



*Faculty of Computing, Engineering and Technology*

# Computing Degree Scheme

## *Level I (2) Award Structures and Module Handbook*

*CertHE, DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computing Science**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computer Science**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Software Engineering**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Information Systems**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computing Science: Graphics**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computer Systems**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computing with Applicable Mathematics**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computing Science: Artificial Intelligence**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computing Science: Web Development**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computing Science: Multimedia**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Mobile Computing**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Network Computing**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Forensic Computing**

*DipHE, BSc, BSc(Hons), BEng, BEng(Hons), MEng* **Computer Games Programming**

## **INSTRUCTIONS FOR LEVEL I (2) MODULE ENROLMENT**

### **Week commencing 19 March 2007**

- Collect a Module Enrolment Form from your Award Administrator outside the **Faculty Reception on Monday 19 March between 10am – 2pm.**
- There is a different form for each award. Please ensure that you collect the correct form for the award that you are on.
- **Completed forms must be returned on**

**Thursday 22 March between 10.30am – 3.30pm to Alison Kent Room K243**

**OR**

**Friday 23 March between 10.30am – 3.30pm to Alison Kent Room K243**

**OR**

**Monday 26 March between 10.30am – 3.30pm to Alison Kent Room K243**

If you have any queries about completing the module enrolment forms, please ask the staff for advice

- Failure to hand your forms in on the correct day could result in you being unable to take the modules of your choice.

### **Enrolling on General Options**

- If you are planning to take a module from another Faculty i.e. a General Option, you must choose this from the General Option Directory which can be found on the web <http://www.staffs.ac.uk/modules/options/index.php>. You must make sure that you get permission from the other Faculty that there is space on this module and that you can take it. **PLEASE NOTE: You cannot choose a general option from the University Information Technology Programme modules that are listed in the general option handbook.**
- If you are planning to change award next year you need to ensure that you have completed an Internal Award Transfer Form. Transfer forms can be collected from the Faculty Reception. Complete a module enrolment form for the award to which you wish to transfer and hand both forms in together.

## **FREQUENTLY ASKED QUESTIONS ABOUT MODULE ENROLMENT**

### **What happens if I don't return the form?**

You will not be registered on any modules and will have difficulties at the start of the semester in September.

### **Can I change modules later?**

You will be able to change any non core module in the first two weeks of semester 1 and semester 2 as appropriate.

### **Why do I have to choose a Software Development Option?**

This is called a conditional core module and will not apply to some awards. For awards where a conditional core is required, you must choose at least 1 module from this group or you will not meet the requirements for your award.

### **Can I choose more than one module from the software development options?**

Yes, and you will probably want to. Depending on your award, you may have to select up to 4 computing options. You can choose any module from the approved list of modules in your computing module handbook, whether or not it also appears as a software development option.

### **Do I have to choose a general option?**

You must have a total of 120 CATs points. You can choose 1 x 15 credit point general option module or, if you prefer, you can make up the total of 120 CATS points by choosing an extra module from the computing option modules.

### **I have decided to take a computing option instead of a general option, where do I put this on the form?**

Write the name of the module you have chosen in the general option box.

### **What happens if I do not complete 120 CATS points?**

You do not get a degree.

### **I would like to study an extra module, can I do this?**

Yes, it will be treated as an additional module and will not count towards your degree classification. Write the extra module on the enrolment form. Regulations change, so check when you enrol on the additional module whether or not there will be a charge for it.

### **How can I change to a different degree?**

Select modules for the award you want to be on and complete a change of award form. You will only be allowed to change degrees if you have the correct core modules – but for most students this will not be a problem. We will double check your change of award and contact you if there is a problem.

## GENERAL INFORMATION

### 1.1 Joining Level I (2)

Welcome! We look forward to seeing you in Level I (2) in September.

This booklet provides you with information about the modules you can study in level I. **Please keep your copy of the booklet as you will need to refer to it at the start of semester 1 and semester 2.**

### 1.2 Contact Details

To discuss module choices before August, please contact Clare Stanier ([C.Stanier@staffs.ac.uk](mailto:C.Stanier@staffs.ac.uk)) room K340 or speak to your personal tutor. After August, please contact your theme leader – details will be circulated shortly. The Award Administrator is Alison Kent ([a.j.kent@staffs.ac.uk](mailto:a.j.kent@staffs.ac.uk)) room K243.

### 1.3 Enrolling For Level I in September

Enrolment for CDS level I students (all awards) will take place during week commencing 17 September. You will receive details of the enrolment procedure nearer the time.

### 1.4 Changing Modules

If you feel that you have chosen the wrong module, or you have a timetable clash, you will be able to change modules: first semester modules can be changed during the first two weeks of semester 1; second semester modules can be changed during the first two weeks of semester 2. You will be given details of the module change procedure when you enrol in the autumn.

### 1.5 Staying In Touch

Please check your student email at regular intervals over the summer. If there are any changes to dates or arrangements, we will email you to let you know.

### 1.6 Enjoy Level I

We hope that you will find all the modules you study interesting, challenging and rewarding. Please take the time to look through the module descriptors so that you have all the necessary information to make the right choice of modules. **THE KEY TO SUCCEEDING ON LEVEL I IS TO CHOSE THE CORRECT MODULES.**

## INDIVIDUAL AWARD STRUCTURE AND CONTENT

The comments on this page apply to all CDS awards. In addition, each award has its own individual structure which is given below, for level I only. If you would like to see details of Level H (Level 3), please look at the full award handbook on:

[http://www.fcet.staffs.ac.uk/current\\_students/student\\_hbook\\_computing.htm](http://www.fcet.staffs.ac.uk/current_students/student_hbook_computing.htm)

Please note that the availability of modules may be dependent on student numbers and please ensure that you choose the correct module for the correct semester.

### **GENERAL OPTION:**

The general option can be chosen from the following.

a) the full list of Computing Degrees Scheme modules at level I or level C (see Module section), provided the modules have not already been taken and any module specific admission requirements are met;

Or

b) the modules on the University General Option list <http://www.staffs.ac.uk/modules/options/index.php>, excepting modules from the University IT Programme – again provided the module has not already been taken and any module specific admission requirements are met.

