THE DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS & PHYSICS (CMP)

*Postgraduate Diploma/MSc Technology Entrepreneurship

Please note that the Postgraduate Diploma/MSc. Technology Entrepreneurship will not be offered for the 2020-2021 academic year.

Introduction

The Postgraduate Diploma and MSc. Technology Entrepreneurship programmes aim to train entrepreneurs in the creation of high-technology products and methods of taking these products to market. These programmes fuse the areas of application development, e-business and technology entrepreneurship in a new and creative way poised to meet the emerging needs of the Caribbean region.

Aims and Objectives

The programme aims to:

1. Position regional businesses for growth in the global marketspace through targeted training;
2. Enable businesses and entrepreneurs to leverage ICT to increase productivity and cut costs;
3. Usher in a new breed of technology entrepreneurs capable of creating high technology products for the local, regional and global marketspace;
4. Create mobile applications for local, regional and international consumption;
5. Create a community of game developers capable of producing novel, high quality games for the local, regional and global marketspaces.

The objectives of this programme are:

1. To discuss the constraints involved in the development of high-technology products in developing states and to formulate creative workarounds;
2. To explain the legal, regulatory, ethical and social frameworks required to launch and sustain local, regional and global initiatives;
3. To find solutions to common problems using new and existing technologies;
4. To analyse and evaluate current business processes with the view of process re-engineering for improved efficiency and productivity;
5. To plan and market these products and services;
6. To create an enabling environment for the development of businesses with a global reach; and,
7. To create new products and services.

Entry Requirements

The entry requirement for the Postgraduate Diploma and MSc. Technology Entrepreneurship programmes is at least a Second-Class Honours Bachelor's degree or equivalent.

Candidates with a Pass degree and significant industry experience will be considered on a case-by-case basis. Applicants to these programmes should ensure that they have the necessary pre-requisites for the courses they intend to read.

Duration

Candidates in the Postgraduate Diploma Technology Entrepreneurship are expected to complete the programme requirements in eight months.
Candidates in the MSc. Technology Entrepreneurship are expected to complete the programme requirements in eighteen months (fulltime) or thirty-six months (part-time).

Programme Structure/Course of Study

To be awarded the Postgraduate Diploma Technology Entrepreneurship the student must complete twenty credits of coursework and a 4-credit Mini Capstone project. All courses are compulsory.

To be awarded the MSc. Technology Entrepreneurship the student must complete thirty-six credits of coursework and an 8-credit Capstone project. All students must also complete the "Technology Entrepreneurship and "New Venture Management" workshop for no credit.

Transition

Students who are pursuing the Postgraduate Diploma Technology Entrepreneurship degree may choose to transition to the MSc. Technology Entrepreneurship degree at any time prior to the start of the Mini Capstone Project provided that they receive the necessary permissions to do so from the Campus Committee.

In addition, students who may have been pursuing, but did not complete, the MSc. Technology Entrepreneurship programme may only be awarded the Postgraduate Diploma Technology Entrepreneurship if they have satisfied all the requirements of that programme (including the Mini Capstone Project).

LIST OF COURSES

All Courses worth 4 Credits unless otherwise stated

Postgraduate Diploma Technology Entrepreneurship

Compulsory for All Students

COMP 6108	Starting an e-Business Workshop (0 credits)
COMP 6124	An Introduction to Technology Entrepreneurship
COMP 6126	New Product Development and Intellectual Property Protection
COMP 6222	Business Opportunity Development
COMP 6224	Business Leadership for Technology Entrepreneurs
COMP 6321	Technology Entrepreneurship and New Venture Management Workshop (0 credits)
COMP 6323	Information Technology Project Management
COMP 6510	Mini Capstone Project

MSc. Technology Entrepreneurship

Compulsory for All Students

COMP 6124	An Introduction to Technology Entrepreneurship
COMP 6126	New Product Development and Intellectual Property Protection
COMP 6222	Business Opportunity Development
COMP 6224	Business Leadership for Technology Entrepreneurs
COMP 6321	Technology Entrepreneurship and New Venture Management Workshop (0 credits)

COMP 6323 Information Technology Project Management
COMP 6511 Capstone Project (8 credits)

