



UNIVERSITY of GUYANA

Title of Programme: BSc. Degree in Computing and Information Technology

Administrative Oversight: Office of the Vice chancellor

Academic Department: Department of Computer and Information Technology

Date of Commencement: September 2015.

Programme Description:

Computing and IT skills have become fundamental to the way of life, work, and socialization. They are highly valued in modern workplace. This degree course opens up the world of technology and an array of exciting careers in a wide range of sectors – from finance, government, health, education and the 'Third Sector', to business, gaming and commerce. Graduates would become confident users and managers of information technologies, administer and manage network or database systems; or develop new software solutions to meet specific market or organizational needs.

The BSc degree in Computing and IT offers a variety of pathways, giving the student the opportunity to specialize in computer science, digital technologies, software development, solutions development or networking. Organizations are critically dependent on computing technologies and graduates who can apply specialist IT knowledge within the context of varied work demands. This programme thus provides graduates with such competencies that will make them function adequately highly in modern workplace be it industry, commerce, government or educational institutions.

Educational aims

Professionals working in the IT sector bring many different kinds of expertise to their work. The aim of this degree is to equip students with the knowledge and skills they need to underpin a career in this sector. They will as well acquire and develop knowledge and understanding of the fundamental technologies and techniques and the issues involved in their application. It will also:

- enable the students to keep ahead in a rapidly changing subject area by helping you to develop as an independent learner
- develop relevant skills in communication, numeracy, and collaborative working
- imbue the qualities that come with being a graduate in any discipline: specialist knowledge, intellectual self-confidence and independence, analytical ability and the life-long learning skills needed to keep up with fast-changing technologies
- enable them to apply their learning in private, social and professional life.

And, depending on the pathway they choose through the degree, the students may gain:

- practical experience in the use of information and communication technologies
- an understanding of the types of software and ICT systems that are now being constructed and used, such as distributed internet systems, intelligent systems and databases, and the digital network that underlies the internet itself
- a grasp of the key concepts of computing and of modern computer systems
- skills in the main tasks that are carried out as software is built and maintained, such as analysis, design, programming and evaluation.

Learning outcomes

Knowledge and understanding

On completion of this degree the students will have knowledge and understanding of:

- a broad critical understanding of the fundamental principles, concepts and techniques underlying Computing and IT.

- a range of models and languages to support the analysis and design of Computing and IT systems.
- the range of situations in which Computing and IT systems are used, the ways in which people interact with them, and the possibilities and limitations of such systems.
- an awareness of major trends in computing and IT and of the implications of these trends.
- a critical awareness of the ethical, social and legal issues that can be associated with the development and deployment of Computing and IT systems.

Cognitive skills

On completion of the degree students will be able to:

- apply and critically evaluate key computing and IT concepts in a range of contexts.
- select and apply appropriate techniques and tools for abstracting, modeling, problem-solving, designing and testing computing and IT systems, and be aware of the limitations involved
- compare, contrast, critically analyse and refine specifications and implementations of software systems and/or simple hardware systems.
- devise and carry out a project in computing and IT that applies and extends your knowledge and understanding, and critically reflect on the processes involved and the outcomes of your work.

Practical and/or professional skills

On completion of the degree graduates will be able to:

- analyse, design, evaluate and/or test computing and IT systems, using appropriate simulation and modeling tools where appropriate.
- plan and organise themselves and their work appropriately, including keeping systematic records of work in progress and outcomes.
- demonstrate the ability to undertake ongoing learning in order to keep up to date with computing and IT
- identify and address the ethical, social and legal issues that may arise during the development and use of Computing and IT systems
- use appropriate professional tools to support their work.

Key skills

On completion of the degree graduates will be able to:

- communicate information, arguments, ideas and issues clearly and in appropriate ways, bearing in mind the audience for and the purpose of your communication.
- work in a group, communicating effectively in a distance setting where the communication is computer-mediated.
- work independently, planning, monitoring, reflecting on and improving their own learning.
- find, assess and apply information from a variety of sources, using information technology where necessary.
- select and use accurately, appropriate numerical and analytical techniques to solve problems.
- recognise and understand a range of technological problems and select suitable techniques for solving them.