**If you are registered for a sandwich degree you must do an industrial placement between levels I and H, usually lasting one year. If you wish to change to a non sandwich degree, please contact the placements office by FRIDAY 5 OCTOBER 2007. If you apply after 5/10/07, you may not be able to change to the non sandwich award.**

## Computing Science.

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Computing Option	Computing Option
	Software Development Option	Computing Option	Computing Option	General Option

**SOFTWARE DEVELOPMENT OPTION** [taken in either semester depending on module choice] **one** from:

Further Programming Concepts in C++  
 System Programming and Computer Control Systems  
 System Development Methods  
 Multimedia Applications  
 Web Applications  
 Web Programming  
 Software Development for Mobile Computer Applications  
 Computer Graphics  
 Imaging and Special Effects  
 Mathematical Software with Applications  
 Graphical User Interfaces: Design and Implementation

### COMPUTING OPTION:

Choose **four** modules from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Computer Science.

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Systems Programming & Computer Control Systems	Computing option
	Hardware & Software Systems & Networks 2	Computer Systems: Low Level Techniques	Computer Science Option	General Option

**LEVEL I COMPUTER SCIENCE OPTION** [taken in either semester depending on module choice] **one** from:

Further Programming concepts in C++  
 LAN Switching and WAN Networks  
 Principles and Practices of Software Production  
 Computer Graphics  
 Imaging and Special Effects  
 Maths and Algorithmics  
 Data Recovery, Tracing and Evidence Gathering in Computer Systems

### COMPUTING OPTION:

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Software Engineering.

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Principles & Practices of Software Production	Software Engineering Option
	Further Programming Concepts in C++	Software Engineering Option	Software Engineering Option	General Option

**LEVEL I SOFTWARE ENGINEERING OPTION** [taken in either semester depending on module choice] **three** from:

System Development Methods  
 Mathematics and Algorithmics  
 Hardware and Software Systems and Networks II  
 Concurrent Programming in C#  
 Further Objected Oriented Programming  
 System Programming and Computer Control Systems  
 Fundamentals of Mobile Computing  
 Software Development for Mobile Computing Applications  
 Computer Graphics  
 LAN Switching and WAN Networks  
 Object-Oriented System Development

## Information Systems.

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Systems Development Methods	User-Centred Systems Development
	Object-Oriented System Development	Information Systems Option	Computing Option	General Option

**LEVEL I INFORMATION SYSTEMS OPTION** - **one** from:

Spreadsheet Modelling Techniques  
 Business Forecasting and Planning  
 HCI and Usability [need to take this if you want to take Advanced HCI and Usability in level H]  
 Principles and Practices of Software Production [currently runs in teaching block 1 thus cannot really choose this at the moment]

### **COMPUTING OPTION:**

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Computing Science: Multimedia )

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Web multimedia	Computing Option
	Multimedia Applications	HCI and Usability	Multimedia Option	General Option

**LEVEL I COMPUTING SCIENCE: MULTIMEDIA OPTIONS** [taken in either semester depending on module choice] **one** from:

- Web Applications
- Web Design
- Web Programming
- Graphical User Interfaces: Design and Implementation

### **COMPUTING OPTION:**

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Computing Science: Web Development

<b>LEVEL I</b>	Professional & Enterprise Development	Database and Web Database Systems	Web Multimedia	Computing Option
	Web Applications	HCI and Usability	Computing Science: Web Development Option	General Option

**LEVEL I COMPUTING SCIENCE: WEB DEVELOPMENT OPTIONS** [taken in either semester depending on module choice] **one** from:

- Web Programming
- Multimedia Applications [only if taken level C Introduction to Multimedia Applications- this prerequisite is being reviewed; if you wish to take this module and do have the pre-requisite, please speak to Russell Campion]
- Multimedia Design
- Graphical User Interfaces: Design and Implementation
- LAN Switching and WAN Networks

### **COMPUTING OPTION:**

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met..

**Mobile Computing.**

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Fundamentals of Mobile Computing	Computing Option
	Software Development for Mobile Computer Applications	HCI and Usability	Mobile Computing Option	General Option

**LEVEL I MOBILE COMPUTING** [taken in either semester depending on module choice] **one** from:

Further Programming Concepts in C++  
 Web multimedia  
 Web Programming  
 LAN Switching and WAN Networks

**COMPUTING OPTION:**

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

**Computer Systems.**

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Systems Programming & Computer Control Systems	Computing Option
	Hardware & Software Systems & Networks 2	Computer Systems: Low Level Techniques	Computer Systems Option	General Option

**LEVEL I COMPUTER SYSTEMS OPTION** [taken in either semester depending on module choice] **one** from:

Further Programming Concepts in C++  
 Principles and Practices of Software Production  
 Fundamentals of Mobile Computing  
 Data Recovery, Tracing and Evidence Gathering in Computer Systems

**COMPUTING OPTION:**

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Computing Science: Graphics

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Imaging & Special Effects	Computing Option
	Maths & Algorithmics	Computer Graphics	Computing Science: Graphics Option	General Option

**LEVEL I COMPUTING SCIENCE: GRAPHICS OPTION** [taken in either semester depending on module choice] **one** from:

Further Programming Concepts in C++  
 Programming Physics Engines for Games  
 Further Programming for 3D Applications [only if taken level C Introduction to Programming 3D Applications]  
 AI Methods

### COMPUTING OPTION:

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Computing Science: Artificial Intelligence

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Imaging & Special Effects	Computing Option
	Probability and Statistical Modelling	Artificial Intelligence Methods	Computing Option	General Option

### COMPUTING OPTION:

Choose **two** modules from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Network Computing.

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Fundamentals of Mobile Computing	Web Programming
	LAN Switching & WAN Networks	Software Development for Mobile Computer Applications	Computing Option	General Option

### COMPUTING OPTION:

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## **Computer Games Programming.**

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Programming Physics Engines for Games	Computing Option
	Maths & Algorithmics	Computer Graphics	Computer Games Programming Option	General Option

**LEVEL I COMPUTER GAMES PROGRAMMING OPTION** [taken in either semester depending on module choice] **one** from:

Further Programming for 3D Applications [only if taken level C Introduction to Programming 3D Applications]

Windows Game Programming

Further Programming concepts in C++

Imaging and Special Effects

AI Methods

### **COMPUTING OPTION:**

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## **Forensic Computing.**

<b>LEVEL I</b>	Professional & Enterprise Development	Database & Web Database Systems	Systems Programming & Computer Control Techniques	Data Recovery, Tracing and Evidence Gathering in Computer Systems
	Hardware & Software Systems & Networks 2	Computer Systems Low Level Techniques	Option To be confirmed	General Option

### **OPTION MODULE:**

**This is still under discussion but it is likely that students will be asked to choose an award specific option from a group which will include Biometrics I and Investigating Operating Systems**

Choose **one** module from the Level I modules listed in the module section of this handbook, provided the modules have not already been taken and any module specific admission requirements are met.