MSc. Technology Entrepreneurship
Select 16 Elective Credits from:

Course Code	Course Name	Credits
COMP 6375	Enterprise Architecture Modelling	4
COMP 6370	Enterprise Information Systems	4
COMP 6380	Internet of Things for the Enterprise	4
COMP 6304	Information Security, Ethics & Legal Aspects	4
COMP 6107	Android Development	4
COMP 6109	iOS Development	4
COMP 6307	Mobile Communications and Security	4
COMP 6206	Interaction Design	4
COMP 6209	Web Technologies	4
COMP 6216	Advanced Web Technologies	4
COMP 6211	Advanced Software Engineering	4

COURSE DESCRIPTIONS

Courses are listed here in alphanumeric order by Course Code – i.e. Subject Code followed by Course Number. Descriptions for all Subject codes are given in the next section.

COURSE CODE: COMP 6107
TITLE: Android Development
CREDITS: 4

Description
The course will present students with a comprehensive overview of Android programming concepts and the best practices for Android mobile application development. Students will learn how to use object-oriented analysis and design (OOAD) concepts, design patterns and architectural strategies to create mobile applications for the evolving Android market. Students pursuing careers in mobile application development, IT management or IT consulting will benefit from this course. This course will be delivered using a combination of interactive lectures, online and face-to-face discussions and laboratories.

At the end of this course, students will be able to:

- Describe the process of system development for the Android OS
- Differentiate among the android development environments
- Identify the components of an Android development kit
- Effectively use an Android development kit
- Design an Android application using object-oriented analysis and design (OOAD) methods
- Evaluate enterprise-level architectural strategies, e.g. MVC in the development of android applications
- Evaluate the performance of Android applications.
- Create an Android application using new and emerging features of Android devices.

Assessment
This course will be assessed by 100% Coursework weighted as follows:

- In-course Test(s); Online Discussions; Theoretical and/or Practical Assignment(s): 40%
- Project(s): 60%

COURSE CODE: COMP 6108
TITLE: Starting a High-tech Company
CREDITS: 0

Description
The skills required to start an e-business are wide and varied and includes technology, legal, financial and management issues. This course provides students with a practical introduction to the process of starting an e-business.

At the end of this course students will be able to:
• Discuss methods of marketing and branding a business
• Discuss capital sources
• Discuss launch strategies
• Explain the need for a business plan
• Explain how to move brick-and-mortar organisations online
• Identify the accounting and legal requirements of a business
• Identify risks and uncertainty
• Select a revenue/business model
• Analyse the components of a business plan
• Monitor a running business
• Evaluate an idea and find a niche market

Assessment
Pass / Fail on satisfactory attendance

COURSE CODE: COMP 6109
TITLE: iOS Development
CREDITS: 4

Description
Apple mobile devices such as the iPhone, iPod Touch and iPad, have gained wide popularity in recent times and have also provided a rich opportunity for program developers to develop applications for these devices. The aim of this course is therefore to provide the student with all the fundamental tools required to develop applications for those devices and then to immerse the student into an application development environment. The course will address issues ranging from generic good design and programming principles, to specific Objective C and Cocoa Touch programming patterns, tips and tricks, along with Apple's guidelines for application development and design.

At the end of this course, students will be able to:
• Describe the overall iPhone OS programming steps
• Explain the key software features provided by the iPhone OS
• Explain the principles of the Model View Controller design pattern
• Write Objective-C and Cocoa Touch applications
• Demonstrate the utility of the XCode development environment on the Macintosh
• Demonstrate skills in using the iPhone SDK software interfaces
• Demonstrate the principles behind location awareness
• Demonstrate an understanding of the multi-touch interface model
• Analyse the performance implications of developing applications on a constrained device
• Debug, profile and optimize applications
• Design the interface of a mobile application that conforms to Apple's Human Interface Guidelines
• Create multimedia and mobile applications for the iPhone, iPod Touch and iPad

Assessment
100% Coursework

COURSE CODE: COMP 6124
TITLE: An Introduction to Technology Entrepreneurship
CREDITS: 4

Description
The commercialisation of technologies (COT) by technology-based entrepreneurs serves the dual role of knowledge creation and economic development. This COT process fuels the economies of many developed countries. This is a compelling reason for small developing economies to want to understand and study this process so that they can diversify their economies and generate wealth. This course introduces students to the concept of technology entrepreneurship through a study of entrepreneurs who commercialised high-technology products. It explains why poor developing countries consider the COT so important and exposes students to the process of creating a new venture, different types of ventures, and the models, theories, instruments and mechanisms of technology entrepreneurs. This course also introduces students to fundamental financial and management principles needed for technology-based entrepreneurs.