Teaching, learning and assessment methods

They will learn independently, using the following types of material, provided:

- printed and online teaching texts.
- multimedia packages, on CD-ROM, DVD and the Web.
- directed readings from textbooks and papers.
- specialised software tools.

Learning will be supported with:

- self-assessment questions and exercises, included in the teaching texts.
- programming tasks, computer-based investigations and open-ended project work.
- feedback and guidance from a tutor; tutorials, revision and day-schools.
- e-mail and computer conferences.
- study and project guides..

Learning will be assessed with:

- tutor-marked assignments (TMAs).
- multiple-choice computer-marked assignments (CMAs).
- formal examinations.

- progress and project reports..

Cognitive skills are promoted in the teaching materials via a range of activities including self-assessment exercises, multi-media tasks and computer-based investigations. They are supported by tutor led discussions and activities at regional tutorials. Tutor feedback aids the development of these skills.

Cognitive skills are assessed by questions asking for the application of concepts in new situations, for analysis, for synthesis, etc., (TMAs and examination) and also by more open-ended design, investigative and project activities (TMAs and examinable component).

Key skills will be explicitly taught and developed within the teaching materials and are supported by tutor feedback and guidance on TMAs. There is a progressive development of key skills through the levels of the degree. Key skills will be assessed by TMAs, by examinations where practicable and by examinable components. Practical and professional skills are developed through the teaching materials and are supported by tutor feedback and guidance on TMAs. Practical skills are assessed by TMAs and examinable components.

Justification for the programme and expected annual student intake:

This programme is designed to increase the pool of persons in Guyana who are qualified to contribute to the social and economic competitiveness of the country. Organizations are critically dependent on computing technologies, and people who can apply specialist IT knowledge within the context of varied work demands. This programme thus provides individuals with such competencies that will make them function adequately in modern workplace be it industry, commerce, government or educational instruction. As indicated above the demand for personnel skilled in computing and information technology is high and obvious in every sector of the Guyana national development and also in the Caribbean. And within the context of Open Education; it is to, like other programmes, ensure availability and accessibility especially those in the hinterland.

The initial intake will be 50 students. Preference will be given to applications living outside of Region 4 and 6 in Guyana and all school teachers irrespective of where they reside.

Commencement date: September, 2015.

Entry Requirements: CXC or CSEC with passes Mathematics, English, and 3 other subjects with grades I, II, II. Mature candidates with lesser qualifications must pass the UG entrance examination before being admitted into the programme.

Duration: Within the context of the Open Education philosophy the duration depends on the entry point and how fast an individual can progress. The programme is organized into four (4) stages; and is designed to be completed between 4 to 8 years.

Programme Evaluation and Grading Scheme: The programme will be evaluated through course work four (4) assignments with a weight of 10% each (total 40%) and final examination with a weight of 60%.

Career relevance and employability

This degree programme is relevant for those already working, or would like to work, with computing and IT systems and are looking for a qualification that gives them a sound grasp of the principles of hardware-based, software-based, or systems-based technologies – along with an ability to apply their knowledge and skills in a broad range of industries and organisations. Depending on choice of modules, they will gain a good preparation for employment in software engineering, communications, networks or web technologies.

Designing, developing and deploying IT systems are not solitary activities: they require outstanding teamwork and ‘people management’ skills, along with knowledge of how businesses and organisations operate. The BSc (Honours) Computing and IT will give graduates the opportunity to gain experience of working in a team to tackle an appropriate development task. They’ll also undertake a project to demonstrate their ability to undertake a substantial piece of work on a topic they have selected. A range of highly valued transferable skills will be acquired in:

- communication
- time management
- numeracy
- analysing and solving problems.

Depending on modules chosen, the degree may help graduates obtain professional recognition from BCS – The Chartered Institute for IT, a professional body established by royal charter.

Programme Details

Students are expected to complete 360 credits of studies to be awarded the degree in four stages. This is arranged into 90 credits per stage.

