature review, as well as written and presentation versions of the project plan. The applied project is assessed through your dissertation, which must include a significant literature survey to set the context for your work, implementation of the project, and a critical evaluation and reflection.

4. Subject Specific Practical Skills

On successful completion of this programme you will be able to:

D1. Use specialist software development and analysis tools

Teaching and Learning Methods

Most modules include practical work, involving use of specialised tools for software development or analysis.

Assessment Methods

Assessment is based on coursework in the form of technical reports, software designs and implementation, and also the applied project.

Programme Structure

Programme Requirements

A Bachelor's degree in IT field with at least second class from a recognised university or alternative qualifications, including professional qualifications, acceptable to the Open University of Mauritius. Candidates must have a good mastery of English Language.

Programme Duration

	Minimum	Maximum
Master's degree	2 years	4 years

Minimum credits required for the awards

Master's degree	42	Credits
Postgraduate diploma	36	Credits (without dissertation)
Postgraduate certificate	18	Credits (without dissertation)

Each credit in the university's system is equivalent to a minimum of 20 hours of study including all learning activities (i.e. reading and comprehending the print material, listening to audio, watching video, attending tutorials/counselling sessions, writing assignment responses and preparation for the examinations). Thus, a 3 credit course involves a **minimum** of 60 hours of study which include directed reading and self-learning. The Postgraduate diploma and Postgraduate certificate are exit points which may avail of upon application by the learner.

Grading

Marks (x) %	Description	Grade	Grade Point
$x \geq 70$	Excellent	A	5
$60 \leq x < 70$	Very Good	B	4
$50 \leq x < 60$	Good	C	3
$45 \leq x < 50$	Satisfactory	D	2
$40 \leq x < 45$	Pass	E	1
$x < 40$	ungraded	U	0

Award

MSc Applied Computing and Digital Technologies with

Distinction : CPA ≥ 70%

Merit : 60% ≤ CPA < 70%

Pass : 40% ≤ CPA < 60%

If CPA < 40%, the learner will have to repeat the entire academic year, and retake the modules as and when offered. However, s/he will not be required, if s/he wishes, to retake module(s) for which Grade C or above has been obtained. Learners are allowed to repeat twice once over the entire duration of the Programme of Studies. No award is made if CPA < 40%. A learner who fails a Masters project / Dissertation and subsequently passes it will only be eligible for the award of a Master Degree at a pass level.

Programme Plan

Learners are informed that the number of face-to-face (F2F) sessions will vary from module to module.

YEAR 1 (TOTAL CREDITS IN YEAR 1 = 18)

MODULE CODE	MODULE	Semester1	Semester 2	F2F Sessions	Credits
OUpm017111	Service-Oriented Architecture and Web Services	√		12hrs	3
OUpm017112	Cloud Computing Applications	√		10hrs	3
OUpm017113	Web Engineering & Analytics	√		12hrs	3
OUpm017121	Business IT		√	10hrs	3
OUpm017122	Wireless Sensors and Embedded Systems		√	12hrs	3
OUpm017123	Machine Learning and Artificial Intelligence		√	12hrs	3

YEAR 2 (TOTAL CREDITS IN YEAR 2 = 24)

MODULE CODE	MODULE	Semester 1	Semester 2	F2F Sessions	Credits
OUpm017211	IT Project Management	√		12hrs	3
OUpm017212	Research Methods	√		12hrs	3
OUpm017213	Mobile Application Development	√		14hrs	6
OUpm017221	Cyber Security and Cyber Law		√	10hrs	3
OUpm017222	Big Data Theory and Practice		√	12hrs	3
OUpm017223	Project		√	-	6

