UTS

Faculty of Mathematical and Computing Sciences Handbook

University of Technology, Sydney

1997

Faculty of Mathematical and Computing Sciences Handbook 1997

The University attempts to ensure that the information contained in this handbook is correct as at 2 December 1996. The University reserves the right to vary any matter described in the handbook at any time without notice.

University of Technology, Sydney

Equal opportunity

It is the policy of the University of Technology, Sydney to provide equal opportunity for all persons regardless of sex, race, marital status, family responsibilities, disability, sexual preference, age, political conviction or religious belief.

Free speech

The University supports the right to freedom of speech and the rights of its members to contribute to the diversity of views presented in our society.

Non-discriminatory language

UTS has adopted the use of non-discriminatory language as a key strategy in providing equal opportunity for all staff and students. Guidelines for the use of non-discriminatory language have been developed and all members of the University community are encouraged to use them.

Editorial and production:

Publications Branch,
Corporate Responsibilities Unit

Cover design:

External Relations Unit

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General University information

PREFACE

Welcome to the University of Technology, Sydney (UTS), the fourth largest university in New South Wales. UTS has a reputation for delivering quality higher education that meets the needs of the professions, the technologies and the community. It is a multicampus university operating at three major locations in the Sydney metropolitan area – Broadway, Kuring-gai and St Leonards – and offering over 80 undergraduate and 200 postgraduate courses to nearly 22,000 students.

The main work of course development and delivery at UTS is carried out by the Faculties of Business; Design, Architecture and Building; Education; Engineering; Humanities and Social Sciences; Law; Mathematical and Computing Sciences; Nursing; and Science; and the Institute for International Studies. Each of these is responsible for a range of programs across a number of key disciplines.

Every year UTS produces 10 faculty/institute handbooks containing information about all the courses and subjects offered at UTS, and including details of course content, attendance patterns, credit point requirements and combined degrees, plus important faculty and student information.

These handbooks are part of a suite of publications which includes the *UTS Calendar* and the postgraduate and undergraduate student handbooks. The *UTS Calendar* contains the University Act, By-law and Rules, a list of courses offered at the University, and other useful University information. Copies are held in the University's libraries and faculty offices, and may be purchased at the Co-op Bookshop. The student handbooks contain general information about application procedures, academic progression, assistance schemes, and services and facilities offered to students. You will be given a free copy of one of these when you enrol.

If you need more information about the University or its courses, you can contact the UTS Information Service or your faculty office. The University provides a whole range of services for students, and there are plenty of qualified people here to give you help and advice.

We hope you enjoy your time as a student at UTS, and wish you well in your studies.

ADDRESSES AND TELEPHONE NUMBERS

University of Technology, Sydney

Postal address

PO Box 123
Broadway
NSW 2007 Australia

Telephone

(02) 9514 2000
International: +61 2 9514 2000
Fax: (02) 9514 1551

World Wide Web

http://www.uts.edu.au

City campus

Broadway

- Building 1 (Tower Building)
  1 Broadway, Ultimo
- Building 2
  1 Broadway, Ultimo
- Building 3 (Bon Marche Building)
  Cnr Harris St and Broadway, Ultimo
- Building 4
  Cnr Thomas St and Harris St, Ultimo
- Building 6
  702–730 Harris St, Ultimo
- Broadway Terraces
  9, 11 and 13 Broadway, Ultimo
- Magic Pudding Childcare Centre
  Thomas St, Ultimo

Haymarket

- Building 5
  Cnr Quay St and Ultimo Rd, Ultimo

Blackfriars

- Cnr Blackfriars St and Buckland St, Chippendale
- Blackfriars Childrens Centre
  Buckland St, Chippendale

Smail Street

- 3 Smail St, Ultimo

Wembley House

- 839–847 George St, Sydney

Harris Street

- 645 Harris St, Ultimo

Student housing

- Bulga Ngurra
  23–27 Mountain St, Ultimo
- Geegal
  82–84 Ivy St, Ultimo

Kuring-gai campus

- Eton Rd, Lindfield
  (PO Box 222, Lindfield NSW 2070)

St Leonards campus

- Dunbar Building
  Cnr Pacific Highway and
  Westbourne St, Gore Hill
- Clinical Studies, Centenary Lecture Theatre and West Wing
  Reserve Rd, Royal North Shore Hospital
- Gore Hill Research Laboratories
  Royal North Shore Hospital

Yarrawood conference and research centre

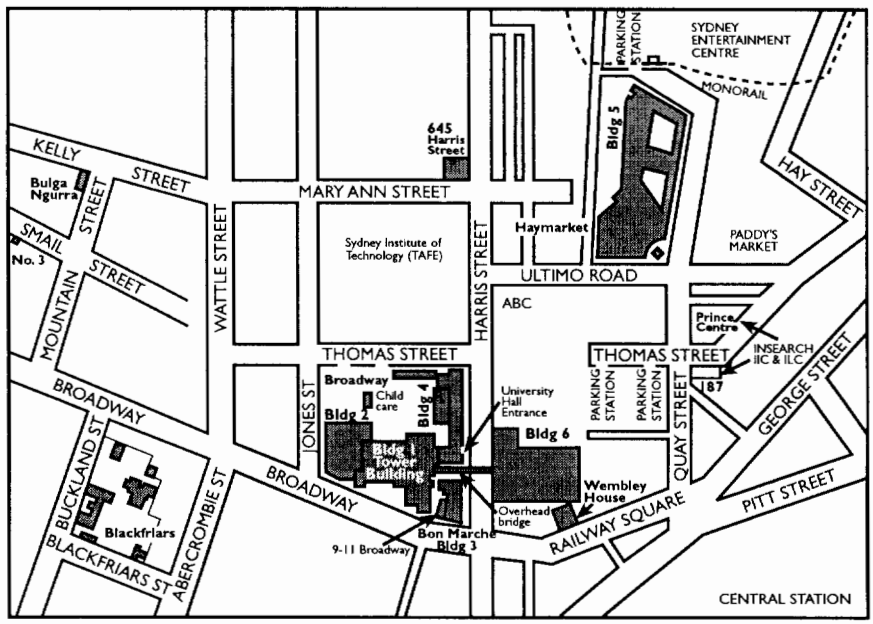
- Hawkesbury Rd
  Yarramundi NSW 2753

Stroud Field Station

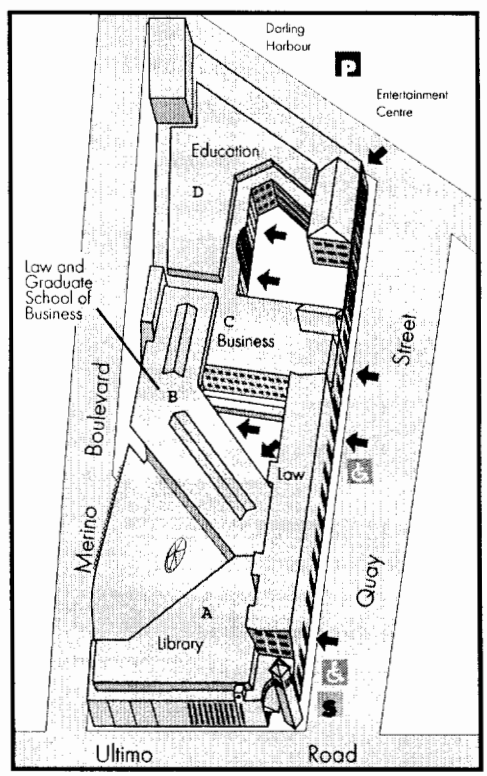
- Lot AFP 161894
  The Bucketts Way
  Booral NSW 2425

CAMPUS MAPS

City campus



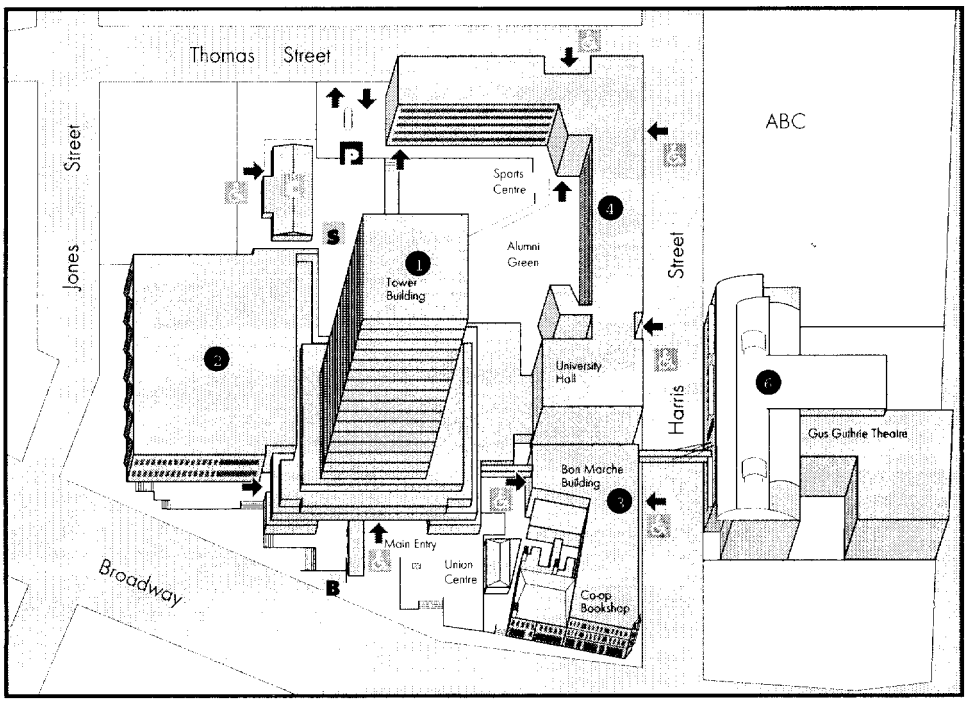
Haymarket



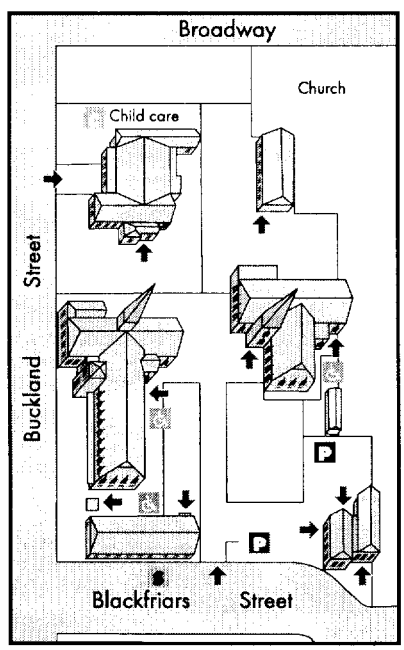
KEY

- Entry/Exit
- Disabled access
- B Main bus stop
- S UTS shuttle bus
- P Parking
- 1 Building numbers
- Child care

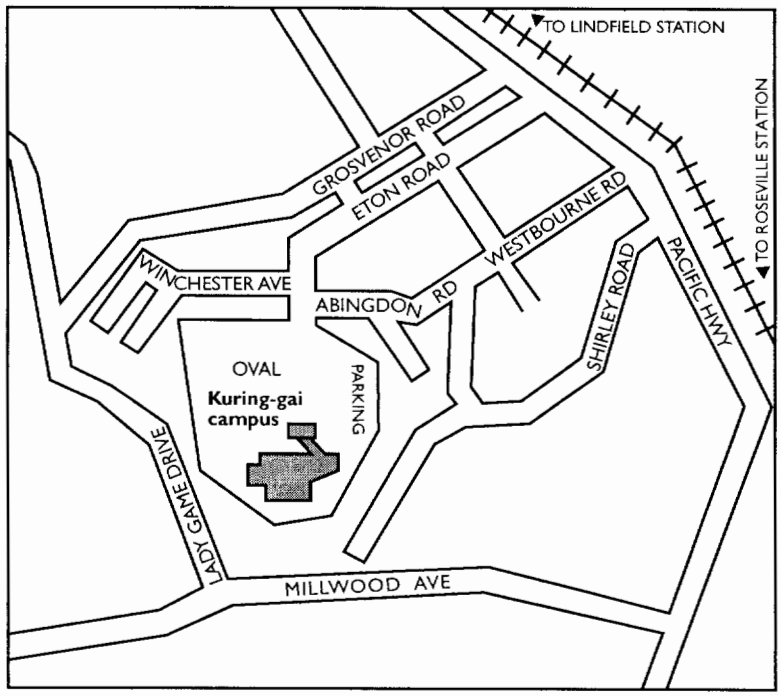
Broadway

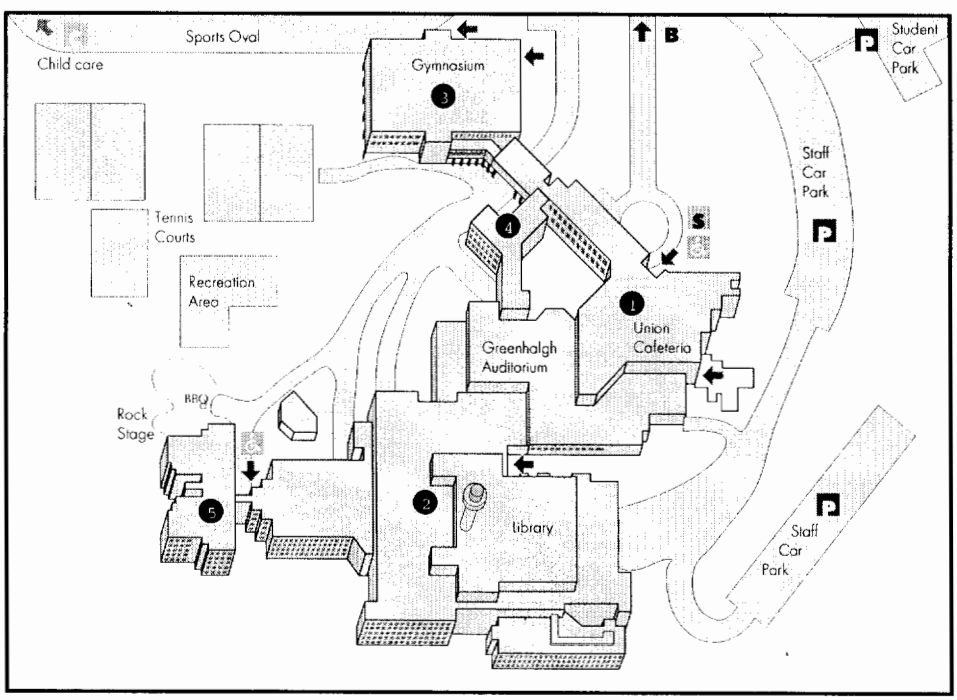


Blackfriars

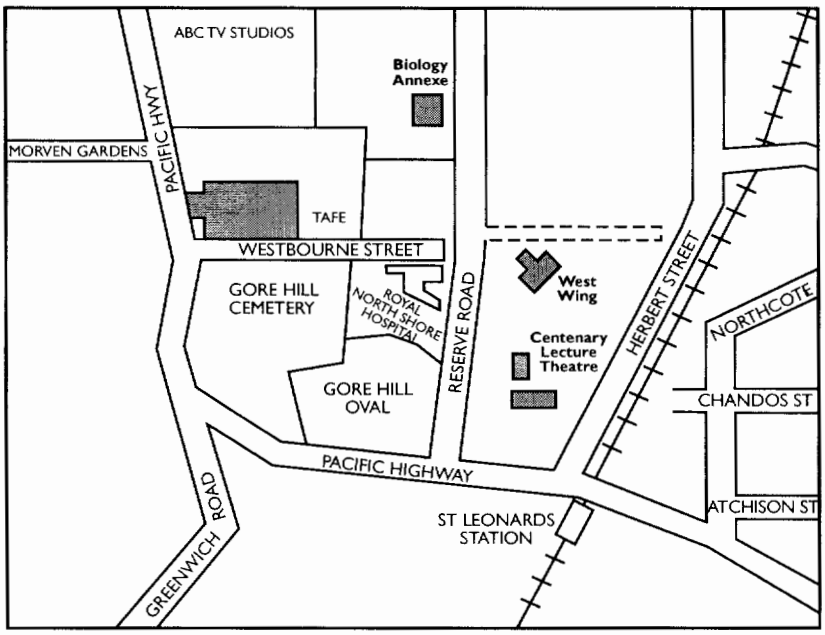


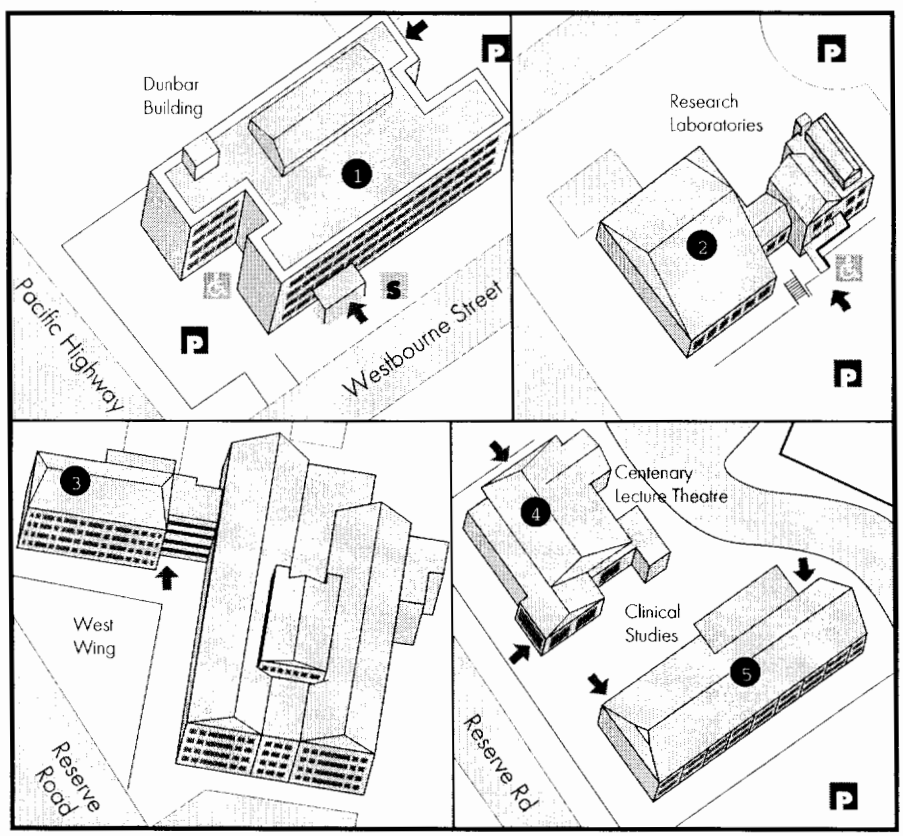
Kuring-gai campus





St Leonards campus





APPLYING FOR UTS COURSES

Undergraduate

Applications for the majority of those undergraduate courses which start at the beginning of each year must be lodged through the NSW and ACT Universities Admissions Centre (UAC) between August and October. Please check the application requirements in the *UAC Guide*, as some of these courses close for applications at the end of September. Some courses are also available by direct application to UTS. These are usually courses that are not available to school leavers.

A small number of UTS courses also start in the middle of the year. Applications for these should be made direct to UTS in May.

Contact the UTS Information Centres for more information.

Postgraduate

Applications for postgraduate courses should be made direct to UTS. For courses starting at the beginning of the year, most applications are open from August to October, but some may have earlier closing dates. For courses starting in the middle of the year, applications close in May.

Contact the UTS Information Centres for more information.

Non-award and External Award study

Non-award and External Award study allows individuals and students from other universities to study single subjects at UTS. There are four application periods, and closing dates are different for each of the semesters. Some faculties may have special application procedures which will vary depending on the subjects chosen.

Contact the UTS Information Centres for more information.

International students

International students need to satisfy the normal UTS entry requirements and be proficient in English. For details on courses, fees and application procedures, contact International Programs.

UTS INFORMATION CENTRES

Street address	Postal address	Telephone/Fax
City campus		
Foyer, Tower Building 1 Broadway	UTS Information Service PO Box 123 Broadway NSW 2007	Telephone: (02) 9514 1222 Fax: (02) 9514 1200
Kuring-gai campus		
Level 5 or 6, Main Building Eton Road Lindfield	Kuring-gai Student Centre PO Box 222 Lindfield NSW 2070	Telephone: (02) 9514 5555 Fax: (02) 9514 5032
International Programs		
Level 5, Tower Building 1 Broadway	International Programs PO Box 123 Broadway NSW 2007	Telephone: (02) 9514 1531 Fax: (02) 9514 1530

E-mail inquiries

Within Australia – *info.office@uts.edu.au*

International – *intlprograms@uts.edu.au*

PRINCIPAL DATES FOR 1997

Autumn semester

January

7 Release of HSC results

10 Formal supplementary examinations for 1996 Spring semester students

10 Closing date for changes of preference to the Universities Admissions Centre (UAC) from 1996 NSW and ACT HSC applicants

21–28 Enrolment of students at City campus

24 Main Round of offers to UAC applicants

27 Australia Day – public holiday

29–31 Enrolment of new undergraduate students at City campus (and 3 February till noon)

31 Public school holidays end

February

3 Enrolment of new undergraduate students at City campus till noon (and 29–31 January)

3–26 Enrolment of students at City campus

March

3 Classes begin

14 Last day to enrol in a course or add subjects

27 Last day to apply for leave of absence without incurring student fees/charges[1]

27 Last day to withdraw from a subject without financial penalty[1]

28 Public school holidays begin

28 Good Friday – public holiday

31 HECS census date

31 Easter Monday – public holiday

31 Vice-Chancellors' Week (non-teaching) begins

April

1 Graduation period begins

4 Public school holidays end

4 Vice-Chancellors' Week (non-teaching) ends

11 Last day to withdraw from a course or subject without academic penalty[1]

24 Provisional examination timetable available

25 Anzac Day – public holiday

30 Last day to apply to graduate in Spring semester 1997

May

1 Applications available for undergraduate courses

6 Applications available for postgraduate courses

9 Graduation period ends

16 Examination Masters due

30 Final examination timetable available

30 Closing date for undergraduate and postgraduate applications for Spring semester

June

9 Queen's Birthday – public holiday

13 Last teaching day of Autumn semester

14–30 Formal examination period (and 1–4 July)

30 Public school holidays begin

July

1–4 Formal examination period (and 14–30 June)

4 Autumn semester ends

7–11 Vice-Chancellors' Week (non-teaching)

11 Public school holidays end

14–18 Formal alternative examination period for Autumn semester students

25 Release of Autumn semester examination results

28 Formal supplementary examinations for Autumn semester students

30–31 Enrolment of new and readmitted students and students returning from leave/concurrent study (and 1 August)

August

1 Enrolment of new and readmitted students and students returning from leave/concurrent study (and 30–31 July)

1 Applications available for undergraduate and postgraduate courses for Autumn semester 1998

Spring semester

August

4 Classes begin

8 Last day to withdraw from full year subjects without academic penalty[1]

15 Last day to enrol in a course or add subjects

29 Last day to apply for leave of absence without incurring student fees/ charges (Spring enrolments only)[1]

29 Last day to withdraw from a subject without financial penalty[1]

29 Last day to apply to graduate in Autumn semester 1998

31 HECS census date

September

12 Last day to withdraw from a course or subject without academic penalty[1]

26 Provisional examination timetable available

29 Public school holidays begin

29 Graduation period begins

29 Vice-Chancellors' Week (non-teaching) begins

30 Closing date for undergraduate applications via UAC (without late fee)

30 Closing date for postgraduate applications (some courses may have a later closing date)

30 Closing date for inpUTS Special Admission Scheme applications

October

3 Graduation period ends

3 Vice-Chancellors' Week (non-teaching) ends

6 Labour Day – public holiday

10 Public school holidays end

17 Examination Masters due

31 Final examination timetable available

31 Closing date for undergraduate applications via UAC (with late fee)

31 Closing date for undergraduate applications direct to UTS (without late fee)

31 Closing date for Australian Postgraduate Award (research & coursework), the R L Werner and University Doctoral Research Scholarships

November

14 Last teaching day of Spring semester

15–28 Formal examination period (and 1–5 December)

December

1–5 Formal examination period (and 15–28 November)

5 Spring semester ends

15–19 Formal alternative examination period for Spring semester students

19 Release of Spring semester examination results

22 Public school holidays begin

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[1] HECS/postgraduate course fees will apply after the HECS census dates (31 March and 31 August or last working day before).

Note: Information is correct as at 28 October 1996. The University reserves the right to vary any information described in Principal Dates for 1997 without notice.

Faculty information

MESSAGE FROM THE DEAN

On behalf of all the staff of the Faculty of Mathematical and Computing Sciences, I am pleased to extend this welcome to you.

The Faculty has a commitment to providing an education with an emphasis on professional relevance. To this end, the Faculty values the considerable expertise of its advisory committees, drawn from industry, government and the professions. Senior practitioners with considerable expertise in industry give their time in assisting in the design and presentation of courses. Together with the Faculty's commitment to cooperative education, this ensures that the reputation of producing high-quality graduates, capable of immediately contributing to industry, will be maintained. Furthermore, the Faculty provides life-long learning opportunities for practising professionals.

The last year has been one of consolidation and extension. The Management Development Program for IT professionals was successful in significantly expanding its student intake. The computer algebra system, *Mathematica*, became more widespread in mathematics teaching and learning. The University Statistical Consulting Service was launched within the Faculty to provide statistical services to the University and to the community at large. New professional programs covering the latest Internet technologies were developed and presented.

In the year 1997, and beyond, we are faced with many challenges arising from changes to the regulation and funding of the Higher Education system. A response to these challenges from this Faculty will be further development and promotion of our professional programs. We will complement our emphasis on relevance and currency of courses with an enhanced focus on quality.

The Faculty research profile has continued to expand with further success in obtaining research grants. The Faculty sees the existence of a strong corps of postgraduate research students as vital, and accommodation was improved for research students during 1996. Much of the Faculty's research continues to be focused around a number of dynamic and diverse groups including distributed systems and networking, algorithms and languages, parallel systems, computer-supported cooperative work, artificial intelligence, statistics and operations research.

This Faculty is an innovator in the use of technology for teaching and learning. In particular, the Faculty has significant expertise in Internet technologies and their application. The Faculty is extending its usage of the Internet to provide novel and flexible learning opportunities for its students.

I commend to you the many activities and opportunities available within UTS. Participation in these activities enriches your experience of university life. Acquainting yourself with support services reduces some of the stress that studying can impose.

Finally, I wish you every success and trust that your time at UTS is both enjoyable and productive.

FACULTY MISSION STATEMENT

The Mission of the Faculty is to provide high-quality, innovative programs of teaching and learning, research and consulting, and continuing professional education to clients of wide backgrounds, both nationally and internationally, in the mathematical and computing sciences. It is committed to technology transfer for the benefit of society by interacting closely with industry, business and government in research and development.

