SCHOOL OF SCIENCE AND TECHNOLOGY

MSC IN INFORMATION TECHNOLOGY WITH INTERNET APPLICATIONS &
POSTGRADUATE CERTIFICATE IN MULTIMEDIA AND INTERNET TECHNOLOGY

MT834 Web Server Technology (10 credits; 2 semesters)

Course Coordinator: Dr T. S. Li (email: tsl@ouhk.edu.hk)

This 10-credit optional course is one of eight courses in the MSCIT programme. This course teaches students the underlying principles and technologies of the Web and its future directions.

MT834 Web Server Technology aims to provide students with a sound foundation of knowledge in World Wide Web technologies. It also aims to enable students to choose and evaluate the methods and options available for designing Web applications and services, to setup and maintain Web services, and to write computer programs for use in Web services.

There are at least the following ten major modules:

- Components of the Internet
- Internal Structure of the Web Server
- Scripts and Forms
- Web robots, indices, and search engines
- Databases and State Management Mechanisms
- Web Service Performance
- Web Caching and Document Distribution
- Evolution of HTML and Interactive Web Services
- Security and the Web
- E-commerce and Cryptography

You will need to have access to a PC with Linux, a printer, and the Internet.

There are four tutor-marked assignments (TMAs) spread throughout the course. Tutors will be required to grade and comment extensively on TMAs. Each tutor is expected to conduct about nine tutorials and one revision session before the examination. Surgeries will also be held on one evening every two to three weeks when one tutor at a time will be on duty. It is a requirement that tutors are available to attend these tutorials on either Sunday or Saturday afternoon. In addition, they need to allocate a number of hours a week to give advice and help to their own group of students on the problems about the course. The questions can come in through regular phone calls, email messages, or the course OLE.

Usually one or two weeks before the cut-off dates of TMAs an increase in the number of queries or questions can be expected.

Applicants must have an advanced degree in Computer Science or a related subject such as Information Technology, Computing, Software Engineering, Information Engineering, etc. Experience in teaching or distance teaching would be an advantage but is not a requirement. Preference will be given to those who has teaching or working experience in web sites, streaming and encryption technologies.

MSC IN INFORMATION TECHNOLOGY WITH INTERNET APPLICATIONS

MT858 Advanced Database Systems (10 credit; 2 semesters)

Course coordinator: Mr C C Chan (Tel: 2768 6820; email: cchan@ouhk.edu.hk)

This is a postgraduate course in information technology. The course aims to acquaint student with database technology (its principles, benefits, techniques and practical application).

The course first begins by describing database systems, relational database model and the use of SQL language. The second part of the course considers the developments in database technology that are likely to affect the construction and use of database systems.

The content of MT858 includes:

- Database technology
- The Relational Model
- Using SQL
- SQL Database Management
Distributed databases
Data warehousing
Data Mining
Object-relational and multimedia databases.

There are four tutor-marked assignments (TMAs) assessing the students' progress during the course. Tutors will be required to mark and comment extensively on TMAs and may be appointed as script markers during the final examination. Each tutor is expected to conduct nine tutorials and some surgeries throughout the course. It is a requirement that tutors are available to attend these tutorials and surgeries (on Weekday evening or Saturday afternoon or Sunday). In addition they need to allocate a number of hours a week to give advice and help to their own group of students on the problems about the course which are raised by phone-in queries. Usually the number of telephone queries and questions are expected to increase as the cut-off dates of TMAs approach.

Applicants must possess an honours degree and a higher degree in Electronic, Computing, Information Technology or a related discipline.

**COMPUTING PROGRAMMES**

**MT201 Computing Fundamentals with Java (10 credits; 2 semesters)**

**Course Coordinator:** Mr Kelvin Lee (Tel: 2768 6815)

This is a middle level course which introduces the basic elements of computer science with emphasis on object-oriented programming in Java.

The aims of the course are
- *Provide* students with a sound foundation in software development and deployment models.
- *Provide* students with a sound foundation in Object Oriented Programming.
- *Enable* students to analyse problems and produce software designs to handle these problems using object oriented programming methodology.
- *Develop* students’ knowledge and understanding of the fundamental concepts in developing Java programs.

The content include
- Computer Concepts and Skills
- Problem Solving through Objects
- Java Programming
- Classes and Objects
- Control Structures
- Arrays
- Advanced Control Structures
- More on Classes
- Basic Input/Output
- Graphical User Interface
- Data Structures

A total of four tutor-marked assignments (TMAs) are given throughout the course. Tutors will be required to mark and comment *extensively* on TMAs. Each tutor is expected to conduct about ten tutorials for his/her group as well as some surgery sessions for answering questions from students. It is a requirement that tutors are available to attend these tutorials on either Saturday afternoon or Sunday. In addition, they need to allocate a number of hours a week to give advice and help to their own group of students on the problems about the course which are raised by email or phone-in queries. Usually the number of queries and questions are expected to increase as the cut-off dates of TMAs approach.

It is expected that a tutor can have access to a Pentium-grade computer with MS Windows 95/98 and Word. A modem is also needed but dial-up access to the Internet will be provided by OUHK. Answering questions from students through other electronic means such as discussion group are also required.

Applicants must possess an honours degree in Computer Science or a related discipline, or have passed Part I and Part II examinations of the British Computer Society or equivalent. Programming experience in an object-oriented language, preferably Java, is required. Teaching experience will be an advantage, but it is not a requirement.

**MT269 Commercial Information Systems and Programming (10 credits; 2 semesters)**

**Course Coordinator:** Dr Rocky Y K Fan (Tel: 2768 6811)
MT269 is the only course in Applied Computing Programme that is directly related to Commercial Application Programming. This course is intended to teach COBOL and related techniques to implement commercial information processing systems. COBOL would take up about 50% of the course content, other techniques and concepts like Analysis & Logical Design and 4GL 25% and the rest 25%.

The aims of the course are to equip students with (1) the concepts and techniques of commercial data processing, (2) advanced COBOL programming skills to develop and maintain commercial system applications, and to appreciate the strengths and weaknesses of alternative implementation technologies.

There are five tutor-marked assignments (TMAs) spread throughout the course. Tutors will be required to grade and comment extensively on TMAs. Each tutor is expected to conduct about nine tutorials and one revision session during weekends. Surgeries will also be held in a weekday evening per fortnight when one or two tutors at a time will be on duty. In addition, they need to allocate 4 to 6 hours a week to give advice and help to their own group of students through phone-in queries.

Tutors must possess an honours degree in Computer Science or a related discipline. Knowledge of information systems and COBOL is required. Relevant working experience would be an advantage but it is not a requirement.

U101 Introduction to Information and Communications Technology (10 credits; 2 semesters)

Course Coordinator: Dr Vanessa S. C. Ng (Tel: 2768 6814)

The course provides an historical perspective of the nature and impact of the continuously accelerating change occurring in all the technologies surrounding modern computing, and in particular the convergence of computing, microelectronics and communication technologies which has brought such an explosion in our capacity for data processing and transmission. It will show at the same time just how simple the underlying physical and logical mechanisms are, and yet how complex the process of transforming a real-life problem into a computer based solution can be. This 10-credit foundation level course will be delivered in the distance education mode via printed materials and the Internet.

Topics include:
- the nature of data, basic encoding systems, integration of multimedia data;
- transmission, storage and access of data;
- integration of multimedia data on a web page accomplished using HTML and XML
- the basic composition of a simple computing system;
- programs and programming using JavaScript;
- basic concepts of databases;
- presentation of information;
- confidentiality and security issues in information;
- the methods for encrypting data, cryptography standards;

You will need to have access to a PC with Windows 98 or above and Internet access. Dialup service will be provided by the university.

There are about four tutor-marked assignments (TMAs) throughout the course. Tutors will be required to grade and comment extensively on TMAs. Each tutor is expected to conduct about 10 tutorials. Surgeries will also be held on one evening every two to three weeks. Depending on the size of the class, one or two tutors will be responsible to facilitate a surgery session. The tutorials will be held on Saturday afternoon or Sunday while surgeries will be held on a week day’s evening.

Online support of the course is available through the Online Learning Environment (OLE). You should participate actively in the discussion over there. You have to allocate about six hours per week to answer queries from students either by phone or in the OLE. Applicants must have an honours degree in Computer Science or related subjects with programming experience in Javascript, HTML and XML. Experience in teaching computing related subjects would be an advantage.