Total No. of credits = 42

OUpm017111 - Service-Oriented Architecture and Web Services	
	Aim
	The aim of the module is to understand XML fundamentals and how to build applications based on XML. The key principles behind SOA will be underlined. The module provides learners the different elements of web services technology to realise SOA applications. Moreover, the module will help learners to study the various web service standards.
	Key Elements
	▪ Web Technologies ▪ Introduction to XML ▪ Building XML-based applications ▪ Web services architecture principles ▪ Web service and service consumers/providers ▪ Web services protocols ▪ Design and implementation of web services ▪ Security aspects and implications ▪ REST API, GraphQL
	Learning Outcomes
	After successful completion of this module, learners should be able to • Design, develop and test Web services. • Understand concepts related to Web services: Web Services Description Language (WSDL), Simple Object Access Protocol (SOAP), and Universal Description, Discovery and Integration (UDDI). • Apply the basic principles of Service-Oriented Architecture to develop a sample application. • Design, develop and test applications in XML/REST/GraphQL • Evaluate emerging and proposed standards for the main components of Web services architectures. • Work efficiently and effectively as a member of a project team, managing their own contribution and time effectively. • Present technical information in written and orally to an audience.

OUpm017112 - Cloud Computing Applications
Aim
This unit aims to give a comprehensive overview of elastically scalable and remotely-accessed "cloud" computing services such as those offered by Amazon, Google, and Microsoft, and associated technologies. It also provides a hands-on comprehensive study of Cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS). Moreover, it identifies security and privacy issues in cloud computing.
Key Elements
▪ Cloud computing overview ▪ Cloud computing platforms ▪ Enterprise Cloud-Based High Performance Computing (HPC) Applications ▪ Cloud security ▪ Distributed Storage Systems ▪ Virtualisation ▪ Cloud platforms in industry and Cloud Applications ▪ Using Mobile Cloud - Working with Mobile Devices & Working with Mobile Web Services
Learning Outcomes
After successful completion of this module, learners should be able to • Understand the fundamental ideas behind Cloud Computing, the evolution of the paradigm, its applicability; benefits, as well as current and future challenges. • Understand the principles in data center design; cloud management techniques and cloud software deployment considerations. • Analyse cloud storage technologies and relevant distributed file systems, NoSQL databases and object storage. • Understand the basics of Hadoop. • Implement MapReduce, its Java API and Hadoop Distributed File System (HDFS) features. • Work efficiently and effectively as a member of a project team, managing their own contribution and time effectively. • Use a range of source to locate relevant information and present technical information in written.

OUpm017113 - Web Engineering and Analytics
Aim
The aim of this module is to introduce the key concepts of web analytics in the digital marketing discipline. Learners will be able to demonstrate how web analytics can build knowledge of online customer behaviour and campaign effectiveness that can be used successfully in the business environment within which marketers now operate.
Key Elements
▪ Introduction to Content Management System ▪ Flavours of popular CMS (WordPress, Drupal) ▪ CMS Implementation - Dynamic and Ecommerce sites ▪ Introduction to Web Analytics ▪ Web Analytics Tool - Google Analytics Vs Spring Metrics ▪ Introduction to Search Engine Optimisation (Perform an SEO audit, Think 'mobile-first', Keywords Implementation, Monitor Duplicate Content, Page Load Speed, Link optimisation) ▪ SEO Tools - MOZ vs SEMrush
Learning Outcomes
After successful completion of this module, learners should be able to • Design, develop and implement a website using a Content Management System. • Apply basic web analytics methods. • Understand the common monitoring or analysis tasks and techniques used in web analytics and how to effectively use the resulting insights to support website design decisions, campaign optimisation, search analytics. • Evaluate different types of software tools, techniques, and reports that are relevant to web analytics and understand the basics of how to apply them. • Work efficiently and effectively as a member of a project team, managing their own contribution and time effectively. • Present technical information in written and orally to an audience.

OUpm017121 – Business IT	
	Aim
	The aim of the module is to provide an overview of the current and future IT activities taking place around the world to make businesses and organisations more profitable.
	Key Elements
	▪ Introduction to industrial IT (Accounting, Sales, HR, marketing, profit / loss, banking, etc.) ▪ Business Process Management (BPM) ▪ Robotic Process Automation (RPA) ▪ Customer Relationship Management ▪ Agile Methodology and DevOps ▪ Enterprise Architecture (ERP logical / physical architecture, hardware and software configurations
	Learning Outcomes
	After successful completion of this module, learners should be able to • Understand industrial IT concepts and best practices. • Identify business process management. • Understand how robotic process automation can be used. • Recognise the importance of CRM to an organisation. • Apply agile methodology. • Design enterprise architecture. • Work efficiently and effectively as a member of a project team, managing their own contribution and time effectively. • Use a range of source to locate relevant information and present technical information in written.