## Level I (level 2) Modules

**Computing modules not on this list are not valid for your award.**

### Teaching block 1

CE00321-2	System Development Methods
CE00315-2	Professional and Enterprise Development
CE00318-2	Database and Web Database Systems
CE00352-2	System Programming and Computer Control Systems
CE00003-2	Principles and Practices of Software Production
CE00353-2	User Centred Systems Development
CE62022-2	Mathematics Software with Applications
CE00354-2	Web Multimedia
CE00375-2	Fundamentals of Mobile Computing
CE00392-2	Programming Physics Engines for Games
CE00376-2	Imaging and Special Effects
CE62020-2	Business Forecasting and Planning
CE00299-1	Further Programming for 3D Graphics Applications
CE00359-3	Data Recovery, Tracing and Evidence Gathering in Computer Systems
CE00123-2	Fundamentals of Network Security
CE00425-2	Web Programming
CE00317-2	Management and Planning
Ce62024-2	Questionnaire and Data Analysis
CE00527-2	Further Object-Oriented Programming

### Teaching block 2

CE00341-2	AI Methods
CE00281-2	Hardware and Software Systems and Networks 2
CE62021-2	Mathematics and Algorithmics
CE00373-2	Computer Systems: Low Level Techniques
CE00314-2	Further Programming Concepts in C++
CExxxx1-2	Object Oriented System Development
CE00377-2	Computer Graphics
CE62023-2	Probability and Statistical Modelling
CE00310-2	Web Applications
CE00309-2	Multimedia Applications
CE00127-2	LAN Switching and WAN Networks
CE00343-2	Software Development for Mobile Computing Applications
CE00374-2	Graphical User Interfaces: Design and Implementation
CE00406-2	Dynamic Data Interchange
Ce00526-2	Data Management
CE62025-2	Spreadsheet Modelling Techniques
CE00386-2	Windows Game Programming
CE00306-2	Human Computer Interaction and Usability
CE00130-2	Advanced Routing
CE00100-2	Remote Access Networks
CE00379-2	IT Systems for Business
CE00409-2	Practical Systems Management
CE00399-2	Biometrics1
CE00526-2	Concurrent Programming in C#
CE00419-2	Mobile Computing Devices And Technologies} New for 2007. Please check
<u>CE00422-2</u>	Mobile Applications And Systems Development}module descriptor on line

# Semester 1

This is a summary of the modules. Please note that module details can and do change. The full module descriptor is available on the faculty site:  
<http://www.staffs.ac.uk/current/student/modules/>

## CE00321-2 System Development Methods

**Contact:**        **Rose King**                      **Room K226**

### Module Details

- Structured techniques for analysis and design using a method such as SSADM
- Typical techniques to be included are user requirements capture, process models, data models, event models and enquiry access paths
- Correlation of different views of a system, for example, process – data, process – event, data – event models
- Use of a CASE tool to check for consistency
- Introduction to the concept and use of a Database Management System
- Implementation of a Database to include queries, forms and reports to meet user requirement specification
- HCI overview, user skills and characteristics
- Perceptual ability including perception, cognition and memory
- Interface design considerations, including icons, screen layouts and interaction styles
- Task analysis and Interface evaluation
- A comparison of multimedia and web-based approaches with the structured approach adopted for the development of the prototype

50% ASSIGNMENT

50% EXAMINATION

Pre-requisites: Prior study of L1 Systems Analysis and Design or equivalent.

## CE00315-2 Professional and Enterprise Development

**Contact:**        **Rosemary Borup**    **Room K344**

### Module Details

**This module is core on ALL computing degree scheme awards**

Professional issues:

- Professional Bodies, Ethics and Codes of Conduct
- Legal Issues relevant to the computer professional
- the need for Continuing Professional Development (CPD)

Organisational context of professional work:

- Management structures and teams
- Types of organisations
- Financial context
- Human Resource management issues
- Quality and Quality Assurance
- Project Management

Career development:

- Career planning
- Recruitment processes, skills and issues
- Business start-up knowledge and skills
- Entrepreneurship

Reflection on personal development - needs and directions (Personal Development Planning)

50% Assignment

50% In-class test

## CE00318-2 Database and Web Database Systems

This module is core on ALL computing degree scheme awards

Contact: Robert Kinmond K336

### Module Details

Distributed database design: Entity models, relational design, mapping designs to implementations, normalisation and de-normalisation

Database languages

SQL: DML, DDL and DCL

Developing applications with database tools

Database system architecture

Database security, reliability, integrity and concurrency control

Database administration: functions of database administration, organisational issues.

Introduction to ASP

Internet based Database connectivity.

XML and related database technologies

Multimedia databases

50% A CLASS-TEST

50% A MULTI-CHOICE TEST

Pre-requisites: Prior study of Systems Analysis and Design (SAD) or equivalent coverage of SAD material.

## CE00352-2 System Programming and Computer Control

Contact: David Hodgkiss Room K217

### Module Details

This module is an introduction to computer control and data acquisition together with an advanced use of the programming language 'C'.

The module **does not** offer an introduction to 'C' but will include a rapid review of those features covered within the pre-requisite Level 1 module on C. This review will NOT be a level suitable for those with no familiarity with C.

The programming aspects of the module will include: use of pointers and memory management; implementation of both static and dynamic data structures; bitwise operations; command line arguments and interprocess communications.

The computer control and data acquisition aspects will consider the concepts of the subject together with consideration of the available hardware. Consideration of the methods of communication currently used: digital and analogue signals; serial and parallel; data rates; signal conditioning; single ended and differential inputs.

50% Coursework

50% Examination

Pre-requisites: Prior study on Introduction to C Programming or equivalent.

### Module Leader's Comments:

**In this module you will learn about a number of 'C' programming techniques that are used for system programming. You will need to have a good working knowledge of 'C' programming fundamentals and be prepared to have a go as there will; be plenty of opportunity to practise these advanced programming techniques. The programming is developed in a UNIX / Linux environment and students are encouraged to install Linux on their own machines – disks are available. The module also looks at how computers are used to control external equipment and how data may flow between the various devices.**

## CE00003-2 Principles and Practices of Software Production

Contact: Kelvin Hilton

Room K319

### Module Details

Software development lifecycles

Planning, cost estimation, risk evaluation and contingency planning

Project management

The roles in a software development project

Resource allocation

Requirements specification

Design paradigms

Design architectures (e.g. model-view-controller)

Managing deployment and maintenance; change control

Practices for safety-critical systems, including the use of formal methods

Quality, metrics, testing and process improvement

100% assignment. You will be assessed in one assignment that will run for most of the teaching block and consists of a set of exercises, which represent the steps taken in a complete software development project.