Credits measure the student workload required for the successful completion of a study programme or qualification - one credit represents about 10 hours of study. At the OU, you'll be awarded credit after you have successfully completed a module. For example, if you study a 60-credit module and successfully pass it, you will be awarded the full 60 credits.

Stage	UG Course Code	OU Course code	Course Title	Credits
1	ENG 1108		Introduction to Use of English	10
1	ENG 1208		Technical Communication	10
1	CSO1001	TU 100	My digital life.	60
1	CSO1002	M 123	Discovery Mathematics	30
				110credits
2	CSO2001	MT 129	Technologies in practice	30
2	CSO2002	M250	Object oriented Java programming	30
2	CSO2003	M269	Algorithms, data structures and computability	30
				90credits
3	CSO3001	MT 264	Designing applications with visual basic	30
3	CSO3002	TT 284	Web Technologies	30
3	CSO3003	T320	e-Business technologies: foundations and practice	30
				90credits
4	CSO4001	M359	Relational database: theory and practice,	30
4	CSO4002	T325	Technologies for digital media.	30
4	CSO4003	TM470	The Computing and IT Project	30
				90credits
			Total	380credits

Collaborating Institutions: Ministry of Education and Open University, UK

COST: The cost per year is G\$ 2500 (Two thousand and five hundred Guyanese Dollars) per credit.

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

What's included

Printed study texts, online study texts, website, DVDs, online forums, and a SenseBoard. This course makes use of the optional Google Apps for Education account provided to all Open University students. This is subject to a privacy policy and, for registered OU students, does not include advertising. Most of the learning outcomes addressed by the use of Google services can be achieved with other software (not provided) such as Microsoft Office. However some optional activities will only be able to be completed by using your Google Apps for Education account.

What students will need

They will need a headset with a microphone and earphones to take part in online tutorials and collaborative activities. They will need a computer with internet access to study this course. It includes online activities – they can access using a web browser – and some course software provided on DVD.

- If students have new desktop or laptop computer running Windows since 2007, or an Apple Mac (OS X 10.6 or later) or Linux computer, they should have no problems completing the computer-based activities.
- A netbook, tablet or other mobile computing device containing all course reading materials will be provided.

Course Outlines

Course Code	ENG 1108
Course Title	Introduction to the Use of English
Number of Credit	10 credits
Programme Stage	One
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

The Introduction to the Use of English is a foundation course required for students who enter the University of Guyana and are largely from Creole speaking backgrounds. The course introduces students to language as it is used in academic settings and targets the development of reading and writing skills for the tasks required at university. It aims to provide interactive settings for students to develop and increase their language awareness and attain confidence to aim for mastery of oral and written Standard English.

Learning outcomes

At the end of the course the student would increase their:

- language awareness;
- skills in listening/viewing/reading and responding to English used in academic settings;
- critical thinking and level of comprehension of written English;
- skills in writing well-developed essays on topical issues;

Course content:

- Introduction to language in the Guyana context
- Different types of writings
- Rhetorical strategies and paragraphing
- Literal and interpretative meanings
- Higher order level of thinking; analysis, synthesis and evaluation
- Sentence construction.
- Essay writing – topic, thesis , paragraphing, structure and development

Evaluation

Grammar- punctuation, vocabulary, verbs, tenses Evaluation: Course work: Portfolio (5 pieces)

Two in-class tests = 50% Examination: One three-hour written paper = 50%

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended Readings

Bailey, S (2011). *Academic Writing: A Handbook for International Students*. 3rd Ed. Londin: Routledge.
Gillett, A. (2012). *Using English for Academic Purposes: A Guide for Students in Higher Education*, Online at <http://www.uefap.com>
Lowe, C and Zemliansky, P. (eds) (2009). *Writing Spaces: Readings on Writing*. Vol. 1 indiana: Parlour Press
Lowe, C and Zemliansky, P. (eds) (2009). *Writing Spaces: Readings on Writing*. Vol. 2 indiana: Parlour Press

Course Outlines

Course Code	ENG 1208
Course Title	Technical Communication
Number of Credit	10 credits
Programme Stage	One
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Course summary

This course is designed to help students develop the communication skills that are essential for individuals to competently function in a professional, scientific or technical environment. It is intended to develop students' proficiency in writing reports that reflect extensive knowledge and clear understanding of the procedures/methods employed in acquiring and analyzing data.