OUpm017122 - Wireless Sensors and Embedded Systems
Aim
The aim of the module is to help the learner to acquire the understanding of the basic principles behind a Wireless Sensor Network (WSN). It will present the particular challenges of designing network protocols, services and applications for WSNs composed of large numbers of constrained devices.
Key Elements
▪ Network Architecture ▪ Medium Access Control Protocols ▪ Routing and Data Gathering Protocols ▪ Power Management Schemes ▪ Time synchronisation protocols ▪ Applications of WSN and network optimisation tools ▪ Challenges in WSN ▪ Sensor network programming ▪ Simulation of wireless networks ▪ Embedded Systems
Learning Outcomes
After successful completion of this module, learners should be able to • Understand the basic concepts related to WSN, emphasising their differences with other communication networks. • Assess different communication protocols and their usefulness in different applications. • Analyse some existing applications of wireless sensor networks and embedded systems. • Perform a simulation in sensor network platforms. • Work efficiently and effectively as a member of a project team, managing their own contribution and time effectively. • Present technical information in written and orally to an audience.

OUpm017123– Machine Learning and Artificial Intelligence	
	Aim
	The aim of the module is to provide a broad introduction to machine learning and statistical pattern recognition. The learner will be aware of recent applications of machine learning such as robotic control, data mining, autonomous navigation, bioinformatics, speech recognition, and text and web data processing.
	Key Elements
	▪ Machine Learning fundamentals ▪ Data Representation and Overfitting ▪ Data Dimensionality Reduction Techniques ▪ Supervised Learning Methods ▪ Unsupervised Learning Methods ▪ Deep Learning ▪ Feature Extraction Methods ▪ Neural Networks ▪ Artificial Intelligence ▪ Principles & Design of IoT
	Learning Outcomes
	After successful completion of this module, learners should be able to • Understand the concepts, techniques, and algorithms in machine learning. • Distinguish a wide variety of learning algorithms and their application to data. • Perform evaluation of learning algorithms and model selection. • Work efficiently and effectively as a member of a project team, managing their own contribution and time effectively. • Present technical information in written and orally to an audience.

OUpm017211 – IT Project Management	
	Aim
	The aim of the module is to acquire the skills of project management in order to generate successful new products and services to ensure the continued viability of the organisation in a highly competitive globalised environment.
	Key Elements
	▪ Introduction; Philosophy and Concepts ▪ Project Lifecycle ▪ Planning Fundamentals ▪ Network Scheduling; PERT, CPM and resource allocation ▪ Cost Estimation and Budgeting ▪ Managing Risk in Projects ▪ Project Control ▪ Project Evaluation ▪ Reporting and Termination ▪ Project Organisation Structure and Integration ▪ Project Roles, responsibility and authority ▪ Managing participation, teamwork and conflict ▪ Project failure, success and lessons learned ▪ Software Quality Management
	Learning Outcomes
	After successful completion of this module, learners should be able to • Explain the stages in the system development lifecycle and the activities that are carried out to implement an IT application. • Apply basic project planning techniques. • Understand the steps needed to build and maintain effective development teams. • Explain the procedures needed to monitor, control and report upon an IT development project. • Discuss and where appropriate apply the principles of project risk management. • Explain the ways in which appropriate quality attributes of the products of an IT development project can be assessed and assured. • Work independently, managing time effectively. • Present technical information in written and orally to an audience.