Pre-requisites: Prior study of Fundamentals of Software Development **and** Systems Analysis and Design or equivalent.

## CE00353-2 User Centred Systems Development

Contact:

Euan Wilson

Room K319

### Module Details

Incorporating a range of relevant topics such as:

- An overview of traditional methodologies and how their shortcomings are reduced by the methodologies studied in this module
- An in-depth review of James Martins Rapid Application Development (RAD)
- A review of updated versions / variations of RAD such as DSDM, Prestwood Development Methodology etc.
- An overview of Agile methodologies
- An overview of Extreme Programming
- An in-depth review of Soft Systems Methodologies (SSM) and Checklands influence on other methodologies such as SSADM 4+
- Prototyping as a tool for user centered development
- Use of CASE tools to increase development quality and reduce development times
- An overview of project management and risk assessment strategies that are needed to support user centered design
- HCI issues with respect to the use of prototyping as a development aid

50% group assignment to develop an application using the techniques and methodologies contained within the module.

50% examination that covers the theoretical elements not assessed by assignment 1.

Pre-requisites: First year methodology module e.g. Systems Analysis and Design.



**CE00375-2 Fundamentals of Mobile Computing****Contact: Justin Champion****Room C203****Module Details**

The module will Adopt a Systems Approach to Mobile Communications Architecture and Processes.

- Basic principles of communication architectures: PSTN, PSDN and Gateways
- Different types of mobile communications: Cellular Bluetooth, wireless LANS, Piconets, Scatternets, Ad-hoc networks
- Basic Principles and Evolution of FDMA, TDMA, CDMA, reviewing Standards and Leading Technologies, Evolution from 1G, 2G, 3G, 4G. Computing, Key Components for 3G (Mobile Computing) Products.
- Wireless Application Protocol (WAP), Wireless Short Message Service (SMS), Multimedia Messaging Service (MMS). Wireless Intelligent Networks.
- Frequency Allocation, Handover and Bandwidth allocation, Internet Access, Internet Security, Internet Telephony, Quality of Service and Performance for Mobile Computing. Wireless Business Applications. Fraud analysis in IP and Mobile Computing.
- Signalling System 7 (SS7), Session Initiation Protocol (SIP).
- Introduction to Smart Antenna Systems, Smart Cards in Wireless Services,

50% ASSIGNMENT

50% EXAMINATION - UNSEEN IN EXAMINATION CONDITIONS

Pre-requisites: None

**CE00392-2 Programming Physics Engines for Games****Contact: Claude Chibelushi****Room K220****Module Details**

Basic mathematical concepts: Cartesian coordinates, vectors

Rigid-body, particle, and articulated-body dynamics for modelling or animation:

- Newton's laws of motion
  - Particle kinematics and kinetics
  - Motion with constant velocity or constant acceleration
  - Force, gravity, friction
  - Momentum, energy
  - Projectile motion
  - Collisions
  - Particle systems
  - Forward and inverse kinematics
  - Quaternion rotation
- Genre-specific physics models: motion capture for skeletal animation, vehicle simulation

50% ASSIGNMENT

50% EXAMINATION

Pre-requisites: Prior study of Fundamentals of Software Development or equivalent.

## CE00376-2 Imaging and Special Effects

**Contact:** Len Noriega

**Room K325**

### Module Details

Image representations (binary, monochrome, colour, alpha channels), Grey-level transforms (thresholding, negation, quantisation), Contrast Enhancement (histogram equalisation, stretching), Filtering in the Spatial Domain (noise removal, edge detection, blurring, etc.), Morphing, Warping, simple colour image processing.

50% Assignment

50% Examination

Pre-requisites: Prior study of Fundamentals of Software Development or equivalent.

**Module Leader's Comments: This module is based on programming and involves some mathematics. The essence of the course is the theory and practice of developing software that will process images. Students with no interest in programming are advised NOT to take this module.**

## CE62020-2 Business Forecasting & Planning

**Contact:** Helen Shaw

**Room LC021 (Stoke Campus)**

### Module Details

Rationale for and limitations of forecasting.

Decomposition methods for time-related data. Identification of trend, seasonal components for additive and multiplicative models; seasonal indices; forecasts. Use of simple exponential smoothing.

Understanding relationships between paired data. Scatter diagrams. Coefficients of correlation and determination. Simple linear regression techniques. Estimates for intercept, slope and predictions. Variability and consideration of accuracy of estimates.

Introduction to hypothesis testing. t-test for regression parameter estimates.

Nature and cost aspects of stock control. Economic order quantity, lead times, re-order levels, discounts and stockouts. Understanding the role of uncertainty and safety stock.

50% Practical computer-based class test

50% Examination

Pre-requisites: Knowledge of simple mathematical/statistical methods and basic computer literacy. For example, Data Analysis module or equivalent.

**CE00299-2 FURTHER PROGRAMMING FOR 3D GRAPHICS APPLICATIONS****Contact: Bob Hobbs****Module Details**

Texturing, shading and lighting using suitable graphics API such as OpenGL with software development environment or toolkit such as C or C++. Extending interaction capabilities of such an environment to include GUI type interfacing. Interaction metaphors. Importing and rendering from proprietary modelling software such as Maya or 3D Studio Max. Matrix manipulation using the graphics matrix stack and associated functionality. Depth models and concepts such as culling and buffering.

An EXAM length 2 HOURS weighted at 50%. An ASSIGNMENT weighted at 50%.

pre requisites: CE00056-1, Introduction to Programming 3D Applications and prior study of CE00371-1, Introduction to Software Development and CE00396-1, Object Oriented and Event Driven Programming or equivalent.

**CE00359-3 Data Recovery, Tracing and Evidence Gathering in Computer Systems****Contact: Bill Fone****K213****Module Details**

PC and network fundamentals and component handling for data recovery and evidence gathering:

Operating systems, log and configuration files, data redundancy and protection.

Digital media and data storage, structures, risks and recovery strategy.