At the end of this course students will be able to:
• Define technology entrepreneurship
• Explain the meaning of the "valley of death" in COT
• Explain the process of creating a new venture
• Examine the role and importance of technology entrepreneurship to society
• Distinguish between entrepreneurship and technology entrepreneurship
• Analyse models, theories, instruments and mechanisms of technology entrepreneurship
• Create value propositions
• Evaluate and critique the successes and failures of technology-based entrepreneurs

Assessment
70% Coursework; 30% Final Examination

COURSE CODE: COMP 6126
TITLE: New Product Development and Intellectual Property Protection
CREDITS: 4
Description
The process of developing new technology products is a key part of the entrepreneurial process. Understanding how to protect these product ideas will make the difference between successful and unsuccessful ventures. In this course students will learn how to create product ideas from available technologies which are appropriate for the researched markets (T-P-M linkages). The result of this process will be a prioritised list of product ideas from which value propositions can be developed. Students will also learn how to protect the generated intellectual property.

At the end of this course students will be able to:
• Define venture objectives
• Define and research the opportunity space
• Discuss the consequences of software piracy

• Explain how patent and copyright laws may vary in different jurisdictions
• List available (developed, owned or licensed) technologies
• Use online tools to perform patent searches
• Distinguish among patent, copyright, and trade secret protection
• Develop Technology-Product-Market linkages
• Prepare a patent application for an invention
• Formulate an intellectual property strategy for an invention
• Create value propositions
• Create, evaluate and prioritise product ideas

Assessment
100% Coursework

COURSE CODE: COMP 6206
TITLE: Interaction Design
CREDITS: 4

Description
With the rapid rise of consumer-oriented software and devices in both the consumer and enterprise markets, the importance of careful user interface design in the software development process has become paramount. In fact, usability has become one of the key success factors of any computer software. This course introduces students to the process of user interface or interaction design. The course aims to provide students with the skills and knowledge necessary for the successful design, evaluation and implementation of usable user interfaces on a range of devices and contexts.

At the end of this course students will be able to:
• Describe the goals of interaction design.
• Explain the concept and role of the design stage.
• Explain the concept and role of the evaluation stage.
• Explain the concept and role of the implementation stage.
• Select and apply tools for interface design, implementation and evaluation.
• Select and use appropriate interaction devices (both input and output).
• Use appropriate interface modalities such as sound, colour and menus.
• Apply fundamental interaction design techniques in the design, implementation and evaluation of interfaces.
• Apply appropriate design techniques for the given devices - mobile versus desktop devices, touch versus mouse-based devices.
• Apply appropriate design techniques for the given contexts - web-based versus desktop applications versus mobile applications.
• Create user interfaces using the appropriate design, implementation and evaluation methods and tools.

Assessment
100% Coursework

COURSE CODE: COMP 6211
TITLE: Advanced Software Engineering
CREDITS: 4
PRE-REQUISITES(S): COMP2145 Software Engineering or Equivalent

Description
This course aims to further develop students understanding of the concepts and methods required for the construction of large software intensive systems. It aims to develop a broad understanding of the discipline of software engineering. It seeks to complement a familiarity with analysis and design with knowledge of the full range of techniques and processes associated with the development of complex software intensive systems. It aims to set these in an appropriate engineering and management context.