OUpm017212 - Research Methods	
	Aim
	The aim of the module is to help the learner to establish their understanding of research through critical exploration of research work, ethics, and approaches. Learners will use the theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in forming their understanding of their research proposal.
	Key Elements
	▪ The concept of research ▪ Overview of research methods ▪ Research approaches and strategies ▪ Different parts and concepts of a research report in the IT field ▪ Analysis and synthesis ▪ Sources and referencing of relevant research materials ▪ Ethics in research ▪ Guidelines for a research proposal in the IT field
	Learning Outcomes
	After successful completion of this module, learners should be able to • Understand the concept of research. • Define the various research methods and explain their usage. • Perform literature reviews using print and online databases. • Explain the rationale for research ethics and its importance. • Identify the problem statement for an IT project. • Prepare a research proposal for an IT project. • Think creatively to produce new ideas and concepts to implement a research project. • Present technical information in written and orally to an audience. • Work independently on a significant research project, managing time and risk in an effective manner.

OUpm017213 - Mobile Application Development	
	Aim
	The aim of this module is to develop learners' skills in implementing applications for mobile devices, including smartphones and tablets. Furthermore, learners will have an exposure to current mobile platforms and mobile application development environments as well as to develop applications for popular mobile platforms.
	Key Elements
	▪ Introduction to Mobile Application Development Ecosystems (Apple, Google, Microsoft) ▪ Introduction to Android Programming ▪ Android Application Frameworks ▪ Introduction to iOS platform ▪ Building a simple User Interface ▪ Introduction to HMAD ▪ Create your first hybrid application ▪ Native versus Hybrid Mobile Applications ▪ App Publishing and Business Models
	Learning Outcomes
	After successful completion of this module, learners should be able to • Link between the business trends and mobile applications. • Distinguish between Android, iOS and Microsoft applications within the field of mobile technology. • Identify the characteristics and architecture of mobile applications. • Design and develop mobile applications using an application development framework. • Work independently, managing time effectively. • Present technical information in written and orally to an audience.

OUpm017221 - Cyber Security and Cyber Law	
	Aim
	This module aims at acquiring fundamental legal knowledge in order to be able to give basic advices on issues like threats, data protection and legal consequences of security breaches.
	Key Elements
	▪ Data protection (national and international law including European law i.e. GDPR) ▪ Cybersecurity legal aspects ▪ Intellectual property (including database protection), trademark, patent ▪ Information security management systems ▪ Threats of internal/inclusion prevention system, internal detection system ▪ Cloud Security
	Learning Outcomes
	After successful completion of this module, learners should be able to • Appraise the rising concern for IT laws. • Conduct a PIA (privacy impact assessment). • Build an emergency plan including legal aspects (proof of evidence, notifications to authorities and / or clients, criminal complaint). • Analyse the internal contractual relationships and strike legal issues regarding intellectual property rights (specific focus on databases). • Use a range of source to locate relevant information and present technical information in written.

OUpm017222 – Big Data Theory and Practices	
	Aim
	This module aims at equipping learners with the essential knowledge and skills to design a plan for big data management and evaluate the effectiveness of the proposed solution.
	Key Elements
	▪ Introduction to big data ▪ Concepts and principles of big data ▪ Data analytics framework ▪ Data analysis model ▪ Big data tools and techniques ▪ Big data storage security and data privacy ▪ Big data applications
	Learning Outcomes
	After successful completion of this module, learners should be able to • Understand the principles, methods and technologies of big data management for business improvements and innovations. • Design strategic plans for using big data management to solve business problems, and evaluate the effectiveness of the proposed solutions. • Use existing databases/perform simulations for data generation. • Analyse data using methods and technologies in big data for business improvements and innovations. • Work independently, managing time effectively. • Use a range of source to locate relevant information and present technical information in written.

OUpm017223– Applied Project/Dissertation

The research project will draw upon significant concepts and techniques introduced during the taught part of the course and will have to merge the theoretical background and practical skills through the achievement of a considerable and related in-depth piece of work. The review of the final year project will be based on the compliance of a report which should be in the range of 12,000 to 15,000 words and the implementation of the project. An oral presentation (viva voce) for the demonstration of the project will be conducted after the submission of the project.