To support its Mission, the Faculty aims to:

Teaching and learning

- maintain a comprehensive range of educational programs to satisfy the spectrum of needs in the community
- excel in both the quality of the learning environment and the professional relevance of its educational programs
- develop an international perspective to its teaching programs

Research and scholarship

- excel in the quality of its research activities
- encourage and facilitate participation by all staff in research or scholarly activities while focusing its research activities onto its defined areas of strength and a small number of targeted areas for development
- increase the participation rate of students in postgraduate programs
- promote intra-faculty, interfaculty, national and international research collaboration
- emphasise to staff and students the benefits of an international perspective on their disciplines

Management and resources

- assure the quality of activities within the Faculty through the ongoing monitoring and the continuous development of a range of quality control processes
- maintain a balanced portfolio of expertise within its staff, which reflects perceived trends within the industries and disciplines addressed by the Faculty
- seek supplementary sources of external funding through research, joint ventures and entrepreneurial activities
- ensure the principles of equity are observed in all aspects of the Faculty's work, with particular emphasis on the areas of importance identified in the UTS Equity Plan
- develop links with prestigious overseas universities and research institutions

Community service

- preserve strong, effective links with industry, government, business, professional and community organisations
- improve credit transfer arrangements to facilitate the movement of properly prepared students who wish to transfer between universities, or who move into the university sector with prior education and knowledge

INFORMATION FOR STUDENTS

Only new students and those enrolled in courses that have undergone major changes will receive a free handbook.

The Faculty of Mathematical and Computing Sciences consists of two Schools – Mathematical Sciences and Computing Sciences. Together, these disciplines form the basis of 'enabling technologies' for applications in most other disciplines.

Each School teaches towards its own professional degrees from undergraduate through to Doctoral studies. Although student administration functions are centralised at faculty level, all the courses and much of the staff and research management are conducted at the school level. Each School has, as a consequence, developed its own management structure appropriate for the support of its teaching and research programs. Teaching is carried out across all campuses of the University.

The Faculty has a commitment to cooperative education, of both the work experience 'sandwich' form, and the cooperative scholarship format. The Faculty is active in research and has close liaison with industry in all aspects of its work.

The structure of the **School of Mathematical Sciences** reflects the orientation and emphases of its academic programs. There are three discipline groups:

Mathematics

Computational Mathematics

Statistics and Operations Research

The School also provides a support service to all students of the University studying in various introductory mathematical or quantitative areas through its **Mathematics Study Centre**, under the directorship of Leigh Wood. The services of the Centre are available at the City and Kuring-gai campuses. Most of the teaching in the Centre occurs at an individual level and the Centre is open for at least 30 hours each week, with certain times devoted to particular areas of mathematics. Students can obtain help with individual problems specific to a particular course. Alternatively, students with more systematic problems may study in the Centre on a regular basis, obtaining assistance from a tutor as necessary.

The **University Statistical Consulting Service** (USCS), a joint initiative of the School of Mathematical Sciences and the University Graduate School, has been established to provide a range of statistical services to support the research programs of UTS staff and graduate students. The Service, which is directed by Associate Professor Deborah Street, also offers its full range of service (which include both consultancy and short courses on statistical methods and software) to industry at a fee. At present, there are seven statisticians associated with the USCS having extensive consulting experience in the agricultural sciences and engineering, as well as in the design of biomedical trials, various areas of medical statistics, educational statistics, and the design and analysis of sample surveys.

The structure of the **School of Computing Sciences** reflects the orientation and emphases of its academic work. There are four discipline groups:

Computer Systems

Computing Methods

Information Systems Technology

Information Systems Management

The **Australian Transputer Centre** was set up as a collaborative effort between UTS, SGS-Thomson and GEC Electronics to support and promote parallel processing with the Inmos transputer in Australia. With 43 transputers available to undergraduates, researchers and developers through AARNet, the Centre is also the focus for work in parallel processing in the School of Computing Sciences. The Director of the Centre is Ury Szewcow.

The **Centre for Object Technology Applications and Research (COTAR)**, established in 1994, provides a focal point for the software industry using, or considering using, the new software development techniques of object technology. COTAR aims to promote and conduct research in object-oriented software engineering, object-oriented information systems and object-oriented computing. It provides not only a focus for such research and collaborative work with industry, but also high-quality professional development education. Further information can be obtained from the Head of School, Associate Professor Jenny Edwards.

The mission of the **CRC for Distributed Systems Technology (DSTC)** is to build the distributed information systems of the future through leading edge research, and to work with industry and government to apply and commercialise the results. The UTS participation in DSTC draws on expertise from the School of Computing Sciences and the School of Electrical Engineering. The primary focus of the UTS research is on Quality of Service (QoS) and the delivery of multimedia information in real time within various distributed systems frameworks such as the World Wide Web, JAVA and CORBA. For further information contact Associate Professor Michael Fry.

Faculty Office contacts

Faculty Office staff are located on either the third floor of Building 4 or on Level 15 of Building 1, as indicated below. There is an Information Office at each location to assist students and the general public on course-related matters, although, generally, inquiries relating to computing science courses should be directed to the Information Office in Building 4, and those relating to mathematical science courses should be directed to the Information Office in Building 1.

When telephoning from outside the University, all extension numbers should be prefixed by 9514.

E-mail addresses should be suffixed with '@socs.uts.edu.au', unless indicated with an asterisk (*), where the suffix should be '@maths.uts.edu.au'.

	Ext	Bldg/Room	E-mail	Student administration responsibility
Dean				
Associate Professor M Fry	1801	4/343	mike	—
Faculty Administrator				
Miss F C Ma	1880	4/341	florence	—
Executive Assistant to the Dean				
Vacant	1800	4/342	—	—
Executive Officer				
Mr G C Goodwin-Moore	1308	4/335	gerard	—
Student administration				
Student Administration Manager				
Ms L G McCoy	1867	4/373	leanne	*All courses*
Industry Liaison Officer				
Mr D A Saunders	1804	4/374	des	*BInfTech and IndustrialTraining*
Graduate Studies Officer				
Vacant	1806	4/335	gso	*All postgraduate programs*
Student Liaison Officers				
Ms I Chu	1802	4/337	ivy	*All BSc (Comp Sc)*
Ms J C Smith	2250	1/1520	josmith*	*All BSc (Maths), BMathFin, and related Honours programs*
Information Assistants				
Ms L Abraham	1803	4/335	layla	*General inquiries*
Ms R Bow	2246	1/1520	rosabow	*General inquiries*

Continuing Professional Education (CPE)

The Faculty offers a variety of CPE courses each semester.

The School of Computing Sciences offers courses in programming, such as Object-oriented Programming with C++, UNIX/C, Prototyping with Visual Basic, and Programming on the Internet, and professional courses in three-dimensional computer animation, database design, expert systems design and distributed databases, and client/server computing.

A range of CPE courses, such as the Introductory Statistics Workshop, are run under the auspices of the University Statistical Consulting Service. In addition, mathematics preparation courses such as Intensive Mathematics, Intensive Statistics and Preparation for Nursing are available through the Mathematics Study Centre.

Information on all CPE courses is available from the Faculty Information Offices on 9514 1803 or 9514 2246.

Sub-majors offered to students enrolled in other faculties

The Faculty offers a number of sub-majors to students enrolled in other faculties. Students wishing to enrol in a sub-major offered by the Faculty of Mathematical and Computing Sciences should first contact one of the Faculty Information Offices on 9514 1803 or 9514 2246.

In all cases, enrolment will be subject to students obtaining the permission of their home faculty, and their satisfying all prerequisite requirements.

Students should refer to the relevant School's 'Subject descriptions' section elsewhere in this handbook for prerequisite details.

Sub-majors offered by the School of Mathematical Sciences

The following sub-majors are currently available to students enrolled in any faculty.

Mathematics (24cp)

The Mathematics sub-major provides a foundation of knowledge in mathematics sufficient for further development in the discipline and application to quantitative areas of business, particularly finance, and contributes key critical, analytical and quantitative skills.

Sequence		
35101	Mathematics 1	6cp
35102	Mathematics 2	6cp
35212	Linear Algebra	6cp
35231	Differential Equations	6cp

Operations Research (24cp)

The Operations Research sub-major provides students with a level of knowledge necessary for application of the discipline in areas of relevance to business, particularly in mathematical programming (optimisation), scheduling and transportation, inventory analysis and financial modelling.

Sequence		
33401	Mathematics for Computing	6cp
35524	Mathematical Programming 1	6cp
35340	Operations Research Practice	6cp
35344	Network Optimisation	6cp

Statistics (24cp)

The Statistics sub-major provides students with a level of knowledge necessary for application of the discipline in areas of relevance to business, particularly in the areas of regression methods, design and analysis of statistical experiments and stochastic processes.

Sequence		
33401	Mathematics for Computing	6cp
35252	Statistics 2	6cp
35353	Regression Analysis	6cp
35361	Probability and Stochastic Processes	6cp

Sub-majors offered by the School of Computing Sciences

The following sub-majors are currently available to students enrolled in any faculty.

Business Analysis and Design/ Databases (24cp)

This sub-major provides students with a detailed knowledge of current, state-of-the-art databases – relational, object-oriented and distributed – and the analysis and design needed to use them.

Sequence		
31424	Systems Modelling	6cp
31434	Database Design	6cp
31443	Distributed Databases and Client Server Computing	4cp
31921	Objectbases	4cp
31922	Object-oriented Methodologies	4cp

Business Information Technology (24cp)

This sub-major provides students with a broad overview of the basics of computer hardware and software and major applications.

Sequence

31414	Information Systems	6cp
31531	Systems Analysis and Design	6cp
31551	Database	6cp
31561	Data Communications	6cp

Human Factors and Computing in Business (24cp)

The sub-major on Human Factors and Computing in Business provides students with an insight into the effect that computers and information technology have on staff and the workplace, particularly in a climate of change.

Sequence

31531	Systems Analysis and Design	6cp
31551	Database	6cp
31737	Business Process Transformation	4cp
31777	Human–Computer Interaction	4cp
31923	Office and Group Support	4cp

Programming and Design (24cp)

The Programming and Design sub-major provides students with skills in systems modelling and design, and object-oriented and procedural programming.

Sequence

31415	Principles of Software Development A	6cp
31424	Systems Modelling	6cp
31429	Procedural Programming	6cp
31434	Database Design	6cp

International Studies electives

The Institute for International Studies at UTS offers electives in language studies, and in the study of contemporary societies in parts of the non-English-speaking world. All subjects last one semester and have a value of eight credit points.

Language studies

All students wishing to engage in language studies as a credited part of their degree are required to enrol through the Institute for International Studies, whether the language studies are undertaken at UTS or elsewhere. The Institute teaches some language programs at UTS, has made arrangements with other universities for some languages to be taught to UTS students, and can make special arrangements for individual students to attend specific language programs where academic needs demand. The individual student's level of language proficiency before entry to the UTS program determines his or her level of language study. There is a range of entry levels to the various programs available. Most are available at beginner's and post-HSC levels, and some at more advanced levels.

In 1997 the following programs will be available at UTS as part of the International Studies program, and are open to students in all faculties: Cantonese, Chinese, Indonesian, Japanese, Modern Standard Chinese and Spanish. (Modern Standard Chinese is a program for students who are either complete beginners or who started to learn Chinese at school in Australia.) In addition, arrangements are in place for the delivery of French, German, Hindi, Italian, Korean and Thai. There are no prerequisites for entry to any language program.

Contemporary Society

The Institute also offers a series of subjects that provide an introduction to the contemporary societies, politics, economies and cultures of the countries of East and South-East Asia, Latin America and Western Europe, which are the areas of specialisation of the Institute.

In 1997 introductory subjects on the contemporary societies of China, Eastern Europe, Indonesia, Japan, Latin America, Malaysia, Spain, South-East Asia, South China, Taiwan, Thailand and Western Europe will be available. There are no prerequisites for any of the Contemporary Society subjects. All subjects are taught in English and are available, with the permission of their faculty, to all UTS students.

Students should consult the Academic Administrator at the Institute for International Studies, UTS, 9 Broadway, Sydney, NSW 2007, telephone 9514 1574, fax 9514 1578, or the *Institute for International Studies Handbook*, for further details.

Statement of good practice and ethics in informal assessment

Aims of assignments

In many subjects offered by the Faculty, students undertake assessment tasks in the form of assignments. The setting of assignments is intended to promote a number of educational aims, including furthering each student's learning of the subject, particularly the acquisition of practical skills; providing a

means for staff to assess each student's learning; providing feedback to the student on his or her progress in learning; and providing feedback to staff on the effectiveness of their teaching.

These aims can be subverted if students deceive staff about the authorship of their work.

Acceptable behaviour

Using sources

Whenever anything from someone else's work is used, it is standard practice to indicate exactly where the information comes from. Acknowledgment is achieved by using a standard system of referencing, such as footnotes, end notes, the Harvard system etc. The *Guide to Writing Assignments* (available from the Co-op Bookshop) explains how to use all these standard systems of reference.

Collaboration

In some cases assignment guidelines may permit or require students to cooperate in developing a solution to part or all of an assignment. This may occur formally when a staff member assigns students to groups and indicates which components of the assignment they are to work on as a group and which components they are to work on individually.

It may also occur informally. For example, some assignments may involve an 'ideas gathering' phase followed by an 'execution' phase. Students may be permitted to collaborate informally on the preliminary phase(s), but be expected to work completely individually on the subsequent phase(s). In a programming assignment, for example, it is normally acceptable for one student to discuss with another student (or other person) the specifications of the task so as to determine the requirements (see below). Whether this collaboration could extend to subsequent phases (such as the design phase) would depend on the assignment guidelines; normally, collaboration in the design and subsequent phases is not permitted.

Depending on the type of assignment and degree of collaboration permitted it is possible to define several categories of collaboration:

- individual effort (the student is required to work on all phases entirely by himself or herself);
- group effort (the student is required to work on all phases as part of a formal group);
- mixed effort (the student is required or permitted to work on some or all phases as part of a formal or informal group).

Unless assignment guidelines specifically state otherwise, **a student should assume that an assignment requires a completely individual effort.** The forms of cooperative collaborative behaviour that are acceptable under most circumstances are:

- discussing assignment specifications with another student (or other person) with a view to clarifying what is required;
- getting help from another student (or other person) on technical matters that are not directly part of the assessment task (e.g. on how to use some facility provided by the computer system, such as the editor);
- getting help from another student (or other person) in debugging a program. This is a common occurrence in computing; and
- obtaining help from a tutor.

Generally, what distinguishes the acceptable cases of collaborative behaviour from the unacceptable ones is the student's intention to deceive. For example, in an assignment requiring a completely individual effort, a student may encounter some snag, such as an unfamiliar compiler diagnostic. If the student were to seek help from another student (or person) to remove the snag, then this would normally be considered acceptable behaviour. If, however, several students designed and coded a solution together, then disguised this collaboration, that would be unacceptable behaviour.

Unacceptable behaviour

Outright lying

This is seen most often in programming assignments, where the program does not run, or runs incorrectly, yet the output handed in is correct. The output has been 'tailored' using a word processor in an attempt to fool the marker. Lying is never acceptable behaviour.

Plagiarism

Plagiarism is the action of taking and using as one's own the thoughts, writings, or inventions of another with the intention to deceive.

For example, if one student in a computing subject were to obtain a copy of another student's (or other person's) program, were to modify parts of the program (e.g. change

variable names) so as to disguise its origin, and then submit the modified program as his or her solution, then this would be considered plagiarism.

As another example, a student may obtain all or a major part of the solution to an assignment problem from a text book and, without acknowledging this, submit the solution as his or her own work.

As a further example, a student may use a source of information in an essay, without acknowledging the source. Such plagiarism may range from a sentence or two, or a table or diagram, to occasional cases where the entire paper consists of material copied from a book with only a few sentences added by the student. The student thus submits another's ideas as his or her own work.

Plagiarism is a form of cheating and is never acceptable.

Collusion

Collusion occurs when a student combines with one or more other students (or other persons) to produce a common essay or solution to part or all of an assignment, disguises the shared origin of the solution, and submits the solution as his or her own individual work.

Collusion is regarded as a form of cheating and is never acceptable.

Graduation ceremonies

University graduation ceremonies are held in the Autumn and Spring semesters of each year. All students should take note of the Academic Board policy on late approval of graduands which states that, 'any graduands who have their results confirmed **after** the appropriate Academic Board meeting should **not** be eligible to graduate at the immediately forthcoming ceremony'. Any graduand who is approved, through exceptional circumstances, to attend a ceremony after the Academic Board deadline may not have his or her name included in the Graduation Program.

Environmental Health and Safety

The Faculty has an Environmental Health and Safety Plan, copies of which are available from either Information Office, or on the School and Faculty World Wide Web pages. Staff and students should familiarise themselves with the plan and comply with all hazard procedures outlined in it.

The names and locations of First Aid Officers, and of first aid kits, are indicated by appropriate signs in Faculty and School areas.

Eligibility for Austudy

Austudy provides financial help to full-time students who meet its income and assets requirements. Application forms and information about Austudy eligibility are available from offices of the Student Services Unit at the City and Kuring-gai campuses. **Students who receive Austudy and decide to drop subjects during the semester need to be aware that to remain eligible for Austudy they must be enrolled in a minimum of 18 credit points or have a HECS liability for the semester of .375.** The only exceptions made are for students with disabilities that interfere with their studies, students who are single supporting parents, or those who have been directed by the University to reduce their study load. Student Welfare Officers in the Student Services Unit can assist students who wish to apply for exceptions on these grounds.

Insearch Institute of Commerce

The Insearch Institute of Commerce, which is wholly owned by the University of Technology, Sydney, offers a Diploma program in Information Technology. This program was designed by staff of the Faculty of Mathematical and Computing Sciences. While the University cannot guarantee admission to its degree programs, students who have completed this Diploma may apply for admission to the Bachelor of Science in Computing Science. If admitted, students may be granted up to one year's advanced standing. For further information contact the Admissions Manager, Insearch Institute of Commerce, Level 3, 187 Thomas Street, Haymarket; telephone 9281 8188, fax 9281 9875.

LIST OF COURSES AND CODES

Course title	Code
School of Mathematical Sciences	
Bachelor of Mathematics and Finance	MM03
Bachelor of Mathematics and Finance (Honours)	MM04
Bachelor of Mathematics and Finance/Bachelor of Arts in International Studies	MM06
Bachelor of Science in Mathematics	MM01
Bachelor of Science (Honours) in Mathematics	MM02
Bachelor of Science in Mathematics/Bachelor of Arts in International Studies	MM05
Graduate Certificate in Mathematical Sciences	MM56
Graduate Diploma in Applicable Mathematics	MM67
Graduate Diploma in Mathematics and Finance	MM66
Graduate Diploma in Operations Research	MM52
Graduate Diploma in Statistics	MM65
Master of Science in Operations Research (by coursework)	MM53
Master of Science (by thesis)	MM51
Doctor of Philosophy	MM54

Course title	Code
School of Computing Sciences	
Bachelor of Information Technology	MC03
Bachelor of Science in Computing Science	MC02
Bachelor of Science in Computing Science/Bachelor of Arts in International Studies	MC05
Bachelor of Science in Computing Science/Bachelor of Laws	LL06
Graduate Certificate in Advanced Information Technology	MC62
Graduate Certificate in Applied Computing	MC57
Graduate Certificate in Computer Science	MC60
Graduate Certificate in Human–Computer Interaction	MC65
Graduate Certificate in Information Systems	MC61
Graduate Certificate in Information Technology Management	MC63
Graduate Certificate in Programming Practice	MC64
Graduate Certificate in Software Quality Assurance	MC56
Graduate Diploma in Information Technology	MC52
Graduate Diploma in Information Technology Management	MC75
Master of Business in Information Technology Management (by coursework)	MC85
Master of Science in Computing (by coursework)	MC53
Master of Science (by thesis)	MC51
Doctor of Philosophy	MC54

All inquiries regarding courses should be directed to the Faculty Information Offices on 9514 1803 or 9514 2246.

School of Mathematical Sciences

The School of Mathematical Sciences offers four courses leading to Bachelor's degrees, postgraduate courses leading to qualifications at the Graduate Certificate, Graduate Diploma and Master's levels, and two research degree programs leading to Master's and Doctoral level qualifications. They are:

- the Bachelor of Mathematics and Finance, which is a three-year Pass degree with a fourth year Honours degree, offered in conjunction with the School of Finance and Economics;
- the combined Bachelor of Mathematics and Finance and Bachelor of Arts in International Studies which is a five-year degree, with an additional year of advanced study to fulfil the requirements of the Bachelor of Mathematics and Finance (Honours) degree, offered in conjunction with the Institute for International Studies and the School of Finance and Economics;
- the Bachelor of Science in Mathematics, which is a three-year Pass degree with a fourth year Honours degree;
- the combined Bachelor of Science in Mathematics and Bachelor of Arts in International Studies which is a five-year degree, with an additional year of advanced study to fulfil the requirements of the Bachelor of Science in Mathematics (Honours) degree, offered in conjunction with the Institute for International Studies;
- the Graduate Certificate in Mathematical Sciences;
- the Graduate Diploma in Applicable Mathematics;
- the Graduate Diploma in Mathematics and Finance;
- the Graduate Diploma in Operations Research;
- the Graduate Diploma in Statistics;
- the Master of Science in Operations Research (by coursework);
- the Master of Science, which is awarded on the basis of supervised research and presentation of a thesis; and
- the Doctor of Philosophy, which is awarded on the basis of supervised research and presentation of a thesis.

Computing facilities

The School of Mathematical Sciences operates a number of Sun and Silicon Graphics minicomputer systems, all running versions of the UNIX operating system. All of these systems are linked to the University's network.

Access to these computers is available from a number of laboratories which are owned and operated by the School for mathematics students, as well as from the various public access laboratories operated by the University's Information Technology Division. The School's laboratories provide terminal and X-terminal access to the School's minicomputers as well as IBM-style PC 486 and Pentium compatible computers linked via the School's Novell and Windows NT networks. These PCs also act as terminals to any UNIX system in the University.

The School provides hardware and software facilities for computer graphics, including high-quality graphics workstations, a drafting plotter, PCs emulating graphics terminals (X-terminals), image processing hardware, PostScript laser printers, and an extensive library of FORTRAN subroutines for both two- and three-dimensional graphics.

The School also has a significant quantity of software running on the Silicon Graphics, PCs and Sun systems to support teaching and research in statistics, operations research, applied mathematics and computing. This is supplemented by software resources supplied centrally by the University's Information Technology Division.

Extensive use is made of the University's central facilities, which consist of a number of large Sun server systems. These can all be accessed from any PC laboratory in the University, via the University's network.

The School is actively involved in two major regional computing consortia. The NSW Centre for Parallel Computing operates a Silicon Graphics Power Challenge parallel computer, located at the Australian Technology Park and available to registered users through

the AARNet. The Vislab Consortium provides scientific visualisation research facilities, with principal hardware components located at the University of Sydney and the Australian Technology Park (accessed via AARNet), and local nodes located at each of the partner institutions, including UTS.

University Statistical Consulting Service

The University Statistical Consulting Service (USCS) aims to provide statistical advice to research workers at UTS and to industrial clients. It is a joint initiative of the School of Mathematical Sciences and the University Graduate School. There are seven statisticians associated with the USCS. They have had extensive consulting experience with agricultural scientists, with engineering firms, in the design of biomedical trials and other aspects of medical statistics, in educational statistics, and in the design and analysis of sample surveys.

The major areas of expertise of the USCS are:

- design and analysis of experiments
- design of clinical trials
- analysis of data from biomedical areas
- engineering statistics
- quality control and quality management issues
- design and analysis of sample surveys
- data-based forecasting and prediction

The policy of the USCS is to encourage research workers at UTS to become self-sufficient in the carrying out of routine statistical analyses. Consultants will act in an advisory capacity, offering assistance with the planning and design of experiments and surveys, and with the interpretation of analyses, and will carry out non-routine analyses. Courses on statistical methods for research workers will be conducted by the consultants from time to time.

Routine statistical analyses are best carried out using statistical packages such as Minitab, SAS and SPSS. Courses on these packages will be conducted by the consultants from time to time.

All research workers, including postgraduate students, are encouraged to see a member of the USCS during the planning stage of their research programs. This will ensure that experiments are correctly designed to answer the research workers' questions, that efficient use is made of resources and that the results are recorded in a form appropriate for future analysis. To assist the consultant, the research worker is requested to provide a written summary of the proposed research project, clearly stating the aims of all experiments. For postgraduate students, supervisors should participate in the initial meetings and in the interpretation of the results.

While all reasonable efforts will be made to complete the analysis expeditiously, no definite time can be estimated for the completion of an analysis and no guarantee can be given that useful results will be obtained.

The staff of the USCS are Associate Professor Deborah Street, Director, Dr Tania Prvan, Senior Lecturer, and Ms Jacqueline Allen, Assistant Statistical Consultant.

Mathematics Study Centre

Through its Mathematics Study Centre, the School of Mathematical Sciences provides a support service to all students of the University studying in various introductory mathematical or quantitative areas including statistics. The Mathematics Study Centre coordinates all mathematics support services across the University, and is available on both the City and Kuring-gai campuses.

Drop in service

The Centre is open each day during semester, including tutorial and study weeks. It is open two nights a week on the City campus to cater for part-time students. Students can drop in to the Centre to obtain help with problems specific to a particular course or they may choose to study in the Centre on a regular basis, obtaining assistance from a lecturer as needed. A timetable of Centre lecturers with their particular areas of expertise is available from both branches of the Centre.

Tutorial support

The Mathematics Study Centre offers extra support tutorials for students who have difficulty with their mathematics and statistics studies at first-year level. Where a need exists, students enrol in one of the subjects listed below. This can be arranged separately for students in any faculty; the subjects have previously been run for students in Mathematical Sciences, Engineering, Business, Nursing, Teacher Education and Information Studies. Students may only enrol in one subject of the same number in each semester.

94434, 94435, 94436

Mathematics Tutorial 1, 2, 3

These subjects consist of approximately one hour tuition per week during semester time. These subjects are free of HECS charges and carry no credit point value.

94437, 94438, 94439

Mathematics Study 1, 2, 3

These subjects consist of approximately two hours tuition per week during semester time. These subjects are free of HECS charges and carry no credit point value.

Workshops

The Centre runs Saturday workshops during semester and in the final examination period for many first-year mathematics and statistics subjects. They are timed to assist students in their preparation for quizzes and the final examination, and are popular with students from all faculties. Students may only enrol in one subject of the same number in each semester.

94431, 94432, 94433, 94440, 94441, 94442

Mathematics Workshop 1, 2, 3, 4, 5, 6

These subjects consist of approximately six hours of instruction, usually on a Saturday. These subjects are free of HECS charges and carry no credit point value.

Individual assistance

It is possible for students to arrange individual assistance with mathematics. This is particularly appropriate if a student has a record of failure in mathematics subjects or suffers from low self-confidence. It is also appropriate for students with disabilities. If required, arrangements may be made for a student to have an individual tutorial each week. Much of this is done with counselling support from Student Services.

Bridging subjects

The Mathematics Study Centre provides bridging subjects for students who need mathematics skills for their degree studies at UTS. If faculties have particular needs, Centre staff can design a bridging subject specifically to meet these needs.

94450

Introduction to Statistics

This is a 12-hour subject, run over four evenings in February and also on four days in July, and is designed for students about to enter introductory statistics or research methods subjects. It is particularly popular with Information Studies students. This subject is free of HECS charges and carries no credit point value.

94470

Introduction to Computers for Beginners

This is a 12-hour subject, run day and evening in February. It is designed for students who are not familiar with computers and aims to develop confidence, an understanding of terminology and some basic skills. This subject is free of HECS charges and carries no credit point value.

94480

Bridging Mathematics

This is a 24-hour subject, run day and evening over two weeks in February between enrolment and the start of classes. It provides prerequisite mathematics skills at 2/3 Unit HSC level and is aimed at mature-age students, students who have studied mathematics overseas and students who have not studied a high enough level of mathematics at school for their needs. This subject is free of HECS charges and carries no credit point value.