At the end of this course, students will be able to:
•Explain the issues affecting the organisation, planning and control of software-based systems development
• Identify tools that can be used to plan and run a project
• Analyse business requirements
• Write requirements, specifications and testing documentation
• Plan and run a small software intensive system development project

Assessment
100% Coursework

COURSE CODE: COMP 6222
TITLE: Business Opportunity Development
CREDITS: 4

Description
Business plans are tools used by entrepreneurs to evaluate the viability of business opportunities and record their goals and objectives. Although having a business plan does not guarantee business success, not having one makes success less likely. This course teaches students how to identify and evaluate potential business opportunities, as well as evaluate and create business plans for high-technology ventures. By the end of the course the student, as a part of a group, will have created a business plan for a new venture.

At the end of this course students will be able to:
• Discuss the purpose and benefits of a business plan
• Identify and evaluate business opportunities
• Identify the essential components of a business plan
• Appraise and interpret financial statements in business plans
• Create a business plan for a high-technology venture
• Evaluate and critique a business plan

Assessment
100% Coursework

COURSE CODE: COMP 6224
TITLE: Business Leadership for Technology Entrepreneurs
CREDITS: 4

Description
The course provides students with the opportunity to:
• Develop a range of skills to enable them to relate to, connect with and influence people and other entities within - and associated with - the technology start-up.
• Develop the business acumen necessary to maximize the likelihood of success in an entrepreneurial environment.
• Develop an awareness of social entrepreneurship and corporate social responsibility by challenging students to become champions for socially responsible businesses to build our evolving societies.

On completing this course students will be able to forge and maintain strong working relationships with everyone involved in their technology start-up in order to move the business forward with the best technology expertise, have an understanding of the goals of their start-up and adopt a targeted approach to the overall competitive landscape.

At the end of this course student will be able to:
• Identify the appeals that are most persuasive when going out to influence others.
• Identify recent trends in social entrepreneurship and corporate social responsibility.
• Explain the implications of social entrepreneurship and corporate social responsibility for technology business that is for and not for-profit.
• Explain personal orientations when leading, influencing and interacting with others.
• Explain how organizational systems and conventionally used management paradigms lead to misguided behaviour in technology organizations.
• Explain the social impact and economic sustainability of technology business.
• Explain what persons do and why they do it when in a less effective mode - thus reflecting on their style in a targeted manner to examine the origins of that style.
• Choose positive actions that result in an effective technology business.
• Use the Mind-Set Management perspective to describe what takes place in work environments by demonstrating an understanding of the Culbert and McDonough view of human nature, personal style, and how people think and operate when working with others
• Demonstrate effectiveness in technology-based entrepreneurial scenarios through the implementation of practical knowledge of leadership strategies.
• Demonstrate effectiveness in entrepreneurial scenarios through the implementation of practical knowledge of strategies for turning strong social ideas into viable ventures.

Assessment
70% Coursework; 30% Final Examination

COURSE CODE: COMP 6304
TITLE: Information Security, Ethics and Legal Aspects
CREDITS: 4

Description

In today's electronic environment, security of assets is becoming increasingly important as businesses and consumers become more dependent on complex systems that span multiple companies and countries. This course introduces students to theoretical and practical aspects of information security, ethics and legal aspects as it relates to data and information in organisations. The course aims to provide students with the skills and knowledge necessary for the planning and implementation of policies and procedures for the security of an organization's information assets.

At the end of this course students will be able to:

- Explain the concept and role of information technology monitoring
- Explain the concepts of identity theft, phishing, content filtering, encryption and firewalls
- Identify and explain the difference between authorization and authentication
- Categorize security threats to e-Business
- Distinguish ethical from legal issues as they relate to information within the organization.
- Distinguish information security policies from information security plans.
- Evaluate different monitoring technologies
- Evaluate the security of an e-commerce/e-business website, a game or a mobile application
- Create ePolicies that address ethical use of information and devices in the business environment
- Create an information security plan

Assessment

70% Coursework; 30% Final Examination

COURSE CODE: COMP 6307
TITLE: Mobile Communications and Security
CREDITS: 4

Description

The ubiquitous nature of mobile devices has revolutionized communication within societies on a global scale. Consequently, there are now new avenues via which users can both access and distribute content. However, while these devices provide for the comfort and convenience of the user, threats related to the security of data and applications are a major concern. In this module students will be exposed to the fundamentals of wireless signal transmission, medium access control and mobile networks. Additionally, the basic techniques of security, attacks and protection in mobile communication networks will also be examined. Students will be able to assess the security vulnerabilities of a mobile system and design or adapt protocols to mitigate these vulnerabilities.