Learning outcomes mapping document

Module Code	Module Title	Knowledge and Understanding					Subject Specific Intellectual and Research Skills							Transferable and Generic Skills					Subject specific practical skills
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	D1
OUpm017111	Service-Oriented Architecture and Web Services	•	•	•			•	•							•	•			•
OUpm017112	Cloud Computing Applications	•	•	•			•	•						•	•	•		•	•
OUpm017113	Web Engineering & Analytics	•	•	•			•	•							•	•			•
OUpm017121	Business IT					•			•					•	•		•	•	
OUpm017122	Wireless Sensors and Embedded Systems	•	•	•			•	•							•	•			•
OUpm017123	Machine Learning and Artificial Intelligence	•	•	•			•	•							•	•			•
OUpm017211	IT Project Management				•				•						•		•	•	
OUpm017212	Research Methods					•				•	•		•	•	•		•	•	
OUpm017213	Mobile Application Development	•	•	•			•	•							•		•		•
OUpm017221	Cyber Security and Cyber Law		•									•			•	•	•		
OUpm017222	Big Data Theory and Practice	•	•									•			•	•	•	•	
OUpm017223	Applied Project	Subject to the topic, various combinations of the knowledge and understanding learning outcomes will be demonstrated					•	•	•	•	•	•	•	•	•		•	•	•

Assessment mapping document

Module Code	Module Title	Year Semester	Assessment 1	Assessment 2	Assessment 3
OUpm017111	Service-Oriented Architecture and Web Services	Y1S1	Group Project Presentation - 50%	N/A	Written Exam 3 hours - 50%
OUpm017112	Cloud Computing Applications	Y1S1	Group Project Presentation - 50%	N/A	Written Exam 3 hours - 50%
OUpm017113	Web Engineering & Analytics	Y1S1	Group Project Presentation - 50%	N/A	Written Exam 3 hours - 50%
OUpm017121	Business IT	Y1S2	Business Process Report - 25%	Implementation Report - 25%	Written Exam 3 hours - 50%
OUpm017122	Wireless Sensors and Embedded Systems	Y1S2	Group Project Presentation - 50%	N/A	Written Exam 3 hours - 50%
OUpm017123	Machine Learning and Artificial Intelligence	Y1S2	Group Project Presentation - 50%	N/A	Written Exam 3 hours - 50%
OUpm017211	IT Project Management	Y2S1	Technical Report - 50%	N/A	Written Exam 3 hours - 50%
OUpm017212	Research Methods	Y2S1	Research Proposal Presentation - 100%	N/A	N/A
OUpm017213	Mobile Application Development	Y2S1	Project Presentation - 100%	N/A	N/A
OUpm017221	Cyber Security and Cyber Law	Y2S2	Cyber Security Report - 25%	Cyber Law Report - 25%	Written Exam 3 hours - 50%
OUpm017222	Big Data Theory and Practice	Y2S2	Analytical Report - 50%	N/A	Written Exam 3 hours - 50%
OUpm017223	Applied Project	Y2S2	Dissertation (12,000 to 15,00 words) followed by oral presentation- 100%	N/A	N/A

Graduate Attributes

The Open University Graduate Attributes are a set of core competencies to which we aspire in all our degree programmes.

Our aim for our graduates is that they will:

- Demonstrate deep conceptual understanding of their chosen discipline
- Approach challenges with critical thinking and innovation
- Develop into independent learners with high self-efficacy
- Display a strong sense of personal and professional identity
- Demonstrates a sense of values and ethics personally and professionally

Career Opportunities

Graduates mainly go on to work in the IT industry as senior developers, team leaders, senior consultants, project managers or senior technical specialists. Academic possibilities include further study towards a PhD qualification, or research assistant positions undertaking related research.

Recommended Additional Reading

Module Service-Oriented Architecture and Web Services

Title: Service Oriented Architecture
Series: Computer Science, Technology and Applications
Authors: Anandamurugan, S. Priyaa, T.
Hauppauge, New York : Nova Science Publishers, Inc. 2014

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1134313&site=ehost-live

Title: Web Services, Service-Oriented Architectures, and Cloud Computing
Series: The Savvy Manager's Guides
Authors: Barry, Douglas K.
San Francisco, Calif : Morgan Kaufmann. 2003