ELECTRONICS AND COMMUNICATIONS TECHNOLOGY PROGRAMMES

CT212 Network Programming and Design (10 credits; 2 semesters)

Course Coordinator: Dr. Philip Tsang (Tel: 2768 6837)
http://comtech.ouhk.edu.hk

CT212 is one of the intermediate level courses on computer networking within the Bachelor of Science in Communications Technology degree. The course is self-contained and assumes no specific knowledge of computer networking concepts and network programming techniques. However, students are expected to have a basic knowledge on computer operations and programming.
The overall aims of this course are to introduce students to networking concepts and network programming techniques. Topics related to the Internet, including its underlying mechanisms, the services available and programming for it, are also discussed. Theoretical concepts and practical techniques are integrated with the practical analysis of case study design and programming problems.

The bottom-up approach is taken in structuring the course. Students start from the basic building blocks of a computer network and how these individual units are integrated to construct a complete network. This is includes how networks can be interconnected and how communications are made across networks. Following these underlying principles, students proceed to the programming techniques for making use of network resources and finally end with the Internet related concepts.

The topics include:
- Network Basics and Internetwork Architecture
- Local Area Network Operating System
- Network Protocols for the Internet
- Introduction of Unix Environment
- C Programming in the UNIX Environment
- Internet Application Programming
- Interprocess Communication
- Socket Programming
- Network Security
- Network Planning, Implementation and Management

Course materials include textbooks, course readings, and Internet based materials. To ensure that students have the opportunity to develop their design and programming techniques, each unit will include a case study activity which integrates the various topics and techniques covered in each unit. These may be network design and development case study activities or where students are required to develop programs for a particular case study scenario. Where appropriate, the activities may include Internet based elements.

A total of 5 tutor-marked assignments (TMAs) are given throughout the course. Tutors will be required to mark and comment extensively on TMAs. Each tutor is expected to conduct about 10 two-hour tutorials for his/her group as well as some surgery sessions for answering questions from students. It is a requirement that tutors are available to attend these tutorials on either Saturday afternoon or Sunday. In addition, they need to allocate a number of hours a week to give advice and help their own group of students on the problems about the course which are raised by phone-in queries or e-mails. Usually the number of queries and questions are expected to increase as the cut-off dates of TMAs approach.

Applicants must possess an honours degree in Computer Science, Computer Studies, Communication Engineering or related fields. Teaching experience will be an advantage, but it is not a requirement. Preference will be given to those who are well versed in Unix, C and Network programming & design, and those with Internet access. Membership of professional and learned societies such as HKIE, HKCS, IEEE, IEE, ACM, will be a distinct advantage.

CT312 Networking and Switching Technology (10 credits; 2 semesters)

Course Coordinator: Dr H. K. Lau (Tel: 2768 6845; e-mail: hklau@ouhk.edu.hk)

CT312 is one of the compulsory courses of the BSc (Hons) in the Communications Technology programme; BSc(Hons) in the Applied Computing programme; and BSc/BSc (Hons) in the Computing and Networking programme. It is also an elective course for the BSc/BSc (Hons) in Computer Engineering programme, the BSc (Hons) in Communication Technology with Management programme and the BSc in Communication Technology programme.

Although there is no compulsory prerequisite, learners are advised to have basic knowledge in communication technology or have completed CT211 Fundamentals of Communications Technology before enrolling in this course.

Aims
This course aims to introduce the basic principles and practices of networking and switching technology, including layered network architecture, various networking protocols, and modern switch design, used to achieve high-speed multimedia networking.

Content
This course covers the following topics:
- Introduction to network architecture
- Transmission and physical layer aspects
- Principles of communications protocols and the data link layer
- Network services and protocols
- Transport and application oriented layers
- High-speed networking
- Network control
- Network security and cryptography
- Switching fundamentals
• Switching architectures and designs
• Performance evaluation of packet switches and advanced switch design

Tutorials
There will be regular structured tutorials. Furthermore, this course is supported by the Online Learning Environment (OLE). Latest course information can be found from the OLE. Through the OLE, learners can communicate electronically with tutors and the Course Coordinator as well as other learners. To access the OLE, learners and tutors will need to have access to the Internet.

Assessment
There are five tutor-marked assignments and a final examination. Tutors will be required to mark and comment extensively on TMAs. Each tutor is expected to conduct about 10 two-hour tutorials (face-to-face) for his/her group as well as some surgery sessions (face-to-face and/or on-line chat) for answering questions from the students. It is a requirement that tutors are available to attend these tutorials on either Saturday or Sunday. In addition, they need to allocate a number of hours a week to give advice and help their own group of students on the problems about the course which are raised by phone-in queries, e-mails or OLE discussion boards. Usually the number of queries and questions are expected to increase as the cut-off dates of assignments approach.

Equipment
A computer system suitable for connecting to the Internet is essential. The minimum configuration of the computer system is:
• Pentium 100 MHz CPU
• Microsoft Windows 98
• VGA display card and monitor
• 32 MB RAM
• 300 MB free space hard disk
• CD-ROM drive (2X or better) and sound card
• 28.8 kbps modem
• Mouse and printer

Internet access
Internet access (from any Internet Service Provider) is required for this course.

Applicants should have at least an honours degree or equivalent in Computer Engineering, Computer Science, Electronic Engineering, Information Engineering or related discipline. A higher degree and professional membership are preferred. Tertiary teaching or related industrial experience would be an advantage.

CT313 Emerging Technologies (10 credits; 2 semesters)

Course Coordinator: Dr Philip Tsang  (Tel: 2768 6837; e-mail: ptsang@ouhk.edu.hk)

This innovative course will be delivered in a mixture of face-to-face meetings, workshops, site visits and learner centred self learning materials (including CDs).

This course aims to introduce advanced technologies in communications and related management. Topics to be covered include: Access Technologies, Broadband Network, Component-Level Technologies, Digital Subscriber Line (DSL), Gigabit LANs, Virtual Private Network, Intelligent Network, Second Generation Internet Technology, IPV6, Computer Telephony, Wireless Interactive Multimedia, Streaming and Compression Technology, Privacy and Network Security, Smart card, Network Management, Viruses, E-commerce, M-commerce, and industrial case studies.

For further information, please contact Dr. Philip Tsang, ptsang@ouhk.edu.hk.

The applicant should possess:
• ability to communicate effectively in written English
• prior IT teaching/training experience
• a post-graduate degree in Communications Technology/related discipline or equivalent industry experiences.

Applicants must possess a good honours degree in either of the following disciplines: Computer Science, Telecommunications, Applied Computing/Engineering or related disciplines, with two or more years’ tertiary teaching experience or experience in relevant industry. Membership of professional and learned societies such as HKIE, HKCS, IEEE etc. will be desirable.

CT401 Communications Technology Project (20 credits; 2 semesters)
Course Coordinator: Dr Philip Tsang (Tel: 2768 6837)

Students should have successfully completed at least 140 credits from the OUHK Communications Technology Programme before they undertake this course. This course is a compulsory course for all the Honours students of Communications Technology Programme.

This course will expose you to situations that you will face in your employment. It requires planning, researching and putting ideas into practice in the search for solutions. You will work under the supervision of a tutor who will guide you throughout your project work.

**Aim**
The overall aims of the course are to:
- enable you to define a set of objectives and appropriate methodologies
- provide an opportunity for you to apply and put into practice what you have learned from
- other communications courses
- help you develop skills in planning, managing and scheduling various tasks required to solve a number of problems
- enable you to fully develop and use your knowledge and skills in the communications
- technology profession
- teach you how to present a well-structured, written account of the techniques, methods and
- findings from an independent study.

**Content**
The course has no conventional course materials. Some reading of current technical materials available in journals and reference books may be required. This course will enable students to reveal problems in this area that are yet to be tackled and understand the directions scholars are taking to find solutions.

The project has a practical aim and is conducted at an advanced undergraduate level. Individual projects can be any of the following: (a) projects based on expertise in one particular area from among CT311, CT312, CT313 or (b) projects initiated by a course team or by students' work-related projects with company endorsement.

**Tutorials**
In additional to the online support, face-to-face tutorials will be held regularly throughout the course. Activities will involve discussion, guidance and advice-giving sessions for individual projects.

**Assessment**
Three reports are required for submission: (i) Initial Report (TMA 01)--the project proposal, its background and the project plan in about 1,500 words (ii) Interim Report (TMA 02)--outlining progress made, the method of investigation and a brief outline of the final report in about 2,000 words, plus an oral presentation of the interim report (iii) Final Report (TMA 03) in about 7,500-8,500 words--full details of the project results, conclusions and importance of these conclusions. There may be an oral examination at the end, if required.