At the end of this course students will be able to:

- Describe the fundamentals concepts of mobile communication systems
- Describe the technologies and protocols involved in mobile communication
- Describe the infrastructure required for and m-communication.
- Explain the structure, design, and functionality of each of the major existing cellular networks: GSM, IS-95, and 3G networks
- Discuss the security vulnerabilities of a mobile system.
- Discuss the various protocols used to mitigate security vulnerabilities in mobile systems
- Analyse a mobile system to determine the vulnerabilities and to provide appropriate solutions
- Advise on the latest developments and directions of research in modern cellular networks

Assessment
70% Coursework; 30% Final Examination

COURSE CODE: COMP 6321
TITLE: Technology Entrepreneurship and New Venture Management
CREDITS:

Description
Entrepreneurship requires the transforming of ideas into opportunities using a structured process. This intense course utilises case studies to explore the essential elements of the entrepreneurial process. The course will address the issues of: What is an entrepreneur, how to develop business models, how to secure financial resources, how to manage a growing venture and corporate entrepreneurship.

At the end of this course students will be able to:
• Identify and secure capital
• Identify and manage uncertainty
• Monitor a growing venture
• Judge whether an individual is an entrepreneur
• Develop business models for a new venture

Assessment
Pass/Fail on satisfactory attendance

COURSE CODE: COMP 6323
TITLE: Information Technology Project Management
CREDITS: 4

Description
This course teaches students about the roles and responsibilities of a technology project manager as well as fundamental and best practice management techniques for technology project management. The course assumes no prior knowledge in management techniques and is intended to teach students how to develop approaches and styles of management specific to technology projects. The course assumes a basic understanding of software development and the software development life cycle and uses this basis to teach the student how to deliver technology projects on time, within budget, and to specifications. On completing this course student will have the practical skills required to: start a technology project with a clearly defined scope, set and manage stakeholder expectations, manage changing client requirements, and meeting quality standards. The student will also be able to identify and overcome the typical pitfalls of technology projects.

At the end of this course students will be able to:
• Identify the communication mechanisms for different audiences, and how to work with local and remote teams.
• Identify the unique risks, issues, and critical success factors associated with technology projects.
• Describe measurement theory for the management of technology projects and how to communicate the results.

• Differentiate between the project management of technology initiatives from other kinds of projects, including hardware, technology and vendor relationships.
• Apply project management principles and techniques as they relate to technology project planning, implementation and tracking.
• Demonstrate the use of technology project management philosophies, principles, methods, tools, and standards
• Demonstrate the use of various techniques for managing a technology development team.
• Apply the appropriate product and process metrics and analytical techniques to a project
• Apply the project life cycle to an information technology project
• Infer the optimal time for product release.
• Create a project management plan

Assessment
100% Coursework

COURSE CODE: COMP 6370
TITLE: Enterprise Information Systems
CREDITS: 4

Description
This course presents an overview of all aspects on information systems in the enterprise. Topics to be covered include: Managing in a digital world, managing information system infrastructures, gaining the competitive edge using information systems; developing information systems and using big data and analytics.
This course is for students who want a strong foundation in developing IT systems as well as the ability to clearly articulate the business case for its adoption. It is also for students seeking a career path in application development, IT management, project management, software testing and security. The course will be delivered using face-to-face lectures, online and in-class discussions, class presentations and hands-on labs.

At the end of this course, students will be able to:

- Describe information systems and the business models that leverage information systems
- Explain the issues associated with managing information systems in a highly connected world including ethics of data collection and dissemination
- Illustrate how to gain competitive advantage using information systems
- Analyse the issues associated with information systems management
- Design a business-to-consumer e-Commerce solution
- Design an organisational solution using social media
- Design a business intelligence solution using big data and analytics
- Evaluate business processes
- Evaluate the security of information systems
- Recommend whether to develop or acquire an information system.