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=207322&site=ehost-live

Module Cloud Computing Applications

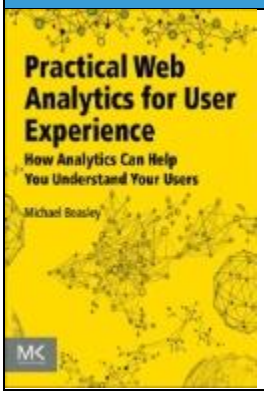
Title: Grid and Cloud Computing: Concepts and Practical Applications
Series: Proceedings of the International School of Physics "Enrico Fermi", Course 192
Authors: Carminati, F , Betev, L., Grigoras, A.
Amsterdam, Netherlands : IOS Press. 2016

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1238936&site=ehost-live

Title: GCA 2014 : Proceedings of the 2014 International Conference on Grid & Cloud Computing & Applications
Authors: Solo, Ashu M. G. , Tinetti, Fernando G., Arabnia, Hamid R., Gravvanis, G. A.
[United States] : Mercury Learning and Information. 2014

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=929544&site=ehost-live

Module Web Engineering & Analytics



Title: Practical Web Analytics for User Experience : How Analytics Can Help You Understand Your Users
Authors: Beasley, Michael
Amsterdam : Morgan Kaufmann. 2013

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=485273&site=ehost-live

Module Business IT

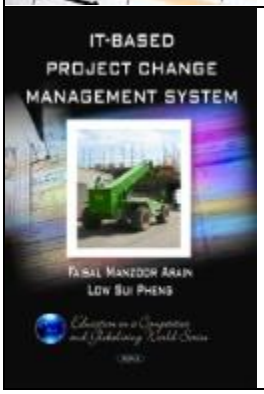
Title: IT for Business (IT4B) : From Genesis to Revolution: a Business and IT Approach to Digital Transformation
Authors: Johnson, Brian, Zondervan, Walter
Ely, Cambridgeshire, United Kingdom : **IT** Governance Publishing. 2018

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1836445&site=ehost-live

Module IT Project Management

Title: Methods of IT Project Management : Second Edition
Authors: Brewer, Jeffrey L.m Dittman, Kevin C.
Ed.: 2nd ed. West Lafayette, Ind : Purdue University Press. 2013

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=599406&site=ehost-live



Title: IT-based Project Change Management System
Series: Education in a Competitive and Globalizing World Series
Authors: Arain, Faisal Manzoor, Low, Sui Pheng
New York : Nova Science Publishers, Inc. 2009

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=333655&site=ehost-live

Module Mobile Application Development

Title: Mobile Application Development: JavaScript Frameworks
Series: Learning Path
Authors: Saleh, Hazem, Holmes, Ethan, Bray, Tom, Yusef, Sani
Birmingham, UK : Packt Publishing. 2016

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1364681&site=ehost-live

Module Cyber Security and Cyber Law

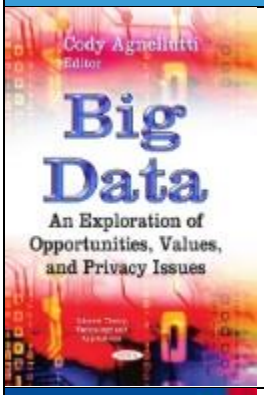
Title: Advances in Cyber Security : Technology, Operations, and Experiences
Authors: Hsu, D. Frank
New York : Fordham University Press. 2013

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=644831&site=ehost-live

Title: Cybercriminal Networks. Origin, Growth and Criminal Capabilities
Authors: Leukfeldt, Rutger
Utrecht : Eleven International Publishing. 2016
Resource Type: eBook.

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1441967&site=ehost-live

Module Big Data Theory and Practice



Title: Big Data : An Exploration of Opportunities, Values, and Privacy Issues
Series: Internet **Theory**, Technology and Applications
Authors: Agnellutti, Cody
New York : Nova Science Publishers, Inc. 2014

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http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=811106&site=ehost-live

Title: Cloud Computing and Big Data
Series: Advances in Parallel Computing, v.23
Authors: Catlett, C.
Amsterdam : IOS Press. 2013

Link:
http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=683308&site=ehost-live