Learning outcomes

At the end of the course the student would be able to:

- develop an understanding of the fundamental characteristics and functions of technical communication
- apply current conventions and techniques to compose letters, memoranda, e-mail messages and other business correspondence
- engage in various stages of the planning and writing process to produce well-structured, well-written proposals and reports
- appropriately use information from the internet, library databases and other information sources
- increase their communicative competence in the use of English through form- and meaning-focused activities (e.g., language exercises, drama routines, and field excursions).

Course content:

- Introduction to Technical Communication (TC)
- Writing within an Organization: Format & Layout of Business Documents: Letters, Memoranda and Emails
- Writing Summaries
- Planning and Writing Proposals
- Designing and Delivering Oral Presentations
- Planning and Writing Technical Report.

Recommended Readings

- 1) Boveé, Courtland L. and John V. Thill. *Business Communication Today*. Eighth Edition. New Jersey: Prentice Hall, 2005.
- 2) Kennedy, Mary L. and Hadley M. Smith. *Reading and Writing in the Academic Community*. New Jersey: Prentice Hall, Inc., 1994
- 3) Kirszner, Laurine G. and Stephen R. Mandell. *The Holt Handbook*. Fifth Edition. San Diego: Harcourt Brace College, 1999
- 4) Markel, Mike. *Technical Communication: Situations and Strategies*. Fourth Edition. New York: St. Martin's Press Inc., 1996.
- 5) *Merriam-Webster's Guide to Business Correspondence*. Second Edition. Massachusetts: Merriam-Webster Inc., 1996.

Evaluation

Coursework: Three (3) assessments = 50%

Examination: One three-hour written paper = 50%

Note: Students MUST obtain a PASS in BOTH Coursework and Examination for successful completion of this course.

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Course Outlines

Course Code	CSO1001(T100)
Course Title	My digital life
Number of Credit	60
Programme Stage	One
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

While you're learning about tomorrow's technology why not help create it? My digital life takes you on a journey from the origins of information technology through to the familiar computers of today, and on to tomorrow's radical technologies. Students will get hands-on experience of the ubiquitous computing approaches that will become increasingly common over the next decade. They will also learn about the profound social and technological changes associated with information technology – changes that will affect every one of us. This key introductory Level 1 course will help the students prepare for these changes – it is an online survival kit for the twenty-first century.

Learning outcomes: At the end of the course students will be able to:

- use a wide range of online services to create and share documents, spreadsheets and web pages
- create and combine images with a soundtrack to produce short audiovisual presentations
- learn how the technologies underpinning these activities work as you use them
- experience the benefits and limitations of a digital lifestyle and what the future might hold
- see how the internet makes the physical location less relevant in performing many tasks
- understand the significance of an increasing number of devices that know and respond to their location.

Course Content:

This course deals with the past, present and the future of information technology, and relates this to the everyday life.

The topics addressed in this course include:

- Myself
- Anything, anywhere
- Recourses
- Seeing senses(programming)
- Geography is history
- Wireless communication and mobile computing.
- Inside the box
- The vanishing computer
- Information overload
- Everyware, everywear, everywhere
- Glue
- My friends
- Online together
- Virtual worlds
- My society
- Keeping secrets
- Digital rights, digital wrong
- My world
- Leave home
- Cloud computing

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO1002 (M123)
Course Title	Discovery Mathematics
Number of Credit	30
Programme Stage	One
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

This key introductory Level 1 course provides a gentle start to the study of mathematics. It will help students to integrate mathematical ideas into their everyday thinking and build confidence in using and learning mathematics. They'll cover statistical, graphical, algebraic, trigonometric and numerical concepts and techniques, and be introduced to mathematical modeling. Formal calculus is not included and they are not expected to have any previous knowledge of algebra. The skills introduced will be ideal if their plan to study more mathematics courses, such as *Essential mathematics 1* (MST124). It is also suitable for users of mathematics in other areas, such as computing, science, technology, social science, humanities, business and education.