**Laboratory classes**
Many advanced communications and computer facilities are available for project use. For example, wireless LAN, satellite signal transmission and receiving hardware, multimedia and virtual reality development tools, mobile and network simulation software. Industrial collaboration project opportunities are also available. If your project is done at home, you will need access to an IBM compatible computer with the following minimum configurations: Pentium III, 64 MB RAM and a 56 kbps modem (broadband preferred)

Applicants must possess a good honours degree in either of the following disciplines: Computer Science, Telecommunications, Applied Computing/Engineering or related disciplines, with two or more years’ tertiary teaching experience or experience in relevant industry. Membership of professional and learned societies such as HKIE, HKCS, IEEE etc. will be desirable.

T222 Electronics Principles and Digital Design

Course Coordinator: Dr Wilson Hon-Wai CHU (Tel: 2768 6817)

This course is intended to give a basic understanding of electronic principles, circuits and systems, and to develop the fundamental theory and practical skills required to carry out engineering analysis and design. It provides essential background knowledge for higher level courses in electronics and related disciplines. It is also suitable for students of other disciplines who require a good working knowledge of electronics. However, the treatment is not superficial, and a good mathematical and scientific background is necessary.

The central theme of the course is the analysis and design of digital circuits. The course includes: nodal analysis; Thevenin and Norton equivalent circuits; transistors and the design of integrated circuits; principles of digital electronics, including combinational and sequential logic circuits; analogue-digital conversion; and digital circuits.

Practical skills in electronics are developed in short laboratory sessions held in our own laboratories at Homantin and one-day Sunday Long Lab held in our own laboratory.
This course uses a computer-aided design package to help with circuit design. Both students and tutors are required to have access to an IBM PC or compatible computer to run this CAD software.

Tutors will be required to grade and comment extensively on 5 written assignments submitted by the students. Tutors are required to attend regular two-hour tutorials, surgery sessions, as well as the laboratories.

Applicants are expected to have an honours degree in Electronics. Experience of teaching Electronics at tertiary level would be a distinct advantage, but is not essential.

**T223 Microprocessor-based Computers (10 credits; 2 semesters)**

**Course Coordinator:** Dr Paul C K Kwok (Tel: 2768 6804)

T223 is designed as an introduction to the technical aspects and applications of microprocessor-based computers. It aims at providing an understanding of the principles of operation and organisation of a small computer. The hardware and software subsystems of microprocessor-based computers are explained and interaction between them is discussed at length. Practical training on the main types of software available for controlling and exploiting the hardware of microprocessor-based computers is provided. Some of the topic areas that are at the centre of current development activities in the field of microprocessor-based computers are discussed.

The course contents are:

- **Major components:** computer systems, hardware components, software components.
- **Program development:** introduction to programming languages, the basic structure of a C program, C variables and keywords, C operators, functions, C constructs, arrays and strings in C, other high level languages.
- **Heart of the computer:** the representation and storage of data in main memory, logic operations and processing, the division subroutine, the fetch-execute sequence, bitwise operators and pointers in C, uses for low-level programming, assembly language, combining object modules.
- **Data transfers:** requirements for data transfer, techniques of data transfer, operating system support for data transfer.
- **Microcontrollers and applications:** introduction, computers on a chip, case study: the TMS board, microcontrollers in mass-produced products, case study: a central-heating controller, case study: a washing-machine controller.
- **Extending the horizons:** introduction, portability and compatibility, developments in microprocessors, software development, computer communications.

Tutors will be required to mark 4 written assignments submitted by each student over a period of a year. Each tutor will take about 13 tutorials and 2 surgeries each 2-hour long.

Applicants must possess at least a good honours degree in a computer-related discipline with two or more years' tertiary level teaching experience or experience in relevant industry.

**T334 Signal Processing and Multimedia Technology (10 credits; 2 semesters)**

**Course Coordinator:** Dr H. K. Lau (Tel: 2768 6845; e-mail: hklau@ouhk.edu.hk)

The course is divided into two parts: theory and practices. The first half of the course is on digital signal processing. The latter half is on multimedia which includes audio, image, and video technologies, and compression methods. Towards the end, the method of deployment of multimedia in the Internet is explored. The content is as follows:

**Signal Processing:** Discrete-time signals and systems; Design and Implementation of digital filters; Discrete Fourier transform and fast algorithms.

**Compression:** Data compression; audio and speech compression; image and video compression methods and algorithms.

**Multimedia:** Audio processing; image processing; Internet multimedia.

The course makes use of Matlab as a tool to analyse and synthesize signal processing algorithms. In addition, there will be other visualization and animation tools which will be used to enable students to easily understand the underlying concepts.

**TMAs:**
There will be 5 Tutor-Marked Assignments (TMAs).

**Tutorials:**
There will be 10 tutorials and 10 surgeries, two hours each. Tutorials will be held on weekend and surgeries on the weekday after office hours.
Experience:
Applicants must possess at least a good Honours degree in Electronic, Communication, Information, or Computer Engineering or related discipline and should have sufficient academic or industrial experience in the subject matter.

**TE401 Electronics Project Course (10 credits; 2 semesters)**

Course Coordinator: Dr Paul C K Kwok (Tel: 2768 6804)

The course TE401 is an Honours level project course. It is aimed at providing an opportunity to students to integrate the knowledge gained from the study of their courses to work independently and competitively on a scientific project. A typical project may require students to collect, analyse and evaluate appropriate material relevant to their project in order to enhance their understanding and awareness of the issues and problems related to the project and generate new ideas and provide solutions. Students will also learn how to organize their work strategies and time schedule to achieve the specified goals of a project, and produce a lucid and concise report about their achievements.

This would also help build students' confidence and give them the knack for methodically tackling scientific, technical and business problems they would encounter in their practical and professional life.

There will be 15 two-hour tutorials appropriately spaced to maximize the tutor-student interaction. The tutorials will be held at the OUHK campus at Ho Man Tin, where the project lab is situated, so that tutors can help their students on the spot, when necessary. Activities at tutorials would involve constructive discussions with students about their individual projects, providing technical guidance during the progress of the projects, and advice about writing reports on the projects.

There will be three TMAs, otherwise known as:

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial report</td>
<td>about 2,000 words in the 8th week</td>
</tr>
<tr>
<td>Interim report</td>
<td>approximately 3,000 to 3,500 words in the 20th week</td>
</tr>
<tr>
<td>Final report</td>
<td>about 10,000 to 15,000 words in the 40th week</td>
</tr>
</tbody>
</table>

The tutor is supposed to provide guidance in writing these reports, and then vet the reports for their technical contents, clarity and proper organization of the constituents.

The tutor must be able to suggest at least six viable project topics for the six students whom he/she would supervise independently. The tutor should be well versed in his/her own suggested topics and take charge of the successful completion of the projects. The projects may be related to or independent of one another, but must bear some differences to prevent the students copying from one another. The tutor will monitor the project, and provide ongoing support in terms of resolving technical difficulties, if any, and providing guidance for report-writing and vetting of reports.

The tutor should possess a Master's or PhD degree in one of the following or a related field of study: Electronic Engineering, Applied Computing, Computer Science, Information Technology, Information Engineering. Sufficient research experience gained at a university or in industry and the ability to supervise Honours level projects is required. Corporate membership of professional and learned societies such as HKIE, IEE, UK Engineering Council etc. would be desirable.

**U123 Introduction to the Internet (10 credits; 2 semesters)**

http://learn.ouhk.edu.hk/~u123

Course Coordinator: Dr Mike Robertshaw (Tel: 2768 6802; email: u123@learn.ouhk.edu.hk)

U123 is an introduction to the world of the Internet in its many forms. The course is meant for students from any discipline and for students new to the OUHK - hence the ‘U’ for Universal.

The aim of the course is to expose students to a number of Internet-based activities:

- email communication
- discussion groups
- chat
- Web surfing
- basic Web publishing
and to develop related skills. The course will discuss the factors involved in selecting a computer system and software as well as an Internet Service Provider. The social issues arising from the growing importance of the Internet in the world today will form an important element of the course. The expectations with regards to Web publishing are very conservative with students required to prepare only a text-rich page enhanced with colour and static images. Students are expected to be active participants in the Internet activities under the management of tutors and co-ordinator. It is assumed that all students will start the course with basic computing skills, e.g. use of Windows.

In addition to the wonders of the Internet this course offers a stimulating challenge to both students and tutors through the use of the Internet for teaching and learning. Students and tutors will be expected to:

- engage in 1-1 communication through email;
- 'attend' electronic tutorials managed by the tutor;
- engage in off-line discussions on the social issues via a bulletin board;
- handle assignments electronically.

There is a recommended minimum computer configuration for students:

- IBM compatible 486 PC
- 8MB RAM
- 40 MB free hard disk space
- 3.5" (1.44MB) floppy disk drive
- 14" VGA monitor
- 14400 mps modem
- mouse
- Windows 95 or 98

However, a tutor would be expected to have a more powerful system capable, for example, of enabling the tutor to comment on student scripts electronically. The OUHK will provide tutors with accounts for accessing the electronic support services and the Web itself. The main Internet software package to be used in the course is Internet Explorer 6.