94490

Mathematics Preparation for Nursing

This is a 12-hour subject, run day and evening in February. It gives a general introduction to mathematics and science for students entering Nursing. This subject is free of HECS charges and carries no credit point value.

Preparation courses

The Centre runs three fee-paying courses each year to prepare students for university studies the following year. Students completing these courses have had success in gaining entry to university and in completing their degree studies.

Intensive Mathematics begins in July and runs for 15 weeks on two nights per week. The course covers the content of the HSC 2 Unit mathematics course and prepares students for entry into mathematics-based courses, such as Engineering and Science.

Intensive Statistics begins in July and runs for 15 weeks on two nights per week. The course is designed for people who will be studying statistics subjects as part of their tertiary studies or whose occupations involve the use of statistical information. No previous knowledge of statistics is assumed.

Preparation for Nursing is a course aimed at giving potential Nursing students the prerequisite knowledge in mathematics and science for their degree studies. This course runs in October and November each year.

Location

City campus: Building 1, Room 1615
Kuring-gai campus: Room K2-522

Opening hours

Monday to Friday during semester, including tutorial and study weeks. The Centre will be open on some evenings to cater for part-time students. Detailed timetables are available at the Centre.

Contact details

For further information, students should contact the Director of the Mathematics Study Centre, Leigh Wood, telephone 9514 2268, e-mail L.Wood@maths.uts.edu.au

Mathematica

The University has recently acquired a site licence for the computer algebra system *Mathematica*. This software permits the integration of symbolic, graphical and numerical computation with a modern programming environment. It is ideally suited to teaching and research in any mathematically-based area of interest.

The system is being introduced into many of the subjects offered by the School. Students' exposure to *Mathematica* begins in the first semester of the BSc and BMathFin degree programs and knowledge of the system expands as the course develops. By the time of graduation, all students will have acquired considerable expertise in the use of this software.

PRIZES

The School of Mathematical Sciences awards the following prizes on a yearly basis.

Foundation for Australian Resources Prizes

The Foundation for Australian Resources is an independent non-profit organisation whose nominated beneficiary is the Faculty of Mathematical and Computing Sciences. The Foundation has made available three prizes to students enrolled in courses run by the School of Mathematical Sciences. One prize, valued at $250, is for the best graduating student from the Bachelor of Science (Honours) in Mathematics degree. The other two, valued at $100 each, are awarded to the outstanding first-year full-time student enrolled in either the Bachelor of Science in Mathematics or the Bachelor of Mathematics and Finance program, and to the outstanding part-time student enrolled in Stage 1 of either of these programs.

Sam Huxham Memorial Prize

This prize was established in 1994 in memory of Samuel Hugh Huxham, who joined the NSW Institute of Technology in 1971 and was Head of the Statistics and Operations Research Unit at the time of his death in May 1994. It is awarded each year for the best performance in the Statistics major by a student completing the Bachelor of Science in Mathematics degree in the preceding year. The prize has a cash value of $250.

Statistical Society of Australia Prize in Statistics

In 1980 the Statistical Society of Australia NSW Branch established a prize for excellence in Statistics. This prize is now awarded to the student who is first in order of merit of those students completing the Statistics strand of the Bachelor of Science (Honours) in Mathematics degree. The prize is a cash award of $200.

School contacts

All staff of the School of Mathematical Sciences are located on Levels 15 and 16 of the Tower Building (Building 1) on the City campus (Broadway).

When telephoning from outside the University, all extension numbers should be prefixed with 9514.

All e-mail addresses should be suffixed with '@maths.uts.edu.au'.

Name	Ext	Room	E-mail
Assistant Statistical Consultant			
Ms Jacqueline Allen	2273	1555	J.Allen
Associate Professor			
Lindsay Botten	2247	1520	L.Botten
Senior Systems Programmer			
Mr Martin Caden	2253	1618	M.Caden
Deputy Head of School, Director, Postgraduate Studies, and Head, Mathematics Unit			
Associate Professor Graeme Cohen	2262	1528	G.Cohen
inpUTS Coordinator for students with special needs and Academic Liaison Officer			
Ms Mary Coupland	2241	1535	M.Coupland
Mr Peter Coutis	2268	1536	P.Coutis
Exemptions Coordinator			
Ms Layna Groen	2266	1533	L.Groen
Dr Jules Harnett	5186	K2-522	J.Harnett
Ms J Hayne	5186	K2-522	J.Hayne
Dr Ian Hoffman	2244	1545	I.Hoffman
Graduate Certificate Coordinator			
Mr Jeff Hogg	2238	1524	J.Hogg
Dr Tim Langtry	2261	1537	T.Langtry
Dr Brian Lederer	2263	1558	B.Lederer
Electives Coordinator			
Mr Ed Lidums	2235	1530	E.Lidums
Computer Systems Support Officer			
Mr Eric Lindsay	2254	1618	E.Lindsay
Dr Beverley Möore	2258	1550	B.Moore
Head of School			
Associate Professor Gordon McLelland	2259	1520	G.Mclelland
Mr Ken Ozanne	2256	1538	K.Ozanne
Head, Computational Mathematics Unit			
Mr Larry Park	2278	1560	L.Park

Name	Ext	Room	E-mail
Honours Coordinator			
Dr Peter Petocz	2264	1531	P.Petocz
Mr Denis Porteus	2265	1559	D.Porteus
Coordinator, University Statistical Consulting Service			
Dr Tania Prvan	2237	1551	T.Prvan
Mr Bob Rozsasi	2245	1561	B.Rozsasi
Professor Tony Shannon	1334	1511	T.Shannon
Director, Undergraduate Studies			
Dr Geoff Smith	2236	1532	G.Smith
Ms Narelle Smith	2239	1539	N.Smith
Head, Statistics and Operations Research Unit, and Director, University Statistical Consulting Service			
Associate Professor Deborah Street	2251	1527	D.Street
Mr Ron Sorli	2281	1548	R.Sorli
Mr Brian Stephenson	2267	1547	B.Stephenson
Professor Barry Thornton	2252	1541	B.Thornton
Director, Mathematics Study Centre			
Ms Leigh Wood	2268	1536	L.Wood
Executive Assistant to Head of School			
Ms Nadene Wright	2249	1520	N.Wright
Mr Peter Wright	2243	1546	P.Wright
Dr Yakov Zinder	2279	1523	Y.Zinder

Undergraduate courses

Bachelor of Science in Mathematics

Course code: MM01

This degree aims to prepare students for employment in industry, commerce and government and to provide the foundation for higher studies in mathematics. It provides great flexibility by allowing students to follow a course of study which best suits their interests and aspirations. It aims to help students acquire sufficient experience and understanding in a broad range of mathematical disciplines to enable them to apply mathematical and computing techniques to industrial and commercial problems.

The course operates as a three-year Pass degree with a fourth year Honours degree. The basic structure of the Pass degree is as follows:

The core – this provides a thorough grounding in the elements of mathematics, statistics, operations research, computing and their applications. This component occupies half of the Pass degree and is taught predominantly during the first two years of the full-time program.

The major – this occupies half of Year 3 of the full-time course (or Years 5 and 6 of the part-time course) and may be taken in one of the areas of pure or applied mathematics, statistics or operations research. This framework provides for specialised study of a particular area of application. A major in Operations Research involves topics such as linear programming, simulation, optimisation and financial modelling. The Statistics major aims to expose students to realistic statistical problems, preparing them to cope with data and their associated uncertainty and variability. The Mathematics major develops further geometric, analytic and algebraic tools and applies them in a variety of complex and practical situations.

Electives – these occupy one-third of the course and, subject to certain restrictions, may be subjects from any school of the University chosen by students to strengthen their understanding in areas of their choice. Common choices are the Computing major offered by the School of Mathematical Sciences, an additional major in mathematics, or a sub-major in computing, finance or one of the sciences.

The Computing major provides students with both practical and theoretical training in computer science and its mathematical foundations, information systems and commercial computing, and a wide variety of applications. Because this major occupies the entire elective sequence, students who wish to pursue it are advised to commence it in their first year of study. However, because it is an elective major, students are not obliged to follow it to completion. The major is accredited at Level 1 by the Australian Computer Society and, accordingly, those who complete it are eligible for Associate Membership of that Society. Students who do not wish to complete the entire major may instead take the Computing sub-major, described in the 'Sub-majors' section.

The course may be attempted on either a full-time or a part-time basis. The standard full-time load is 24 credit points per semester (typically, four subjects each worth six credit points) and the standard part-time load is 12 credit points per semester (typically, two subjects both worth six credit points). Most mathematics subjects worth six credit points involve four hours of class contact per week (typically, three hours of lectures and one hour of tutorial), although some first-year subjects have a higher contact load of six hours. Some subjects, especially those in computing, have additional laboratory hours.

Part-time students will be accommodated by the provision of evening classes for most subjects. It is expected that part-time students will be able to attend classes on one afternoon and three evenings per week during the first two years of the course, and on one afternoon and two evenings per week during later years. Part-time students taking the Computing major may be required to attend a laboratory class on one additional evening per week for some later subjects.

As a general rule, for any given subject, it is wise to devote to home study the same number of hours per week as are allocated to lectures and tutorials in the case of first-year subjects, and twice the number of hours associated with lectures and tutorials per week for more senior subjects.

Details of individual subjects can be found in the 'Subject descriptions' section for the School of Mathematical Sciences in this handbook.

Grading of awards

The School of Mathematical Sciences does not grade students eligible to receive the Bachelor of Science in Mathematics degree.

Course program

Full-time program

Year 1

Autumn semester

35100	Mathematical Practice	3cp
35101	Mathematics 1	6cp
35111	Discrete Mathematics	3cp
35170	Introduction to Computing	6cp
	Electives	approx. 6cp

Spring semester

35102	Mathematics 2	6cp
35151	Statistics 1	6cp
	Electives	approx. 12cp

Year 2

Autumn semester

35212	Linear Algebra	6cp
35231	Differential Equations	6cp
35232	Advanced Calculus	6cp
	Electives	approx. 6cp

Spring semester

35241	Mathematical Programming 1	6cp
35252	Statistics 2	6cp
35281	Numerical Analysis 1	6cp
	Electives	approx. 6cp

Year 3

Autumn semester

35321	Analysis 1	6cp
	Major 1	6cp
	Major 2	6cp
	Electives	approx. 6cp

Spring semester

	Major 3	6cp
	Major 4	6cp
	Electives	approx. 12cp

Part-time program

Year 1

Autumn semester

35100	Mathematical Practice	3cp
35101	Mathematics 1	6cp
35111	Discrete Mathematics	3cp

Spring semester

35170	Introduction to Computing	6cp
	Electives	approx. 6cp

Year 2

Autumn semester

35102	Mathematics 2	6cp
	Electives	approx. 6cp

Spring semester

35212	Linear Algebra	6cp
	Electives	approx. 6cp

Year 3

Autumn semester

35151	Statistics 1	6cp
	Electives	approx. 6cp

Spring semester

35231	Differential Equations	6cp
35232	Advanced Calculus	6cp

Year 4

Autumn semester

35241	Mathematical Programming 1	6cp
35252	Statistics 2	6cp

Spring semester

35321	Analysis 1	6cp
	Electives	approx. 6cp

Year 5

Autumn semester

35281	Numerical Analysis 1	6cp
	Major 1	6cp

Spring semester

	Major 2	6cp
	Electives	approx. 6cp

Year 6

Autumn semester

	Major 3	6cp
	Electives	approx. 6cp

Spring semester

	Major 4	6cp
	Electives	approx. 6cp

Major areas of study

Students must complete at least one of the majors in the areas of Statistics, Operations Research or Mathematics. Students may also choose to complete the Computing major.

Mathematics major

Two sequences, one in Pure Mathematics and one in Applied Mathematics, are offered, although it is not expected that all subjects in both sequences would be taught in any one year. Students may be required to choose a program combining subjects from both sequences. Students interested in the Mathematics major should discuss their enrolment with the Director, Undergraduate Studies, late in the year preceding their intended enrolment.

Pure Mathematics sequence

Full-time program Year 3 and part-time program Years 5 and 6

Autumn semester

35313	Pure Mathematics 3A	6cp
35335	Mathematical Methods	6cp

Spring semester

35314	Pure Mathematics 3B	6cp
35322	Analysis 2	6cp

Applied Mathematics sequence

Full-time program Year 3 and part-time program Years 5 and 6

Autumn semester

35333	Applied Mathematics 3A	6cp
35335	Mathematical Methods	6cp

Spring semester

35334	Applied Mathematics 3B	6cp
35382	Numerical Analysis 2	6cp

Statistics major

Full-time program

Year 3

Autumn semester

35356	Design and Analysis of Experiments	6cp
35361	Probability and Stochastic Processes	6cp

Spring semester

35353	Regression Analysis	6cp
35355	Quality Control	6cp

Note: A minor change to the Statistics major has been made starting in 1997. As a transition arrangement for 1997, students wishing to do the Statistics major may complete any four out of five subjects from the four shown above and 35354 Statistical Inference.

Part-time program

Year 5

Autumn semester

	Core subject	
35356	Design and Analysis of Experiments	6cp

Spring semester

35361	Probability and Stochastic Processes	6cp
	Electives	approx. 6cp

Year 6

Autumn semester

35353	Regression Analysis	6cp
	Electives	approx. 6cp

Spring semester

35355	Quality Control	6cp
	Electives	approx. 6cp

Note: See the note following the full-time program above.

Operations Research major

Full-time program

Year 3

Autumn semester

35342	Mathematical Programming 2	6cp
35361	Probability and Stochastic Processes	6cp

Spring semester

35340	Operations Research Practice	6cp
35363	Stochastic Methods in Operations Research	6cp

Part-time program

Year 5

Autumn semester

	Core subject	
35342	Mathematical Programming 2	6cp

Spring semester

35361	Probability and Stochastic Processes	6cp
	Electives	approx. 6cp

Year 6

Autumn semester

35363	Stochastic Methods in Operations Research	6cp
	Electives	approx. 6cp

Spring semester

35340	Operations Research Practice	6cp
	Electives	approx. 6cp

Computing major

The Computing major occupies all the electives of the BSc in Mathematics degree. The major is augmented by the core subject 35170 Introduction to Computing and by a component of the subject 35281 Numerical Analysis 1.

Full-time program

Year 1

Autumn semester

31414 Information Systems 6cp

Spring semester

31424 Systems Modelling 6cp
35171 Computing 1 6cp

Year 2

Autumn semester

31434 Database Design 6cp

Spring semester

35272 Computing 2 6cp

Year 3

Autumn semester

35373 Computing 3 6cp
35376 Advanced Topics in Computing A 6cp

Spring semester

35377 Advanced Topics in Computing B 6cp

Advanced Topics in Computing

The subjects 35376 Advanced Topics in Computing A and 35377 Advanced Topics in Computing B each consist of two modules to be chosen from the list below. These subjects allow for detailed investigation of selected areas of mathematically-based computing. The modules to be offered each semester will depend on demand and staff availability.

Computer Graphics
Computing Machinery
Cryptology
Formal Analysis of Business Processes
Formal Specification
High Performance Computing
Language Translation
Neural Networks

In some circumstances, these modules may be taken as individual subjects worth three credit points. For this purpose, following consultation with their academic adviser, students must enrol in one of the following subjects: 35274 Computing Seminar A, 35275 Computing Seminar B, 35378 Computing Seminar C, or 35379 Computing Seminar D.

Constraints on completion of the Computing major in the full-time course

In order to accommodate the preferred pattern of operation for the Computing major in Year 3 of the full-time course, certain minor variations of the schedule of subjects are required. Pass degree students taking the Computing major in Year 3 will need to take the subject 35321 Analysis 1 in the Spring semester in order to accommodate the program listed above. However, Pass degree students who wish to undertake both the Computing major and a major in Mathematics involving the subject 35322 Analysis 2 will need to replace 35241 Mathematical Programming 1 in their fourth semester of study with 35321 Analysis 1, and take both 35322 Analysis 2 and 35241 Mathematical Programming 1 in their sixth (or final) semester of study.

The requirement that students proceeding to Honours must have completed the subject 35322 Analysis 2 in addition to the other requirements for the Pass degree implies that (in general) students will not be able to complete the Computing major and satisfy the Honours entry requirements within the 144-credit-point framework of the Pass degree. Because 35322 Analysis 2 is a prerequisite for Honours studies, most students intending to proceed to the Honours year must take 35321 Analysis 1 and 35322 Analysis 2 in the Autumn and Spring semesters respectively and will have to delay or forego completion of the Computing major within the framework of the standard course. (In the case of the Pure Mathematics sequence of the Mathematics major, however, it is possible to qualify for Honours entry and complete the Computing major within the 144-credit-point structure of the standard Pass degree, because the subject 35322 Analysis 2 is contained within that major.)

Part-time program

Year 1

Autumn semester

No Computing major subjects

Spring semester

31424 Systems Modelling 6cp

Year 2

Autumn semester

35171 Computing 1 6cp

Spring semester

31414 Information Systems 6cp

Year 3

Autumn semester

31434 Database Design 6cp

Spring semester

No Computing major subjects

Year 4

Autumn semester

No Computing major subjects

Spring semester

35272 Computing 2 6cp

Year 5

Autumn semester

35373 Computing 3 6cp

Spring semester

No Computing major subjects

Year 6

Autumn semester

35376 Advanced Topics in Computing A 6cp

Spring semester

35377 Advanced Topics in Computing B 6cp

See the full-time program for the Computing major for a description of the subjects 35376 Advanced Topics in Computing A and 35377 Advanced Topics in Computing B.

Electives

Electives occupy one-third of the BSc in Mathematics degree and may be chosen by students to strengthen or develop their knowledge in an area of their choice. Electives are split into **free electives** and **structured electives**.

Free electives

Free electives, whose total weight cannot exceed 24 credit points, provide students with an opportunity to select subjects which accommodate their various interests and needs in a less formal manner than is the case for structured electives. These subjects can be taken from any school within the University, or from another university if the subject area is not represented at UTS. The choice of free electives must be discussed with academic advisers and must be approved by the Electives Coordinator, who will ensure that no subjects specifically proscribed by the School are included. The proscribed list includes subjects of a mathematical nature which are taught elsewhere in the University, and which provide coverage of material that is already incorporated in subjects offered by this School.

Subjects offered by the School of Mathematical Sciences and not included in a student's chosen major may also be taken as free electives. In addition, the following subjects may be chosen:

35205	History of Mathematics	6cp
35344	Network Optimisation	6cp
35292–6	Project	2–6cp
35391	Seminar (Mathematics)	6cp
35392	Seminar (Operations Research)	6cp
35393	Seminar (Statistics)	6cp
35394	Seminar (Computing)	6cp

Structured electives

Structured electives, whose total weight shall not be less than 24 credit points, provide an opportunity for students to systematically develop knowledge of some discipline of their choice. The possibilities are:

- the Computing major (see above);
- a second major within the BSc in Mathematics degree, other than the Computing major;
- the Computing sub-major offered by the School of Mathematical Sciences (not available to students who complete the Computing major);
- existing majors or sub-majors within the University, that have been approved by the School as appropriate for use as structured electives;
- subject sequences which provide for the systematic development of a topic but which are not recognised formally as either a major or sub-major. These sequences must be negotiated between the students and their academic advisers and approved by the Electives Coordinator.

Sub-majors

The following are available as sub-majors. In all cases, full details are available from the School Office.

Computing sub-major

35171	Computing 1	6cp
35272	Computing 2	6cp
	and any two of	
35373	Computing 3	6cp
35376	Advanced Topics in Computing A	6cp
35377	Advanced Topics in Computing B	6cp
31414	Information Systems	6cp
	or	
31424	Systems Modelling	6cp

Sub-majors offered by other faculties

Students may elect to do sub-majors offered by other faculties. It is necessary to discuss the choice with the Electives Coordinator in the School of Mathematical Sciences, and to obtain appropriate approval from the faculty concerned. The following are possible sub-majors.

Aboriginal Studies sub-major

The faculties of Humanities and Social Sciences and Education offer a range of Aboriginal Studies subjects that may be taken as a sub-major, or as elective subjects, as appropriate, within any undergraduate course.

The sub-major provides Aboriginal and non-Aboriginal students with an opportunity to study subjects that are culturally appropriate to an understanding of Aboriginal culture, history and social/political structures. These initial studies serve as a basis for applying critical analysis skills to Aboriginal and non-Aboriginal perspectives on issues and trends which affect the cultural and social integrity of Aboriginal peoples. Consideration is also given to other indigenous people, including Torres Strait Islanders. The role of the media and written or spoken communication are the major focuses of these analyses.

T5110	Aboriginal Cultures and Philosophies	8cp
54230	Aboriginal Social and Political History	8cp
	plus at least one of	
54231	Aboriginal People and the Media	8cp
54330	The Politics of Aboriginal History	8cp
54331	Aboriginal Forms of Discourse	8cp

Finance sub-major

The School of Finance and Economics offers a sub-major in Finance consisting of 30 credit points. To ensure completion of this sub-major it is normally necessary to commence it in the Autumn semester of Year 1.

Physics sub-majors

The Department of Applied Physics offers two sub-majors, one in Physics and one in Electronics. Both contain two compulsory subjects. The remaining subjects, with a value totalling eight credit points (or more), must be chosen from a selection of subjects appropriate to the field.

Bachelor of Science (Honours) in Mathematics

Course code: MM02

The Honours degree provides the opportunity for students to develop their level of competence in the area of mathematics chosen as their major in the BSc in Mathematics degree. The Honours degree is offered over one year on a full-time basis, or two years on a part-time basis, and consists of advanced coursework (comprising two-thirds of the program) and a thesis. This thesis allows students to use the expertise developed by their coursework in an area of application. Students who complete the Honours degree will accordingly be well prepared to enter the workforce at a high level or to undertake graduate studies.

The precise selection of subjects to be offered in any particular year will depend on the interests of students, and the interests and availability of staff. Students should consult the Honours Coordinator, who will assist them in planning their program. This is of particular importance for part-time students since few subjects will be offered at night.

Admission to the Honours degree will be assessed individually according to the following criteria:

- Students who are eligible to graduate from the BSc in Mathematics degree with an average mark of 65 or more in Year 2 (full-time) of the core and in their chosen major, will be eligible for entry to the Honours degree.
- Students who have obtained qualifications equivalent to the BSc in Mathematics degree will, upon application, be considered for entry by the Head of the School of Mathematical Sciences, on the basis of assessed potential to complete the Honours degree.

The Honours program will require the completion of subjects worth 48 credit points in one year of full-time study, or two years of part-time study. Honours will be offered in the Mathematics, Statistics and Operations Research strands, although some strands may not be offered in a given year. The program will consist of eight coursework subjects, each of four credit points, and a thesis of 16 credit points.

Students contemplating taking Honours are advised to consult the Honours Coordinator or the Director, Undergraduate Studies, on completing the core of the BSc in Mathematics degree. This will enable them to plan studies for the following years and make decisions at an early stage which will not close off options that otherwise would be available to them. Usually students decide to apply for Honours before the completion of the BSc in Mathematics but, under the structure of the course, entry to Honours is possible even if the decision to do so is delayed until completion of the BSc in Mathematics.

The Honours degree consists of:

- 24 credit points of Honours-level mathematics subjects (numbered as 354xx). These consist of six four-credit-point subjects, at least five of which must be taken in the major area of study.
- A thesis consisting of a research project of 16 credit points, assessed by a written report and a seminar. A supervisor will be appointed to monitor the progress of the thesis and to advise on its preparation.
- Eight credit points consisting of the subjects 35496 Thesis Seminar A and 35497 Thesis Seminar B. These are reading courses designed to complement the research project or to provide additional foundation for graduate study in the area of the project. The thesis supervisor will be responsible for designing and administering these subjects. In certain circumstances, these subjects may be replaced by Honours Seminar subjects.

Subjects offered in the various strands are as follows.

Mathematics strand

35418	Analytic Number Theory	4cp
35419	Advanced Algebra	4cp
35427	Functional Analysis	4cp
35428	Convexity and Optimisation	4cp
35436	Advanced Mathematical Methods	4cp
35437	Partial Differential Equations	4cp
35438	Nonlinear Dynamical Systems	4cp
35466	Advanced Stochastic Processes	4cp

Operations Research strand

35443	Mathematical Programming 3	4cp
35446	Scheduling Theory	4cp
35447	Discrete Optimisation	4cp
35448	Dynamic Optimisation	4cp
35466	Advanced Stochastic Processes	4cp
35485	Advanced Financial Modelling	4cp

35486	Optimal Control 1	4cp
35487	Optimal Control 2	4cp

Statistics strand

35456	Nonlinear Statistical Models	4cp
35457	Multivariate Statistics	4cp
35458	Loglinear Modelling	4cp
35459	Linear Models and Experimental Design	4cp
35466	Advanced Stochastic Processes	4cp
35467	Time Series Analysis	4cp
35469	Statistical Consulting	4cp

Each strand is augmented by two seminar subjects, 35491 Honours Seminar A and 35492 Honours Seminar B. These Seminar subjects will be offered either by a visitor to the School, or by members of the School's staff in some particular area of interest at the time.

These strands may be amended as areas of significance and interest in the School change with time.

Grading of awards

Students' final results will be based on the coursework subjects, the thesis and the associated seminar. Satisfactory completion of the Honours program will result in the award of an Honours degree with the grade of First Class, Second Class (Division 1), Second Class (Division 2) or Third Class.

The grade of Honours will be determined from the average mark of all subjects, weighted by their credit point values. The grade of First Class, Second Class (Division 1), Second Class (Division 2) or Third Class Honours will be awarded for an average mark in the range of 80–100, 70–79, 60–69 or 50–59, respectively. An average mark of less than 50 will be regarded as a failure. A thesis that is of outstanding merit may justify an increase in the grade of Honours. A student with First Class Honours and outstanding results may be awarded a University Medal.

Bachelor of Science in Mathematics/Bachelor of Arts in International Studies

Course code: MM05

This course combines the Bachelor of Science in Mathematics with the University's Bachelor of Arts in International Studies. Mathematics is integrated with a major in the language and culture of another country. Students spend the fourth year of study at a university overseas. Owing to timetabling constraints, the combined degree is only offered on a full-time basis over five years.

Studies in Mathematical Sciences

The Mathematical Sciences component of the combined degree aims to provide students with a broad education in the field, to prepare graduates for professional practice in industry, commerce and government, and to provide the foundation for graduate studies and research. It provides great flexibility by allowing students to follow a course of study that best suits their interests and aspirations. It aims to help the students acquire sufficient experience and understanding in a broad range of mathematical disciplines to enable them to apply mathematical and computing techniques to industrial and commercial problems.

For further information, see the course outline for the Bachelor of Science in Mathematics in this handbook.

An Honours degree in Mathematics (with strands in Statistics, Operations Research and Mathematics), requiring an additional year of full-time study, is also available.

International Studies

The Bachelor of Arts in International Studies is designed to increase awareness and understanding of the non-English-speaking world.

Students take one of the following majors in the International Studies program: China, Eastern Europe, Indonesia, Japan, Latin America, Malaysia, South China, South-East Asia, Spain, Taiwan, Thailand or Western Europe. They study an appropriate language and culture; learn about the contemporary

society of their country of specialisation; and then spend an academic year of study at a university in their country of specialisation. The costs of tuition and travel are borne by UTS. In many cases, there will be no additional costs for students. However, those studying in countries or regions where the cost of living is high – notably Japan, Argentina, Hong Kong and Taiwan – should be prepared to pay additional costs for accommodation and maintenance.