Learning outcomes:

In broad terms the students will have the skills in-

- integrating mathematics in every day thinking.
- the use and learning of mathematics
- applying concepts and principles in mathematics to other related disciplines.

Course Content: The content includes:

- key ideas in mathematics, including some statistics, algebra, geometry and trigonometry
- mathematical vocabulary and notation introduced and developed in the module
- selection and use of mathematical techniques for solving problems
- interpretation of results in the context of real life situations
- simple mathematical arguments
- how to explain mathematical ideas from the module in writing
- development of skills in learning mathematics
- use of relevant ICT tools for learning and for working on mathematical problems
- describing problems mathematically
- analysing mathematical reasoning

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO2001 (MT129)
Course Title	Technologies in practice
Number of Credit	30
Programme Stage	Two
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

This course provides an opportunity to sample some of the key areas in computing and information technology. Students will be introduced to three topics as tasters for their future studies and career: networking- Linux and robotics. Studying these topics will enable them to develop essential skills if they are considering future employment in the computing and IT industry. Students will be applying what they learn to develop a portfolio, to demonstrate their skills and understanding in these areas to potential employers. By studying this key introductory Level 1 course students can also begin to explore where their future career ambitions or interests might lie.

Course Content:

- Introduction to Linux
- Installing Linux
- Applications and the operating system
- Command-line Interface
- Devices and Drives
- Operating systems
- Networking and Security
- Things that think
- Robotics and the meaning of life
- Moving and sensing
- Thing that think
- Robots – how Human?
- Social robots
- Optimization
- Exploring space with Robots
- The Future.

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO2002 (M250)
Course Title	Object oriented Java programming
Number of Credit	30
Programme Stage	Two
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

This course teaches the fundamental ideas behind the object-oriented approach to programming through the widely-used Java programming language. Concentrating on aspects of Java that best demonstrate object-oriented principles and good practice, students'll gain a solid basis for further study of the Java language and object-oriented software development. They will need to be confident using a personal computer and have experience of writing small computer programs. The Level 1 course *My digital life* (TU100) would be ideal preparation. They should also be able to write short explanations of technical ideas in their own words, and be able to communicate with others electronically.

Course Content:

The course content includes the following:

- Introducing objects
- Object concepts
- Data types and variables
- Methods and messages
- Selection and iteration
- Sub -classing and inheritance
- How work gets done
- Errors, exceptions and debugging
- Arrays, strings and string builders
- Sets and maps
- Sorted and ordered collections
- Streams, files and persistence

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition.

Course Outlines

Course Code	CSO2003(269)
Course Title	Algorithms, data structures and computability
Number of Credit	30
Programme Stage	Two
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

The aim of this course is to help students become computational thinkers. Formulating a problem for efficient solution by computers is an extremely important skill. In this course, students will learn this skill: exploring a range of computing concepts; applying these to a variety of problems; and, in the process, becoming familiar with the popular Python programming language. This is the course for the students who are specializing in computing or if – whatever their field – they need to understand both the power and the limitations of computing. Though the focus is on the underlying ideas, students will also need to work with some mathematical concepts and notations.

Course Content:

The content includes the following topics:

- What is computation?
- Introducing Python
- Computational thinking
- From problem to programs
- “Getting it right”
- Sorting – what it is? - Naïve sorting
- Inducing, reducing, and recur sing
- Recursive sorting
- Dividing and conquering
- “Trees and heaps”
- Searching for pattern
- Optimisation
- Graphs and greed”
- Dynamic programming
- Unconventional algorithm
- Sets, logic and data bases
- Computational complexity
- Beyond the limits?

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts: All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO3001 (MT264)
Course Title	Designing soft ware applications with visual basic
Number of Credit	30
Programme Stage	Three
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

This course in object-oriented programming will teach students on how to design and write small applications using Visual Basic Express. Software applications discussed in the course range from a very simple traffic survey application, to more complex applications that are linked to a database. Roughly one third of the course consists of important practical Visual Basic Express programming exercises, using web-based units. The students'll also use printed course books that use a design language similar to Visual Basic (VB), to learn essential programming skills. They should be ready to study computing at Level 2 and ideally have some programming experience.