In addition to the electronic support services tutors will be expected to participate in face-to-face tutorials, which are expected to be held during the week or at weekends. There will be six assignments during the course, all of which are to be submitted and processed electronically by the tutor and the University. Whilst tutors will be expected to respond to student telephone calls, students will be encouraged to make use of email as a replacement.

We are looking for tutors who have an honours degree. The subject of the degree is not restricted; however, a tutor is expected to be

- Internet enthusiast
- Experienced user of email, chat, newsgroups and listservs
- Experienced Web surfer including the location of specific information
- Capable of producing a Web page

Teachers interested in investigating how the Internet can be used in education are particularly sought, although teaching experience itself is not a requirement for tutors.

In addition to the application form you must prepare a Web page (without frames) describing your experience on the Internet. If you have access to an ISP or server, then you can include the address of your page on your application form. If you are not able to display your page on the Web, then you can submit it on a disk (unfortunately the disk will not be returned).

ENGINEERING MECHANICS, MATERIALS AND DESIGN PROGRAMME

T264 Design: Principles & Practice (10 credits; 2 semesters)

Course Coordinator: Mr C C Chan (Tel: 2768 6820)

T264 is a middle level course for degree programmes in EMMD, PD&T, Electronics and Dip in Materials and Design Engineering.

This course has the following aims:

- to develop your design awareness by providing an understanding of how decisions are made about the design of artefacts, the influences that contribute to these decisions and the nature of the design process, leading to a fostering of analytical and critical judgments about designed projects.
- to develop your understanding of design principles of analysis, evaluation, creation and configuration that are applicable across a variety of professional practices, such as engineering, product design and architecture.
- to develop your design skills by giving examples, instruction and experience in the use of a variety of basic techniques of designing, e.g. drawing, modelling and creative thinking.
The course content is divided into several areas of studies:

- **Introduction to Design** - This highlights the awareness, principles and skills of design with the help of examples of a wide variety of chairs.
- **Product Planning and Design** - This focuses on the problem exploration, product planning/briefing phase using a wide variety of consumer products and domestic appliances as examples.
- **Creativity and Conceptual Design** - This focuses on the creative aspects of designing throughout the design process, particularly in the inventive and early conceptual phase of design.
- **Geometry and Configuration in Design** - Emphasis is given to those activities in the design process which are concerned with devising, manipulating and specifying the geometrical forms of designed objects.
- **Product Development and Manufacture** - This deals with the later process of design, the phases that move on from concept and embodiment to specific details, taking into account major practical considerations such as material choice, material processing, manufacture, assembly and testing.
- **Review of Design** - This deals with a range of factors which have an impact on design eg changes in product market, development of new materials, sophistication in the use of computers and fundamental changes in economic and social conditions.

Guided design exercises are used throughout the course.

There will be 9 tutorials of 2 hours duration and 10 surgeries of 2 hours duration. Each tutor will be expected to handle 9 tutorials and 3-5 surgeries in the whole session of the course.

There are 5 Tutor-Marked Assignments (TMAs) to be marked by tutors. Tutors will also have to comment extensively on 5 TMAs. Though marking guides will be provided tutors will be required to familiarize themselves fully with all the course components in order to be able to guide the students through their written comments.

Applicants are expected to have an honours Degree in Mechanical or Manufacturing Engineering or a related discipline and at least two years industrial or teaching experience preferably in the design area.

**T395 Mechatronics (10 credits; 2 semesters)**

**Course Coordinator: Mr C C Chan (Tel: 2768 6820)**

T395 is a higher level optional course for the degree programmes in Electronics, Applied Computing, Product Design & Technology, and Engineering Mechanics, Materials and Design.

This course aims to introduce an integrated interdisciplinary knowledge of mechatronics and to develop skills needed to participate in the specification and conceptual design of intelligent machines.

The course concentrates on the architecture, desired behaviour and performance of intelligent machines rather than on technological details. The emphasis is on principles and methods applicable to configuring mechatronic systems and sub-systems.

The content of T395 includes:

- The concept of 'intelligent machine'. Economic and other reasons for developing intelligent machines. Aspects of intelligent behaviour. A framework based on concepts of perception, cognition and execution within which intelligent machines can be analysed and designed.
- Perception as a machine's capability to collect and use information about its environment and its own behaviour.
- Cognition as a machine's capability to interpret models constructed by its perception subsystem with a view to planning its behaviour. Reasoning in conditions of certainty and uncertainty.
- Execution as capability of acting on instructions. The concept of a deterministic control system. Fundamentals of feedback, stability and hierarchical control.
- The use of artificial intelligence (AI) in the design of machines in order to add value to their performance.
- Pattern recognition systems.
- Reasoning.
- Acquiring explicit knowledge.
- Knowledge-based systems & Neural networks.
- Intelligent planning; intelligent control.
- Algorithmic and AI approaches to computer vision and self-diagnosing.

There are four tutor-marked assignments (TMAs) and four formative computer-marked assignments (CMAs) assessing the students' progress during the course. Tutors will be required to mark and comment extensively on TMAs and may be appointed as script markers during the final examination. Each tutor is expected to conduct nine tutorials, four or five day-long laboratories and six surgeries throughout the course. It is a requirement that tutors are available to attend these tutorials, surgeries (on Weekday evening or Saturday afternoon) and day-long laboratories (on Sunday). In addition they need to allocate a number of hours a week to give advice and help to their own group of students on the problems about the course which are raised by phone-in queries. Usually the number of telephone queries and questions are expected to increase as the cut-off dates of TMAs approach.
Candidates must possess an honours degree (preferably a higher degree) in Mechatronics, Electrical, Electronic, or Mechanical Engineering or a relevant discipline. They should also be familiar with control engineering systems and be able to guide students in the experimental work related to the design of intelligent machines.

**TEM401 EMMD Project Course (20 credits; 2 semesters)**

Course Coordinator: Dr Jimmy Chan (Tel: 2768 6821)

This course requires that students should have completed 140 credits from OUHK EMMD programme. This course is a compulsory course for all BSc (Hons) EMMD students. The students will work under the supervision of a Tutor who will guide them throughout their project work. The student may be advised to pursue a specified course of study before starting a TEM401 project if it is considered that he is inadequately prepared to embark on the proposed project topic to the depth and breadth consistent with an honours-level project.

This course offers the students an opportunity to carry out a supervised project in any area or combinations of areas covered by the courses of the OUHK EMMD programme. Through TEM401 the students will get a chance to integrate the knowledge gained from the study of their courses to work independently on a scientific project. They should be able to organize themselves and their work to achieve a specified goal within a limited time, gather, analyze and evaluate material relevant to their project and to generate ideas and produce a written report that clearly and concisely communicates the content of the project to others.

The course does not have any conventional type of course material for study. It will, however, require some reading of referred scientific materials available in journals and reference books which may be recommended by the tutor to expose the student to previous work relevant to his project. Such an exposure would help reveal the problems that are yet to be tackled and the direction the scholars are taking for providing solutions.

The TEM401 project will usually have a practical aim in view. The projects may include design proposals or specifications for a system or a mechanical device, policy proposals or scientific studies relevant to such practical ends. Several kinds of activity can be the basis of a suitable project, whether it is concerned with an investigation of an organization or a system or a design specification for a mechanical device. Projects must draw on knowledge gained by the students from various courses studied under the EMMD programme and may also draw on knowledge or experience they have gained elsewhere. Tutors will be required to give a list of at least 5 projects (or more for students to have a choice) which they can guide and can offer to the students for guidance. The tutors should contact the Course Coordinator to find out what equipment is available in the OUHK laboratory to conduct project work before deciding on the project list. A tutor will normally be required to guide 5 project students.

There are 14 two hour tutorials spread throughout the year. Tutor is required to supervise a group of 5 students in the tutorials to be conducted on Thursdays evenings or Sundays. In addition to tutorials the tutors have to guide the students through telephone tutoring for which they must set aside about 4 hours per week.

Tutors will have to assess the initial, interim and final reports submitted by the students. They will also be required to attend and assess the oral presentation after the interim report.

Applicants must have at least an honours degree and preferably a post-graduate qualification in a relevant discipline such as Mechanical Engineering, Material, Design, Mechatronics, Electro-Mechanical, Computer-aided Engineering or related fields. Some project supervision or research experience is desirable.