Course structure

The structure of the five-year course in Mathematical Sciences and International Studies is derived from the combination of the Bachelor of Science in Mathematics with the Bachelor of Arts in International Studies.

All arrangements currently in force for both the Bachelor of Science in Mathematics and the Bachelor of Arts in International Studies apply equally to the combined degree program in Mathematical Sciences and International Studies.

To graduate a student is required to have completed 240 credit points: 144 credit points in Mathematics and 96 credit points in International Studies.

The Mathematics component of the combined degree is structured in three distinct sections: core studies, a major in an area of the mathematical sciences, and an elective component, precisely as for the Bachelor of Science in Mathematics. The major is taken in the final (fifth) year of study.

The Bachelor of Arts in International Studies requires undergraduates to study a major – a region or country of specialisation – over a minimum of three years. Students study language and culture for at least two years in Sydney, and this is followed by a period of study overseas. In 1997 the following range of majors will be available: China, Eastern Europe, Indonesia, Japan, Latin America, Malaysia, South China, South-East Asia, Spain, Taiwan, Thailand and Western Europe. The specialisation on Western Europe is only available to students who have previously completed HSC studies or equivalent in either French, German or Italian. The Eastern Europe specialisation is only available to students with a sound working knowledge of an appropriate Eastern European language.

Each of the specialisations within the International Studies program is 96 credit points, and includes 32 credit points (four subjects) of instruction in an appropriate Language and Culture; 16 credit points (two subjects) of the study of Contemporary Society and its context; and 48 credit points (two semesters) of study at a university or institution of higher education in the country or region of specialisation.

The International Studies subjects listed in the course program are subjects of enrolment referring to common units of instruction across the University.

Language and Culture

Study of Language and Culture at UTS depends on the individual student's level of language proficiency before entry to the UTS program. There is a range of entry levels to the various Language and Culture programs available. Most are available at beginner's and post-HSC levels, and some at more advanced levels.

For 1997 the following Language and Culture programs will be available at UTS as part of the International Studies program: Cantonese, Chinese, Indonesian, Japanese, Malay, Modern Standard Chinese and Spanish. (Modern Standard Chinese is a program for students who are either complete beginners or who started to learn Chinese at school in Australia.) In addition, arrangements have been made for the delivery of Croatian, French, German, Greek, Italian, Polish, Russian, Serbian, Slovenian, Ukrainian and Thai.

Contemporary Society

For each specialisation of the International Studies program, students have a prescribed pair of units of instruction in Contemporary Society, taught by the Institute for International Studies in cooperation with the Faculty of Humanities and Social Sciences.

The first is a subject on Modernisation and Globalisation that provides a general introduction to comparative social and political change. It is designed to locate further study of the major in its intellectual and physical contexts.

The second is a subject that provides a more detailed introduction to the area of specialisation, and which is specific for each major:

- China: *Contemporary China*
- Eastern Europe: *Contemporary Eastern Europe* or *Modern Greek History and Society* or *Contemporary Russia*

- Indonesia: *Contemporary South-East Asia*
- Japan: *Contemporary Japan*
- Latin America: *Contemporary South America*
- Malaysia: *Contemporary South-East Asia*
- South China: *Chinese East Asia*
- South-East Asia: *Contemporary South-East Asia*
- Spain: *Contemporary Europe*
- Taiwan: *Chinese East Asia*
- Thailand: *Contemporary South-East Asia*
- Western Europe: *Contemporary Europe*

In-country Study

Arrangements for students to spend two semesters of study at an institution of higher education in the country or region of specialisation have already been made, or are in train. The first semester will largely be concerned with further language development and cultural appreciation. The second semester will continue the study of language and culture but, where possible, will attempt to direct study towards subjects related to the mathematical sciences. Where students have reached an appropriate level of language competence, arrangements may be made to substitute one or two semesters of industrial experience for periods of In-country Study. In-country industrial experience undertaken in this way will be assessed by UTS in a manner similar to subjects of In-country Study, though through cooperation between the Institute for International Studies and the School of Mathematical Sciences.

Course program

Year 1

Autumn semester

35100	Mathematical Practice	3cp
35101	Mathematics 1	6cp
35111	Discrete Mathematics	3cp
35170	Introduction to Computing	6cp
	Electives	approx. 6cp

Spring semester

35102	Mathematics 2	6cp
35151	Statistics 1	6cp
	Electives	approx. 6cp
	Electives	approx. 6cp

Year 2

Autumn semester

35212	Linear Algebra	6cp
35232	Advanced Calculus	6cp
971xxx	Language and Culture 1	8cp

Spring semester

35241	Mathematical Programming 1	6cp
35252	Statistics 2	6cp
35281	Numerical Analysis 1	6cp
972xxx	Language and Culture 2	8cp

Year 3

Autumn semester

35231	Differential Equations	6cp
59341	Modernisation and Globalisation	8cp
973xxx	Language and Culture 3	8cp
	Electives	approx. 6cp

Spring semester

35321	Analysis 1	6cp
974xxx	Language and Culture 4	8cp
976xxx	Contemporary Society 2	8cp

Year 4

Autumn semester

977xxx	In-country Study 1	24cp

Spring semester

978xxx	In-country Study 2	24cp

Year 5

Autumn semester

353xx	Mathematics Major 1	6cp
353xx	Mathematics Major 2	6cp
	Electives	approx. 6cp
	Electives	approx. 6cp

Spring semester

353xx	Mathematics Major 3	6cp
353xx	Mathematics Major 4	6cp
	Electives	approx. 6cp
	Electives	approx. 6cp

Note: Students intending to complete the elective major in Computing will need to interchange Analysis 1 with an Elective from Year 5 Autumn semester.

Majors

The program for each of the majors corresponds precisely with that in the Bachelor of Science in Mathematics.

Arrangements for In-country Study

In general, students may expect that no additional costs will be incurred through following a period of In-country Study as part of this degree program. The two semesters of In-country Study are full-credit subjects at UTS for which HECS is payable. There are, however, no further tuition fees and the Institute for International Studies will provide travel subsidies. Students in receipt of Austudy in Australia are also able to receive it while they are engaged in In-country Study.

Some of the countries targeted in the International Studies program are relatively 'high-cost'. Though the Institute for International Studies will assist students enrolled in a period of In-country Study in one of those countries with their costs, it cannot guarantee to meet all additional costs. In such cases, students need to be prepared to shoulder a proportion of the costs themselves. Japan is the most obvious case in point.

Under normal circumstances, students can only proceed to a period of In-country Study within the International Studies program if they have successfully completed all earlier stages in the degree program. Students who have not successfully completed all earlier stages may only proceed to a period of In-country Study under exceptional circumstances and with the permission of both the Dean of the Faculty and the Director of the Institute for International Studies.

Before students leave UTS to engage in a period of In-country Study within the International Studies program, they may be required to meet appropriate financial and enrolment requirements by the Director of the Institute for International Studies. They will also be required to agree to be governed by the Institute's code of good conduct during their period of In-country Study.

Bachelor of Mathematics and Finance

Course code: MM03

The years since deregulation of the Australian financial system have witnessed many sweeping changes and a considerable increase in the financial and economic activity of many Australian corporations. During this same period there has been an increasing use by major financial institutions of the sophisticated quantitative techniques that have been developed since the early 1970s. As a consequence, there is a demand for a new type of graduate trained in both mathematics and finance.

To meet this need, the Bachelor of Mathematics and Finance degree is offered jointly by the School of Mathematical Sciences and the School of Finance and Economics.

Students graduating from the BMathFin will have undertaken an integrated sequence of subjects in mathematics, statistics, finance, economics, accounting, business law and computing, and will therefore have sound training in both the traditional theory of finance and the mathematical aspects of modern portfolio management techniques.

As a result, graduates should find interesting and rewarding employment in major financial institutions such as merchant banks, insurance companies and government instrumentalities.

The Bachelor of Mathematics and Finance is offered as a three-year Pass degree with a fourth year Honours degree.

The Pass degree is offered on both a full-time and a part-time basis. In the first four years of the course, part-time students will be expected to be able to attend classes on one afternoon and two or three evenings per week. The final two years may require attendance at morning classes because some subjects, which form parts of other degrees, are not offered at night. Programs will be arranged individually for part-time students to spread the eight subjects of Year 3 of the full-time course over two years.

Grading of awards

The School of Mathematical Sciences does not grade students eligible to receive the Bachelor of Mathematics and Finance degree.

Course program

Full-time program

Year 1

Autumn semester

22105	Accounting A	4cp
25110	Microeconomics	4cp
25308	Financial Markets	4cp
35101	Mathematics 1	6cp
35170	Introduction to Computing	6cp

Spring semester

25209	Macroeconomics	4cp
25314	Business Finance	4cp
35100	Mathematical Practice	3cp
35102	Mathematics 2	6cp
35151	Statistics 1	6cp

Year 2

Autumn semester

35111	Discrete Mathematics	3cp
35212	Linear Algebra	6cp
35231	Differential Equations	6cp
35232	Advanced Calculus	6cp
79101	Business Law	4cp

Spring semester

25905	Capital Budgeting and Valuation (Honours)	6cp
25906	Investment Analysis (Honours)	6cp
35252	Statistics 2	6cp
35281	Numerical Analysis 1	6cp

Year 3

Autumn semester

25621	Financing Decisions and Capital Market Theory	6cp
25620	Derivative Securities	6cp
	or	
25210	Microeconomic Theory and Policy	6cp
35321	Analysis 1	6cp
35353	Regression Analysis	6cp

Spring semester

25421	International Financial Management	6cp
25606	Financial Time Series Analysis	6cp
35241	Mathematical Programming 1	6cp
	or	
35322	Analysis 2	6cp
35361	Probability and Stochastic Processes	6cp

Students not intending to proceed to Honours must take the subjects 25620 Derivative Securities and 35241 Mathematical Programming 1 in their Year 3 program. Students intending to undertake the Honours degree must include 25210 Microeconomic Theory and Policy and 35322 Analysis 2 in their Year 3 program.

Part-time program

Year 1

Autumn semester

25110	Microeconomics	4cp
35101	Mathematics 1	6cp

Spring semester

22105	Accounting A	4cp
35100	Mathematical Practice	3cp
35170	Introduction to Computing	6cp

Year 2

Autumn semester

25209	Macroeconomics	4cp
35102	Mathematics 2	6cp
35111	Discrete Mathematics	3cp

Spring semester

25308	Financial Markets	4cp
25314	Business Finance	4cp
35212	Linear Algebra	6cp

Year 3

Autumn semester

35151	Statistics 1	6cp
79101	Business Law	4cp

Spring semester

35231	Differential Equations	6cp
35232	Advanced Calculus	6cp

Year 4

Autumn semester

35252	Statistics 2	6cp
35281	Numerical Analysis 1	6cp

Spring semester

25905	Capital Budgeting and Valuation (Honours)	6cp
25906	Investment Analysis (Honours)	6cp

Year 5

Autumn semester

25621	Financing Decisions and Capital Market Theory	6cp
35353	Regression Analysis	6cp

Spring semester

25606	Financial Time Series Analysis	6cp
35321	Analysis 1	6cp

Year 6

Autumn semester

25620	Derivative Securities	6cp
	or	
25210	Microeconomic Theory and Policy	6cp
35361	Probability and Stochastic Processes	6cp

Spring semester

25421	International Financial Management	6cp
35241	Mathematical Programming 1	6cp
	or	
35322	Analysis 2	6cp

Students not intending to proceed to Honours must take the subjects 25620 Derivative Securities and 35241 Mathematical Programming 1 in their Year 6 program. Students intending to undertake the Honours degree must include 25210 Microeconomic Theory and Policy and 35322 Analysis 2 in their Year 6 program.

Bachelor of Mathematics and Finance (Honours)

Course code: MM04

The Bachelor of Mathematics and Finance degree is also offered at an Honours level, requiring an additional year of advanced study. Honours degree graduates will be particularly sought after and their additional skills will enable them to compete for high-entry-level jobs in the banking sector. It is expected that most students will opt to undertake this additional year.

Admission to the Honours degree will be assessed individually according to the following criteria:

- Students who are eligible to graduate from the BMathFin degree at UTS with an average mark of 65 or more over all subjects in Years 2 and 3 (full-time) will be eligible for entry to the Honours degree, subject only to the approval of the Heads of the Schools of Mathematical Sciences and Finance and Economics.
- Students who have obtained qualifications equivalent to the BMathFin degree will be considered for entry, upon application, by the Heads of the two participating Schools on the basis of their assessed potential to complete the Honours degree.

The Honours degree will require completion of subjects worth 48 credit points over one year of full-time study. The year consists of nine coursework subjects of an advanced nature in mathematics, statistics and finance, together with a substantial project. The project will involve a major investigation over two semesters of some area of finance, and will provide students with the opportunity to apply the skills developed in their coursework. The project will be assessed on the basis of a thesis and a seminar presented to the staff of both Schools.

Grading of awards

The assessment of students' results will take into account the Honours level coursework subjects, the thesis and the seminar. Honours at the grades of First Class, Second Class (Division 1), Second Class (Division 2) and Third Class will be awarded for the successful completion of the course.

Course program

Listed below is the course program for the BMathFin(Hons) degree.

Year 4

Autumn semester

25907	Theory of Financial Decision Making	4cp
25910	Thesis	12cp
35438	Nonlinear Dynamical Systems	4cp
35466	Advanced Stochastic Processes	4cp
35467	Time Series Analysis	4cp
35486	Optimal Control 1	4cp

Spring semester

25908	Derivative Security Pricing	4cp
25909	Advanced Corporate Finance	4cp
25910	Thesis (cont.)	
35456	Nonlinear Statistical Models	4cp
35487	Optimal Control 2	4cp

Bachelor of Mathematics and Finance/Bachelor of Arts in International Studies

Course code: MM06

This course combines the Bachelor in Mathematics and Finance with the University's Bachelor of Arts in International Studies. Studies in mathematics and finance are integrated with a major in the language and culture of another country. Students spend the fourth year of study at a university overseas. Because of timetabling constraints, the combined degree is available only on a full-time basis over five years.

Studies in Mathematics and Finance

Students graduating from this degree will have undertaken an integrated sequence of study in mathematics, statistics, finance, economics, accounting, business law and computing, and thus will have sound training in both the traditional theory of finance and the mathematical aspects of modern portfolio management techniques. With such skills, graduates should find interesting and rewarding employment in major financial institutions including banks, insurance companies and government instrumentalities.

For further information, see the course outline for the Bachelor of Mathematics and Finance in this handbook.

The Mathematics and Finance components of the course occupy three effective full-time years. An Honours degree, leading to the qualification of BMathFin(Hons) and requiring an additional year of full-time study, is also available.

International Studies

The Bachelor of Arts in International Studies is designed to increase awareness and understanding of the non-English-speaking world.

Students take one of the following majors in the International Studies program: China, Eastern Europe, Indonesia, Japan, Latin America, Malaysia, South China, South-East Asia, Spain, Taiwan, Thailand or Western Europe. They study an appropriate language and culture; learn about the contemporary society of their country of specialisation; and then spend an academic year of study at a university in their country of specialisation. The costs of tuition and travel are borne by UTS. In many cases, there will be no additional costs for students. However, those studying in countries or regions where the cost of living is high – notably Japan, Argentina, Hong Kong and Taiwan – should be prepared to pay additional costs for accommodation and maintenance.

Course structure

The structure of the five-year course in Mathematics and Finance and International Studies is derived from the combination of the Bachelor of Mathematics and Finance with the Bachelor of Arts in International Studies.

All arrangements in force for both the Bachelor of Mathematics and Finance and the Bachelor of Arts in International Studies apply equally to the combined degree program in Mathematics and Finance and International Studies.

To graduate a student is required to have completed 240 credit points: 144 credit points in Mathematics and Finance and 96 credit points in International Studies.

The Mathematics and Finance components of the course include an integrated sequence of subjects in mathematics, statistics, finance, economics, accounting, business law and computing.

The Bachelor of Arts in International Studies requires undergraduates to study a major – a region or country of specialisation – over a minimum of three years. Students study language and culture for at least two years in Sydney, and this is followed by a period of study overseas. In 1997 the following range of majors will be available: China, Eastern Europe, Indonesia, Japan, Latin America, Malaysia, South China, South-East Asia, Spain, Taiwan, Thailand and Western Europe. The specialisation on Western Europe is only available to students who have previously completed HSC studies or equivalent in either French, German or Italian. The Eastern Europe specialisation is only available to students with a sound knowledge of an appropriate Eastern European language.

Each of the specialisations within the International Studies program is 96 credit points, and includes 32 credit points (four subjects) of instruction in an appropriate

Language and Culture; 16 credit points (two subjects) of the study of Contemporary Society and its context; and 48 credit points (two semesters) of study at a university or institution of higher education in the country or region of specialisation.

The International Studies subjects listed in the course program are subjects of enrolment referring to common units of instruction across the University.

Language and Culture

Study of Language and Culture at UTS depends on the individual student's level of language proficiency before entry to the UTS program. There is a range of entry levels to the various Language and Culture programs available. Most are available at beginner's and post-HSC levels, and some at more advanced levels.

For 1997 the following Language and Culture programs will be available at UTS as part of the International Studies program: Cantonese, Chinese, Indonesian, Japanese, Malay, Modern Standard Chinese and Spanish. (Modern Standard Chinese is a program for students who are either complete beginners or who started to learn Chinese at school in Australia.) In addition, arrangements have been made for the delivery of Croatian, French, German, Greek, Italian, Polish, Russian, Serbian, Slovenian, Ukrainian and Thai.

Contemporary Society

For each specialisation of the International Studies program, students have a prescribed pair of units of instruction in Contemporary Society, taught by the Institute for International Studies in cooperation with the Faculty of Humanities and Social Sciences.

The first is a subject on Modernisation and Globalisation that provides a general introduction to comparative social and political change. It is designed to locate further study of the major in its intellectual and physical contexts.

The second is a subject that provides a more detailed introduction to the area of specialisation, and which is specific for each major:

- China: *Contemporary China*
- Eastern Europe: *Contemporary Eastern Europe* or *Modern Greek History and Society* or *Contemporary Russia*
- Indonesia: *Contemporary South-East Asia*
- Japan: *Contemporary Japan*
- Latin America: *Contemporary South America*
- Malaysia: *Contemporary South-East Asia*
- South China: *Chinese East Asia*
- South-East Asia: *Contemporary South-East Asia*
- Spain: *Contemporary Europe*
- Taiwan: *Chinese East Asia*
- Thailand: *Contemporary South-East Asia*
- Western Europe: *Contemporary Europe*

In-country Study

Arrangements for students to spend two semesters of study at an institution of higher education in the country or region of specialisation have already been made, or are in train. The first semester will largely be concerned with further language development and cultural appreciation. The second semester will continue the study of language and culture but, where possible, will attempt to direct study towards subjects related to mathematics and finance. Where students have reached an appropriate level of language competence, arrangements may be made to substitute one or two semesters of industrial experience for periods of In-country Study. In-country industrial experience undertaken in this way will be assessed by UTS in a manner similar to subjects of In-country Study, though through cooperation between the Institute for International Studies and the School of Mathematical Sciences.

Course program

Year 1

Autumn semester

22105	Accounting A	4cp
25110	Microeconomics	4cp
25308	Financial Markets	4cp
35101	Mathematics 1	6cp
35170	Introduction to Computing	6cp

Spring semester

25209	Macroeconomics	4cp
25314	Business Finance	4cp
35100	Mathematical Practice	3cp
35102	Mathematics 2	6cp
35151	Statistics 1	6cp

Year 2

Autumn semester

35111	Discrete Mathematics	3cp
35212	Linear Algebra	6cp
35231	Differential Equations	6cp
971xxx	Language and Culture 1	8cp

Spring semester

25905	Capital Budgeting and Valuation (Hons)	6cp
35252	Statistics 2	6cp
35281	Numerical Analysis	6cp
972xxx	Language and Culture 2	8cp

Year 3

Autumn semester

35232	Advanced Calculus	6cp
59341	Modernisation and Globalisation	8cp
79101	Business Law	4cp
973xxx	Language and Culture 3	8cp

Spring semester

25906	Investment Analysis (Hons)	6cp
974xxx	Language and Culture 4	8cp
976xxx	Contemporary Society	8cp

Year 4

Autumn semester

977xxx	In-country Study 1	24cp

Spring semester

978xxx	In-country Study 2	24cp

Year 5

Autumn semester

25620	Derivative Securities	6cp
25621	Financing Decisions and Capital Market Theory	6cp
35321	Analysis 1	6cp
35361	Probability and Stochastic Processes	6cp

Spring semester

25421	International Financial Management	6cp
25606	Financial Time Series Analysis	6cp
35241	Mathematical Programming 1	6cp
35353	Regression Analysis	6cp

Note: Students intending to proceed to the Honours degree in Mathematics and Finance should substitute 25210 Microeconomic Theory and Policy for the subject 25620 Derivative Securities and 35322 Analysis 2 for the subject 35241 Mathematical Programming 1 in their final year.

Arrangements for In-country Study

In general, students may expect that no additional costs will be incurred through following a period of In-country Study as part of this degree program. The two semesters of In-country Study are full-credit subjects at UTS for which HECS is payable. There are, however, no further tuition fees and the Institute for International Studies will provide travel subsidies. Students in receipt of Austudy in Australia are also able to receive it while they are engaged in In-country Study.

Some of the countries targeted in the International Studies program are relatively 'high-cost'. Though the Institute for International Studies will assist students enrolled in a period of In-country Study in one of those countries with their costs, it cannot guarantee to meet all additional costs. In such cases, students need to be prepared to shoulder a proportion of the costs themselves. Japan is the most obvious case in point.

Under normal circumstances, students can only proceed to a period of In-country Study within the International Studies program if they have successfully completed all earlier stages in the degree program. Students who have not successfully completed all earlier stages may only proceed to a period of In-country Study under exceptional circumstances and with the permission of both the Dean of the Faculty and the Director of the Institute for International Studies.

Before students leave UTS to engage in a period of In-country Study within the International Studies program they may be required to meet appropriate financial and enrolment requirements by the Director of the Institute for International Studies. They will also be required to agree to be governed by the Institute's code of good conduct during their period of In-country Study.

Postgraduate courses

POSTGRADUATE RESEARCH DEGREES

The Master of Science (by thesis) (MSc) and Doctor of Philosophy (PhD) degrees provide the opportunity for graduates to extend and deepen their knowledge in specialised areas of mathematics by undertaking research under the supervision of a member of the academic staff.

The main interests within the School of Mathematical Sciences are in applied and computational mathematics, operations research and statistics. Particular interests and specialisations exist in the following areas:

Clinical Trials and the Modelling of Medical Data

Inversion of Raman spectra of living cells; stability and uniqueness in compartmental models for medical applications; diabetic control; insulin sensitivity; and modelling of glucose and C-peptide response curves.

Computational Mathematics and Computing

Lattice rules for numerical multiple integration; development of AMPL (A Mathematical Programming Language); database management system for diabetes; computer performance modelling; mathematical foundations of computing; and computer-aided instruction in mathematics.

Differential Geometry

Topology and Ricci curvature; and integral formulas on submanifolds of a Riemannian manifold.

Geophysical Applications of Mathematics

Seismic ray theory for slightly heterogeneous structures; properties of normal rays; seismic wave propagation; seismic velocity inversion; inverse problems; and radio frequency propagation in coal seams.

Mathematics Education

PhD education of industrial mathematicians; mathematical education of engineers; tertiary education in applied mathematics; and statistical education.

Number Theory

Recurring sequences; odd perfect numbers and related numbers; and arithmetical functions.

Operations Research

Simulation techniques; scheduling; discrete optimisation; neural networks; and finance theory and modelling.

Optics and Electromagnetic Diffraction Theory

Diffraction properties of one-dimensional and two-dimensional periodic structures; and optics of thin films.

Statistics

Medical applications of statistics; measurement and test design; permissible statistics; stationary Markov sequences; simulation and density estimation; and applied statistics.

Research projects that are focused on biomedical applications are conducted through the Centre for Biomedical Technology which was formed in 1990. The Centre is an interfaculty network of research and education teams working in the field of biomedical technology. It integrates the University's diverse expertise and resources to enhance the scientific and technological base for biomedical technology research and training for industry, health-care providers and government. Other schools and faculties involved with the Centre are the Faculty of Science, the Faculty of Nursing, the School of Electrical Engineering, the School of Mechanical Engineering and the School of Computing Sciences.

Fees

Fees will be levied in accordance with University policies and DEETYA guidelines. Details will be available in early 1997.

Recent theses

PhD theses

Ollerton, R L 1990, Adaptive control and the insulin dependent diabetic.

Dobson, R J 1992, Modelling host regulation of trichostrongylus colubriformis, a nematode parasite of sheep.

Melham, R S 1995, Some aspects of homogeneous linear recursive sequences of order mainly two.

Wong, C-K 1996, Mathematical modelling of peptide kinetics in diabetes mellitus.

MSc theses

Reuben, A J 1990, Mathematical models of erythrocyte sedimentation.

Haggar, F 1991, An account of the behaviour of some pairs of e(1) variables.

Lee, J K 1991, Strategies for inversions for some geophysical and medical applications.

Thornton, F 1996, Combining diagnostic modalities to aid breast screening effectiveness.

Doctor of Philosophy

Course code: MM54

The Doctor of Philosophy (PhD) program provides an opportunity for graduates to acquire high-level research skills and substantially deepen their knowledge in an area of the mathematical sciences by working under the guidance of a supervisor. The research program entails survey and mastery of a large body of literature in the chosen topic together with a substantial body of high-level original work by the candidate. Students are also required to present seminars during the time of their enrolment and at the completion of their program.

The course is offered in full-time and part-time modes. For full-time enrolments, the normal duration of the program is three years; for part-time enrolments, it is six years. It is expected that part-time students will be able to devote 20 hours per week to work towards the degree. All students are expected to maintain regular contact (at least weekly) with their supervisor.

Master of Science

Course code: MM51

The Master of Science (MSc) program provides an opportunity for graduates to acquire research skills and deepen their knowledge in some areas of the mathematical sciences. Students work under the guidance of a supervisor who is a member of the full-time academic staff of the School. The research program entails survey and mastery of a substantial body of literature in the chosen topic together with original work from the candidate. The degree is examined through the presentation of a thesis. Students are also required to present seminars during the time of their enrolment and at the completion of their program.

The course is offered in full-time and part-time modes. For full-time enrolments, the normal duration of the program is two years; for part-time enrolments, it is four years. It is expected that part-time students will be able to devote 20 hours per week to work towards the degree. All students are expected to maintain regular contact (at least weekly) with their supervisor.

POSTGRADUATE COURSEWORK PROGRAMS

Master of Science in Operations Research

Course code: MM53

Operations research may be defined as the application of the methods of science to complex problems arising in the direction and management of large systems of people, machines, materials and money in industry, business, government and defence. This course aims to prepare graduates for high-level professional work in the application of operations research techniques to the problems of modern society.

The subjects in the program provide students with a suite of advanced techniques, together with the theoretical background for these methods. Studies in the fields of optimisation, mathematical programming, stochastic processes and the theory of finance, together with a broad survey of applications having industrial and social importance, will enable graduates to deal with high-level professional work in operations research in business and industry.