Assessment
100% Coursework

COURSE CODE: COMP 6375
TITLE: Enterprise Architecture Modelling
CREDITS: 4

Description
This course equips students with the knowledge, tools and techniques used in modelling enterprise systems. It will cover topics that include: an introduction to enterprise architecture; governance instruments; architecture methods and frameworks; description languages like BPMN and UML; enterprise modelling; viewpoint design and visualization; architecture analysis and alignment.
This course targets students pursuing careers in IT as developers, architects, project/team leaders, project managers, IT managers or IT consultants. Students currently holding, occupying, or who aspire to undertake team lead, architect or management positions will immediately benefit from this course. Course delivery will be realised through face-to-face interactive lectures, online and in-class discussions and hands-on lab sessions.

At the end of this course, students will be able to:

- Describe the enterprise architecture process
- Explain the internal and external drivers for enterprise architecture
- Apply different frameworks and description languages to an architecture model
- Apply different communication strategies to facilitate architecture modelling
- Distinguish among the different governance instruments used in enterprise architecture modelling
- Construct an enterprise architectural model based on the guidelines
- Compose viewpoints of an architecture
- Analyse an existing enterprise architecture
- Critique case studies of enterprise architecture models and make recommendations for improvement.

Assessment
70% Coursework; 30% Final Examination

COURSE CODE: COMP 6380
TITLE: Internet of Things for the Enterprise
CREDITS: 4

Description
This course provides an overview of the Internet of Things (IoT) and how to deploy the technologies in an organization. Topics to be covered include: the IoT stack, IoT applications, and implementing IoT open source solutions. This course is designed for students who desire knowledge of the cutting-edge field of IoT and how it can be meaningfully used by organizations.
Students who need a strong foundation in developing IT systems as application developers, as well as those who wish to develop the ability to clearly articulate the business case for 10T adoption as IT managers, will benefit from this course. The delivery mechanisms used for this course include face-to-face lectures, online and in-class discussions, class presentations and hands-on labs.

At the end of this course, students will be able to:

- Describe the components that comprise a typical Internet of Things (IoT) stack
- Explain the issues associated with IoT including data management and security
- Illustrate how to use IoT to gain the competitive advantage
- Design IoT solutions
- Implement an IoT solution using commercial and open source stacks
- Evaluate business processes for IoT modification
- Evaluate the security of IoT implementations
- Recommend whether to adopt IoT for specific organisational goals.

Assessment
100% Coursework

COURSE CODE: COMP 6510
TITLE: Mini Capstone Project
CREDITS: 8
PRE-REQUISITES: Completion of all taught courses required for Diploma programme

Description
The mini capstone project is a shorter version of the capstone project created specifically for diploma students who are undertaken a programme of shorter duration. The mini capstone project inherits all the characteristics of the capstone project but will be completed in the shorter time of three months.

At the end of this course students will be able to:
• Identify a project idea
• Investigate the background materials required to start the project
• Write a report/research paper documenting the project
• Create a solution/model/framework for the project
• Identify and evaluate different technological solutions for the project
• Justify the selected solution
• Evaluate the solution

Assessment
100% Coursework

COURSE CODE: COMP 6511
TITLE: Capstone Project
CREDITS: 8
PRE-REQUISITE(S): Completion of all taught courses required for MSc programme

Description
At the end of the taught component of an M.Sc. degree it is necessary for students to consolidate their knowledge and demonstrate their mastery of the taught materials. The capstone project is one way for students to consolidate this knowledge by allowing them to pursue research or a project in their area of specialisation. The capstone project

is a substantive project lasting for six-month. In this course students will undertake a project either a) for an organisation, b) based on a research topic, or c) identified by the student(s) individually or in collaboration with a supervisor(s).

This project will require the student(s) to a) build an application and report on it, or b) conduct a piece of research and write a research paper, for example create and evaluate/prove a theoretical model/framework or complete a substantive research study. Students may or may not pursue the commercialisation of their projects. In addition, students pursuing a research project are required to complete the Kick-Starting your Research workshop. The capstone project may be completed individually or as part of a group. Working as a part of a group is strongly encouraged since it develops group collaboration skills and allows more to be accomplished.

Assessment
100% Coursework