Course Content:

- Introduction to Graphic user interfaces
- Simple coding of events handlers
- Properties and the view
- Working with collections
- Inheritance
- Working with text
- Working with sounds and pictures
- Simple graphic games
- Introduction to databases
- Working with databases
- Consolidation

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO3002 (TT284)
Course Title	Web Technologies
Number of Credit	30
Programme Stage	Three
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

The World Wide Web continues to provide a foundation for the development of a broad range of increasingly influential and strategic technologies, supporting a large variety of applications and services, both in the private and public sectors. There is a growing need for management and decision makers to gain a clearer understanding of the application development process, from planning through to deployment and maintenance. This course will give students an insight into architectures, protocols, standards, languages, tools and techniques; an understanding of approaches to more dynamic and mobile content; and demonstrate how they can analyse requirements, plan, design, implement and test a range of web applications.

Learning outcomes:

Knowledge

- Describe how the development of the Web has enabled the creation of new forms of information systems and impacted commerce and public services.
 - Explain different architectural approaches to application design and contrast traditional approaches with the underlying client–server model of Web applications.
 - Describe the roles of the range of protocols and standards associated with Web applications and their communications.
 - Explain the operation and properties of service, distributed and mobile approaches to web architecture.
- #### Knowledge
- Describe how the development of the Web has enabled the creation of new forms of information systems and impacted commerce and public services.
 - Explain different architectural approaches to application design and contrast traditional approaches with the underlying client–server model of Web applications.
 - Describe the roles of the range of protocols and standards associated with Web applications and their communications.
 - Explain the operation and properties of service, distributed and mobile approaches to web architecture.
 - Critically evaluate the role of standardisation bodies, and their published recommendations and standards, for the development of web applications.
 - Demonstrate knowledge of a range of different programming languages and explain their differing roles and properties for web applications.
 - Discuss issues of web design including, accessibility, usability, localisation and globalisation.
 - Explain the role of the open source movement in the development of applications including collaborative development, licensing and reuse of resources.
 - Explain a range of security issues including secure protocols, use of certificates, authentication, authorisation, and firewalls.
 - Discuss the nature of static and dynamic content and different content delivery approaches.

Cognitive skills

Analyse requirements to produce a design for a simple web application, applying an understanding of requirements for aspects such as usability and accessibility.

Describe a suitable architecture, components and standards as the basis for implementation of a web application for a

public or business organisation.

Construct, using appropriate code, a simple web application selecting and reusing code etc where appropriate.

Produce an application which, as appropriate, transforms content and integrates services to produce a mobile application.

Evaluate the suitability of a range of design tools and techniques for the development of an application.

Find, select and use information from a range of sources to support analysis, design and implementation tasks.

Plan and produce a well structured and researched quality report as part of a project.

Plan and manage effort and progress whilst undertaking a substantial project.

Practical skills

Outline the importance of standards and standardisation bodies.

Maintain an up-to-date view of ongoing developments in web technology including standards and techniques.

Produce design and development plans for a specific technical solution to a challenge in Web application development.

Produce simple project plans for management of time and resources.

Course Content:

The content for the course include:

- Basic Web technologies
- Web Architectures
- Mobile content and Applications
- Managing Application Development
- EMA project

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO3003 (T320)
Course Title	e-Business technologies: foundations and practice
Number of Credit	30
Programme Stage	Three
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

e-business is booming as organisations strive to gain efficiencies through improved workflows, resource management, just-in-time provisioning and business relationships. This course explores the driving forces behind such developments, introducing fundamental technologies and protocols upon which new systems and services can be built – including Service Oriented Architectures (SOA), web services, XML and associated security standards. Case studies illustrate a range of business models and the business strategies behind the deployment of web services as well as providing insights into future developments. The students will explore the evolution of ebusiness surrounding ICT developments; use software tools to create schemas and web services; deploy collaborating applications; and consolidate your learning in a final project.

