

MODULE DESCRIPTIONS

COMPUTATIONAL THINKING AND INTRODUCTION TO PROGRAMMING

Efficient and effective problem solving is a skill that is of benefit to any individual in his/her everyday life. In the field of computing, problem solving as well as familiarity with computer programming concepts, development of computer programs, and the syntax and semantics of programming languages are fundamental to successful software development.

This module first introduces computational thinking as a systematic approach to problem solving with the solution expressed in such a way that it can be carried out by a computer. Thereafter, all aspects of programming, from designing an algorithm and coding this algorithm to develop a program, to debugging and executing the program, are covered. The main focus of the module is on the coding aspect, where students will be exposed to the Python programming language, from the basic programming constructs (sequencing, decisions and looping) and data structures (such as simple types and lists) to more advanced constructs (such as the use of functions and recursion) and more complex data structures (such as dictionaries).

No prior programming experience is required to complete this module. Students will be taken from first principles to being able to develop a non-trivial Python program. The module will be useful to students from diverse fields by offering a systematic way of approaching problem solving and providing a solid introduction to programming.

Having completed this module, students will have a solid foundation of problem solving and programming experience, thereby facilitating the comprehension of the more advanced aspects of programming, including object-oriented design and the use of abstract data structures as taught in later modules.

CONTENT MANAGEMENT SYSTEM WEBSITES

A web content management system (WCMS) is a software system that provides authoring, collaboration, and administration tools designed to create websites. This module will enable students to create a website by means of a web content management system. To demonstrate the ability of the functions of a Web Content Management System (CMS), WordPress will be used, but it can vary from year to year as technology changes.

DATA AND DECISION-MAKING

In this module students will learn the importance of data in the decision-making process. They will be exposed to the fundamentals of decision making and how to assess risk and uncertainty while supporting this with well formulated and appropriate data. Students will further learn how to apply this knowledge as part of a larger project team for highly complex and more specialised decision-making environments where they act as facilitators rather than the actual analysts or decision makers. To achieve the module outcomes, students will learn how to separate empirical quantifiable data (known factors) from uncertain and unverifiable assumptions (unknowns) often required in business decision making. With this separation established, students will be guided in how to apply the known and unknown correctly in order to manage risks associated with the degree of uncertainty. Learning how to assess whether the balance between the known and unknown data components will be achieved through the use of sensitivity analysis and the illustration of the relative impact that the various data points can have on the final decision and ultimately how the final decision will impact the venture over time.

INDUCTION TO BUSINESS STUDIES

In this induction module, students are provided with the skills and knowledge required to be successful in entry-level business degree studies. Making the most of the online learning environment is central to success in degree studies and students are exposed to the requirements, practices and techniques that will help them to succeed. The Preparing for studying online component is aimed at introducing the student to STADIO and the BCom degree, the online learning environment and assisting the student to plan his/her studies and time effectively to ensure successful completion of his/her studies. The Academic reading and writing component expose students to good reading techniques, guides them through the writing process, and helps them to write effective academic essays. The Study skills component is aimed at providing students with basic information and techniques on how to improve their study skills from preparation to the exams. The module concludes with the Numeracy component that focuses on essential business numeracy skills required for business studies.

INFORMATION SECURITY FOR IS PRACTITIONERS

The first part of this module provides students with a basic understanding of computer networking concepts and technologies. Thereafter, potential risks are identified that may affect the security of organisational information. Information security issues that are addressed in this module include security threats targeting human users; network security and intrusion detection; security issues affecting software and databases; vulnerability assessment tools; and preventative measures that can be taken to protect the security of organisational information. At the end of the module, students will complete a group project that integrates the knowledge they have acquired during the course of the module.

INFORMATION SYSTEMS 1

This is a pre-requisite module that will form the foundation for Information Systems 2 (INF262). It will develop an understanding and knowledge of the principles of information systems and how real global businesses use technology and information systems to increase their profitability, gain market share, improve their customer service and manage their daily operations. The student will learn how information systems provide the foundation for modern business enterprises.

INFORMATION SYSTEMS 2

It will equip the student with knowledge and an understanding of e-Business and e-Commerce, basic wireless principles of information systems and how wireless computer networks, mobile computing and mobile commerce applications are used in an organisation. The student will also gain knowledge of how information systems operate within the organisation integrating social computing.

INFORMATION SYSTEMS 3

It deals with the integration of customer relationship management and supply chain management as well as business analytics. It will equip the student with sufficient knowledge to be able to acquire and apply information systems. The syllabus includes the planning, justification and evaluation of IT applications.

INTRODUCTION TO DATABASES

Information and raw data are the life blood of the various computing disciplines, either for their use in creating a solution to a given problem, or for storing after having been generated by information systems and other computational applications. As such algorithms for the efficient and effective collection, transformation, storage, access and updating of data, as well as for the representation, organization and presentation of the resulting information, constitute vital knowledge for computing professionals.