**U238 Quality and Reliability (10 Credits; 2 semesters)**

Course Coordinator: Dr Jimmy Chan (Tel: 2768 6821)

U238, Quality and Reliability, is a one-year, 10-credits course. The overall aims of this course are to introduce to student the basic principles and practices of quality and reliability in the industrial sectors. This course is designed to cover two critical and interrelated components of the product/process realisation process: quality and reliability. Quality and reliability are essential elements that must be considered at the design stage of a product or a service or a process. The achievement and continuous improvement of product/process quality and reliability is not only the competitive edge, but even the essence of survival in existing global business environment. This course provides a fundamental, yet comprehensive, coverage of quality assurance and reliability. It covers not only the principles and practices, but also the tools and techniques.

There are totally ten units in this course. The first five units introduce to student the contemporary concept of quality, quality philosophies, and quality assurance systems. The core concepts of customer satisfaction and total quality management are permeated throughout the units. Several important statistical techniques of quality assurance are also discussed after a brief introduction of the basic statistics involved. The remaining five units cover the concept and prediction of reliability of electronics/mechanical components and systems. While statistical methods are inevitably involved in these two subject areas, emphasis is put on the practical applications and implications of these tools and techniques, rather than the theories and mathematics involved.

Tutors will have to mark 4 tutor-marked assignments (TMAs). Though marking guides will be provided, tutors will need to familiarise themselves fully with all the components of the course in order to provide proper guidance to students through their written comments.

Each tutor will be required to conduct about twelve two-hour tutorials at intervals of about 3-4 weeks. In addition, each tutor will also be expected to provide support and help to students through surgery sessions, telephone consultation and Webct discussion board.

Applicants are expected to have good honours degree in a relevant discipline. However, preference will be given to those with a relevant higher degree and working experience.

POSTGRADUATE CERTIFICATE IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY

EN835 Advanced Environmental Control, Monitoring and Modeling (10 credits; 2 semesters)

Course Coordinator: Prof K. C. Ho (Tel: 2768 6803; email: kcho@ouhk.edu.hk)

EN835 is a 10-credit, two semesters course course specially designed for the Postgraduate Certificate in Environmental Science and Technology (PCEST). Course materials of EN835 will be principally adapted from those of EN335 Environmental Control, Monitoring and Modeling, a higher-level course for students pursuing a B.Sc. degree in Environmental Studies. Nevertheless, EN835 is not only a follow-up course of the undergraduate course but it also offers postgraduate-level materials for students who may not have strong background in environmental science and technology. Therefore, EN835 provides bridging elements for students before getting into the main contents of the course.

The course aims to equip students with the advanced knowledge and skills to develop state of the art solutions to environmental pollution control problems. Emphasis is placed on the engineering principles involved in the design of pollution control system and equipment. Specifically, it covers knowledge and practices in hazardous waste management, noise impact assessment, water and wastewater treatment, air pollution control, incineration engineering and relevant predictive models, along with design principles for different types of environmental devices. Referred publications, professional literature and working examples are frequently used to illustrate the state-of-the-arts technologies and their practical applications in Hong Kong and the Pearl River Delta. Self-assessment questions are included at ends of most of the units to give students a chance to test their understanding of the material. Case studies of vary degrees of complexity, are selected to suit the need of local relevance.

This course is divided into four major blocks with 12 self-study units inclusive:

- **Block 1** covers chemical and hazardous wastes in aspects from composition and quantity to land filling and incineration. Recycling and waste reduction at source is addressed. Units 1 to 3 introduce management of chemical and hazardous wastes, transport, treatment and final disposal. Aspects of the chemical waste treatment center in Hong Kong are also discussed. An introduction to remediation of contaminated sites is included.
- **Block 2** examines air pollution control technologies including those for particulate and gaseous emissions. Units 4 and 5 discuss the pollutants emissions from motor vehicles and waste incineration. Unit 6 introduces atmospheric dispersion modeling with aspects of environmental systems.
- **Block 3** deals with the assessment of machine, construction and transportation noise. Discussion is given of the noise generation and propagation characteristics, methods of prediction, and noise and vibration control procedures. In addition, mathematical modeling available is discussed with views to applications.
- **Block 4** focuses on research and development into conventional water and wastewater treatment processes as well as new and advanced technology. Units 8 to 10 review the existing theory and address the application of state of the art technology to the solution to major problems in drinking water and wastewater control.

Online support (by Webct) and visual materials will also be provided to assist students’ learning.

Continuous Assessment includes four Tutor Marked Assignments (TMAs), one Project Assignment (PA) and an oral presentation of the project results. The four TMAs (TMAs 1-4) are related to comprehension of course contents, whereas PA (TMA5) is a final report of a mini project of individual student. To pass the course, student shall achieve a 50% threshold for the PA. Tutors shall provide guidance and supervision to the design and conduction of projects. Furthermore, tutors should attend the oral presentation sessions of project assignments.

In addition, tutors are expected to meet with his/her groups in 8 tutorials and a series of surgeries throughout the course. To prepare students for the final examination, there will be a Revision Tutorial at the end of the course.
The course will contain at least three compulsory day-long schools (4 hours each) on Sunday, public holidays or weekday evenings. Various field visits would also be arranged to allow students to get hands-on experiences in environmental control, monitoring and modeling.

Tutors should have a degree at postgraduate level in relevant disciplines. Preference will be given to those with sound working experience in environmental protection/environmental engineering. Teaching experience is also desirable although not essential.

ENVIRONMENTAL STUDIES PROGRAMME

EN320 Environmental Impact Assessment (10 credits; 2 semesters)

Course Coordinator: Dr Gordon S. Maxwell (Tel: 2768 6812; email: gmaxwell@ouhk.edu.hk)

This course aims to help and enhance course receivers in the salient aspects of Environmental Impact Assessment.

The course aims to introduce, examine, analyse and explain the salient aspects of contemporary Environmental Impact Assessment (EIA). Hong Kong will be given thematic treatment against a background of global trends and practice in EIA. Although this is a level 3 course in our BSc/BSc (Hons) Environmental Studies programme, it is suitable to all those who have an interest in the process and system of EIA. As such, it will benefit course receivers working in a wide range of environmentally aware industries and professions.

The course presentation will include as part of a comprehensive and interesting package, printed textual material, articles from environmental papers and journals, T.V. programmes and video cassettes, face-to-face tutoring, field excursions, expert-led seminars and process-oriented assignments.

Thematic topics and study areas will include:

- Overview and philosophy of EIA
- EIA models of a multidisciplinary process
- EIA methodologies
- EIA content and components
- Ecological impact assessment and socio-economic impact assessments
- Environmental risk assessment
- EIA in Hong Kong and EIA lessons from developed and developing countries
- EIA trends and prospects

Assessment will be based around four tutor-marked assignments (which will be skill and process oriented rather than fact dominated) and a 3 hour written examination. The tutor-marked assignments will include a useful, apt and personalised project on EIA process. Learning will be based on a mastery philosophy and the 20 hours of tutorial time allocated will use an interactive teaching and learning mode. In addition, two compulsory day schools lasting 3 hours will be arranged to build on HK EIA issues and scenarios.

Tutors should possess a BSc degree with Hons or a Masters degree or higher in science, engineering, town/urban planning/environmental science or equivalent. Experience in EIA is an added recommendation.

EN410 Environmental Project (20 credits; 2 semesters)

Course Coordinator: Dr Gordon S. Maxwell (Tel: 2768 6812; email: gmaxwell@ouhk.edu.hk)

This is a higher-level course aims to enhance students' independent ability in carrying out an environmental research project. After studying this course, students will be able to analyse and integrate facts and ideas in the context of problem solving and drawing conclusions in a research exercise of relevance to the environmental professions. Students will be part of a tutor group of approximately five peers and work under the supervision of a tutor and or university professor. The final selection of investigation / research topics will depend on such factors as student’s own interest, supervisors specialisms, lab facilities and practicalities of obtaining results within the academic year.

The course is an optional subject for BSc(Hons) students. Students must accumulate at least 120 credits in the Environmental Studies Programme before taking this course. This course does not have Study Units or set textbooks. There are however three Tutor-Marked Assignments (TMAs), a student oral presentation and, a final oral examination where necessary. These three TMAs are structured so that they guide a student through three stages of the project, which approximates a BSc Hons thesis in style and scope.

There are 9 tutorials of about 18 hours spreading throughout the year. The tutor is required to supervise a group of about 5 students at the tutorial on either Sunday or Saturday afternoons. In addition, he / she will need to set aside couple of hours a week to give advise on phone-in queries e-mail exchanges and to mark the TMAs.

Applicants must have at least higher degree in Science, Engineering or related disciplines. Experience in carrying out and supervising environmental research projects are highly desirable.
Applicants will also be asked to provide a list of two or three possible projects.