Fees

The Master's degree in Operations Research is offered with a fixed quota of student places and the course fees have been set in accordance with University policy. In 1997 the tuition fees have been set at $2,100 for each semester of equivalent full-time study. Fees for part-time

students are levied on a pro rata basis. Course fees are revised from year to year in accordance with University and government policy.

Course structure

The course has a length of 48 credit points and consists of six core subjects (24 credit points), 12 credit points of elective subjects (incorporated to enable students to develop complementary skills) and a substantial project of 12 credit points (requiring students to undertake a survey and a modest level of research in some area of application of the discipline). The normal attendance pattern involves two years of part-time study. However, it is possible to complete the degree through one year of full-time study.

Applicants for this course must be graduates who have high-level skills in the mathematical sciences. In particular, they must have:

- a knowledge of statistics equivalent to 35252 Statistics 2;
- completed studies in operations research corresponding to the Graduate Diploma in Operations Research, the Operations Research major of the BSc in Mathematics, or its equivalent; and
- completed prerequisites in mathematics which are presumed in the core subjects of the degree.

Applicants not satisfying these prerequisites are advised to consider enrolling in the Graduate Diploma in Operations Research or the Graduate Certificate programs offered by the School. Applicants should discuss their eligibility for entry with the Director, Postgraduate Studies.

The course is composed of the following elements.

A sequence of subjects

The subjects are taught through lectures, tutorials and reading.

A major report

Students are required to investigate an approved topic in operations research. They are required to present a written report and to give an oral presentation in the form of a seminar.

Three electives

The electives have been included within the program to enable students to round out their education in an appropriate manner. It is intended that these subjects be of senior undergraduate standard or higher. Typical choices will include additional studies in operations research, statistics or possibly subjects from some area of business or management. The electives will be chosen by the student and an academic adviser who will be appointed by the Director, Postgraduate Studies.

Students will have their registration discontinued for failure to complete the course in three years from the time of registration in the case of a full-time student, or in four-and-a-half years in the case of a part-time student (not inclusive of periods of leave of absence) (Rule 3.3.7.1), or for recording any three failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/92/70) (Rule 3.3.7.2).

Course program

Part-time program

Semester 1		
35447	Discrete Optimisation	4cp
35448	Dynamic Optimisation	4cp
	Electives (approx. 4cp)	
Semester 2		
35443	Mathematical Programming 3	4cp
35446	Scheduling Theory	4cp
	Electives (approx. 4cp)	
Semester 3		
35449	Operations Research Models and Methodology	4cp
35486	Optimal Control 1	4cp
35599	Report (Part 1)	6cp
Semester 4		
35599	Report (Part 2)	6cp
	Electives (approx. 4cp)	

It should be noted that 35599 Report is a year-long subject. Students are expected to devote approximately three hours per week to the Report in Semester 3 and six hours per week in Semester 4.

Graduate Diploma in Applicable Mathematics

Course code: MM67

The Graduate Diploma in Applicable Mathematics is designed to offer suitably qualified graduates the background in mathematics required to pursue further studies in an area of mathematics, and particularly in the area of mathematical finance. Students will be expected to have a sound background in mathematics and statistics to approximately second-year level.

The subjects in the Graduate Diploma include the necessary background material at undergraduate level that will enable its graduates to proceed into the Bachelor of Mathematics and Finance (Honours) degree, provided an acceptable standard is reached. Exemption from some subjects, due to prior study, will be available where warranted.

The length of the course is 48 credit points, comprising coursework in eight subjects. One of these subjects is an elective that would generally be chosen from one of the major areas (Mathematics, Statistics or Operations Research) in the Bachelor of Science in Mathematics degree. The expected pattern of attendance is part time over two years.

Applicants for the Graduate Diploma should discuss their eligibility with the Director, Postgraduate Studies. Those who have not completed the necessary prerequisites will be required to enrol in appropriate subjects, either as miscellaneous students or in a Graduate Certificate program.

Students will have their registration discontinued for failure to complete the course in eight semesters from the time of registration in the case of a part-time student, or four semesters from that time in the case of a full-time student, not inclusive of periods of leave of absence (Rule 3.2.6.1), or for any three failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

At present there are no government-funded student places for this course and it is necessary to charge full fees. The cost of the course has been set at $2,880 for each semester of equivalent full-time study. Fees for part-time students are levied on a pro rata basis. Course fees are revised from year to year in accordance with University and government policy.

Course program

Part-time program

Semester 1		
35231	Differential Equations	6cp
35252	Statistics 2	6cp
Semester 2		
35232	Advanced Calculus	6cp
35321	Analysis 1	6cp
Semester 3		
35353	Regression Analysis	6cp
	Elective	6cp
Semester 4		
35322	Analysis 2	6cp
35361	Probability and Stochastic Processes	6cp

Graduate Diploma in Mathematics and Finance

Course code: MM66

The Graduate Diploma in Mathematics and Finance is designed to allow suitable graduates in one area of mathematics, say statistics or pure mathematics, to be retrained so that they will have sufficient knowledge of relevant aspects of financial modelling to enable them to participate authoritatively in the area of finance. Students will be expected to have a sound background in mathematics and statistics to second-year level.

The subjects in the Graduate Diploma range from necessary background material at undergraduate level through to Honours level subjects in time-series analysis and financial modelling. Exemptions from subjects, due to prior study, will be available where warranted.

The length of the course is 48 credit points, comprising 36 credit points of coursework in seven subjects and a project worth 12 credit points. The expected pattern of attendance is part time over two years. Applicants should be aware that attendance at daytime classes may be unavoidable for some subjects.

Applicants for the Graduate Diploma should discuss their eligibility with the Director, Postgraduate Studies. Those who have not completed the necessary prerequisites will be required to enrol in appropriate subjects, either

as miscellaneous students or in a Graduate Certificate program.

Students will have their registration discontinued for failure to complete the course in eight semesters from the time of registration in the case of a part-time student, or four semesters from that time in the case of a full-time student, not inclusive of periods of leave of absence (Rule 3.2.6.1), or for any three failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

At present there are no government-funded student places for this course, and it is necessary to charge full fees. The cost of the course has been set at $2,880 for each semester of equivalent full-time study. Fees for part-time students are levied on a pro rata basis. Course fees are revised from year to year in accordance with University and government policy.

Course program

Part-time program

Semester 1		
33401	Mathematics for Computing	6cp
35252	Statistics 2	6cp
Semester 2		
35361	Probability and Stochastic Processes	6cp
35384	Financial Modelling	4cp
Semester 3		
35241	Mathematical Programming 1	6cp
35467	Time Series Analysis	4cp
35596	Project (Part 1)	6cp
Semester 4		
35485	Advanced Financial Modelling	4cp
35596	Project (Part 2)	6cp

Graduate Diploma in Operations Research

Course code: MM52

This course is designed to train professional people in the application of operations research principles and methods. It may be regarded as a training or retraining course for graduates from a wide range of disciplines, provided they have a sound foundation in mathematics, statistics and computing to approximately second-year level. It is ideally suited for subsequent entry into the Master of Science in Operations Research, provided a suitable standard is attained.

The subjects in the Graduate Diploma cover standard operations research techniques and their theoretical foundations. The range of topics and the level of presentation are commensurate with those found in senior undergraduate studies in this discipline.

The length of the course is 48 credit points, comprising 36 credit points of coursework (six subjects) and a project worth 12 credit points. The expected pattern of attendance is part time over two years. Attendance at daytime classes may be unavoidable for some subjects.

Applicants for this course will be graduates from a variety of disciplines who satisfy the basic entry requirements. These consist of a knowledge of pure and applied mathematics and statistics that is sufficient to satisfy the prerequisites of the program's subjects, and a knowledge of computer programming equivalent to the content of the subject 35170 Introduction to Computing.

Applicants not satisfying these prerequisites are advised to consider enrolling in a Graduate Certificate course. Applicants for the Graduate Diploma program should discuss their eligibility with the Director, Postgraduate Studies.

Students will have their registration discontinued for failure to complete the course in eight semesters from the time of registration in the case of a part-time student, or four semesters from that time in the case of a full-time student, not inclusive of periods of leave of absence (Rule 3.2.6.1), or for any three failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

The Graduate Diploma in Operations Research is offered with a fixed quota of student places and the course fees have been set in accordance with University policy. In 1997 the tuition fees have been set at $1,900 for each semester of equivalent full-time study. Fees for part-time students are levied on a pro rata basis. Course fees are revised from year to year in accordance with University and government policy. Students paying tuition fees will not be liable for HECS (the Higher Education Contribution Scheme).

Course program

Part-time program

Semester 1		
35241	Mathematical Programming 1	6cp
35252	Statistics 2	6cp
Semester 2		
35361	Probability and Stochastic Processes	6cp
35363	Stochastic Methods in Operations Research	6cp
Semester 3		
35342	Mathematical Programming 2	6cp
35596	Project (Part 1)	6cp
Semester 4		
35340	Operations Research Practice	6cp
35596	Project (Part 2)	6cp

It should be noted that 35596 Project is a year-long subject. Students are expected to devote approximately four hours each week to the Project in both semesters.

Graduate Diploma in Statistics

Course code: MM65

The Graduate Diploma in Statistics aims to train graduates in the methods and principles of applied statistics. The course provides access to training or retraining in statistics to at least the level of skill attained by students completing the BSc in Mathematics degree with the Statistics major. Students will be expected to have some statistical and mathematical background.

A knowledge of statistical methodology is becoming ever more important for graduates in many disciplines. Degree courses in the sciences, in engineering and in business often do not provide the exposure to statistics which graduates find they need in employment. This course is suitable for such graduates and also for those who have completed degrees in pure or applied mathematics without a major in statistics.

The subjects in the Graduate Diploma cover standard statistical techniques and their theoretical foundations. The range of topics and the level of presentation are commensurate with those found in senior undergraduate studies in this discipline.

The course has a value of 48 credit points, comprising 40 credit points of coursework (six subjects) and a project worth 8 credit points. The expected pattern of attendance is part time over two years. Attendance at daytime classes may be unavoidable for some subjects.

Applicants for this course will be graduates from a variety of disciplines who satisfy the basic entry requirements. These consist of a knowledge of statistics and pure and applied mathematics that is sufficient to satisfy the prerequisites of the program's subjects, and a knowledge of computer programming equivalent to the content of the subject 35170 Introduction to Computing.

Prospective applicants will be assessed by the Director, Postgraduate Studies, and those who have not completed the necessary prerequisites will be required to enrol in appropriate subjects, either as miscellaneous students or as part of a Graduate Certificate program.

Students will have their registration discontinued for failure to complete the course in eight semesters from the time of registration in the case of a part-time student, or four semesters from that time in the case of a full-time student, not inclusive of periods of leave of absence (Rule 3.2.6.1), or for any three failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

The Graduate Diploma in Statistics is offered with a fixed quota of student places and the course fees have been set in accordance with University policy. In 1997 the tuition fees have been set at $1,900 for each semester of equivalent full-time study. Fees for part-time students are levied on a pro rata basis. Course fees are revised from year to year in accordance with University and government policy.

Course program

Part-time program

Semester 1

35252	Statistics 2	6cp
35356	Design and Analysis of Experiments	6cp

Semester 2

35353	Regression Analysis	6cp
35361	Probability and Stochastic Processes	6cp

Semester 3

35363	Stochastic Methods in Operations Research	6cp
35467	Time Series Analysis	4cp

Semester 4

35355	Quality Control	6cp
35594	Project	8cp

Graduate Certificate in Mathematical Sciences

Course code: MM56

The Graduate Certificate in Mathematical Sciences has been developed in response to a demand for short courses in mathematics, statistics, operations research and computational mathematics. It provides those employed in industry with access to additional training or retraining in quantitative disciplines.

The course has a flexible structure and the wide range of subjects offered in the other postgraduate and undergraduate courses in the School of Mathematical Sciences is available to intending students. Students may undertake any sequence of subjects offered by the School with a total value of 12 credit points, provided that individual subject prerequisites are satisfied.

Applicants will normally be expected to hold a Bachelor's degree, or higher qualification, from a recognised tertiary institution. Applicants who do not possess such qualifications will be considered on an individual basis. Prior to their admission, all applicants will be required to discuss their preferred program of study with the Graduate Certificate Coordinator in order to ensure that they have the requisite background knowledge for their chosen subject sequences.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of a part-time student, or two semesters from that time in the case of a full-time student, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Fees

Full tuition fees will be charged for this course. In 1997 a fee of $900 per subject will be payable. This fee is subject to annual review.

Course program

A number of coherent subject sequences in the areas of mathematics, computational mathematics, operations research and statistics are possible. Samples of these are listed below. Some computing subjects require extra attendance for laboratory work. Details are given in the 'Subject descriptions' section for the School of Mathematical Sciences in this handbook.

Computational Mathematics

Sequence A

Theme: Numerical Analysis

Presumed knowledge

Equivalent to introductory courses in calculus, linear algebra and differential equations, and an elementary knowledge of the C language.

Program of study

35281	Numerical Analysis 1	6cp
35382	Numerical Analysis 2	6cp

Sequence B

Theme: Mathematical Cryptology

Presumed knowledge

Equivalent to an introductory course in linear algebra, and an intermediate-level knowledge of a modern procedural language.

Program of study

35314	Pure Mathematics 3B	6cp
35376	Advanced Topics in Computing A (Modules: Cryptology, High Performance Computing)	6cp

Sequence C

Theme: Neural Networks

Presumed knowledge

Equivalent to introductory courses in calculus, matrix algebra and statistics, and an intermediate-level knowledge of a modern procedural language.

Program of study

35232	Advanced Calculus	6cp
35376	Advanced Topics in Computing A (Modules: Neural Networks, High Performance Computing)	6cp

Mathematics

Sequence A

Theme: Differential Equations

Presumed knowledge

Equivalent to introductory courses in calculus and linear algebra.

Program of study

35102	Mathematics 2	6cp
35231	Differential Equations	6cp

Sequence B

Theme: Modern and Linear Algebra

Presumed knowledge

Equivalent to introductory courses in matrix algebra and discrete mathematics.

Program of study

35212	Linear Algebra	6cp
35314	Pure Mathematics 3B	6cp

Sequence C

Theme: Analysis with Applications to Probability Theory

Presumed knowledge

Equivalent to introductory courses in calculus, differential equations and linear algebra.

Program of study

35321	Analysis 1	6cp
35322	Analysis 2	6cp

Operations Research

Sequence A

Theme: Financial Modelling

Presumed knowledge

Equivalent to intermediate courses in calculus, linear algebra and statistics.

Program of study

35241	Mathematical Programming 1	6cp
35340	Operations Research Practice	6cp

Sequence B

Theme: Techniques of Mathematical Programming

Presumed knowledge

Equivalent to intermediate courses in calculus and linear algebra.

Program of study

35241	Mathematical Programming 1	6cp
35342	Mathematical Programming 2	6cp

Sequence C

Theme: Simulation and Decision Support

Presumed knowledge

Equivalent to intermediate courses in calculus and statistics.

Program of study

35361	Probability and Stochastic Processes	6cp
35363	Stochastic Methods in Operations Research	6cp

Statistics

Sequence A

Theme: Analysis of Experimental Data

Presumed knowledge

Equivalent to introductory courses in calculus and statistics.

Program of study

35252	Statistics 2	6cp
35353	Regression Analysis	6cp

Sequence B

Theme: Industrial Applications of Statistics

Presumed knowledge

Equivalent to intermediate courses in calculus and statistics.

Program of study

35355	Quality Control	6cp
35361	Probability and Stochastic Processes	6cp

Sequence C

Theme: Mathematical Statistics

Presumed knowledge

Equivalent to intermediate courses in calculus and statistics.

Program of study

35356	Design and Analysis of Experiments	6cp
35361	Probability and Stochastic Processes	6cp

Subject descriptions

Guide to subject descriptions

The subject descriptions shown below indicate the subject number and name, the number of credit points for the subject (e.g. 4cp), and the number of formal contact hours per week (e.g. 3hpw). Also shown are the prerequisites or corequisites, if any, and a brief outline of the content.

Prerequisites are subjects that must be completed before taking the subject to which they refer. Corequisites may be completed before or be taken concurrently with the subject to which they refer.

Subjects offered by the School of Mathematical Sciences are listed first, followed by those offered by other faculties. Subjects offered by the School of Computing Sciences can be found in that School's 'Subject descriptions' section later in this handbook.

33401

Mathematics for Computing

6cp; 3hpw

Matrices and determinants. Gaussian reduction. Solution of linear equations. Eigenvalues and eigenvectors. Vectors. Products of vectors. Equations of lines and planes. Complex numbers. Polar form and de Moivre's theorem. Linear independence of vectors. Rank of a matrix. Symmetric matrices. Quadratic forms. Geometric transformations in two and three dimensions. Functions of one and several variables. Partial derivatives. Maxima and minima. Taylor's theorem. Gradient and Hessian. Classification of critical points.

35100

Mathematical Practice

3cp; 3hpw

Introduction to the art and practice of mathematics. Perspectives on communication and mathematical communication. History of mathematical communication. Reading, writing and speaking mathematics. Mathematics in context. Inductive and deductive reasoning and scientific method. Mathematical practice case studies: proof techniques, problem solving and modelling.

35101

Mathematics 1

6cp; 6hpw

Matrices and determinants; solution of linear equations; Gaussian reduction. Eigenvalues and eigenvectors. Vectors: products of vectors, equations of lines and planes. Complex numbers: polar form, de Moivre's theorem. Limits, continuity and differentiation. Mean value theorem. Curve sketching. Related rates. Maxima and minima. Integration. Riemann sums; fundamental theorem of calculus; application to areas and volumes and to lengths of curves. Logarithm and exponential functions. Trigonometric and hyperbolic functions; inverse trigonometric and hyperbolic functions. L'Hôpital's rule.

35102

Mathematics 2

6cp; 6hpw; prerequisite: 35101 Mathematics 1

Methods of integration; improper integrals. Ordinary differential equations; first-order linear and variable separate equations; higher-order linear equations; undetermined coefficients. Sequences and series; tests for convergence; power series; radius of convergence; Taylor's series. Application of matrix exponentials to systems of linear differential equations. Series solution of linear differential equations; ordinary and regular singular points; Bessel functions. Partial derivatives, directional derivative and gradient; maxima and minima; Lagrange multipliers.

35111

Discrete Mathematics

3cp; 3hpw

Graphs, paths, trees. Set operations. Indexing and recurrence relations. Propositional and predicate calculus. Groups and monoids. Automata. Permutations, combinations, partitions, counting and allocation problems.

35151

Statistics 1

6cp; 6hpw

Describing and exploring data. Producing data. Probability. Random variables. Introduction to inference. Inference for

distributions. Inference for categorical data. Regression. Analysis of variance. Distribution-free inference.

35170

Introduction to Computing

6cp; 7hpw

An introduction to computer systems by providing skills in the use of editors, user interfaces and operating systems. Three approaches to simple numerical and business problems will be developed: imperative programming, functional programming and the utilisation of spread-sheets, illustrating the complementary nature of these approaches to computing.

35171

Computing I

6cp; 7hpw; prerequisite: 35170 Introduction to Computing; corequisite: 35111 Discrete Mathematics

Further investigation of functional and imperative programming techniques. Functional programming: polymorphism, higher-order functions, finite and infinite lists, proofs of relations. Imperative programming: pointers, linked lists, arrays, static and dynamic variables, file handling. Searching and sorting algorithms. Lists, stacks, queues and trees. Design techniques: modularisation, abstraction, generalisation, structural induction, testing, information hiding. Comparison of functional and imperative programming paradigms with respect to iteration and recursion, eager and lazy evaluation, and the use of prototypes.

35205

History of Mathematics

6cp; 4hpw

Overview of general history. Overview of the history of mathematics. Mathematics before the Greeks. Greek mathematics and the development of logical argument and rigour. The decline of Greek mathematics. Indian and Arabic contributions to notation and calculation, and the preservation of Greek knowledge. Scholastic and Renaissance mathematics: the rediscovery of classical knowledge in Western Europe. The scientific revolution and the discovery of the calculus. Development of the calculus and its applications in continental Europe. The search for a rigorous foundation for the calculus and the rise of analysis. The resurgence of geometry and algebra in the 19th century.

35212

Linear Algebra

6cp; 4hpw; prerequisite: 35101 Mathematics I

Systems of linear equations, decompositions. Vector spaces. Inner product spaces, Gram-Schmidt orthogonalisation. The eigenvalue problem. Symmetric matrices, diagonalisation, quadratic forms. Jordan form. Matrix exponentials.

35231

Differential Equations

6cp; 4hpw; prerequisites: 35102 Mathematics 2

Existence and uniqueness of solutions. Variation of parameters. Qualitative theory of linear and nonlinear systems. Limit cycles. Poincaré-Bendixson theorem. Applications. Boundary value problems, separation of variables. Fourier series. Heat and wave equations. Laplace's equation. Transform methods.

35232

Advanced Calculus

6cp; 4hpw; prerequisite: 35102 Mathematics 2

Vector calculus: calculus of several variables, partial derivatives, Taylor's theorem, critical points, Hessians, multiple integrals, line integrals. Complex variables: analytic functions, Cauchy-Riemann equations, complex integrals, Cauchy's theorem, contour integrals, residues.

35241

Mathematical Programming I

6cp; 4hpw; prerequisites: 35212 Linear Algebra; 35232 Advanced Calculus

Operations Research: scope and methodology. Examples of linear, discrete, nonlinear, and dynamic programming problems. Convex sets and convex functions. Simplex method. Revised simplex method. Unconstrained nonlinear programming, first-order and second-order conditions. Method of steepest descent. Constrained nonlinear programming, first-order and second-order conditions. Duality and sensitivity. Basic concepts of dynamic programming; principle of optimality and functional equations.

35252

Statistics 2

6cp; 4hpw; prerequisite: 35151 Statistics 1

Probability. Random variables and their probability distributions. Multivariable probability distributions. Functions of random variables. Sampling distributions and the Central Limit Theorem. Applications to estimation. Multivariate normal distribution.

35272

Computing 2

6cp; 6hpw; prerequisites: 35111 Discrete Mathematics; 35171 Computing 1

Object-oriented design and programming. User-defined recursive data-structures with implementation in an object-oriented imperative language and a functional programming language. Standard problem solving strategies. Analysis of data types and algorithms. Introduction to formal techniques for program specification and design.

35274

Computing Seminar A

3cp; 2hpw; prerequisites: see 35376 Advanced Topics in Computing A

This subject provides coverage of an advanced topic of contemporary interest in mathematically-based computing. It is drawn from the suite of modules that comprise the Advanced Topics in Computing subjects. The modules to be offered will vary from semester to semester, depending on demand and staff availability. Students cannot choose a module already taken within an Advanced Topics in Computing subject.

35275

Computing Seminar B

3cp; 2hpw; prerequisites: see 35376 Advanced Topics in Computing A

As for 35274.

35281

Numerical Analysis 1

6cp; 4hpw; prerequisite: 35170 Introduction to Computing; corequisite: 35231 Differential Equations

Introduction to numerical analysis, including the study of: solution methods for nonlinear equations, systems of linear equations (LU factorisation and iterative methods), interpolation, numerical differentiation and integration, orthogonal polynomials and approximation theory, the Euler and Runge-Kutta methods for initial value problems, and finite difference methods for boundary value problems. Further work on the use of spreadsheet modelling including coverage of command macros.

35292–6

Project

2–6cp; 1–4hpw; prerequisite: by consent; corequisite: by arrangement

A supervised investigation of a topic in an area of interest providing the student with additional skills of direct use in employment or in further academic studies.

35313

Pure Mathematics 3A

6cp; 4hpw; prerequisites: 35231 Differential Equations; 35232 Advanced Calculus

Projective geometry: Euclidean and non-Euclidean geometry, Pappus' and Desargues' theorems, transformations in the plane, collineations, projectivities, incidence matrices, Latin squares. Differential geometry: vector fields, vector fields on surfaces, Gauss map, Weingarten map, curvature of curves and surfaces.

35314

Pure Mathematics 3B

6cp; 4hpw; prerequisite: 35111 Discrete Mathematics

Number theory: the division algorithm and unique factorisation in Z, number-theoretic functions, congruences, Fermat's theorem, Euler's theorem, linear diophantine equations, continued fractions. Groups: basic definitions, symmetry groups, cyclic groups, generators, relations and presentations of a group, subgroups and cosets, conjugacy and normal subgroups, quotient groups, solvable groups, prime power groups, Sylow theorems. Group homomorphisms and isomorphism theorems. Introduction to rings: homomorphisms, subrings, ideals, quotient rings.

35321

Analysis 1

6cp; 4hpw; prerequisites: 35102 Mathematics 2; 35212 Linear Algebra

Review of sets and functions. Algebraic and order properties of R. Countability. Point sets. Application to sequences. Limit of a function:

limit theorems, continuity and uniform continuity. Properties of a continuous function on a closed interval. Differentiation. Taylor's theorem with remainder. Review of series, Taylor's series. The Riemann integral. Sequences and series of functions: uniform convergence, Weierstrass M-test. Metric spaces: Cauchy sequences and completeness, the fixed point theorem and applications. Sequentially compact sets in metric space, application to approximation theory. Normed vector spaces: Banach space, finite-dimensional normed spaces, equivalent norms. The Weierstrass approximation theorem.

35322

Analysis 2

6cp; 4hpw; prerequisite: 35321 Analysis 1

Revision of metric spaces. Compact subsets of R, the Heine-Borel theorem. Topological spaces: Hausdorff spaces, homeomorphisms. Operators and functionals on normed spaces, the dual space. Inner product spaces. Hilbert space. Hilbert space isomorphism. Measures and outer measures. Lebesgue and Lebesgue-Stieltjes measure. Borel sets. The Cantor set. Measurable functions, step functions. The Lebesgue integral. L^p spaces: Hölder and Minkowski inequalities, completeness. Product measures. Probability spaces: random variables, distribution functions, independence, expectation and variance. Modes of convergence: Borel-Cantelli lemmas, laws of large numbers. The Radon-Nikodym theorem. Conditional expectation and conditional probability.

35333

Applied Mathematics 3A

6cp; 4hpw; prerequisite: 35232 Advanced Calculus; corequisite: 35335 Mathematical Methods

Modelling mechanical properties: force, work, energy, power, projectiles, oscillation, orbits. Modelling electromagnetic properties: electric fields, magnetic fields, Coulomb's law, Biot-Savart law, Ampere's circuital law, Faraday's law, Maxwell's equations.

35334

Applied Mathematics 3B

6cp; 4hpw; prerequisites: 35333 Applied Mathematics 3A; 35335 Mathematical Methods

Acoustic waves in fluids. Waves on a liquid surface. Elastic waves in solids. Electromagnetic waves.

35335

Mathematical Methods

6cp; 4hpw; prerequisite: 35231 Differential Equations

Vector integral theorems. Bessel and Legendre equations. Applications to boundary value problems. Integral transform methods for solving boundary value problems.

35340

Operations Research Practice

6cp; 4hpw; prerequisites: 35241 Mathematical Programming 1; 35252 Statistics 2

Financial modelling: mathematics of finance, compound interest, various types of annuities, perpetuities, bond pricing, contingent payments, consumption and investment decisions under certainty, investment decisions under uncertainty, utility theory and risk analysis, Markowitz portfolio theory, single index model, capital asset pricing model. Inventory control: economic order quantity, production lot size model, quantity discounts, shortage models, single period model, safety stock approach, service level approach, periodic review system, dynamic EOQ, classical optimisation methods, materials requirements planning.