Relational databases, which rely on the use of structured tables to store data, have traditionally been used for data storage. However, with the ever-increasing volume of data needed to be processed and stored by information systems, non-traditional, unstructured alternatives have recently become more popular. The main aim of this module is to introduce students to the theoretical concepts of databases as well as provide practical experience in designing and extracting information from both relational and semi-structured databases.

This module introduces fundamental database concepts related to the design and creation of relational databases, as well as the extraction of information in the form of query building using SQL (structured query language). Also covered in the module are considerations of transactional processing and security of databases as well as an introduction to non-relational database models using XML to apply the theoretical concepts in semi-structured databases.

Having completed this module, students will be able to manipulate a variety of databases, as well as design, implement and manage a database system.

MOBILE APPLICATION DEVELOPMENT

In this module the student will gain knowledge how to create and run mobile applications with various operating systems, with the largest concentration on Android Programming. Android also encompasses the XML language as well as basic Apache Ant scripting for build purposes. A student must have pre-requisite knowledge of XML (covered in Web Development (WD12) and Java (covered in Informatics ICS12A and Informatics ICS12B) in this programme.

OBJECT-ORIENTED PROGRAMMING

One of the main competences required for employment in any of the computing disciplines is good programming skills. The object-oriented paradigm is extensively used in industry for developing large information systems. This module aims to impart both the theory and practice of this paradigm and further develop the overall programming skills of the students by introducing a second programming language, Java.

Students must have completed the "Computational Thinking and Introduction to Programming" module as prerequisite before attempting this module, which builds on the first principles of programming already covered and focuses on the design and implementation of larger more complex programs through a widely used industry language. In addition to providing the corresponding Java syntax for the constructs previously covered in the Python programming language, this module introduces object-oriented programming concepts, such as encapsulation and information hiding, data objects and inheritance, as well as additional imperative programming concepts and constructs, such as garbage collection and reference types. Practical experience using an object-oriented language is included by way of computer-based programming assignments.

RESEARCH METHODOLOGY

It covers principles, concepts and processes pertaining to academic scientific research. Aspects covered include the features of scientific research, types of research, as well as common aspects in the execution of a research assignment, such as problem identification, motivation of the study, formulating a hypothesis, research objectives, selecting suitable methods, planning and preparing the research action, as well as the gathering of data, and performing analysis and interpretation of results leading to a research report.

STATISTICS

In this module, students will gain a good theoretical and practical understanding of statistical techniques and experimental design as applied to commercial problems. The topics covered in this module address the full breadth of the components of statistics, consisting of descriptive statistics, inferential statistics and statistical modelling.

WEB DEVELOPMENT 2

JavaScript programming, interacting with controls on the client side, doing calculation and create a small animation for the website as well as create client-side forms using the same structure in Action Script and in .NET programming. Client and Server side coding, using Web services between Websites projects, XML technology, and SQL database to save and retrieve information and design Mobile Applications. Creating and modifying PDF and Text File, creating and connecting to email addresses and store information on MYSQL database and creating MVC frameworks in PHP.

WEB ANIMATION SCRIPTING

The student will be equipped with the knowledge on constructing an interactive web animation product by using HTML in combination with JavaScript. The basics of animation as well as more advanced concepts of web animation scripting and finally debugging, evaluating and optimizing the final product. Similar to ActionScript, HTML and JavaScript can be used to create rich animation-based web applications. Instead of using a separate SWF file, animation is included within the HTML files itself.

WEB DESIGN

Knowledge will be acquired to create vector illustrations, logos and basic web layout, including a wide range of techniques to create professional designs. The module also provides students with image editing experience and provides the students with knowledge of different software functions, as well as a range of imaging and editing tools. Knowledge of using a professional visual editor for creating and managing web sites will be developed. The student will be able to create and edit cross-platform, cross-browser pages.

WEB DEVELOPMENT

Students will be able to plan the structure and apply correct tools for designing a web design in software such as Dreamweaver. HTML is a language used to describe data and display content of the website. Students will also develop understanding of working with CSS, and the relationship between HTML and CSS.

WEB DEVELOPMENT PROJECT

This module will require the student to investigate and execute a project of choice, use the selected computer software for the specific project, use all the template documents associated with projects, produce reports and do presentations before, during and with the close of the final year project. Students should work individually on the Responsive Website Design and Development Final Project.

WEB MARKETING

Internet marketing, digital marketing, web marketing, online marketing, search marketing, or e-marketing, is referred to as the marketing of products or services over the Internet. Digital customer data and electronic customer relationship management (ECRM) systems are often grouped under internet marketing. Internet marketing also refers to the placement of media along many different stages of the customer engagement cycle through search engine marketing (SEM), search engine optimization (SEO), banner ads, email marketing, mobile advertising, and Web 2.0 strategies.