Computing Undergraduate Unit Descriptions

Introductory Units

Programming & Problem Solving
This is the first programming unit. You might think that you know how to program already but this unit teaches you to program in a systematic manner with a design that reflects the structure of the problem to be solved. Currently the programming language used is Java.

Computer Systems Fundamentals
This unit introduces you to foundation concepts of modern computer systems architectures and their operating systems.

Programming with Data Structures
This unit is not just about learning more Java. Its proper focus is on how to develop programs that fulfil specifications and are properly tested. At the same time you learn about the different way data can be organised in programs.

Data Management
Students will be introduced to concepts and techniques necessary for the effective organisation, manipulation and analysis of shared data. Students will learn how to apply these concepts with an emphasis on relational databases. XML and SQL are introduced as commonly used languages to manage data.

Web Management
Students will gain an understanding of the management issues associated with designing and developing content for a website. In this unit you will learn the technologies used for web application development. The unit includes the introduction of web related protocols, advanced HTML/XHTML.

Intermediate Units

Algorithms
Some programs tackle tasks that would take several years to solve with a simple approach, but can be solved within seconds with a smart approach. This unit will teach you the data structures, algorithms and techniques for writing programs that work smarter rather than harder. You will also learn how to analyse programs so that you can make an informed choice about which algorithm to use for a particular problem.

ICT Project Management
The ICT profession is largely people centered rather than technology centered. You have to be able to communicate your expertise. Students will develop skills appropriate to professional computing employment, particularly written, verbal and interpersonal communication skills. Students will also experience the principles, techniques and tools of project management.

Advanced Dynamic Web Development
This unit is about the latest techniques used in web page development. Currently it focuses on the development of interactive sites, where users supply data to the server and responses come from databases storing graphics, video and audio data as well as textual information about a product or service.

Computer Security
The threats to computer systems are real. In this unit you will learn about the threats and the people that perpetrate attacks. You study the theoretical techniques that can be used to protect computer systems and networks before examining how some of these can be applied.

Computer Networks
The biggest growth area in computing is in networking. In order to make networks work you need to study how data can be transmitted and the various protocols that are used to achieve this. You will also gain practical experience in installing and administering a network.
Advanced Units

ICT Project A & B

Many students obtain their first job on the basis of the work that they have done on their project. Projects are undertaken as a team working together to produce a solution for a client generally from outside of the university.

Artificial Intelligence

No one has yet made a C3PO-like multi-lingual intelligent robot, but the study of Artificial Intelligence has led to more useful robots and better language-related applications. In this unit you study the core concepts of AI and are introduced to the techniques used in various sub-fields such as expert systems, machine learning, computer vision and robotics.

Data Mining and Text Retrieval

Machine Learning is commonly considered to be a sub-field of AI, and can be seen as the study of computational approaches to finding patterns in data. Data Mining applies Machine Learning techniques to look for patterns in large data sets. Many applications involve textual data, such as e-mails or Web pages. This unit introduces the key ideas and techniques in Machine Learning and techniques for working with textual data, including techniques from the field of Information Retrieval.

Concurrent Programming

This unit is the final one in the software engineering stream. It teaches you ways of expressing and analysing safety, responsiveness, correctness and other performance goals through the Concurrent Sequential processes model. The software development is introduced through java threads and related concurrent programming practices and patterns Introduction to distributed computing: J2EE, RMI.

Computer Graphics & Animation

Students in this unit produce incredible assignments of animated shapes and characters. You study the algorithms and object-oriented programming techniques used to create these, and you have ample opportunity to practice.

Programming C# and .NET Applications

This unit is for any programmer who wants an introduction to C# and the .NET Framework.

Mobile and Ubiquitous Computing

This unit studies how mobile communications are achieved: the technology and digital protocols used by mobile phones and how mobile communications fit into a traditional wired network structure such as the internet. The emphasis is on the current state of the industry, standardisation and the integration of the many aspects of computing that come together in this field.

Human Computer Interaction

Students are introduced to the main issues and insights in human-computer interaction (HCI). HCI is the interdisciplinary field that looks at supporting the various ways people interact with computers including, but not limited to, traditional desktop computers, web interfaces, ubiquitous computing, mixed reality and mobile computing.

Other School Units

The school also has other units in Games (Hobart), Human Interface Technology (Launceston) and Electronics (Launceston).

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