Access controls and encryption

Data recovery

Analysis of digital media, tools and techniques used by forensic agencies.

Network activity monitoring and tracing

50% Exam

50% Task based assignment

Pre-requisites: Pre-requisites: Prior study of Systems Programming and Computer Control Systems or equivalent.

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**CE00123-2 Fundamentals Of Network Security****Contact:** FRANK DUDEK**K224****Module Details**

Introduction to Network Security course focusing on overall LAN security processes with particular emphasis on hands on skills in the following areas:

Security policy design & management

Security technologies, products & solutions

Firewall and secure router design, installation, configuration, & maintenance

AAA implementation using routers and firewalls

VPN implementation using routers and firewalls

An EXAM length 2 HOURS weighted at 50%. A PRACT EXAM length 2 HOURS weighted at 50%.

A written MCQ examination, length 2 hours weighted at 50% which will assess Learning outcomes 1, 3, 4

A practical not in examination conditions weighted at 50% which will assess Learning outcomes 2 and 5

Prerequisites:

To have completed level 1 module Introduction to Networking with LAN's and WAN's.

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**CE00425-2 Web Programming****Contact:** Alistair Dawes**Room C214****Module Details**

Client Side Scripting

Introduction to server side languages using PHP

Software engineering for web sites

Testing Processes

An ASSIGMT length 3000 WORDS weighted at 100%.

100% assignment (learning outcomes 1, 2, 3)

You will be required to produce a dynamic web application using a suitable programming language. A typical example would be an On-line Bank application.

You will also be required to document the design and testing of this application, using suitable methods and tools, producing a report of no more than 3000 words

Pre-requisites: None

**Module Leader's Comments: In this module you will learn how to create dynamic web solutions using PHP and MySQL. You will spend time studying and applying software engineering principles and practices. Your assignment will involve developing the solution to a real world problem; a typical example would be an "Online Bank account". If you enjoy problem solving and programming you will enjoy this module.**

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<b>CE00317-2 Management and Planning</b>
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**Contact:** Alan Eardley

**Room K330**

**Module Details**

1. The concepts and definitions of management at the strategic, tactical and operational levels. Objectives and mission statements, policies and planning approaches that can be used by a typical organisation.
  2. Strategy formulation and the influences on strategy in various businesses. Strategic alternatives, growth and expansion, acquisition, integration and divestment. Competitive strategy and portfolio analysis.
  3. Using forecasts under various conditions and for various 'time horizons'. Comparing qualitative techniques, (eg Delphi, brainstorming and heuristic analysis) and quantitative techniques, (eg regression, linear programming, exponential smoothing). Evaluating forecasts and recognising the problems of forecasting.
  4. Management audit and environmental analysis. Strategy and operations audits. Environmental scanning. Business analysis techniques, (eg SWOT, value chain and Seven-S analysis, network analysis).
  5. Factors influencing organisation structure and design. Advantages and disadvantages of different organisational forms, (eg tall vs flat, centralised vs decentralised, matrix). Types of corporate culture, the learning organisation, change management.
  6. Functional strategies and plans. Marketing planning, the marketing mix, branding and the product lifecycle, promotion and media planning. Financial planning, investment and budgeting issues, costing and pricing issues. Operational planning, production and distribution planning.
- A COURSEWORK weighted at 50%. An EXAM length 2 HOURS weighted at 50%.

**Coursework 50%**

A business/technical report of about 10 pages based on research taking about 25 hours per student to produce. The work will normally be done in pairs. The work will include the analysis of an existing situation, the application of analysis techniques (introduced in lectures and developed in tutorials) and the presentation of conclusions using similarly-acquired techniques. It is intended to promote and assess practical research skills. Learning outcomes 1, 2, 3 and 4.

**Examination 50%**

An individual closed-book, time constrained examination of 2 hours duration. The examination may be based on the same case study as the course work. A choice of questions will be offered, with a compulsory section if considered appropriate. Learning outcomes 1, 2, 3 and 4.

**Pre-requisites:** Level 1 Introductory Business Concepts (CE00367-1) or equivalent.

**CE62024-2 QUESTIONNAIRE AND DATA ANALYSIS****Contact:** Emily Raeburn

Room LC023 (Stoke Campus)

**Module Details**

You will study a variety of aspects connected with the design, operation and analysis of a survey including:

Defining survey objectives- what are the aims of this survey?

Sampling strategies-who to ask, how many to ask, how to ask.

Questionnaire design (to include OMR and web based) and the use of various attitude scales to measure opinions and attitudes.

Data entry, exploratory data analysis and the presentation and interpretation of tables, percentages and descriptive statistics using a statistics package eg SPSS

Introduction to sampling theory. Confidence intervals for means and proportions.

Hypothesis testing, including non-parametric statistics.

Using graphical output to display results and relationships.

Report writing and presentation.

An IND.PROJECT weighted at 100%.

1. A single project involving a small scale survey on a topic of your choice, approved by the module leader, resulting in the submission of a written report.(100%) . (Learning Outcomes 1-4). This report is to be of about 5000 word equivalent, or 15 sides of A4, including tables and charts.

Pre-requisites: A knowledge of introductory statistics.

**CE00527-2 Further Object-Oriented Programming****Contact:** Cathy French**Module Details**

Review of object-oriented principles (objects and classes, association, inheritance and polymorphism) and their implementation in Java.

The Object class and its methods.

Abstract classes and interfaces.

Wrapper classes for primitive types.

Inner and nested classes.

The String, StringBuffer and String Tokeniser classes.

Handling files, input, output and serialisation.

Internationalisation, processing dates and time.

Regular expressions.

Exception handling and assertions.

Multithreading.

Java collections framework.

Networking using sockets and Java RMI

Java 5 features such as enumerations, enhanced for loop, formatted output,

Scanner autoboxing and unboxing of primitives, generic types, variable-length argument lists.

JDK tools and deploying applications.

An ASSIGMT weighted at 50%. An EXAM length 2 HOURS weighted at 50%.

Must have studied CE00371-1, Introduction to Software Development or equivalent.

AND

CE00396-1 Object-Oriented Systems Development or equivalent.

# Semester 2

**CE00341-2 AI Methods****Contact: Bernadette Sharpe****Room K252****Module Details**

Introduction to AI;

example AI systems;

the role of knowledge and representation for knowledge based problem solving

e.g. predicate logic, production rules, semantic nets and frames

problem solving and search strategies;

Prolog as an example of an AI programming language.