Learning outcomes: The course provides opportunities for students to develop and demonstrate the following learning outcomes:

1. Knowledge and understanding:

- Discuss the relationships between e-business and technological developments on the Internet.
- Describe a set of e-business models, relationships and strategic issues that arise from the deployment of e-business systems
- Discuss technology's role in facilitating the development and evolution of supply chains and the significance of value in e-business
- Describe the role of standards in the technology adoption process
- Discuss the importance of trust in e-business relationships and contrast this with security aspects
- Describe the function of protocols and standards used in data exchange
- Describe security issues that arise in e-business and the use of secure point-to-point connections
- Describe the use, syntax, properties and processing of XML documents, DTDs and schemas
- Evaluate the importance of XML in supporting e-business
- Describe the architecture, operation, standards, protocols, and technologies used in the construction, discovery, and use of web services.
- Discuss the range of different approaches to messaging for web services their properties and the XML documents involved
- Explain issues of interoperability and ensure a basic level of interoperability of a web service
- Discuss some barriers to the wider adoption of web services and developments to improve web services in these areas
- Critically evaluate the role of orchestration as it relates to business processes and web services.
- Describe and evaluate the significance of business process execution languages in business relationships and for the future of SOA.

2. Cognitive skills:

Articulate the business or technology opportunities and challenges afforded by e-business.

Critically evaluate an e-business strategy using a suitable framework, appropriate models and current terminology.

Construct a sound argument that makes use of an appropriate vocabulary with critical use of relevant supporting

references.

Compose a coherent business process including services, fault handling and compensation.

3. Key skills:

As an independent learner, plan, monitor and evaluate your own learning and seek ways to improve your performance. Communicate complex information, arguments, and ideas effectively, and appropriately to your subject, purpose, and audience.

Find, critically evaluate, and use information or data accurately in complex contexts.

4. Practical and/or professional skills:

Understand, create and edit XML documents, DTDs, namespaces and schema.

Use a sophisticated IDE, such as Eclipse, for XML, web service and BPEL development tasks.

Search for, locate and use web services

Implement, deploy and test a basic web service

Course Content:

- E- business
- Basic protocols and standards
- Web services
- Orchestration and EMA planning
- EMA project

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO4001 (M359)
Course Title	Relational database: theory and practice
Number of Credit	30
Programme Stage	Four
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

This advanced computing course offers perspectives on relational databases. It introduces database management systems and the facilities required to store and access large collections of data in a shared user environment. This is followed by a theory of relations, underpinning topics such as data modeling and database architecture; the database language SQL; and the development of a practical database system. Also considered are issues surrounding the ongoing development and application of relational database technologies, including the role of JAVA and XML. Students should already be familiar with program construction and using files and operating systems, as taught in the Level 2 computing courses.

Learning outcomes: The course provides opportunities for students to develop and demonstrate the following learning outcomes:

1. Knowledge and understanding:

1. The principles, concepts and techniques associated with relational databases and the process of database development, including the general context and concepts appropriate to the study of information systems.
2. The concepts and techniques associated with the database language SQL and the underlying theory.
3. The principles, concepts and techniques associated with selected developments in database technology.

2. Cognitive skills:

1. Identify the need for secure, reliable shared data accessible through a range of user processes.
2. Interpret and develop an Entity-Relationship (E-R) data model for a given set of requirements.
3. Model E-R data using a relational model representation and describe and apply basic operations in relational algebra.
4. Design and develop an SQL database and manipulate database content to meet specified requirements.
5. Evaluate alternative database designs using a range of appropriate criteria for evaluation.
6. Critically evaluate database developments in the context of information systems and IT.

3. Key skills:

1. Analyse and model problem situations and implement database solutions.
2. Communicate effectively in writing about databases technologies, using appropriate notations and terminology to achieve desired outcomes.
3. Become an independent learner.