35342

Mathematical Programming 2

6cp; 4hpw; prerequisite: 35241 Mathematical Programming 1

Dual simplex method. Basic ideas of cutting plane and branch-and-bound methods for integer programming. Primal-dual algorithm. Parametric linear programming. Goal programming. Numerical methods for unconstrained nonlinear optimisation; Newton's method, conjugate direction methods. Numerical methods for constrained nonlinear optimisation; feasible direction methods, penalty and barrier methods. Introduction to stochastic programming.

35344

Network Optimisation

6cp; 4hpw; prerequisite: 35241 Mathematical Programming 1

Transportation problems. The transportation simplex method. Assignment problems. Transshipment problems. Shortest path problems. Maximum flow problems. Project planning and scheduling. CPM cost models. Network simulation models. Minimum-cost network

flow problems. Network simplex method. Out-of-kilter algorithms. Algorithm analysis. Auction algorithm. Solution of problems using commercially-available software.

35353

Regression Analysis

6cp; 4hpw; prerequisite: 35252 Statistics 2

Simple and multiple linear regression. General linear models. Weighted regression. Diagnostics and model building. Analysis of covariance. Regression graphics. Introduction to nonlinear regression.

35354

Statistical Inference

6cp; 4hpw; prerequisite: 35252 Statistics 2

Point estimation. Sufficiency. Rao-Blackwell theorem. Hypothesis testing. Neyman-Pearson lemma. UMP tests. Likelihood ratio tests. Decision theoretical approaches. Randomisation tests. Sequential probability ratio test.

35355

Quality Control

6cp; 4hpw; prerequisite: 35361 Probability and Stochastic Processes

Total quality management; process control; acceptance sampling; process capability analysis; tolerance analysis; reliability analysis.

35356

Design and Analysis of Experiments

6cp; 4hpw; prerequisite: 35252 Statistics 2

Introduction to general concepts of the design of experiments. Completely randomised, randomised complete block and Latin square designs. Multiple comparisons. Factorial designs. Introduction to Taguchi designs and response surface designs.

35361

Probability and Stochastic Processes

6cp; 4hpw; prerequisite: 35252 Statistics 2

Probability. Random variables and expectations. Limit theorems. Markov chains. The Poisson process. Birth and death processes.

35363

Stochastic Methods in Operations Research

6cp; 4hpw; prerequisite: 35170 Introduction to Computing; corequisite: 35361 Probability and Stochastic Processes

Bayesian statistics and Bayesian decision making, Monte Carlo simulation, prior distributions, decision trees and influence diagrams, conjugate distributions. Various queuing models and applications. Simulation studies, modelling systems and various representations, statistical modelling, input data analysis, verification and validation, output analysis, comparison of systems designs, random number generation and tests, random variate generation, variance reduction techniques.

35373

Computing 3

6cp; 4hpw; prerequisite: 35272 Computing 2

The characteristics of large complex software systems and design strategies for reducing complexity. Important object-oriented approaches to software construction and their application to substantial modern projects in industry, commerce and science. The use of functional languages for prototyping, including advanced interactive and graphical programming techniques. Computational complexity and the design of efficient data structures and algorithms in functional and imperative languages. A survey of work profiles in the computing industry and review of influential social and ethical issues in its evolution.

35376

Advanced Topics in Computing A

6cp; 4hpw; prerequisites: see individual modules listed below, prerequisites for both modules must be satisfied

The content of this subject will be drawn from two modules, each focusing on a particular specialist area. The modules to be offered will vary from semester to semester, depending on demand and staff availability, but may include: computer graphics, computing machinery, cryptology, formal analysis of business processes, formal specification, high-performance computing, language translation, and neural networks.

Module: Computer Graphics
prerequisites: 35212 Linear Algebra; 35272 Computing 2

Overview of graphics hardware and standard graphics software libraries. Mathematical foundation of transformations used in two- and three-dimensional visualisation. Key algorithms for line drawing, clipping and filling. Image creation: hidden line removal, ray tracing. Curve and surface generation: splines. Implementation of key algorithms and use of a graphics software library.

Module: Computing Machinery
prerequisite: 35272 Computing 2

Historical and social context of computing. Digital logic and digital systems. Finite state machines and their implementation in hardware. Representation of basic data types and associated machine level operations. Structure of processor units and design of a simple central processor unit. Organisation of memory and control of peripherals.

Module: Cryptology
prerequisite: 35272 Computing 2

Divisibility and prime numbers. Congruences; Fermat's theorem. Application to primality testing and factorisation; Fermat's and Pollard's methods. Multiplicative functions; Euler's function. Block ciphers; exponential ciphers; public key cryptology; knapsack ciphers.

Module: Formal Analysis of Business Processes
prerequisites: 31434 Database Design; 35272 Computing 2

Aspects of database techniques, structured system analysis and design methods, mathematical modelling and certain techniques from formal methods of specification. Application to the analysis and design of selected business processes, including financial processes. Effective work practices and communication skills.

Module: Formal Specification
prerequisite: 35373 Computing 3

Formal linguistic systems and the mathematical basis of algebraic and model-based methods of formal specification. Software development by linguistic transformations. Notations, general principles and practical applications of methods of specification and refinement, including Z and the refinement calculus, the Vienna Development Method, the OBJ* and Larch systems, and rapid prototyping. Effective work practices and communication skills.

Module: High Performance Computing
prerequisites: 35212 Linear Algebra; 35272 Computing 2

Overview of vector and parallel computer architectures. Case studies in the application of high-performance computing to industrial and research problems. Modified algorithms tailored to high-performance computing: example applications drawn from linear algebra, number theory and searching.

Module: Language Translation
prerequisite: 35272 Computing 2

Categorisation and specification of grammars. Lexical, syntactic and semantic analysis. Recursive descent and table-driven parsing. Practical compiler-compiler technology. Code generation. Optimisation. Implementation of a compiler for a simple, block-structured imperative language.

Module: Neural Networks
prerequisites: 35151 Statistics 1; 35171 Computing 1; 35232 Advanced Calculus; 35281 Numerical Analysis 1

Feedforward networks: McCulloch-Pitts neuron, simple perceptron, classification problem, linear separability, convergence theorem, multi-layered perceptrons and hard learning, backpropagation training algorithm, convergence, overfitting. Feedback networks: dynamic systems, attractors, memories, Hebbian learning, spurious memories, optimisation problems.

35377

Advanced Topics in Computing B

6cp; 4hpw; prerequisite: see 35376 Advanced Topics in Computing A

The content of this subject will be drawn from two of the modules described under 35376 Advanced Topics in Computing A. The modules chosen by a student for this subject should not include a module already studied as part of 35376 Advanced Topics in Computing A. The modules to be offered will vary from semester to semester, depending on demand and staff availability.

35378

Computing Seminar C

3cp; 2hpw; prerequisites: see 35376 Advanced Topics in Computing A

As for 35274.

35379

Computing Seminar D

3cp; 2hpw; prerequisite: see 35376 Advanced Topics in Computing A

As for 35274.

35382

Numerical Analysis 2

6cp; 4hpw; prerequisite: 35281 Numerical Analysis 1

Numerical linear algebra: the algebraic eigenvalue problem, the singular value decomposition and least squares methods. Extrapolation and multistep methods for initial value problems, stiff problems. Boundary value problems: variational and finite element methods. Symbolic computation: programming styles in *Mathematica* (imperative, functional and rule-based), the evaluation engine, use of pattern matching, implementation of standard symbolic and numerical packages.

35384

Financial Modelling

4cp; 3hpw; prerequisites: 35102 Mathematics 2; 35151 Statistics 1

Introduction to models of the standard problems of financial management and the mathematical techniques for their solution: asset and liability management, planning day-to-day operations and the firm's financing and investment decisions. Net-present value. Capital budgeting problems; investment under certainty; investment decisions under uncertainty. The debt-capacity decision; debt maturity and timing decisions; dividend policy; internal financing and growth.

35391

Seminar (Mathematics)

6cp; 4hpw; prerequisite: by arrangement

Group studies in mathematics. The topics will vary from year to year and will be chosen in accordance with the interests of students and staff, and the availability of staff.

35392

Seminar (Operations Research)

6cp; 4hpw; prerequisite: by arrangement

Group studies in operations research. The topics will vary from year to year and will be chosen in accordance with the interests of students and staff, and the availability of staff.

35393

Seminar (Statistics)

6cp; 4hpw; prerequisite: by arrangement

Group studies in statistics. The topics will vary from year to year and will be chosen in accordance with the interests of students and staff, and the availability of staff.

35394

Seminar (Computing)

6cp; 4hpw; prerequisite: by arrangement

Group studies in computing. The topics will vary from year to year and will be chosen in accordance with the interests of students and staff, and the availability of staff.

35418

Analytic Number Theory

4cp; 3hpw; prerequisites: 35314 Pure Mathematics 3B; 35232 Advanced Calculus

Divisibility, prime numbers and the fundamental theorem of arithmetic; arithmetical functions and Dirichlet multiplication; some asymptotic analysis involving arithmetical functions. Characters of finite Abelian groups; Dirichlet's theorem on primes in arithmetic progressions. The Riemann zeta function; analytic proof of the prime number theorem.

35419

Advanced Algebra

4cp; 3hpw; prerequisite: 35314 Pure Mathematics 3B

Ring theory: commutative rings, integral domains, field of fractions of an integral domain, polynomial rings, principal ideal domains and unique factorisation. Module theory: left and right modules, submodules, free modules, direct sums of modules, structure of finitely generated modules over a principal ideal domain, application to abelian groups and linear transformations of a vector space. Galois theory: classical problems of constructibility and solution of algebraic equations by radicals, extension fields and splitting fields of a polynomial, Galois groups, fundamental theorem of Galois theory and applications.

35427

Functional Analysis

4cp; 3hpw; prerequisite: 35322 Analysis 2

Banach spaces. Bounded linear transformations. Spectrum. Dual space. Adjoint operator. Hahn-Banach theorem. Compact operators. Riesz theory. Fredholm integral equations. Fredholm alternative. Application to potential theory. Hilbert spaces. Operators and adjoints. Riesz representation theorem. Orthogonality. Orthonormal bases. Abstract Fourier theory. Self-adjoint operators. Projections. Compact operators. Spectral theory for compact operators. Application to Sturm-Liouville theory. Fourier series.

35428

Convexity and Optimisation

4cp; 3hpw; prerequisite: 35322 Analysis 2

Convex sets in a linear space. Affine sets and hyperplanes. Algebraic interior and closure. Separation theorems. Geometric Hahn-Banach theorem. Convex functions. Epigraphs. Subdifferentiability and differentiability. Duality. Polars. Support functions. Linear and convex programming. Kuhn-Tucker conditions. General constrained optimisation theory; application to calculus of variations; introduction to applications in optimal control theory.

35436

Advanced Mathematical Methods

4cp; 3hpw; prerequisite: 35334 Applied Mathematics 3B

Generalised functions, Green's functions, applications in electrostatics and electromagnetism. Tensor analysis: tensors from a geometrical viewpoint, metric and curvature tensors, differential forms, Stokes' theorem, applications in special relativity and Maxwell's equations. Use of the symbolic package MathTensor.

35437

Partial Differential Equations

4cp; 3hpw; prerequisite: 35335 Mathematical Methods

First-order equations. Classification of second-order linear equations. Wave equation. D'Alembert's formula. Poisson's formula. Huygen's principle. Heat equation. Maximum principles. Regularity of solutions. Nonlinear problems. Laplace's equation. Properties of harmonic functions. Green's functions. Method of images. Integral equations. Fredholm theory. Application to Dirichlet and Neumann problems. Introduction to scattering theory. Scattering of plane waves by cylinders.

35438

Nonlinear Dynamical Systems

4cp; 3hpw; prerequisites: 35231 Differential Equations; 35321 Analysis 1

Review of linear systems. Nonlinear systems. Phase plane analysis. Linearisation. Local stability and instability. Global asymptotic stability. Stable and unstable manifolds. Limit cycles and strange attractors. Introduction to chaos theory. Asymptotic methods. The methods of Poincaré and Lindstedt. The method of averaging. Applications to the theory of finance.

35443

Mathematical Programming 3

4cp; 3hpw; prerequisite: 35342 Mathematical Programming 2

Decomposition methods for large-scale mathematical programming problems. Ellipsoid methods. Karmarkar's projective algorithm. Stochastic programming, two-stage stochastic programming problems.

35446

Scheduling Theory

4cp; 3hpw; prerequisites: 35342 Mathematical Programming 2; 35447 Discrete Optimisation

Examples of scheduling problems in manufacturing and service. Deterministic and stochastic mathematical models for scheduling, resources, task systems, sequencing constraints, performance measure. Polynomial-time scheduling algorithms. Computational complexity of scheduling problems. Enumerative methods, branch-and-bound algorithms, dynamic programming. Approximation algorithms. Scheduling and controlling manufacturing.

35447

Discrete Optimisation

4cp; 3hpw; prerequisites: 35111 Discrete Mathematics; 35342 Mathematical Programming 2

Example of discrete optimisation problems. Computational complexity, deterministic and nondeterministic Turing machines, NP-completeness and Cook's theorem. Examples of the proofs of NP-completeness. Cutting

plane algorithms. Enumerative methods. Partitioning algorithms. Modern heuristic techniques. Performance guarantees for approximation algorithms.

35448

Dynamic Optimisation

4cp; 3hpw; prerequisites: 35241 Mathematical Programming 1; 35361 Probability and Stochastic Processes; corequisite: 35447 Discrete Optimisation

Sequential decision processes. Deterministic dynamic programming, principle of optimality and recursive relations. Relation to other fields of mathematical programming. Computational efficiency. Stochastic dynamic programming. Applications of dynamic programming: equipment replacement, resource allocation, inventory control, (s, S)-policies, dynamic portfolio analysis. Markovian decision processes, policy iteration and linear programming, successive approximation. Applications of the Markov decision model.

35449

Operations Research Models and Methodology

4cp; 3hpw; prerequisites: 35363 Stochastic Methods in Operations Research; 35443 Mathematical Programming 3; 35448 Dynamic Optimisation; corequisite: 35446 Scheduling Theory

Comprehensive study of operations research methodology through case studies requiring methods of linear programming, nonlinear programming, dynamic programming, integer and combinatorial optimisation, simulation, and queueing theory. Further development of skills in the presentation of the results of operations research studies in the form of a technical report and oral presentation. Further practice in working with scientific journals in the field of operations research.

35456

Nonlinear Statistical Models

4cp; 3hpw; prerequisites: 35353 Regression Analysis; 35467 Time Series Analysis

Introduction to nonlinear regression models. Obtaining least-squares estimates of parameters. Obtaining good initial parameter estimates. Obtaining convergence of parameter estimates. Assessing model nonlinearity. Reducing nonlinearity with reparameterisation. Nonlinear mixture models and segmented models.

35457

Multivariate Statistics

4cp; 3hpw; prerequisites: 35353 Regression Analysis; 35356 Design and Analysis of Experiments

Multivariate normal distribution: definition, moments, characteristic function, estimation of mean and covariance matrices, Wishart distribution, Hotelling's T2. Multivariate linear regression, principal components. Factor analysis. Cluster analysis.

35458

Loglinear Modelling

4cp; 3hpw; prerequisite: 35353 Regression Analysis

Revision of linear models and exponential families. Generalised linear models. Applications including logistic regression and contingency tables. Modelling using statistical distributions; continuous distribution models; discrete distribution models.

35459

Linear Models and Experimental Design

4cp; 3hpw; prerequisites: 35353 Regression Analysis; 35457 Multivariate Statistics; 35356 Design and Analysis of Experiments

Linear models: the linear model of less than full rank, the analysis of variance, completely randomised and randomised block designs. Response surfaces. Incomplete block designs. Repeated measures designs.

35466

Advanced Stochastic Processes

4cp; 3hpw; prerequisites: 35322 Analysis 2; 35361 Probability and Stochastic Processes

Formal definitions of probability space and stochastic processes. Martingales. Riemann-Stieltjes integration. Brownian motion and related processes. Stochastic calculus and stochastic differential equations. Financial applications.

35467

Time Series Analysis

4cp; 3hpw; prerequisite: 35361 Probability and Stochastic Processes

Model identification, estimation, diagnostic examination and forecasting for time series. Nonseasonal/seasonal, stationary/nonstationary and linear/nonlinear time series are considered. Models covered are Box-Jenkins, time series

regression, exponential smoothing, transfer functions and classical regression.

35469

Statistical Consulting

4cp; 3hpw; prerequisites: 35353 Regression Analysis; 35355 Quality Control; 35361 Probability and Stochastic Processes; corequisite: enrolment in any 12cp of core statistics subjects in the Honours program

Introduction to the general framework of statistical consulting, including a large practical component. Job estimation and business aspects of consulting. Recognition of and searching for appropriate techniques to solve particular problems. Constraints imposed by the analysis time frame. Communication of results in written, graphical and oral forms to lay and technical audiences. Ethical issues.

35485

Advanced Financial Modelling

4cp; 3hpw; prerequisite: 35340 Operations Research Practice

Options and futures: concepts and valuation models, current issues and developments. Capital structure and theory of the firm: the effects of corporate and personal taxation on the capital structure of a firm, dividend policy, current issues.

35486

Optimal Control 1

4cp; 3hpw; prerequisites: 35231 Differential Equations; 35232 Advanced Calculus

Problems of the calculus of variations and optimal control. Terminology and notation, historical development, formulation, necessary and sufficient conditions for optimality, the maximum principle, various endpoint conditions, inclusion of constraints of various types, bang-bang and singular controls, infinite horizon problems, dynamic programming, applications in continuous and discrete time.

35487

Optimal Control 2

4cp; 3hpw; prerequisites: 35466 Advanced Stochastic Processes; 35486 Optimal Control 1

Formulation of stochastic control problems. Examples of controls. The Hamilton-Jacobi-Bellman equation. Necessary and sufficient conditions. Reduction to Markov controls. Dynamic portfolio strategies. The optimal portfolio selection problem. Discussion of solutions in particular cases.

35491

Honours Seminar A

4cp; 3hpw; prerequisite: by consent

This subject will provide an opportunity for students to benefit from the specialist knowledge of a visitor to the School or to undertake a course in an area of specific staff research or knowledge.

35492

Honours Seminar B

4cp; 3hpw; prerequisite: by consent

As for 35491.

35496

Thesis Seminar A

4cp; 3hpw; prerequisite: by consent

This subject is intended to provide essential background to the Thesis (Honours) or opportunities for study in areas related to the thesis, complementing the project or providing further research in the area. The subject is operated as a reading course, with the studies being coordinated by the thesis supervisor.

35497

Thesis Seminar B

4cp; 3hpw; prerequisite: by consent

As for 35496.

35498

Thesis (Honours)

16cp; prerequisite: by consent

Students will perform an independent investigation of an area of the mathematical sciences chosen in consultation with a supervisor who will be appointed by the Head of School. This is a year-long subject. Students are expected to spend three hours per week on their project in Autumn semester and six hours per week in Spring semester.

35592–6

Project

4,6,8,10,12cp; prerequisite: by arrangement

A supervised investigation of a topic in an area of interest providing the student with additional skills of direct use in employment.

35599

Report

12cp; prerequisite: by consent

An applied or theoretical study in an area chosen in consultation with the project supervisor who will be appointed by the Head of School. This is a year-long subject. Students are expected to spend three hours per week on their project in Autumn semester and six hours per week in Spring semester.

SUBJECTS OFFERED BY OTHER FACULTIES

Students should consult the relevant faculty and its handbook for any late changes to subject information.

015110

Aboriginal Cultures and Philosophies

8cp; 3hpw

This subject will introduce participants to Aboriginal culture and social organisation as expressions of Aboriginal cosmology. Contemporary Aboriginal culture will be presented as an evolving response to colonialism and as a reassertion of cultural empowerment.

22105

Accounting A

4cp; 3hpw

This subject provides an introduction to accounting, setting out the nature of accounting and its relationships together with double entry bookkeeping's unique ability to record market activity. The body of the course deals with the accounting process (journals to ledger), double entry bookkeeping, definition of the elements of financial statements, using control accounts, control of cash, using accrual accounting, inventory, non-current assets, preparation of financial statements, and the so-called limitations of the historical cost model.

25110

Microeconomics

4cp; 3hpw

Basic market theory. Demand theory. Elasticity of demand. Short-run cost theory. Short-run supply theory, long-run cost theory. Resource market theory. Perfect and monopolistic competition. Oligopoly and monopoly. Firm behaviour, theory of competition policy. Theory of trade. Market failure theory. Income redistribution. Industry policy, regulation.

25209

Macroeconomics

4cp; 3hpw; prerequisite: 25110 Microeconomics

Inflation and unemployment. Aggregate supply and demand. National accounts. Elementary income determination theory. Interest rates and expenditure. The monetary sector. Combining money and expenditure sectors. The balance of payments. Prices, wages and the Phillip's curve. Stagflation.

25210

Microeconomic Theory and Policy

6cp; 4hpw; prerequisite: 25110 Microeconomics

The need for public regulation and/or control of business activity. Microeconomic policy formulation, theory of firms and markets, restrictive trade practices, consumer protection, small business. Industry policy, tariffs and structural change. Foreign investment. Resources policy.

25308

Financial Markets

4cp; 3hpw; prerequisite: 25209 Macroeconomics

Financial intermediation. Interest rate determination. Financial market theory, bond pricing, foreign exchange market futures, options and swaps. The financial system and the Reserve Bank. Introduction to banking. Equity market.

25314

Business Finance

4cp; 3hpw; prerequisites: 22105 Accounting A; 35151 Statistics 1; corequisite: 25308 Financial Markets

Consumption/investment decision: investment decision and techniques for evaluation. Factors affecting investment: the concept of risk, the pricing of risk, investment decisions under risk, the financing decision. Sources of finance, leasing. Capital structure theories, dividend policy.

25421

International Financial Management

6cp; 4hpw; prerequisites: 25308 Financial Markets; 25314 Business Finance

International financial management, mechanics and functions of foreign exchange markets, exchange rate determination and parity relationships, forecasting, measurement of foreign exchange risk, multinational working capital management, trade finance, financing foreign operations, long-term asset and liability, international taxation management.

25606

Financial Time Series Analysis

6cp; 4hpw; prerequisites: 35232 Advanced Calculus; 35353 Regression Analysis

Financial returns: their definitions and behaviour. Models of price volatility. Forecasting standard deviations. Testing the random walk hypothesis. Testing the market efficiency hypothesis. Forecasting trends in prices. Valuing options.

25620

Derivative Securities

6cp; 4hpw; prerequisite: 25906 Investment Analysis (Honours)

Introduction to derivative securities, basic arbitrage arguments, the pricing of futures, properties of options, pricing of differing instruments and hedging strategies using derivatives.

25621

Financing Decisions and Capital Market Theory

6cp; 4hpw; prerequisite: 25905 Capital Budgeting and Valuation (Honours)

Provides an understanding of the theory, empirical evidence and practice of corporate financing decisions. Critical evaluation of a company's existing capital structure and proposed methods of raising new finance. Review of theoretical and empirical research relating to the efficient market hypothesis.

25905

Capital Budgeting and Valuation (Honours)

6cp; 4hpw; prerequisites: 25308 Financial Markets; 25314 Business Finance

The contribution of Markowitz and others to modern portfolio theory and the Capital Asset Pricing Model, including market equilibrium and efficient market assumptions; empirical tests. Relating to the Capital Asset Pricing Model and its derivatives. Arbitrage Pricing Theory. Pricing models for contingent claims, options and futures. Efficient capital markets: theory and evidence.

25906

Investment Analysis (Honours)

6cp; 4hpw; prerequisites: 25308 Financial Markets; 25314 Business Finance

Equilibrium models. Performance measures. Pricing instruments. Options. Return profiles. Option valuation models. Market efficiency. Share market analysis. Fixed income securities. International diversification.

25907

Theory of Financial Decision Making

4cp; 3hpw; prerequisite: by consent

The theory of choice. State preference theory. The mean-variance criteria. Capital market equilibrium, Capital Asset Pricing Model and Arbitrage Pricing Theory. Efficient capital markets: theory and evidence.

25908

Derivative Security Pricing

4cp; 3hpw; prerequisite: by consent

Introduction to derivative securities. Basic arbitrage arguments. Geometric Brownian motion model of asset pricing movements. Ito's lemma. Risk-neutral valuation and the Black-Schole's model. Currency and futures options. Hedging techniques. Interest-rate-derivative securities. Alternatives to Black-Schole's option pricing.

25909

Advanced Corporate Finance

4cp; 3hpw; prerequisite: by consent

A selection of the classic papers in corporate finance. Current research work, Australian empirical work. Major issues involved in the firm's investment and financing decisions, the interaction of these activities and investor

behaviour in the markets for the firm's securities.

25910

Thesis

12cp; prerequisite: by consent

A thesis on a topic chosen by the student in consultation with his or her supervisor.

54230

Aboriginal Social and Political History

8cp; 3hpw

Examines and analyses the impact of colonialism on indigenous peoples, with particular reference to the Aboriginal inhabitants of this region. The emergence of Aboriginal social and political movements will be presented as the basis for repossession of their traditional heritage in land and culture.

54231

Aboriginal People and the Media

8cp; 3hpw; prerequisites: 015110 Aboriginal Cultures and Philosophies; 54230 Aboriginal Social and Political History

Familiarises students with the field of debate in relation to the representation of Aborigines in the media, and with the productions of Aboriginal media organisations. Where possible, some written, video or film production could become part of the course assessment.

54330

The Politics of Aboriginal History

8cp; 3hpw; prerequisites: Aboriginal Studies subjects at 100 and 200 levels

Introduces students to the wide range of historical work by Aboriginal and non-Aboriginal people over the last three decades, and encourages students to develop skills in the critical evaluation of this work in its political and social contexts. Students will enhance their knowledge of primary research materials for the field of Aboriginal history, and will develop their skills in the analysis and use of these sources.

54331

Aboriginal Forms of Discourse

8cp; 3hpw; prerequisites: 015110 Aboriginal Cultures and Philosophies; one Aboriginal Studies subject at the 200 level

Familiarises students with a broad range of Aboriginal forms of discourse – novels, plays, films, oral narratives – and introduces them to methods of analysis, of both text and content, deriving from the disciplines of cultural studies and textual studies.

59341

Modernisation and Globalisation

8cp; 4hpw

The importance of the comparative analysis of social change has been emphasised since the late 1980s with the end of the Cold War and rapid social, economic and political changes that have taken place in Eastern Europe, East Asia and South-East Asia. There have been various claims that the homogenising influences of capitalism and democracy have triumphed, amid a renewed emphasis on cultural determinism and a questioning of the Eurocentricity of the social sciences. Through an examination of key elements of modernisation and globalisation, this subject provides an overview of the social changes in Western Europe, Latin America, East Asia and South-East Asia, and deals with academic discussions on the processes of social change.

79101

Business Law

4cp; 3hpw

Legal philosophy; legal history; constitutional law; torts; crime; property; contracts; consumer protection.

INTERNATIONAL STUDIES SUBJECTS

971101, 972101, 973101, 974101

Modern Standard Chinese 1

8cp; 1st semester, 6hpw; prerequisite: nil

Modern Standard Chinese 1 is the first unit in the Modern Standard Chinese program. It is designed to provide students who have no prior knowledge of Chinese with basic survival skills in language and culture, and the ability to undertake In-country Study in China.