50% Exam

50% Assignment

Pre-requisites: Prior study of Fundamentals of Software Development or equivalent.

**CE00281-2 Hardware and Software Systems and Networks 2****Contact: John Cowley****Room K213****Module Details**

Transmission media (e.g. copper and fibre optic cabling, wireless transmission)

LAN Topologies (e.g. bus, ring, star), LAN standards (e.g. Ethernet) and layer-2 addresses

Layer 3 issues, routing and addressing (e.g. IP)

Connection-oriented v connectionless layer 4 (e.g. TCP and UDP)

WAN technologies and services (e.g. leased lines, ISDN, Frame Relay)

Application-layer software (e.g. e-mail, FTP, Web browsers and Web servers)

Network security (e.g. anti-virus software, firewalls, encryption, digital signatures, PKI, VPNs, SSL, IPSec)

Network management (e.g. network management categories, SNMP, MIB, RMON)

Multimedia hardware

Language translators (assemblers, interpreters and compilers) – structure and operation.

50% COURSEWORK

50% EXAMINATION - UNSEEN IN EXAMINATION CONDITIONS

Pre-requisites: Prior study of Hardware and Software Systems and Networks 1

**Module Leader's Comments: You should take this module if you wish to build upon the knowledge of networks, language translators and multimedia hardware that you gained from CE00300-1 Hardware & Software Systems & Networks 1 (or equivalent).**

**CE62021-2 Mathematics and Algorithmics****Contact: Patrick Wainwright****Room K224****Module Details**

Further Differentiation: Chain, Product and Quotient Rules and Partial Differentiation applied to polynomials and trig functions.

Probability – Bayes' Theorem. The Normal Distribution.

Introduction to Predicate Calculus – Quantifiers and basic deduction.

2 and 3 Dimensional vectors – Arithmetic, magnitude and scalar product.

Complex Numbers – basic arithmetic in rectangular and polar representations – Argand diagrams.

Algorithmics: Time and Storage complexity – Big O notation – Complexity classes.

Algorithm Paradigms: Divide and Conquer, Greedy Algorithms, Dynamic Programming.

50% multiple choice test

50% Examination

Pre-requisites: Prior study of CE61002-1 Mathematics and Statistics for Computing or equivalent.

**CE00373-2 Computer Systems – Low Level Techniques****Contact: Martin Slade****Room K356****Module Details**

Study the architectures of different CPU's and compare and contrast them.

Explain how machine Level instructions are converted into binary and understood by the CPU

To learn at least one machine Level Language in detail and to write and run programmes in that language.

To be able to look at other low level languages on other CPUs and understand their similarities and differences.

Operation of assemblers, linkers, loaders, etc.

50% programming test

50% Examination

Pre-requisites: Prior study of Fundamentals of Software Development

**CE00314-2 Further Programming Concepts in C++****Contact: David Hodgkiss****Room K217****Module Details**

This module is designed to build upon the basic object oriented programming paradigm covered during Level 1. It will make predominant use of the C++ programming language with strong supporting references to Java via exemplars.

The module will cover the following programming aspect: classes and objects; attributes; methods; constructors; constructors and destructors; single and multiple inheritance; overloading functions, methods and operators; polymorphism; memory management; abstract data types; templates (methods and classes); file input & output; data structure implementation and an introduction to MFCs (GUI) and threads.

50% Coursework

50% Examination

Pre-requisites: Prior study of Fundamentals of Software Development or equivalent.

**Module Leader's Comments: This module builds upon the experiences gained in the two level 1 modules CE00371-1 Introduction to Software Development and CE00312-1 Introduction to C Programming and explores the development of object oriented programming using C++. Whilst the main development environment used is Microsoft Visual Studio.NET, students are encouraged to use any suitable alternative if they wish. This is very much a "hands on" module where there will be plenty of opportunity to practise OO programming.**

**CE00463-2 OBJECT ORIENTED SYSTEMS DEVELOPMENT****Contact: John Stockwell****K350****Module Details**

Review of object orientated principles and the use of UML.

Structured method for development that is use-case driven, architecture centric, iterative and incremental.

3-tier architecture, namely, user interface, business model and datastore sequence/collaboration diagrams.

Principles of Class development such as allocation of operations to classes, documenting pre and post conditions for class operations, coupling, cohesion and re-use, inheritance versus aggregation and wrapping.

Correlation of different views of system with one other e.g. use case, class, state and sequence models.

Use of suitable CASE tool

Object persistence e.g. streaming or database.

Use of collection classes for multiplicity implementation.

Development of GUI interfaces - use of storyboarding.

Implementation of a working prototype system using object orientated principles.

An ASSIGNMENT weighted at 50%. An EXAM length 2 HOURS weighted at 50%.

Pre-requisites: Prior study of CE00308-1, Systems Analysis and Design and CE00371-1, Introduction to Software Development and CE00396-1, Object Oriented and Event Driven Programming or equivalent

## CE00377-2 Computer Graphics

Contact: Cathy French

Room K227

### Module Details

- review of object-oriented programming in Java, introduction to C++
- implementation of a graphical user interface, use of native drawing API, user interaction and event and exception handling in Java and/or C++
- data structures for scene description, including application of
  - association
  - inheritance and polymorphism
  - collections such as linked lists, vectors, maps and trees, for example using Java's collection classes
- programming two-dimensional transformations using matrices and homogeneous coordinates
- two-dimensional viewing pipeline: scene modelling, model, view and viewport transformations
- fundamental graphical algorithms such as those for line and circle drawing, clipping, scan conversion and polygon filling
- introduction to graphical APIs such as OpenGL, DirectX, Java2D and 3D

50% Examination

50% Assignment

Pre-requisites: Prior study of Introduction to C Programming or equivalent and Fundamentals of Software Development or equivalent.