### S121 A Foundation Course in Physics and Chemistry (10 credits; 2 semesters)

**Course Coordinator:** Dr C W Chan (Tel: 2768 6813)

S121 is a course designed for learners who may or may not intend to study science beyond the foundation level. It is designed for students who have or does not have previous formal scientific training. Despite of the open entry requirement, S121 will retain the same academic vigor as to the first year chemistry and physics courses presented in other tertiary institutions.

The topics introduced in the Units include:

- **Unit 1:** Mechanics
- **Unit 2:** Electricity and Magnetism
- **Unit 3:** Vibration, Light and Sound
- **Unit 4:** Atomic Structure and Chemical Bonding
- **Unit 5:** States of Matter: Solid, Liquid and Gas
- **Unit 6:** Change of Matter
- **Unit 7:** Chemical Equilibrium and the Laws of Thermodynamics.

Tutors will be required to attend and supervise tutorials, surgeries, laboratory sessions, and workshops if necessary. They will also be required to grade assignments and give extensive comments on the performance of learners. Tutors would be required to have their Internet connection including Web browser and email facilities. They are expected to participate in the online discussion with learners in all study related issues.

In addition, tutors are required to answer learners’ enquiry and give guidance on their studies via telephone counseling bear in mind that not all students will have Internet access.

An honours degree in either chemistry or physics. Preference will be given to candidates with teaching experiences in tertiary institutions, or postgraduate qualifications in subject discipline, education, or equivalent.

### S310 Analytical Chemistry (10 credits; 2 semesters)

**Course Coordinator:** Dr C W Chan (Tel: 2768 6813)

S310, Analytical Chemistry, is a higher level course. This course is designed for students who intend to follow the degree programme in environmental studies.

This course introduces fundamental principles and applications of quantitative analysis by chemical methods, for instance, volumetric analysis, and then deals with techniques in sampling and sample pretreatment. The rest of this course concentrate on methods and applications which are commonly used in environmental analysis such as UV-vis spectroscopy, AAS, GC, HPLC.

There are five tutor-marked assignments (TMAs) assessing the students’ progress during the course. Tutors will be required to grade and comment extensively on TMAs.

Tutors need to conduct a series of evening laboratory classes (each of 3 hours) on weekdays and two day-long schools (each of 8 hours) at weekends. In addition tutors are required to provide guided studies to their students in 8 tutorials of two-hour each (at weekends) and a series of surgeries (on weekdays) throughout the course, tutors are required to answer students' enquiry and give guidance on their studies during telephone counselling as well.

An honours degree in chemistry or environmental sciences. Preference will be given to those working in the chemical or environmental field. Teaching experiences in tertiary institutions, or postgraduate qualifications in subject discipline, education, or equivalent area would be an advantage.

### T237 Environmental Control and Public Health (10 credits; 2 semesters)

**Course Coordinator:** Dr C W Chan (Tel: 2768 6813)

T237 is compulsory for students who intend to follow the degree programme in Environmental Studies. It provides students with a basic understanding of our natural resources (land, air and water) and related environmental problems. Besides, T237 is complementary to many areas of study in science and technology, such as engineering, environmental and urban management, resource planning, natural resources and environmental health.
The course first deals with natural cycles. Units on epidemiology describes the use of this subject in assessing the possible effect of environmental pollution on health. The study of pollution chemistry is necessary for laboratory work and for an understanding of water and air pollution. Units on air pollution include the monitoring of pollutants, health and environmental effects, and methods of control, with reference to relevant legislation. The course further discusses water supply, pollution and pollution control. Units on noise pollution include monitoring of the health and environmental effects and methods of control, with reference to relevant legislation. The problems and methods of management (collection, disposal, reclamation) of domestic, hazardous wastes and the management of radioactive wastes are also discussed.

Tutors will be required to grade and comment on 4 written assignments (TMAs) and to answer queries concerning the 4 multiple choice assignments (CMAs).

Tutors are expected to conduct tutorial classes and answer questions via internet. Also they will attend surgeries on a rota basis.

Laboratory classes are supervised by tutors. The laboratory classes are held either in the evenings or on Saturdays/Sundays.

An honours degree in either science or engineering discipline. Preference will be given to those working professionals in environmental or related field. Teaching experiences in tertiary institutions, or postgraduate qualifications in subject discipline, education, or equivalent area would be an advantage.

MATHEMATICS PROGRAMME

M122 A Foundation in Applied Mathematics (10 credits; 2 semesters)

Course Coordinator: Dr Rocky Y K Fan (Tel: 2768 6811)

M122 forms half of the foundation series in mathematics for the School of Science and Technology and is expected to attract students interested in mathematics and applied science.

This course is composed of a preparatory package and thirteen study units. The preparatory package is designed to prepare students to the skills required for distance learning and the course; Unit 1 reviews relations and functions and then introduces parametric equations and polar coordinates; Unit 2 discusses systems of equations and their solutions; Unit 3 considers matrices and matrix equations for linear systems; Unit 4 presents the cycle of mathematical modelling; Units 5 to 10 investigate differentiation, integration and their applications; Unit 11 introduces vectors and their operations; Unit 12 focuses on applications of calculus and analytic geometry in describing position and motion; and Unit 13 provides an introduction to statistics. Most units will include work with the algebraic software Scientific Notebook.

There are five tutor-marked assignments, five computer-marked assignments and a final examination for M122. Each tutor is expected to meet with his/her group in a series of tutorials held every 2-3 weeks throughout the course. Tutorials are held in weekday evenings or during weekends. The tutor is required to prepare work for students to use at the tutorials, and provide consultation on phone and the Internet.

Tutors must possess an honours degree in Mathematics or a related discipline. Experience on algebraic software and the Internet is required. Teaching experience is highly desirable although it is not a requirement.

M213 Linear Algebra and Analysis (10 credits; 2 semesters)

Course Coordinator: Mrs Louisa Kwok (Tel: 2768 6808)

The course is derived from M203, a middle level pure mathematics course from British Open University. It is a compulsory course for both BSc and BSc (Hons) in Mathematics. The course is also compulsory for secondary teachers who pursue an honours degree in Secondary Education with Mathematics as an area of specialization. It aims to provide students with basic knowledge on Linear Algebra and Analysis. It is recommended for students who are interested at higher levels of mathematical abstraction.

The course has a Preparatory block, Linear Algebra block and Analysis block. Learners are expected to study a unit within two weeks. The course covers the following topics:

Preparatory (1 unit): curve sketching;
Linear Algebra (5 units): vectors and conics, linear equations and matrices, vector spaces, linear transformations, eigenvectors
Analysis (10 units): numbers; sequences, series; continuity, limits, differentiation, integration; power series, differential equations and flows, proofs in analysis.

There are 5 audio-cassettes and 16 television programs in this course.
Students have been advised to complete both foundation courses before they enrol on M213. They should be independent learners on studying course units. Tutors are expected to provide support to these adult learners in building up relevant mathematical concepts through tutorials, assignments, telephone contact and communications through the Internet.

There are 4 tutor-marked assignments spread throughout the course. Tutors are given a marking scheme on each assignment and they are expected to teach through assignment marking.

The course has nine 2-hour tutorials. All tutorials are held on either Saturday or Sunday afternoons. Tutors must prepare work to initiate discussions at these tutorials.

Tutors must allocate six hours every week to answer students’ queries through the telephone. As students have different mathematical backgrounds and it is difficult to discuss mathematics over the telephone, tutors must be patient and sympathetic in helping adult learners.

M213 is an Online Learning Environment (OLE) course. Tutors must be able to communicate and to support students’ learning through the Web Course Tools (WebCT) provided by the University. Details about the WebCT components can be found from http://www.ouhk.edu.hk/ole.html.

The course runs from April 2004 to February 2005. The next presentation of the course will be at October 2005.

Tutors for this course must have a higher degree in mathematics (or equivalent) with a substantial component in Pure Mathematics. Teaching experience at ‘A’ level or above in Pure Mathematics is a distinct advantage.

**M221 Mathematical Methods (10 credits; 2 semesters)**

**Course Coordinator:** Dr Anita Wong (Tel: 2768 6810; email: anwong@ouhk.edu.hk)

This is a second-level applied mathematics course featuring on the core of the mathematical methods and techniques which are appropriately used for different courses in applied computing, engineering science and technology programmes.

This course teaches the commonly used mathematical methods that are required in most science and engineering disciplines, but also covers many examples involving skills in the application of mathematical techniques. It contains material that will find of great use, not only in the higher level of technical courses, but also in the profession after graduation. Part of the course units introduces the basic skill to work with the computer algebra software that can be used to solve a wide variety of mathematical problems.