Modern Standard Chinese 1 aims at developing in students a survival communicative ability in basic social interactions. It teaches students *Pinyin*, the official transcription system, as a guide to the pronunciation of the Chinese language, and some basic structures and devices of the language. Students are expected to know about 300 Chinese characters by the end of this unit.

Modern Standard Chinese 2

8cp; 2nd semester, 6hpw; prerequisite: Modern Standard Chinese 1

Modern Standard Chinese 2 is the second unit in the Modern Standard Chinese program. It is designed to provide students who have no prior knowledge of Chinese with basic survival skills and the ability to undertake In-country Study in China.

Modern Standard Chinese 2 aims at developing in students a survival communicative ability in basic social interactions. It also introduces students to some of the basic structures and devices of the language. Students are expected to know about 600–800 Chinese characters by the end of this unit.

Modern Standard Chinese 3

8cp; 1st semester, 6hpw; prerequisite: Modern Standard Chinese 2 or HSC Chinese

Modern Standard Chinese 3 is the third unit in the Modern Standard Chinese program. It is designed to provide students who have no prior knowledge of Chinese with basic communicative skills and the ability to undertake In-country Study in China. This is also the entry point for students who have completed HSC-level Chinese and who first learnt Chinese at school in Australia.

Modern Standard Chinese 3 aims at further developing students' oral communicative competence in basic social interactions. More written texts will be gradually introduced to enhance the ability of students to use Chinese characters. The basic structures and devices of the language will be reinforced. Students are expected to know about 1,200 Chinese characters by the end of this unit.

Modern Standard Chinese 4

8cp; 2nd semester, 6hpw; prerequisite: Modern Standard Chinese 3

Modern Standard Chinese 4 is the fourth unit in the Modern Standard Chinese program. It is designed to provide students who have no prior knowledge of Chinese with basic communicative skills and the ability to undertake In-country Study in China. This is also the second unit for students who have completed HSC-level Chinese and who first learnt Chinese at school in Australia.

Modern Standard Chinese 4 aims at further developing students' communicative competence in basic social interactions. More written texts are introduced to enhance the ability of students to use Chinese characters. The basic structures and devices of the language are also reinforced. Students are expected to know about 1,600 Chinese characters by the end of this unit.

Modern Standard Chinese 5

8cp; 1st semester, 6hpw; prerequisite: Modern Standard Chinese 4

Modern Standard Chinese 5 is the third unit for students who first learnt Chinese at school in Australia and obtained HSC-level Chinese. It is designed to provide the students with basic cultural and communicative skills, and the ability to undertake In-country Study in China.

Modern Standard Chinese 5 aims at further developing students' communicative competence in general social interactions. While reinforcing the basic structures and devices of the language, this unit will also teach students practical writing skills. Students are expected to know about 2,000 Chinese characters by the end of this unit.

Modern Standard Chinese 6

8cp; 2nd semester, 6hpw; prerequisite: Modern Standard Chinese 5

Modern Standard Chinese 6 is the fourth unit of the second entry point in the Modern Standard Chinese program designed to provide students who first learnt Chinese at school and obtained HSC-level Chinese with

basic communicative skills and the ability to undertake In-country Study in China.

Modern Standard Chinese 6 aims at further developing students' communicative competence in general social interactions. While reinforcing basic structures and devices of the language, this unit will also teach practical writing. Students are expected to know about 2,500 Chinese characters by the end of this unit.

971111, 972111, 973111, 974111

Chinese 1

8cp; 1st semester, 4hpw; prerequisite: a working knowledge of one of the Chinese languages

Chinese 1 is the first unit in a series of four units of the Chinese Language and Culture program, which is for students who have a working knowledge of at least one Chinese language. Its aim is to prepare students for a year of study in China.

This unit aims at developing oral communicative competence to meet students' needs in social and professional interactions where Modern Standard Chinese (also known as Mandarin, *Putonghua* or *Guoyu*) is spoken. Simplified characters, pronunciation and intonation, and situational Chinese usages are the focus of class instruction. This unit also provides an introduction to Chinese word processing using *Pinyin*.

Chinese 2

8cp; 2nd semester, 4hpw; prerequisite: Chinese 1 or HSC Chinese (for background speakers) or equivalent

Chinese 2 is the second unit in a series of four units of the Chinese Language and Culture program, which is for students who have a working knowledge of at least one Chinese language. Its aim is to prepare students for a year of study in China. This is also the usual entry point for those who have completed HSC-level Chinese (for background speakers).

This unit primarily aims at developing communicative competence in reading and writing to meet students' needs in social and professional interactions where Modern Standard Chinese (also known as Mandarin, *Putonghua* or *Guoyu*) is used. Students are exposed to a range of Chinese texts in varied genres so that they may master written Chinese for different purposes, and are provided with opportunities to maintain their speaking and listening skills through discussions of the texts.

Chinese 3

8cp; 1st semester, 4hpw; prerequisite: Chinese 2

Chinese 3 is the third unit in a series of four units of the Chinese Language and Culture program, which is for students who have a working knowledge of at least one Chinese language. Its aim is to prepare students for a year of study in China.

This unit aims at developing in students the high level of communicative competence that is required to be able to understand various electronic and published media texts, contemporary literature, and texts relating to contemporary society where Modern Standard Chinese (also known as Mandarin, *Putonghua* or *Guoyu*) is used. Students are exposed to a range of Chinese texts in varied genres so that they may master Chinese for different purposes, and are provided with opportunities to maintain their speaking and listening skills through discussions of the texts.

Students interested in studying classical Chinese are advised to make inquiries at the Institute regarding the possibility of undertaking relevant subjects at Sydney University.

Chinese 4

8cp; 2nd semester, 4hpw; prerequisite: Chinese 3

Chinese 4 is the fourth unit in a series of four units of the Chinese Language and Culture program, which is for students who have a working knowledge of at least one Chinese language. Its aim is to prepare students for a year of study in China.

This unit aims at developing in students a high level of communicative competence to enable them to examine a variety of texts such as articles, correspondence and texts related to their particular field of study, and to make cross-cultural comparisons. Students are provided with opportunities to maintain their speaking and listening skills through discussions of the texts. In this unit, there is also a greater focus on the development of translation skills than there is in previous units.

971121, 972121, 973121, 974121

Cantonese A-1

8cp; 1st semester, 6hpw; prerequisite: nil

Cantonese A-1 is the first subject in the Cantonese A program. It is designed to provide students who have no prior knowledge of Cantonese with basic survival skills in

language and culture, and the ability to undertake In-country Study in South China.

This subject aims at developing in students a survival communicative ability in basic social interactions. It also deals with the basic language structures and devices of Cantonese. Students will be taught the basic structures of Chinese writing and are expected to know about 150 Chinese characters by the end of the subject.

Cantonese A-1 consists of 78 hours of classroom instruction, involving many interactive group and pair-work activities. Audiovisual equipment and computers will be used to facilitate teaching and learning. A communicative approach is adopted for classroom instruction and students are expected to participate actively in all classroom activities in the process of acquiring language skills. The teaching incorporates an introduction to Cantonese culture and helps students to appreciate the wider cultural ramifications of Cantonese in various contexts.

Cantonese A-2

8cp; 2nd semester, 6hpw; prerequisite: Cantonese A-1

Cantonese A-2 is the second subject in the Cantonese A program. It is designed to provide students who have no prior knowledge of Cantonese with basic survival skills in language and culture, and the ability to undertake In-country Study in South China.

This subject aims at developing in students a communicative and linguistic competence in basic social interactions. It also deals with some of the basic structures and devices of Cantonese. Students will be taught the basic structures of Chinese writing and are expected to know about 300 Chinese characters by the end of the subject.

Cantonese A-2 consists of 78 hours of classroom instruction, involving many interactive group and pair-work activities. Audiovisual equipment and computers will be used to facilitate teaching and learning. A communicative approach is adopted for classroom instruction and students are expected to participate actively in all classroom activities in the process of acquiring language skills. The teaching incorporates an introduction to Cantonese culture and helps students to appreciate the wider cultural ramifications of Cantonese in various contexts.

Cantonese A-3

8cp; 1st semester, 6hpw; prerequisite: Cantonese A-2

Cantonese A-3 is the third subject in the Cantonese A program. It is designed to provide students who have no prior knowledge of Cantonese with basic survival skills in language and culture, and the ability to undertake In-country Study in South China.

This subject aims at developing in students a communicative and linguistic competence in general social interactions. It also deals with the language structures and devices of Cantonese. Discourse features such as registers and polite forms will be discussed. More Cantonese vocabulary and idiomatic expressions will be introduced. Students are expected to know about 500 Chinese characters by the end of the subject.

Cantonese A-3 consists of 78 hours of classroom instruction, involving many interactive group and pair-work activities. Audiovisual equipment and computers will be used to facilitate teaching and learning. A communicative approach is adopted for classroom instruction and students are expected to participate actively in all classroom activities in the process of acquiring language skills. The teaching incorporates an introduction to Cantonese culture and helps students to appreciate the wider cultural ramifications of Cantonese in various contexts.

Cantonese A-4

8cp; 2nd semester, 6hpw; prerequisite: Cantonese A-3

Cantonese A-4 is the last subject in the Cantonese A program. It is designed to provide students who have no prior knowledge of Cantonese with basic survival skills in language and culture, and the ability to undertake In-country Study in South China.

This subject aims at developing in students a communicative and linguistic competence in general social interactions. It deals with the more complex language structures and devices of Cantonese. A number of Cantonese discourse features will be discussed. More Cantonese vocabulary and idiomatic expressions will be introduced. Students are expected to know about 800 Chinese characters by the end of the subject.

Cantonese A-4 consists of 78 hours of classroom instruction, involving many interactive group and pair-work activities. Audiovisual equipment and computers will be

used to facilitate teaching and learning. A communicative approach is adopted for classroom instruction and students are expected to participate actively in all classroom activities in the process of acquiring language skills. The teaching incorporates an introduction to Cantonese culture and helps students to appreciate the wider cultural ramifications of Cantonese in various contexts.

Cantonese B-1

8cp; 1st semester, 4hpw; prerequisite: a working knowledge of one of the Chinese languages

Cantonese B-1 is the first of a two-subject language program for students who have a working knowledge of at least one Chinese language to prepare them for a year of In-country Study in South China.

This subject aims at developing the students' communicative and linguistic competence in general social interactions where Cantonese is used. The Yale romanisation for transcribing Cantonese and pronunciation will be discussed in class. Situational Cantonese usages in different contexts are the main focus of class instruction. The teaching incorporates an introduction to Cantonese culture and helps students to appreciate the wider cultural ramifications of Cantonese in various contexts.

Cantonese B-1 consists of 52 contact hours of classroom instruction, involving many interactive group and pair-work activities. Audiovisual equipment and computers will be used to facilitate teaching and learning. The teaching approach adopted is 'communicative' and students are expected to participate actively in all classroom activities in the process of acquiring language skills.

Cantonese B-2

8cp; 2nd semester, 4hpw; prerequisite: Cantonese B-1

Cantonese B-2 is the second of a two-subject language program for students who have a working knowledge of at least one Chinese language to prepare them for a year of In-country Study in South China.

This subject aims at further developing the students' communicative and linguistic competence in general social interactions where Cantonese is used. Situational Cantonese usages and vocabulary in different contexts are the main focus of class instruction. Discourse features of Cantonese will also be discussed. The teaching incorporates an introduction to Cantonese culture and helps students to appreciate the wider cultural ramifications of Cantonese in various contexts.

This subject consists of 52 contact hours of classroom instruction, involving many interactive group and pair-work activities. Audiovisual equipment and computers will be used to facilitate teaching and learning. The teaching approach adopted is 'communicative' and students are expected to participate actively in all classroom activities in the process of acquiring language skills.

971211, 972211, 973211, 974211

Japanese 1

8cp; 1st semester, 6hpw; prerequisite: nil

This is the first subject in the Japanese Language and Culture program. It is designed as the first step in providing students with no prior knowledge of Japanese with the basic survival language skills and socio-cultural awareness to enable them to undertake In-country Study in Japan.

While focusing primarily on the development of speaking and listening skills, this subject also provides a working knowledge of the *hiragana* and *katakana* scripts and approximately 30 *kanji*. Socio-cultural aspects are integrated into the program as they relate to the need for students to learn to use the language appropriately in various social and cultural contexts.

Japanese 2

8cp; 2nd semester, 6hpw; prerequisite: Japanese 1

This is the second in a series of four units for students with no prior knowledge of the Japanese language. By the completion of this subject, students should be able to demonstrate the language and socio-cultural skills required to establish and maintain relationships in social or work-related spheres, and fulfil basic survival needs in a Japanese-speaking environment.

Emphasis is given to the development of speaking and listening skills, but students will also further develop their reading and writing skills. Besides *kana* they will know approximately 100 *kanji* by the end of the unit. Socio-cultural aspects are introduced into the program as they relate to the need for students to learn to use the language appropriately in various social and cultural contexts.

Japanese 3

8cp; 1st semester, 6hpw; prerequisite: Japanese 2 or HSC Japanese

Japanese 3 is the third in a series of four units for students with no prior knowledge of the Japanese language, or first in a series of four units for students who have successfully completed HSC-level Japanese. By the end of the subject, students are expected to have achieved survival proficiency, and be able to satisfy survival needs and limited social demands relating to topics and situations covered.

At the end of the subject, students are expected to have developed their listening, speaking, reading and writing skills in order to be able to communicate in everyday situations, and be able to demonstrate an awareness of the social implications of language and behaviour.

It is expected that students will know approximately 170 *kanji* by the end of the unit.

Japanese 4

8cp; 2nd semester, 6hpw; prerequisite: Japanese 3

Japanese 4 is the fourth in a series of four units for beginners. It is also the second in a series of four units for those who have successfully completed the 2-unit HSC course or its equivalent and aim to further develop Japanese listening, speaking, reading and writing skills. By the end of the subject, students are expected to have achieved limited social proficiency, and be able to interact in limited social, study and work contexts with Japanese speakers in Japan or Australia. They will also have learnt approximately 250 *kanji*.

Japanese 5

8cp; 1st semester, 6hpw; prerequisite: Japanese 4

Japanese 5 is the third in a series of four units in the post-HSC series, and is for those who have successfully completed either Japanese 4 or its equivalent and aim to further develop listening, speaking, reading, writing and cultural skills. By the end of the subject, students are expected to have achieved limited social proficiency, and be able to satisfy routine social and limited work demands. The emphasis is on the development of the language and cultural sensitivity required in both formal and informal situations. By the end of the subject, students are expected to be able to read and write approximately 350 *kanji*.

Japanese 6

8cp; 2nd semester, 6hpw; prerequisite: Japanese 5

Japanese 6 is the final subject in a series of four units in the post-HSC series and is for those who have successfully completed either Japanese 5 or its equivalent. By the end of this subject, students are expected to have achieved minimal vocational proficiency, and be able to speak the language with sufficient structural accuracy and vocabulary to participate effectively in many formal and informal conversations on practical, social and limited vocational topics. The emphasis is on the development of the language and cultural sensitivity required in both formal and informal situations. By the end of the subject, students should be able to read simple prose and read and write approximately 500 *kanji*.

971311, 972311, 973311, 974311

Indonesian 1

8cp; 1st semester, 6hpw; prerequisite: nil

Indonesian 1 is the first in a series of four units for students with no prior knowledge of Indonesian. By the end of the subject, students are expected to have achieved elementary proficiency and be able to satisfy immediate needs using learnt utterances and phrases relating to the following 10 themes: self and family; direction and location; time; food and drink; buying and selling; description; archipelago and continent; travel and transport; media and the press; and love and sex.

Students are expected to develop a vocabulary of about 800–1,000 words, a knowledge of basic word-order patterns, and a familiarity with the alphabet and pronunciation patterns. This subject prepares people to exchange basic personal information using spelling and numeracy skills for names, addresses and time references etc.; engage in brief conversations within the range of themes covered; and express immediate needs with socially appropriate phrases. Students should be able to understand a limited amount of everyday written language e.g. on signs and in menus.

Indonesian 2

8cp; 2nd semester, 6hpw; prerequisite: Indonesian 1

Indonesian 2 is the second in a series of four units for students with no prior knowledge of Indonesian. By the end of the subject, students are expected to have achieved minimum

survival proficiency, and be able to satisfy basic survival needs and minimum courtesy requirements relating to the following 10 themes: health; house and home; contacts and appointments; education and study; career and occupations; city and village; religion and beliefs; personalities and biography; letters; and Australia–Indonesia relations.

Students are expected to develop a vocabulary of about 1,600–2,000 words, a knowledge of common word-order patterns and the ability to recognise common affixational patterns. This subject prepares students to make simple appointments and arrangements with people, exchange personal background information, engage in five- to ten-minute conversations on the themes covered, and express feelings, likes and dislikes. Students should be able to understand short, practical pieces of written information, such as familiar signs, commands and timetables, and develop skills for reading longer, less familiar written forms.

Indonesian 3

8cp; 1st semester, 6hpw; prerequisite: Indonesian 2 or HSC Indonesian

Indonesian 3 is the third in a series of four units for students with no prior knowledge of Indonesian, or first in a series of four units for students who have successfully completed HSC-level Indonesian. By the end of the subject, students are expected to have achieved survival proficiency, and be able to satisfy survival needs and limited social demands relating to the following themes: personal relations; education – young generation; students; politics; 'pop' culture; religion and beliefs; tourism and its influences; trade; and economics and business.

Students are expected to develop a vocabulary of about 3,000 words by the end of the subject, a knowledge of common word-order patterns, and the ability to recognise, predict and use common affixational patterns. This subject prepares students to engage in short conversations on familiar issues without undue hesitation and with an ability to express their opinion. Students should also be able to comprehend simple texts, such as messages, instructions and directions, and write simple formulaic letters.

Indonesian 4

8cp; 2nd semester, 6hpw; prerequisite: Indonesian 3

Indonesian 4 is the fourth in a series of four units for students with no prior knowledge of Indonesian, or second in a series of four units for students who have successfully completed HSC-level Indonesian. By the end of the subject, students are expected to have begun to develop minimum social proficiency, and be able to satisfy limited routine social and work demands. The subject covers the following themes: the role of women; employment/labour; employers; mainstream/marginal cultures; literature; unity and diversity (multiculturalism); the environment; and Australia-Indonesia relations.

Students are expected to have developed a vocabulary of about 4,000 words by the end of the subject. They should also have developed an ability to recognise, predict and use common word-order and affixational patterns, and to participate in a limited range of social situations with appropriate language. This subject prepares students to be able to discuss familiar events and topics, and give opinions without undue hesitation and with the ability to justify themselves. Students should also be able to deal with short texts and correspond with Indonesians on familiar topics.

Indonesian 5

8cp; 1st semester, 6hpw; prerequisite: Indonesian 4

Indonesian 5 is the third in a series of four units for students who have successfully completed HSC-level Indonesian. By the end of the subject, students are expected to have developed minimum social proficiency, and be able to satisfy routine social and limited work demands. The subject covers the following themes: perceptions of the past; the origin of the New Order; aspirations; achievements; problems; political culture and participation; class and social stratification; and gender.

Students completing the subject should have a vocabulary of about 5,000 words. They should have the ability to recognise and reflect on ways in which vocabulary and grammatical patterns vary in different situational contexts, and how choices in grammar and vocabulary can convey the point of view of the writer and speaker beyond the basic transmission of information. This subject prepares students to discuss a range of social topics and a limited range of work topics, and present rudimentary arguments or points of view expressed with socially appropriate phrases to limit possible misunderstanding or offence. Students should also be able to understand the general thread of articles and documents on familiar topics, and write short texts, such as letters and instructions.

Indonesian 6

8cp; 2nd semester, 6hpw; prerequisite: Indonesian 5

Indonesian 6 is the fourth in a series of four units for students who have successfully completed HSC-level Indonesian. By the end of the subject, students are expected to have begun to develop a minimum vocational language proficiency, and be able to satisfy all routine social and a significant range of work demands. The subject covers the following themes: social and cultural pluralism; national and economic development; science; technical and scientific development; religion and popular culture; and internationalisation.

Students should have a vocabulary of about 6,000 words by the end of the subject. They should also have the ability to vary their language appropriately in accordance with a range of social and work situations, and be able to recognise and manipulate vocabulary and grammatical patterns. This subject prepares students to be able to present arguments or points of view, with the ability to frame them in a style that is appropriate to the social, cultural and interpersonal factors present. Students should also be able to understand articles and documents on familiar topics, and write short texts, such as letters, descriptions and simple explanations.

971320, 972320, 973320, 974320

Thai Language and Culture

Thai is offered to UTS students through the language program offered jointly by the University of Sydney and Macquarie University. The program is designed to allow complete beginners in Thai to reach a survival level that will allow them to continue their studies in Thailand. If student numbers permit, classes will be available on UTS campuses.

971331, 972331, 973331, 974331

Malaysian 1

8cp; 1st semester, 6hpw; prerequisite: nil

Malaysian 1 is the first in a series of four units for students with no prior knowledge of the language. By the end of the subject, students are expected to have achieved elementary proficiency and be able to satisfy immediate needs using learnt utterances and phrases relating to the following 10 themes: self and family; direction and location; time; food and drink; buying and selling; description; archipelago and continent; travel and transport; media and the press; and love and sex.

Students are expected to develop a vocabulary of about 800–1,000 words, a knowledge of basic word order patterns and familiarity with the alphabet and pronunciation patterns. This subject prepares people to exchange basic personal information using spelling and numeracy skills for names, addresses and time references, to engage in brief conversations within the range of themes covered, and express immediate needs with socially appropriate phrases. Students should be able to understand a limited range of everyday written language, such as signs and items and prices on menus.

Malaysian 2

8cp; 2nd semester, 6hpw; prerequisite: Malaysian 1

Malaysian 2 is the second in a series of four units for students with no prior knowledge of Malaysian. By the end of the subject, students are expected to have achieved minimum survival proficiency and to be able to satisfy basic survival needs and minimum courtesy requirements relating to the following 10 themes: health; house and home; contacts and appointments; education and study; career and occupations; city and village; religion and belief; personalities and biography; letters; and Australia–Malaysia relations.

Students are expected to develop a vocabulary of about 1,600–2,000 words, a knowledge of common word order patterns and the ability to recognise common affixational patterns. This subject prepares students to make simple appointments and arrangements with people, exchange personal background information, engage in five- to ten-minute conversations on the themes covered and express limited feelings, likes and dislikes. Students should be able to understand short practical written information, such as familiar signs, commands and timetables and develop skills for reading longer, less familiar written forms.

Malaysian 3

8cp; 1st semester, 6hpw; prerequisite: Malaysian 2

Malaysian 3 is the third in a series of four units for students with no prior knowledge of Malaysian, or first in a series of four for students who have prior knowledge or experience in Malaysian. By the end of the subject, students are expected to have achieved survival proficiency and be able to satisfy survival needs and limited social demands relating to the following themes: personal relations; education – young generation; students; politics; 'pop' culture; religion and

belief; tourism and its influences; trade; economics; and business.

Students are expected to develop a vocabulary of about 3,000 words by the end of the subject, a knowledge of common word order patterns and the ability to recognise, predict and use common affixational patterns. This subject prepares students to engage in short conversations on familiar issues without undue hesitation and with a limited ability to express opinions. Students should also be able to comprehend simple texts, such as messages, instructions and directions and write simple formulaic letters.

Malaysian 4

8cp; 2nd semester, 6hpw; prerequisite: Malaysian 3

Malaysian 4 is the fourth in a series of four units for students with no prior knowledge of Malaysian, or second in a series of four units for students who have prior knowledge or experience of Malaysian. By the end of the subject, students are expected to have begun to develop 'minimum social proficiency' and be able to satisfy limited routine social and work demands demonstrating the following themes: role of women; employment/labour; employers; mainstream/marginal cultures; literature; unity and diversity (multiculturalism); the environment; and Australia–Malaysia relations.

Students are expected to have developed a vocabulary of about 4,000 words and an ability to recognise, predict and use common word order and affixational patterns and recognise and respond to a limited range of social situations. This subject prepares students to discuss familiar events and topics and give opinions without undue hesitation and with a limited ability to justify these opinions. Students should also be able to deal with short texts and correspond with Malaysians on familiar topics.

Malaysian 5

8cp; 1st semester, 6hpw; prerequisite: Malaysian 4

Malaysian 5 is the third in a series of four units for students who have had prior experience of Malaysian. By the end of the subject, students are expected to have developed minimum social proficiency and be able to satisfy routine social and limited work demands. The subject covers the following themes: perceptions of the past; aspirations, achievements, problems; political culture and participation; class and social stratification; and gender.

Students completing the subject should have a vocabulary of about 5,000 words, and the ability to recognise and reflect on ways in which vocabulary and grammatical patterns vary according to situation, and how choices in grammar and vocabulary can convey the point of view of the reader and speaker beyond the basic transmission of information. This subject prepares students to discuss a range of social topics and limited range of work topics and present rudimentary arguments or points of view expressed with socially appropriate phrases to limit possible misunderstanding or offence. Students should also be able to understand the general thread of articles and documents on familiar topics and write short texts, such as letters and instructions.

Malaysian 6

8cp; 2nd semester, 6hpw; prerequisite: Malaysian 5

Malaysian 6 is the fourth in a series of four units for students who have had prior experience of Malaysian. By the end of the subject, students are expected to have begun to develop minimum vocational proficiency and to be able to satisfy all routine social and a significant range of work demands relating to the following themes: social and cultural pluralism; national and economic development; science; technical and scientific development; religion and popular culture; and internationalisation.

Students should have a vocabulary of about 6,000 words by the end of the subject, the ability to vary their language appropriately in accordance with a limited range of social and work situations, be able to recognise and manipulate a choice of vocabulary and grammatical patterns on a limited level and to convey certain points of view. This subject prepares students to discuss a range of social topics and limited range of work topics, to present arguments or points of view, and to frame these in a style appropriate to the social, cultural and interpersonal factors present. Students should also be able to understand articles and documents on familiar topics and write short texts, such as letters, descriptions and simple explanations.

971414/5, 972414/5, 973414/5, 974414/5

French

The French language programs offered through the Institute for International Studies are those taught at the University of Sydney

and Macquarie University. Both universities teach the language at various levels, accommodating different levels of proficiency. The French subjects develop communicative skills in listening, speaking, reading and writing, and introduce students to literary texts. Students also learn about French culture and contemporary society.

971424/5, 972424/5, 973424/5, 974424/5

German

The German language programs offered through the Institute for International Studies are those taught at the University of Sydney and Macquarie University. Both universities teach the language at various levels, accommodating different levels of proficiency. The German subjects develop communicative skills in listening, speaking, reading and writing, and introduce students to literary texts. Students also learn about German culture and contemporary society.

971434/5, 972434/5, 973434/5, 974434/5

Italian

The Italian language programs offered through the Institute for International Studies are those taught at the University of Sydney and Macquarie University. Both universities teach the language at various levels, accommodating different levels of proficiency. The Italian subjects develop communicative skills in listening, speaking, reading and writing, and introduce students to literary texts. Students also learn about Italian culture and contemporary society.

971501, 972501, 973501, 974501

Spanish 1

8cp; 1st semester, 6hpw; prerequisite: nil

Spanish 1 is the first in a series of four units designed to provide students who have no prior knowledge of the Spanish language with basic survival skills in language and culture, and the ability to undertake In-country Study in Latin America or Spain.