### Module Leader's Comments:

**In this module you will learn about the programming principles, algorithms and mathematical operations used in the development of two-dimensional graphical applications. The assignment will involve you programming, in Java, an interactive application which manipulates and displays a 2D scene. The exam will test your knowledge of the underpinning mathematical and programming theory. You should take this module if you are interested in graphics and games programming, or in developing substantial object-oriented programs in general. The module does NOT cover the use of commercial graphical application software (such as Photoshop or Flash) or with artistic considerations.**

**CE62023-2 Probability and Statistical Modelling**

**Contact:** Dr Martin Paisley  
Dr Emily Raeburn

**Room K219/K320**  
**Room LC023 (Stoke Campus)**

**Module Details**

- Probability rules. Bayes' Theorem. Bayesian Belief Networks
- General properties of discrete and continuous probability distributions.
- Probability distributions (Binomial, Poisson, Normal, Exponential)
- Bivariate probability distributions.
- Decision making techniques.
- Summary measures of statistics (mean, standard deviation, and proportions).
- Central Limit Theorem, estimation, confidence intervals.
- Concepts of statistical testing - t-tests.
- Correlation and regression techniques.
- Introduction to time series analysis.
- Use of EXCEL to illustrate statistical techniques

50% Individual assignment

50% Examination

Pre-requisites: Prior study of CE61002-1 Mathematics and Statistics for Computing or CE61007-1 Quantitative Tools for Computing or BLB10000-1 Business and Accounting Skills or equivalent.



**CE00127-2 LAN Switching and WAN Networks**

**Contact:** Frank Dudek x3557 Room C336

**Module Details**

LAN switched networks and VLAN's

Routing and Routed protocols

Network Security

Wide Area Network

Network Management

20% report

50% written MCQ examination

30% practical test not in examination conditions

Pre-requisites: Prior study of CE00126-1 Introduction to Networking with LAN's and WAN's or equivalent.

Disqualifying combination: Other modules that cover preparation for stages 3 & 4 of the CISCO CCNA certificate.

**Module Leader's Comments: In this module you will learn about switched LANs and VLANs, routing and routed protocols, network security, wide area networks and network management. You should take this module if you wish to do Cisco CCCNA 3 and CCNA 4. You will need to have a sound basis in CE00126-1 Introduction to Networking with LANs and WANs or CE00357-2 Programmable Network Architectures to succeed at this module.**

**CE00343-2 Software Development for Mobile Computing Applications**

**Contact:** Khawar Hameed x3338 Room K225

**Module Details**

Strategies for software design and development for portable and small systems (Microsoft, PalmOS, Symbian, J2ME)

Thin client computing

Interaction of information systems with portable and wireless devices

Protocols for supporting portable applications and remote server access (WAP, SMPP)

Middleware and server side implementation

50% Coursework

50% Exam

Pre-requisites: Prior study of Fundamentals of Software Development or equivalent.

## CE00374-2 Graphical User Interfaces: Design and Implementation

**Contact:** Janet Lawton x3271 Room K246

### Module Details

Introduction to an suitable development environment  
Appropriate language for implementation of GUIs  
Principles of GUI design  
Graphical components of interface (eg. buttons, text fields, check boxes, etc)  
Use of colour and its relationship to the human visual system  
Screen structuring and layout  
Textual information presented in error messages, help systems and instructions  
Navigation and consistency  
Database access

100% Assignment

Pre-requisites: Prior study of a high level programming language necessary.

### Module leader's comments:

**You do not need to know VB.NET to take this module. Although it involves programming in VB, the language will be introduced in supplementary lectures. You should take this module if you want to develop graphical user interfaces and provide code to support them. The module is 100% coursework and previous assignments have included "The Wheel of Fortune", a crossword puzzle and a game to teach primary school basic maths.**

## CE00406-2 Dynamic Data Interchange

**Contact:** Euan Wilson K319

### Module Details

Principles of Extensible Mark-Up Language (XML) and structured data. Document Type Definitions (DTDs) and schemas. Entities and encodings. Well-formed and valid encoding. Namespaces.  
XML rendering using Cascading Style Sheets (CSS) and Extensible Style sheet Transformation Language(XSLT).  
XML and databases. XPath and XQuery..  
The Document Object Model (DOM) Simple API for XML (SAX)  
XML applications : - scalable vector graphics (SVG), extensible HTML (XHTML), resource description framework (RDF).  
XML messaging and the Simple Object Access Protocol (SOAP). Web services and the web services description language (WSDL).  
An ASSIGMT weighted at 100%.  
Pre-requisites: Prior study of CE00318-2 Database and Web Database systems or equivalent

## CE00405-2 Data Management

**Contact:** Euan Wilson K319

### Module Details

The module will focus on the following key data areas: -

Data Mining - topics to include (not exhaustive): concepts, techniques, related disciplines (e.g. OLAP etc.), classification, clustering, Web, spatial and temporal mining.

Data Warehousing - architecture, star schema, tuning, loading, etc.

Customer Relationship Management - overview of, ECRM, MCRM etc.

Decision support systems

Quality of Data

An overview of Logistics Applications

An EXAM length 2 HOURS weighted at 50%. A COURSEWORK length 3000 WORDS weighted at 50%.

Pre-requisites: None

## CE62025-2 Spreadsheet Modelling Techniques

**Contact:** Sarah Easton      x4279      Room LC023 (Stoke Campus)

### Module Details

This module will utilise some of the advanced spreadsheet functions and features available to aid modelling/analysis/decision making for quantity based problems. Those met will include amongst others: a range of functions to aid modelling, lookup functions for value selection, array formulae for criteria based analysis, customising worksheet interfaces, solver for problem optimisation, sensitivity analysis using scenarios and data tables, and pivot tables for cross tabulations.

Students will also be introduced to VBA macros together with some basic tools of programming enabling the automation of processes within a spreadsheet. Principles met will include: recording macros, editing macros, use of message boxes and input boxes to allow interaction with the user, if statements, for each and do loops, an introduction to forms, and the development of personalised functions.

50% Lab Based Test requiring the prior preparation of a spreadsheet model for use in the test.

50% Lab Based Test.

Pre-requisites: A basic knowledge of spreadsheets including experience of formulae formulation, charts and built in functions such as SUM, AVERAGE. Examples of modules developing these skills are:

CE61007-1 Quantitative Tools for Computing

CE00305-1 Using Computer Packages

CE61003-1 Essential Computing for EDLC

BLB10000-1 Business and Accounting Skills

Or equivalent.

**CE00386-2-2 Windows Game Programming****Contact: Claude Chibelushi x3802 K220****Module Details**

Introduction to Windows programming.  
APIs for programming Windows-based computer games.  
Algorithms and techniques for bitmapped and vector graphics under Windows: multiple buffering, sprites, scrolling, 2D or 3D isometric games.  
Input device programming: keyboard, mouse.  
Game audio programming.  
Windows game hardware platforms: general-purpose computer, game console.

50% ASSIGNMENT weighted at 50%  
50% EXAMINATION weighted at 50%

Pre-requisites: Prior study of Fundamentals of Software Development or equivalent.