This course includes 15 units, starting with two units on first-order and second-order differential equations, and one unit on vector algebra, going on to matrices and determinants; Eigenvalues and Eigenvectors; simultaneous and non-linear differential equations. There are 3 units on mathematical methods for three-dimensional problems: one on partial differentiation, one on vector calculus and one on multiple integrals, One unit is concerned with numerical methods for differential equations. Two units are devoted to the Fourier series, Fourier transforms and Laplace transforms. Most of the numerical mathematics such as on differential equations, linear algebraic equations and eigenvalues, has practical computing activities associated with it. These activities will be carried out using computer algebraic software - MathCad. The course software will be delivered on CD-ROMS as part of the course material. No programming skills are required.

Most of students taking M221 should have completed one or more of the mathematics foundation courses: M111, M112, M121 or M122, and therefore they should be reasonably competent in studying as independent learners.

There are 4 tutor-marked assignments spread throughout the course.

Each tutor is expected to meet with his/her group in 9 2-hour regular tutorials during weekends throughout the course. The tutor is required to prepare work for students to use in the tutorials and to own a computer at home. Some regular surgeries will be held on weekday nights with tutors attending on a rota basis. In addition, tutors are required to allocate a minimum 8 hours per week for student contact through telephone, web learning environment or email.

For this course tutors should have an honours degree in mathematics, applied mathematics, engineering or equivalent. It is required that the tutor has practical experience in using mathematical or algebraic software (Mathcad). Teaching experience would clearly be an advantage, although it is not a requirement.

**M336 Groups and Geometry (10 credits; 2 semesters)**

**Course Coordinator:** Mrs Louisa Kwok (Tel: 2768 6808)

This course has been taken from the British Open University and is an important course in the honours mathematics programme. It is also important for the secondary education programme with Mathematics as an area of specialization.
Group theory and geometry may appear at first sight to be very different disciplines, as the techniques of group theory often concentrate on the manipulation of algebraic formulae, whereas those of geometry are more visual and graphic. There is, however, a profound connection between the two, via the concept of a symmetry group. Half of the course is concerned with group theory for its own sake, and the other half uses group theory in the presentation and development of geometric ideas.

A major theme of the course is construction, recognition and classification. The Groups stream covers the construction, recognition and classification of the cyclic groups and the finite Abelian groups. The question of a similar process for finite non-Abelian groups is also discussed. In the Geometry stream the concern is with various geometric patterns - namely tiling, frieze and wallpaper patterns - and with three-dimensional structures such as regular solids and crystals. This stream concludes by taking the theme of construction in a literal way and asks students to build some of their own three-dimensional frameworks.

Headings of the 16 units are:
Block 1: Tilings; Groups: properties and examples; Frieze patterns; Groups: axioms and their consequences.
Block 2: Properties of integers; Abelian and cyclic groups; Counting with groups; Periodic and transitive tilings.
Block 3: Decomposition of Abelian groups; Finite groups 1; Two-dimensional lattices; Wallpaper patterns.
Block 4: Sylow’s theorems; Finite groups 2; Groups and solids in three dimensions; Three-dimensional lattices and polyhedra.

The course includes an optional software package, which runs under Windows (3.1 or higher). It would be useful for tutors to be able to run this software on their own PC.

The course includes 4 tutor-marked assignments, which would occur about every 8-10 weeks. There are also nine 2-hour tutorials each separated by about 4 weeks. All tutorials will be held during weekends. Tutors are expected to allocate six hours per week on telephone contact.

M336 is an Online Learning Environment (OLE) course. Tutors must be able to communicate and to support students’ learning through the Web Course Tools (Web CT) provided by the University. Details about the Web CT components can be found from http://www.ouhk.edu.hk/ole.html.

The course runs from April 2004 to February 2005. The next presentation of the course will be at October 2005.

Tutors are expected to have a Master’s degree in pure mathematics. Consideration will be given to students currently involved in an appropriate postgraduate programme.

MT365 Graphs, Networks and Design (10 credits; 2 semesters)

Course Coordinator: Dr Anita Wong (Tel: 2768 6810)

MT365 is a higher-level course which features in four degree programmes in the School of Science and Technology. This reflects its interdisciplinary nature as a mixture of mathematics and technology and computing. The course has been imported from the Open University of United Kingdom.

The material is presented in a down-to-earth manner, with an emphasis on solving problems and applying algorithms rather than on abstract ideas and formal proofs, and the computer is particularly important for this. Practical work and the use of application packages is an important part of the course. Throughout the course considerable emphasis is given to the modeling of problems using mathematical ideas, and the representation of these ideas by means of diagrams.

Some areas covered are:
Operational research - Job assignments, bottle-necks, activity networks in project planning, scheduling, design of experiments.
Transport planning - Flows in networks, choice of optimum route, minimizing dangerous crossings at traffic and traffic intersections.
Communications Synthesis - Of telecommunications networks, designs of codes so as to reduce errors in communication.
Structures and mechanisms - Degrees of freedom in a structural system, synthesis of mechanisms, bracing a frame structure.
Electrical and related networks - Analysis of RCL networks, Kirchoff's laws, multiport networks and systems.

The main areas of mathematical interest are:
Linear graphs and diagrams - Trees, Eulerian and Hamiltonian graphs, shortest path problems and critical path analysis, planar graphs and maps, the four-colour map problem.
Block designs - Design of experiments, coding theory, triple systems and the 'schoolgirls problem'.
Geometry - Tesselations, polyhedra, polyominoes and tilings.

Tutors are expected to be able to reinforce the interdisciplinary nature of MT365 by the use of their own examples and notes in tutorials and to have had formal training in the mathematical areas in the course, but it is not required that they have experience in all of the areas where the mathematics is applied. In applying you should clearly demonstrate how your academic background has prepared you to teach on the
mathematical areas. Preference will be given to applicants with appropriate postgraduate degree. It is required that tutor has a home computer for online communication with students.

Tutors will be involved in the marking of four assignments. Each tutor will be expected to meet with his/her group of students at 8-9 2-hour tutorials throughout the course. All tutorials will be held during weekends. Tutors are required to allocate a minimum 8 hours every week for students contact through telephone, web learning environment or email.

**NURSING PROGRAMME**

**BACHELOR OF NURSING (HONS) PROGRAMME**

**NU401 Nursing Project (10 credits; 2 semesters)**

Course Coordinator: Dr Joseph Lee (Tel: 2768 6818)

This is a higher level course which aims to deepen nurses understanding of research in nursing and expose them to the process of conducting nursing research.

After studying this course students should be able to design and conduct a nursing research project, and write a report suitable for dissemination of findings.

This course is a core subject in the Bachelor of Nursing (Honours) degree. Students will need to have completed at least 60 credits before enrolling in NU401.

Continuous assessment in NU401 consists of tutor marked initial and interim reports whilst the Final Report can be regarded as a Final Examination.

There are 10 tutorials spread throughout the course. A tutor is required to supervise a group of five to seven students in the tutorials and will need to set aside time each week for telephone discussion and to mark the TMAs.

 Applicants must have at least a Post Graduate degree in Nursing, Social Science, Health Studies or related field and have experience in conducting research. Experience in supervision of nursing research projects is highly desirable.

**NU301 Comparative Studies in Health (10 credits; 2 semesters)**

Course Coordinator: Ms Linda Lee (Tel: 2768 6806)

This course aims to increase nurses' awareness of the ways and extent how health beliefs, health practices and health statuses are affected by the society in which people live. The course discusses and examines the following topics:

- cultural diversity in health beliefs and behaviours
- social meanings of health and illness
- health beliefs and health seeking behaviours
- clinical and social epidemiology
- political economy of health
- ethics in the context of health
- comparative health studies and nursing

There are five tutor-marked assignments in this course. Tutors are expected to hold regular tutorials of two hours every month throughout the course.

Applicants must have at least an honours in relevant discipline, such as nursing, sociology, social sciences or health sciences. Working experience in health care will be a distinct advantage.

**NU305 Health Assessment and Primary Health Care (10 credits; 2 semesters)**

Course Coordinator: Dr Joseph Lee (Tel: 2768 6818)
The aims of this course are two fold: first, to improve nurses' knowledge and skills in all aspects of health assessment; second, to enhance nurses' understanding of the philosophy, concepts and implementation of primary health care. The course will discuss and explore the following topics:

- concept and nature of health assessment
- facets of physical and psychosocial assessment
- laboratory data
- physical examination
- fundamentals if primary health care
- primary health care and community
- primary health care and nursing practice
- the international perspective of primary health care

There will be about 35 students in a tutorial group. Tutors are expected to mark five tutor-marked assignments for every student and to hold regular tutorials of two hours every month for the duration of the course (approximately 16-18 hours).