4. Practical and/or professional skills:

1. Advocate the appropriate use of database technology to support data and information management requirements.
2. Create and manage a database in an SQL environment, including the manipulation and extraction of database content to meet requirements.
3. Follow an appropriate development method. Including explaining and justifying the decisions made and the role of the intermediate artefacts in the development process.
4. Appraise and evaluate selected developments in database technology related to commercial applications.

Course Content:

- Database cards
- Conceptual data model comparison s cards
- Database cards block 2
- Database cards block 3
- Adding an ODBC DSN entry

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO4002 (T325)
Course Title	Technologies for digital media
Number of Credit	30
Programme Stage	Four
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

Downloading mp3 music files; exchanging digital photos; reading, watching and listening to news and entertainment on the web or your mobile phone ... digital technologies are changing the way we conduct our private, social and business lives, and transforming our experience of media out of all recognition. This course investigates how this has come about, looking at the technologies behind digital media as well as some of the social, ethical and legal issues they raise. By the end of the studies, students will understand the possibilities and limitations of the technologies, the direction in which they're taking us, and how to keep on top of future developments.

Learning outcomes: The course provides opportunities for students to develop and demonstrate the following learning outcomes:

1. Knowledge and understanding:

- 1 A broad understanding of the basic science of energy storage required for digital media applications.
- 2 An understanding of data storage, display and capture devices required for digital media applications.
- 3 An awareness of how characteristics of human perception influence the coding of digital media.
- 4 An appreciation of the historical development of intellectual property rights and their role in social development.
- 5 An understanding of digital right management technologies and their limitations in terms of security, social acceptance and enforcement of copyright laws.
- 6 An understanding of the technological factors relevant to mobile broadband devices.
- 7 An awareness of the non-technical factors in technology development.

2. Cognitive skills:

1. 8 Be able to extract useful information from highly technical documents, including journal articles, product information, websites, etc.
2. 9 Be able to evaluate critically a range of resource materials originating from third parties.
3. 10 Be able to incorporate critically information from a wide range of resources in a document written for a specific purpose and aimed at a specific audience.

3. Key skills:

- 1 11 Present arguments effectively in writing on a range of topics related to technologies for digital media.
- 2 12 Develop your own learning skills in topics related to technologies for digital media.
- 3 13 Be able to learn independently from third-party materials, in order to keep up to date in technologies for digital media.
- 4 14 Be able to perform simple calculation, use and manipulate simple algebraic equations, and interpret graphs and tables of data.

4. Practical and/or professional skills:

- 1 15 Be able to use third-party material critically.
- 2 16 Understand the role of legal, social, ethical and professional issues in the development of technologies for digital media.
- 3 17 Be able to incorporate copyrighted material appropriately.

Course Content:

- Enabling technologies
- Intellectual property and security issues
- Mobile broadband

Evaluation:

- Four course work assignments at 10% each (40%)
- One final examination (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
E	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition

Course Outlines

Course Code	CSO4003 (TM470)
Course Title	The Computing and IT Project
Number of Credit	30
Programme Stage	Four
Mode of delivery	Distance Mode
Co-requisites and Pre-requisites	None
Duration in weeks	Not applicable

Name of Lecturer(s): Not applicable (Programme Coordinator yet to be appointed)

Course summary

The computing and IT project enables you to explore computing, information and communications technologies in substantial depth and it is the compulsory project module for our computing and IT qualifications. It offers you practical experience of independent learning and reflective practice. Students will apply advanced principles and techniques to produce a solution to a problem which you have defined and write up your experience and findings in a substantial report. They will also be responsible for choosing their own topic, carrying out the project and writing it up, with the help of a supervisor to advise and guide them.

Learning outcomes:

At the end of the course students will develop

- Skills in identifying and defining problems.
- Skills in the systematic procedure in carrying a project

Course Content:

Based on the nature of the project that is undertaken

Evaluation:

- Proposal work assignments at 10% each (40%)
- Final project (60%)

Grading Scheme:

A	100 - 75%
B	74 - 65%
C	64 - 55%
D	54 - 40%
F	39 % & below Fail

Recommended texts:

All recommended text and reading materials will be provided to students and a tablet computer as part of the tuition