**CE00306-2 Human Computer Interaction and Usability****Contact: Diane Bishton x3272 K229****Module Details**

Users - cognitive and major perceptual faculties - memory, vision, hearing  
Users - human factors/ergonomics, Health & Safety, stress  
Users - population & cultural difference, including disability, age related change, NVC  
Techniques - Task analysis, Usability Engineering & specification, Usability Analysis, Ethnography, contextual enquiry, Prototyping, Approaches for Evaluation  
Interaction Design - contextual design, design teams, International Standards, HCI principles, interaction modes and issues of dialogue design, feedback, error handling, use of metaphor etc.

ASSIGNMENT weighted at 50%. (Learning outcomes 2 and 3)  
EXAMINATION weighted at 50%. (Learning outcomes 1, 2 and 4 ), Duration 2 hours

Pre-requisites: None

## CE00130-2 Advanced Routing

**Contact:** FRANK DUDEK x3421 K224

### Module Details

Advanced Routing introduces students to scaling IP networks. Students learn to use VLSM, private addressing, and NAT optimise IP address utilisation. The majority of the course content is related to learning how to implement the RIPv2, EIGRP, OSPF, IS-IS, and BGP routing protocols. In addition, the course details the important techniques used for route filtering and route redistribution.

Upon completion of this module, students will have performed tasks related to:

Internetwork scalability

Advanced IP addressing techniques

Routing protocol operation, configuration, and troubleshooting

RIPv2, EIGRP, OSPF, IS-IS, BGP

Route optimisation

An EXAM length 2 HOURS weighted at 50%. A PRACT EXAM length 2 HOURS weighted at 50%.

A written MCQ examination, length 2 hours weighted at 50% (Learning outcomes 1 and 5).

A practical exam, length 2 hours not in examination conditions weighted at 50% (Learning outcomes 2, 3 and 4).

**Pre-requisites:** To have completed level 1 module Introduction to Networking with LANs and WANs

**Co-requisite:** - To be enrolled on level 2 module LAN Switching and WAN Networks

## CE00100-2 Remote Access Networks

**Contact:** FRANK DUDEK K224

Remote Access: WAN connection types

Modem Functions: Digital to analogue conversion, modem signalling and cabling, Communication Termination

PPP architecture: Functional components, PAP and CHAP authentication

ISDN Architecture: ISDN versus asynchronous, ISDN services and channelised E1 and T1, BRI call processing

Static and Default Routing: Use and configuration of static and default routes

Frame Relay

Queuing

Network Address Translation: Configuring NAT static and dynamic, Inside global address overloading

Access-Control Solution: Security solutions, Understanding AAA, configuring AAA

Broadband Access Technologies: xDSL, Cable modems, DOCSIS

An EXAM length 2 HOURS weighted at 50%. A PRACT EXAM length 2 HOURS weighted at 50%.

A written MCQ examination, length 2 hours weighted at 50% which will assess learning outcomes 1, 2, 3 and 6.

A practical exam, length 2 hours not in examination conditions weighted at 50% which will assess learning outcomes 4 and 5.

**Pre-requisites:** To be enrolled on level 2 module LAN Switching and WAN Networks  
Prior study of Level 1 Introduction to Networking with LANs and WANs.

## CE00379-2 IT Systems for Business

**Contact:** Euan Wilson K319

### Module Details

Types of Information Systems

Organisation Structures

The significance of IS in the operational , tactical and strategic levels of business.

Information Systems Management

Strategic Information Systems for Competitive Advantage

Communication and Collaboration

Information Strategy and IT Planning

Organisational Transformation

Accounting for IT

Managing System Security

Risk and Disaster Recovery

E-Commerce

Customer Relationship Management.

An EXAM length 2 HOURS weighted at 50%. A COURSEWORK weighted at 50%.

Exam 50% (2 hours) which will assess Learning Outcome 1 and 3.

Coursework portfolio 50% which will assess Learning Outcome 2.

**Pre-Requisites: None**

## CE00409-2 PRACTICAL SYSTEMS MANAGEMENT

**Contact:** Chris Howard K213

### Module Details

The ability to appreciate and analyse break-even analysis, profit & loss accounts and balance sheets, and to be able to calculate the total cost of a given project from inception to completion, including procurement.

Business needs analysis - user requirements elicitation to ascertain full needs of the user/company in order to produce a requirements documentation, mapping the relevant business processes.

Risk management for the entire project, financial, resource - physical and non-physical

Time/project management to include management of teams, resources and budgets.

Contractual arrangement, staff and customer, penalty clauses.

A REPORT weighted at 50%. An EXAM length 2 HOURS weighted at 50%.

A report weighted at 50%. An exam length 2 hours weighted at 50%.

A report in the form of a case study. (Learning outcomes 1, 3)

An written examination in the form of a short answer paper. (learning outcomes 1, 2)

Prerequisites: none

## CE00399-2 BIOMETRICS 1

**Contact:** Dave Hodgkiss K217

### **Module Details**

Bio-engineering, HCI issues, Hardware interaction / interfacing, pattern recognition, Further Digital Signal Processing, Implementation issues, Metrics and Taxonomy - fingerprints, face, iris, retina, hand, voice, keyboard dynamics etc.

An ASSIGMT weighted at 100%.

Assignment: 100% (Learning outcomes 1, 2 and 3)

Assignment is a combination of written report covering aspects of biometric orientated installations together with the development of a system that utilises biometric hardware and software.

Prior study of CE00312-1, Introduction to C Programming or equivalent

## CE00526-1 Concurrent Programming in C#

**Contact:** Fred Pratt

### **Module Details**

Overview - .NET framework, FCL structure, CLR, CIL, namespaces

Programming Concepts - Parameter passing modes, C# classes, modifiers, lightweight classes, enumerated types, get and set properties, generics

Concurrency technology - C# threads, delegates, events, event handlers.

Synchronisation primitives: mutex, monitor, send/receive mechanisms.

Graphics technology - C# Forms, Visual Studio. GDI+

Concurrency concepts - Concurrency types. Round Robin Scheduler. Priority.

Processes v Threads. Synchronisation. Asynchronicity. Mutual exclusion.

Indivisibility. Advantages of concurrency. Standard safety issues, liveness, starvation, race-condition. Classical problems e.g. SEmaphore, Producer /

Consumer. Thread-safe concurrent GUIs

A COURSEWORK weighted at 100%.

Pre-requisites: Prior study of CE00312-1 Introduction to C Programming or equivalent