Applicants must have at least an honours degree in relevant disciplines, such as nursing, public health or health sciences. Working experience in the health sector will be a distinct advantage.

HIGHER DIPLOMA IN NURSING PROGRAMME

NU101C 基礎生命科學 (十學分：一學年課程)

學科主任：李燕瓊小姐 (電話：2768 6806)

本科是高級護理文憑課程的基礎程度必修科目，以中文教學為主。本科旨在幫助學生了解人體的基本解剖和生理，從而明白疾病的成因和症狀，並能加以掌握，應用於實際病人護理當中。另外，本科亦會提高學生對微生物學的認識，幫助學生明白導至院內感染的因素，繼而作出預防。

內容
本科包括以下內容：

- 人體的介紹
- 循環系統
- 呼吸系統
- 神經系統和神經官
- 消化系統
- 泌尿系統
- 肌肉及骨骼系統
- 內分泌系統
- 生殖系統
- 免疫系統與微生物學

輔學服務
本科設有七十八小時的輔學，其中包括二十四小時的導修課、十二小時的日間課堂、十八小時的實驗室實習課和二十四小時的補習課。導師需要參與以上的輔學服務以及學生電話輔導。

成績評核
本科學生須呈交五份由導師評改的作業。另外，學生亦須在學期完結時參加一個三小時的期終考試。導師有責任輔導學生編寫作業以及在學期終結前為學生提供總結溫習。
申請資格
本科導師須最少具備護理學或相關學科的榮譽學士資歷，具有高等學位或相關工作經驗的申請人將獲優先考慮。

NU112C 兒童及成人護理學(一) (十學分；一學年課程)

學科主任：李國麟博士 (電話：2768 6818)

NU112C 兒童及成人護理學(一) 是高級護理文憑課程中一個基礎程度必修科目。以中文教學為主。此科目尤為適合新生修讀，建議學生在修讀其他中級和高級程度科目之前，先選修此科。學員修讀本科時須一同修讀 NU101C 基礎生命科學。

目標
本科旨在幫助學員加強對臨床內外科護理的認識和了解，從而明白完整護理過程的模式；並能加以掌握及應用於護理不同功能障礙人士當中。另外，本科亦會透過不同的輔學服務提高學員的臨床護理技巧及操作水平。

內容
本科共有十個修讀單元。各修讀單元的主要內容扼列如下：

● 護理過程概論
● 健康評估導論
● 接受外科手術人士的護理
● 急症病患的護理
● 癌症患者、瀕死人士的護理
● 皮膚系統功能障礙人士的護理
● 心臟血管、周圍血管功能障礙人士的護理
● 呼吸功能障礙人士的護理
● 神經功能障礙人士的護理
● 血液和造血器官功能障礙人士的護理

輔學服務
本科設有導修課(24 小時)，日間課堂(10 小時)，實驗室實習課(20 小時)及補習課(24 小時)等輔學服務合共七十八小時。

成績評核
本科成績的評核，是以五份導師評改作業和一次 3 小時的期終考試為標準。導師亦有責任輔導學生編寫作業及在學期結前為學生提供總結溫習。

申請資格
本科導師須最少具備護理學或相關學科的榮譽學士資歷，具有高等學位或相關工作經驗的申請人將獲優先考慮。

NU114C 治療性精神護理學(一) (十學分；一學年課程)
學科主任：黃冠發先生（電話：2768 6819）

NU114C 治療性精神護理學(一)是精神健康護理學高級文憑課程中的一個必修科目。修讀時間為兩個學期，學分值為十學分，以中文教學為主。

目標：
本科旨在：
- 幫助學員加強對臨床精神護理的認識和了解，從而明白整個護理過程的模式，並能掌握和應用於護理不同精神障礙的人士；
- 向學員提供基礎的精神障礙療法和醫藥知識。
- 通過不同的輔助學習活動，提高學員的臨床護理技巧及操作水平。

內容：
本科共有十個修讀單元。各修讀單元的主要內容瀝列如下：
• 護理程序概論
• 健康評估導論
• 精神護理的取向與實務
• 精神護理的治療性溝通
• 精神護理的基礎治療護理
• 兒童及青少年精神障礙的治療護理
• 學習障礙的治療護理
• 成年人精神障礙的治療護理

輔學服務：
本科安排七十八小時的輔學活動，其中包括二十四小時導修課、十小時日間課堂，二十小時實習課及二十四小時補習課。

成績評核：
本科成績的評核，是以五份導師評改作業及一次三小時的期終考試為標準。導師亦有責任輔導學生編寫作業及在學期終結前為學生提供總結溫習。

申請資格：
本科導師須最少具備護理學榮譽學士學位，主修護理學或相關科目。由導師並須具臨床精神科護理經驗。持有高等學位者將獲優先考慮。

NU208C 健康促進（五學分；一學期課程）
學科主任：李燕瓊小姐（電話：2768 6806）

本科是一個介紹健康概念和促進健康方法的科目，是高級護理文憑課程的中級程度必修科目，以中文教學為主。本科旨在提高學生對健康的了解和幫助學生分析影響健康行為的因素。另外，本科亦會指導學生如何策劃、執行和評價健康促進活動。
內容
本科包括以下內容:
- 認識健康和健康促進
- 健康相關行為
- 健康需求的確定
- 健康促進計劃的設計
- 健康促進計劃的執行及評價

輔學服務
本科設有三十小時的輔學,其中包括十小時的導修課、八小時的日間課堂和十二小時的補習課。導師需要參與以上的輔學服務以及為學生提供電話輔導。

成績評核
本科學生須呈交三份由導師評改的作業。另外,學生亦須在學期完結時參加一個三小時的期終考試。導師有責任輔導學生編寫作業和在學期終結前為學生提供總溫習。

申請資格
本科導師須最少具備護理或相關學科的榮譽學士資歷,具有高等學位或相關工作經驗的申請人將獲優先考慮。

NU212C 兒童及成人護理學 (二) (十學分；一年學分)
學科主任：李國麟博士 (電話：2768 6818)

NU212C 兒童及成人護理學 (二) 是高級護理文憑課程中一個中級程度必修的科目。以中文教學為主;此科目是NU112C 的延續，建議學生在修讀此科目之前，先選修 NU112C。

目標
本科旨在幫助學員加強對臨床內外科護理的認識和了解，從而明白完整護理過程的模式；並能加以掌握及應用於護理不同功能障礙人士當中。另外，本科亦會透過不同的輔學服務提高學員的臨床護理技巧及操作水平。

內容
本科共有十個修讀單元。各修讀單元的主要內容列如下：
- 傳染病患者的護理。
- 免疫功能障礙人士的護理。
- 內分泌與代謝功能障礙人士的護理。
- 泌尿、生殖系統功能障礙人士的護理。
- 消化道、肝臟、膽道和胰臟功能障礙人士的護理。
- 骨骼、肌肉、關節功能障礙人士的護理。
- 眼、耳、鼻、喉功能障礙人士的護理。
- 產科護理導論。
- 兒科護理導論。
- 臨床管理學導論。

輔學服務
本科設有導修課(24 小時)，日間課堂 (10 小時)，實驗室實習課 (20 小時) 及補習課 (24 小時) 等輔學服務合共七十八小時。

成績評核
本科成績的評核，是以五份導師評改作業和一次 3 小時的期終考試為標準。導師亦有責任輔導學生編寫作業及在學期終結前為學生提供總溫習。
申請資格
本科導師須最少具備護理學或相關學科的榮譽學士資歷，具有高等學位或相關工作經驗的申請人將獲優先考慮。

NU300C 護理專業透視（十學分；一學年課程）

學科主任：李燕瓊小姐（電話：2768 6806）

本科是是高級護理文憑課程的高級程度必修科目，以中文教學為主。本科旨在幫助學員認識護理專業的意義，並探討一些和護理專業有關的課題。

內容
本科包括以下內容：
- 護理專業
- 護理倫理學
- 護理與法律
- 護理與資訊科技
- 醫療政策
- 護理理論
- 護理研究
- 護理發展新趨勢
- 中醫護理簡介
- 另類療法簡介

輔學服務
本科設有五十二小時的輔學，其中包括二十小時的導修課、八小時的日間課堂和二十四小時的補習課。導師需要參與以上的輔學服務以及為學生提供電話輔導。

成績評核
本科學生須呈交五份由導師評改的作業。另外，學生亦須在學期完結時參加一個三小時的期終考試。導師有責任輔導學生編寫作業，以及在學期終結前為學生提供總結溫習。

申請資格
本科導師須最少具備護理或相關學科的榮譽學士資歷，具有高等學位或相關工作經驗的申請人將獲優先考慮。