By the end of the subject, students would be expected to have achieved 'elementary proficiency' and be able to satisfy immediate communication needs using expressions and phrases they have learnt that are required in basic social interaction. The program allows for the development of listening, speaking, reading and writing skills, and an understanding of the socio-cultural contexts in which the language is used. Students gain, in particular, an awareness of the background of Hispanic countries. Students also develop strategies for predicting the meaning of new expressions and anticipating ways of expressing new meanings.

Spanish 1 consists of 78 hours of classroom instruction. The approach adopted is 'communicative' and provides students with many opportunities to interact and use the language in various social and cultural contexts. Audiovisual equipment and computers will be used to facilitate learning.

Spanish 2

8cp; 2nd semester, 6hpw; prerequisite: Spanish 1

Spanish 2 is the second in a series of four units designed to provide students who have no prior knowledge of the Spanish language with basic survival skills in language and culture, and the ability to undertake In-country Study in Latin America or Spain.

By the end of the subject, students would be expected to have achieved 'minimum survival proficiency' in speaking, listening, reading and writing, and be able to satisfy immediate communication needs and minimum courtesy requirements in basic social interactions. Students will also develop an understanding of the socio-cultural contexts in which the language is used and further communication strategies.

Spanish 2 consists of 78 hours of classroom instruction. The approach adopted is 'communicative' and provides many opportunities for the students to interact and use the language in various social and cultural contexts. Audiovisual equipment and computers will be used to facilitate learning.

Spanish 3

8cp; 1st semester, 6hpw; prerequisite: Spanish 2 or HSC Spanish

Spanish 3 is the third in a series of four units for students with no prior knowledge of the Spanish language, or first in a series of four units for students who have successfully completed HSC-level Spanish or its equivalent. It provides students with basic survival skills in language and culture, and the ability to undertake In-country Study in Latin America or Spain.

By the end of the subject, students would be expected to have achieved a communicative

competence in speaking, listening, reading and writing skills in order to be able to satisfy all 'survival' needs and limited social needs. They would also be expected to have developed an awareness of the various social and cultural contexts in which the language is used. In this subject, students develop the ability to understand the general content of magazine and newspaper articles.

Spanish 3 consists of 78 hours of classroom instruction. The approach adopted is 'communicative' and provides many opportunities for the students to interact and use the language in various social and cultural contexts. Audiovisual equipment and computers will be used to facilitate learning.

Spanish 4

8cp; 2nd semester, 6hpw; prerequisite: Spanish 3

Spanish 4 is the fourth in a series of four units for students with no prior knowledge of the Spanish language, or second in a series of four units for students who have successfully completed Spanish 3 and HSC-level Spanish or its equivalent. It provides students with basic survival skills in language and culture, and the ability to undertake In-country Study in Latin America or Spain.

By the end of the subject, students would be expected to have begun to develop the communication skills required to satisfy limited routine social and work demands. They would also be expected to have developed an awareness of the various social and cultural contexts in which the language is used. In this subject, students learn to express opinions, discuss education, entertainment and travel, and develop the language skills and background knowledge required to find accommodation.

Spanish 4 consist of 78 hours of classroom instruction. The approach adopted is 'communicative' and provides many opportunities for the students to interact and use the language in various social and cultural contexts. Audiovisual equipment and computers will be used to facilitate learning.

Spanish 5

8cp; 1st semester, 6hpw; prerequisite: Spanish 4

Spanish 5 is the third in a series of four units designed to provide students who have successfully completed Spanish 4 and HSC-level Spanish or its equivalent with the ability to consolidate and extend their knowledge during a period of In-country Study in Latin America or Spain.

By the end of the subject, students would be expected to have achieved the communicative competence in speaking, listening, reading and writing to be able to satisfy routine social demands and limited work requirements. They would have developed an awareness of the various social and cultural contexts in which the language is used. Students learn to communicate in Spanish to compare lifestyles, university life and education, and practise interview techniques in preparation for In-country Study.

Spanish 5 consists of 78 hours of classroom instruction. The approach adopted is 'communicative' and provides many opportunities for the students to interact and use the language in various social and cultural contexts. There are discussions and debates on set topics. Audiovisual equipment and computers will be used to facilitate learning.

Spanish 6

8cp; 2nd semester, 6hpw; prerequisite: Spanish 5

Spanish 6 is the fourth in a series of four units designed to provide students who have successfully completed Spanish 5 and HSC-level Spanish or its equivalent with the ability to consolidate and extend their knowledge during a period of In-country Study in Latin America or Spain.

By the end of the subject, students would be expected to be able to speak the language with sufficient accuracy to participate in limited formal and informal conversations on practical and social topics. Students would also be expected to be able to read and write with sufficient accuracy to meet a limited range of social and work needs. Language focuses on topics such as the economy, class and social stratification, gender roles, religion and beliefs, literature, and the arts.

Spanish 6 consists of 78 hours of classroom instruction. The approach adopted is 'communicative' and provides many opportunities for the students to interact and use the language in various social and cultural contexts. There are discussions and debates on set topics. Audiovisual equipment and computers will be used to facilitate learning.

971710, 972710, 973710, 974710

Greek

Greek is offered to UTS students through arrangements with other universities in Sydney. Combined degree students with a sound working knowledge of the language are

admitted to study Greek. Students are placed in classes appropriate to their level of competence. The program focuses on furthering writing and oral skills in contemporary Greek and learning about literature, society and culture.

971724, 972724, 973724, 974724

Serbian

Serbian is offered to UTS students through an arrangement with Macquarie University. Combined degree students with a sound working knowledge of the language are admitted to study Serbian. Students are placed in classes appropriate to their level of competence. The aim of the Serbian language program is to provide students with a sound knowledge of the language to enable their independent exploration of Serbian language and literature.

971734, 972734, 973734, 974734

Russian

Russian is offered to UTS students through an arrangement with Macquarie University. Combined degree students with a sound working knowledge of the language are admitted to study Russian. Students are placed in classes appropriate to their level of competence. The aim of the Russian language program is to give students a good working knowledge of modern written and spoken Russian and to enable them to express themselves in the language correctly and with reasonable facility.

971744, 972744, 973744, 974744

Croatian

Croatian language is offered to UTS students through an arrangement with Macquarie University. Combined degree students are admitted to study Croatian only at a minimum post-HSC level of language proficiency. Students are placed in classes appropriate to their level of competence with particular emphasis in furthering pronunciation and writing skills and learning about the history of the Croatian language.

971754, 972754, 973754, 974754

Slovenian

Slovenian is offered to UTS students through an arrangement with Macquarie University. Combined degree students with a sound working knowledge of the language are admitted to study Slovenian. Students are placed in classes appropriate to their level of competence. The aim of the Slovenian language program is to provide students with a sound knowledge of the language to enable them to communicate effectively, with particular emphasis placed on broadening their vocabulary and grammar.

971764, 972764, 973764, 974764

Polish

Polish is offered to UTS students through an arrangement with Macquarie University. Combined degree students with a sound working knowledge of the language are admitted to study Polish. Students are placed in classes appropriate to their level of competence. The Polish language program allows students to improve their linguistic competence through practice in speaking and writing skills while consolidating their previous knowledge of grammar.

971774, 972774, 973774, 974774

Ukrainian

Ukrainian is offered to UTS students through an arrangement with Macquarie University. Combined degree students with a sound working knowledge of the language are admitted to study Ukrainian. Students are placed in classes appropriate to their level of competence. The Ukrainian language program allows students to improve their reading, writing and oral skills with particular emphasis placed on the study of grammar and syntax.

976101

Chinese East Asia

8cp; 2nd semester, 4hpw

South China – Hong Kong, Taiwan and the Southern Chinese provinces of Fujian and Guangdong – is a region of global importance. It is a dynamo of economic growth for the East Asia region that has grown out of the economic integration of Hong Kong, Taiwan and South China, and is now expanding to include East China. Yet its constituent parts have developed separately in different and often inimical political systems. As a result of all of these factors, South China is likely to be of increasing importance strategically, economically and politically. This subject examines the development of Hong Kong, Taiwan and South China and their interaction. It is an introductory subject that requires no prior knowledge of the region or of any Chinese language.

976111

Contemporary China

8cp; 2nd semester, 4hpw

This subject examines the contours and dynamics of social, political and economic change in the People's Republic of China since the death of Mao Zedong and the start of the reform era. A central theme is the emerging relationship between state and society in a state socialist system in the process of change and reform. It is an introductory subject that requires no prior knowledge of the People's Republic of China or of any Chinese language.

976211

Contemporary Japan

8cp; 2nd semester, 4hpw

This subject provides an introduction to the political, social and economic contexts of Japan's emergence as an economic superpower. It focuses on the political process and social change, and examines conventional wisdom about a whole range of topics, such as Japan's collectivism, social welfare provision and political stability. In the process, it offers an introduction to Japan's culture and the causes and consequences of social change. It is an introductory subject that requires no prior knowledge of Japan or of Japanese.

976301

Contemporary South-East Asia

8cp; 2nd semester, 4hpw

Australia's political, social and economic interaction with the countries of South-East Asia has increased dramatically over the last 30 years, and South-East Asia has consequently become a region of crucial significance for Australia. Its relations with individual countries and with regional bodies such as ASEAN and APEC are now at least as important as its relations with England and Europe. This subject presents an introduction to the cultures and societies of South-East Asia. No prior knowledge of South-East Asia or any South-East Asian language is required. All classes are taught in English.

976401

Contemporary Europe

8cp; 2nd semester, 5hpw

This unit is an introduction and an overview laying the groundwork for the study of contemporary Europe. It surveys present-day European Union institutions and sociopolitical developments and provides a comparative study of political and social developments in the countries of Western and Eastern Europe. It aims to provide students with an understanding of the historical background of the present-day Europe and enable them to identify major contemporary policy issues in this region of the world.

976501

Contemporary Latin America

8cp; 2nd semester, 4hpw

Latin America has been a crucible for social, political and economic change in the 19th and 20th centuries. The struggles for nationalism, democracy, modernisation and secularisation have all resonated in the countries of Latin America. In the last half of the 20th century, Latin America's primary concerns have focused on the political economy of neo-colonialism and underdevelopment. In Latin America, as it has come out from behind the shadow of the USA, there has been greater awareness of community and identity at both national levels and in the international arena. This subject examines three of the countries of Latin America – Chile, Mexico and Argentina – and their interaction against this background.

The subject requires no prior knowledge of Latin America, or of Spanish or Portuguese.

977111

In-country Study 1: China

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97712x

In-country Study 1: Guangdong or Hong Kong

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97713x

In-country Study 1:Taiwan

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97721x

In-country Study 1: Japan

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977311

In-country Study 1: Indonesia

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977322

In-country Study 1:Thailand

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977331

In-country Study 1: Malaysia

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97741x

In-country Study 1: France

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97742x

In-country Study 1: Germany

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977431

In-country Study 1: Italy

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977451

In-country Study 1: Spain

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97751x

In-country Study 1:Argentina

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97751x or 97752x

In-country Study 1:Argentina or Chile

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

97752x

In-country Study 1: Chile

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977710

In-country Study 1: Greece

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977720

In-country Study 1: Serbia

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977730

In-country Study 1: Russia

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977741

In-country Study 1: Croatia

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977750

In-country Study 1: Slovenia

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977760

In-country Study 1: Poland

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

977770

In-country Study 1: Ukraine

24cp; prerequisite: completion of 4 semesters of study in the International Studies program

978111

In-country Study 2: China

24cp; prerequisite: 977111

97812x

In-country Study 2: Guangdong or Hong Kong

24cp; prerequisite: 97712x

97813x

In-country Study 2:Taiwan

24cp; prerequisite: 97713x

97821x
In-country Study 2: Japan
24cp; prerequisite: 97721x

978311
In-country Study 2: Indonesia
24cp; prerequisite: 977311

978322
In-country Study 2: Thailand
24cp; prerequisite: 977322

978331
In-country Study 2: Malaysia
24cp; prerequisite: 977331

97841x
In-country Study 2: France
24cp; prerequisite: 97741x

97842x
In-country Study 2: Germany
24cp; prerequisite: 97742x

978431
In-country Study 2: Italy
24cp; prerequisite: 977431

978451
In-country Study 2: Spain
24cp; prerequisite: 977451

97851x
In-country Study 2: Argentina
24cp; prerequisite: 97751x

97851x or 97752x
In-country Study 2: Argentina or Chile
24cp; prerequisite: 97751x or 97752x

97852x
In-country Study 2: Chile
24cp; prerequisite: 97752x

978710
In-country Study 2: Greece
24cp; prerequisite: 977710

978720
In-country Study 2: Serbia
24cp; prerequisite: 977720

978730
In-country Study 2: Russia
24cp; prerequisite: 977730

978741
In-country Study 2: Croatia
24cp; prerequisite: 977741

978750
In-country Study 2: Slovenia
24cp; prerequisite: 977750

978760
In-country Study 2: Poland
24cp; prerequisite: 977760

978770
In-country Study 2: Ukraine
24cp; prerequisite: 977770

Numerical list of subjects

The following table indicates the number and name of each subject, the semester or semesters in which it is offered (these are subject to change), the credit-point value, the number of contact hours, and the prerequisites and corequisites (indicated by *c*). The letters A and S refer to Autumn and Spring semesters, respectively, and Y is used for a year-long subject. As a general guide, four contact hours suggests three hours of lectures and one tutorial hour per week, and six contact hours suggests a further two hours of laboratory work per week.

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
015110	Aboriginal Cultures and Philosophies		8	3	Nil
22105	Accounting A	A,S	4	3	Nil
25110	Microeconomics	A,S	4	3	Nil
25209	Macroeconomics	A,S	4	3	25110
25210	Microeconomic Theory and Policy	A,S	6	4	25110
25308	Financial Markets	A,S	4	3	25209
25314	Business Finance	A,S	4	3	22105, 35151, 25308 *c*
25421	International Financial Management	S	6	4	25308, 25314
25606	Financial Time Series Analysis	S	6	4	35232, 35353
25620	Derivative Securities	A	6	4	25906
25621	Financing Decisions and Capital Market Theory	A	6	4	25905
25905	Capital Budgeting and Valuation (Honours)	S	6	4	25308, 25314
25906	Investment Analysis (Honours)	S	6	4	25308, 25314
25907	Theory of Financial Decision Making	A	4	3	By consent
25908	Derivative Security Pricing	S	4	3	By consent
25909	Advanced Corporate Finance	S	4	3	By consent
25910	Thesis	Y	12		By consent
31414	Information Systems	A	6	3	Nil
31424	Systems Modelling	S	6	3	Nil
31434	Database Design	A	6	3	31424
33401	Mathematics for Computing	A	6	3	Nil
35100	Mathematical Practice	A,S	3	3	Nil
35101	Mathematics 1	A,S	6	6	Nil
35102	Mathematics 2	A,S	6	6	35101
35111	Discrete Mathematics	A,S	3	3	Nil
35151	Statistics 1	A,S	6	6	Nil

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
35170	Introduction to Computing	A,S	6	7	Nil
35171	Computing 1	S	6	7	35170, 35111 *c*
35205	History of Mathematics	S	6	4	Nil
35212	Linear Algebra	A,S	6	4	35101
35231	Differential Equations	A,S	6	4	35102, 35212
35232	Advanced Calculus	A,S	6	4	35102
35241	Mathematical Programming 1	A,S	6	4	35212, 35232
35252	Statistics 2	A,S	6	4	35151
35272	Computing 2	S	6	6	35111, 35171
35274	Computing Seminar A	A or S	3	2	See subject description
35275	Computing Seminar B	A or S	3	2	See subject description
35281	Numerical Analysis 1	A,S	6	4	35170, 35231 *c*
35292–6	Project	A,S	2–6	1–4	By arrangement
35313	Pure Mathematics 3A	A	6	4	35231, 35232
35314	Pure Mathematics 3B	S	6	4	35111
35321	Analysis 1	A,S	6	4	35102, 35212
35322	Analysis 2	S	6	4	35321
35333	Applied Mathematics 3A	A	6	4	35232, 35335 *c*
35334	Applied Mathematics 3B	S	6	4	35333, 35335
35335	Mathematical Methods	A	6	4	35231
35340	Operations Research Practice	S	6	4	35241, 35252
35342	Mathematical Programming 2	A	6	4	35241
35344	Network Optimisation	S	6	4	35241
35353	Regression Analysis	A	6	4	35252
35354	Statistical Inference	A	6	4	35252
35355	Quality Control	S	6	4	35361
35356	Design and Analysis of Experiments	S	6	4	35252
35361	Probability and Stochastic Processes	A,S	6	4	35252
35363	Stochastic Methods in Operations Research	A,S	6	4	35170, 35361 *c*
35373	Computing 3	A	6	4	35272
35376	Advanced Topics in Computing A	A	6	4	See subject description
35377	Advanced Topics in Computing B	S	6	4	See subject description
35378	Computing Seminar C	A or S	3	2	See subject description
35379	Computing Seminar D	A or S	3	2	See subject description

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
35382	Numerical Analysis 2	S	6	4	35281
35384	Financial Modelling	A	4	3	35102, 35151
35391	Seminar (Mathematics)	A or S	6	4	By arrangement
35392	Seminar (Operations Research)	A or S	6	4	By arrangement
35393	Seminar (Statistics)	A or S	6	4	By arrangement
35394	Seminar (Computing)	A or S	6	4	By arrangement
35418	Analytic Number Theory	A	4	3	35314, 35232
35419	Advanced Algebra	A	4	3	35314
35427	Functional Analysis	S	4	3	35322
35428	Convexity and Optimisation	A	4	3	35322
35436	Advanced Mathematical Methods	S	4	3	35334
35437	Partial Differential Equations	A	4	3	35335
35438	Nonlinear Dynamical Systems	A	4	3	35231, 35321
35443	Mathematical Programming 3	S	4	3	35342
35446	Scheduling Theory	S	4	3	35342, 35447
35447	Discrete Optimisation	A	4	3	35111, 35342
35448	Dynamic Optimisation	A	4	3	35241, 35361, 35447 *c*
35449	Operations Research Models and Methodology	S	4	3	35363, 35443, 35448, 35446 *c*
35456	Nonlinear Statistical Models	S	4	3	35353, 35467
35457	Multivariate Statistics	A	4	3	35353, 35356
35458	Loglinear Modelling	S	4	3	35353
35459	Linear Models and Experimental Design	S	4	3	35353, 35457, 35356
35466	Advanced Stochastic Processes	A	4	3	35322, 35361
35467	Time Series Analysis	A	4	3	35361
35469	Statistical Consulting	S	4	3	See subject description
35485	Advanced Financial Modelling	A	4	3	35340
35486	Optimal Control 1	A	4	3	35231, 35232
35487	Optimal Control 2	S	4	3	35466, 35486
35491	Honours Seminar A	A or S	4	3	By consent
35492	Honours Seminar B	A or S	4	3	By consent

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
35496	Thesis Seminar A	A	4	3	By consent
35497	Thesis Seminar B	S	4	3	By consent
35498	Thesis (Honours)	Y	16		By consent
35594	Project	S	8		By arrangement
35596	Project	Y	12		By arrangement
35599	Report	Y	12		By consent
54230	Aboriginal Social and Political History	–	8	3	Nil
54231	Aboriginal People and the Media	–	8	3	015110, 54230
54330	The Politics of Aboriginal History	–	8	3	See subject description
54331	Aboriginal Forms of Discourse	–	8	3	See subject description
59341	Modernisation and Globalisation	A,S	8	4	Nil
79101	Business Law	A,S	4	3	Nil
97x101	Modern Standard Chinese 1–6	A or S	8	6	See subject descriptions
97x111	Chinese 1–6	A or S	8	6	See subject descriptions
97x121	Cantonese A1–A4, B1–B2	A or S	8	6	See subject descriptions
97x211	Japanese 1–6	A or S	8	6	See subject descriptions
97x311	Indonesian 1–6	A or S	8	6	See subject descriptions
97x331	Malaysian 1–6	A or S	8	6	See subject descriptions
97x501	Spanish 1–6	A or S	8	6	See subject descriptions
976101	Chinese East Asia	S	8	4	Nil
976111	Contemporary China	S	8	5	Nil
976211	Contemporary Japan	S	8	5	Nil
976301	Contemporary South-East Asia	S	8	5	Nil
976401	Contemporary Western Europe	S	8	5	Nil
976501	Contemporary Latin America	S	8	5	Nil
976714	Modern Greek History and Society	S	8	5	Nil
976734	Contemporary Russia	S	8	5	Nil

Note: In the case of International Studies subjects, x indicates one of four levels of study.

Alphabetical list of subjects

School of Computing Sciences

The School offers the following courses:

Undergraduate courses

Bachelor of Science in Computing Science

Bachelor of Information Technology

Bachelor of Science in Computing Science/ Bachelor of Arts in International Studies

Bachelor of Science in Computing Science/ Bachelor of Laws

Bachelor of Business/Bachelor of Science in Computing Science

Postgraduate courses

Research degrees

Doctor of Philosophy

Master of Science

Coursework degree

Master of Science in Computing

Management Development Program

Master of Business in Information Technology Management

Graduate Diploma in Information Technology Management

Graduate Certificate in Information Technology Management

Graduate Diploma

Graduate Diploma in Information Technology

Graduate Certificates

Graduate Certificate in Advanced Information Technology

Graduate Certificate in Applied Computing

Graduate Certificate in Computer Science

Graduate Certificate in Human–Computer Interaction

Graduate Certificate in Information Systems

Graduate Certificate in Programming Practice

Graduate Certificate in Software Quality Assurance

Academic advisers for 1997

Academic advisers in the School of Computing Sciences are located in Building 4, City campus (Broadway).

For calls made from outside the University, all extension numbers should be prefixed with 9514.

	Ext	Room
Undergraduate courses		
Bachelor of Science in Computing Science		
Mr John Colville	1854	524
Mr Chris S Johnson	1834	360
Mr Cedric Richardson	1866	368
Projects Coordinator		
Mr Chris W Johnson	1855	522
Bachelor of Information Technology		
Mr David Wilson	1832	354
Academic Liaison Officer (Special conditions, disability)		
Dr Bruce Howarth	1859	530
Electives Coordinator		
Mr Chris W Johnson	1855	522
Postgraduate courses		
All Graduate Certificates		
Mr Peter Bebbington	1828	353
Graduate Diploma in Information Technology		
Mr Peter Bebbington	1828	353
Master of Business in Information Technology Management and articulated courses		
Mr David Wilson	1832	354
Master of Science in Computing and Research degrees		
Professor John Debenham	1837	437

Each adviser has specific consultation times. These are displayed on the Ground Floor noticeboards.

Computing facilities

The School provides a number of network-connected laboratories used in both teaching and research. The network, together with a number of SUN UNIX servers, provides the application software required and a number of network services (www, ftp, e-mail, news), which can be used to access resources and information throughout the University and the world. The School's URL is:
http://www.socs.uts.edu.au

General purpose laboratories

- UNIX laboratories – A combination of X-terminals and UNIX workstations provides students with access to the UNIX environment. They are used by many of the School's subjects.
- PC laboratories – A number of PC laboratories provide access to the PC/Windows-type environment. They are used by a number of programming and business application subjects.
- Access – General access to these laboratories is between the hours of 9.00 a.m. and 9.00 p.m., Monday to Friday, during semester. On some occasions, these laboratories are booked for different subjects and, during these booked times, students not enrolled in those subjects should vacate that laboratory. Timetable bookings will be located on the door of each laboratory, and are available on the School's Web site. After the first week of each semester examination period, and also during vacation periods, the laboratories are available only between 9.00 a.m. and 6.00 p.m.
- Extended hours of access to specialist laboratories can be gained through the use of the electronic security door system for which an È-card is required.

Specific purpose laboratories

- Graphics laboratory – A number of Silicon Graphics UNIX computers provide practical graphics usage.
- Parallel processing – This laboratory provides transputer-based systems and is the home of the Australian Transputer Centre.
- Collaborative systems – A research laboratory involved in applying computer and communications technology to improving work practices.
- Distributed Systems Technology Centre and Multimedia Laboratory – A laboratory used for research into distributed systems, in particular software protocols, network management, and interaction between multimedia and networks.
- Usability laboratory – A studio set-up for the testing, evaluation and analysis of interaction between computers and the human operators.
- Access – Access to these specific purpose laboratories will be arranged by the academic involved in a particular subject or research project.

Remote access facility

The remote access facility provides modem access for students and staff through either terminal emulation or remote network connection using PPP. This allows users to access some of the School's computing systems and perform work from home.

Help desk facility

The School's help desk – which is located in the Interface Room, Room 447, Building 4 – provides users with information on usage of the equipment, software and facilities, help with problems and a point of contact for reporting faults. The telephone number is 9514 1869.

Information Technology Division (ITD) facilities

ITD is a University division that provides general computing facilities for all students at UTS. It provides a University-wide network interconnection, a number of large UNIX servers, and laboratories throughout the different campuses. The University provides access to Internet resources through its connection to AARNet.

Laboratories

- ITD provides UNIX, PC and Macintosh laboratories throughout the University which are available for use by all students.
- Access to ITD's UNIX servers is available from all laboratories provided by ITD and the School of Computing Sciences.
- Building 2 laboratories – provide 24-hour, seven-day-per-week access.
- Building 4 UNIX and PC laboratories – provide 9.00 a.m. to 9.00 p.m. access, Monday to Friday only.

Remote access facility

The remote access facility provides modem access by students and staff through terminal emulation or shell access (text only). This allows users to access the University's computing systems and perform work from home.

Resource Centre facility

ITD's Resource Centre and help desk – located on Level 9, Building 1 – provides assistance to the users of the academic computing facilities. During semester, the Resource Centre is open from 9.00 a.m. to 10.00 p.m., Monday to Friday. On weekends, and during semester breaks, it is open from 9.00 a.m. to 5.00 p.m. The help desk telephone number is 9514 2222.

PRIZES AND SCHOLARSHIPS

The School of Computing Sciences awards the following prizes and scholarship on a yearly basis.

Asia Pacific Computer Consultants Tuition Scholarship

This tuition scholarship, established in 1995 by Asia Pacific Computer Consultants, may be awarded annually to an able, needy, first-year, full-time student who is currently enrolled in the Bachelor of Science in Computing Science degree, and for whom this is the first year of tertiary study. The total value of the scholarship is $10,000.

Atmosphera Prize for Interface Programming

This Prize was established in 1996 by Atmosphera Pty Ltd. It is awarded annually to the student enrolled in the Bachelor of Science in Computing Science degree who achieves the highest mark in the subject Operating Systems Facilities. The prize is a cash award of $500.

CABS Information Technology Planning and Design Prize

Established in 1985 by Computer Automated Business Systems Pty Ltd, this prize is awarded annually to the group of final-year students, enrolled in either the Bachelor of Science in Computing Science or the Bachelor of Information Technology, who obtain the highest mark in the subject Information Technology Planning and Design. The cash award of $1,000 is shared among all students in the group.

Claude Lalanne-SITA Prize

Established in 1996 by SITA, this prize is awarded annually to the student enrolled in the Bachelor of Science in Computing Science who achieves the best overall performance in the final year of the degree and who has completed the course within the minimum time. The prize is a cash award of $1,000.

CSC Australia Prize for Communications

Since 1971, Computer Sciences Corporation Australia Pty Ltd has made available an award in the interests of furthering education and knowledge in the field of telecommunications. The prize is awarded to the student enrolled in the Bachelor of Science in Computing Science who achieves the best combined performance in the subjects Systems Software and Networks, and Distributed Software Programming. The prize is a cash award of $200.

Oracle Database Prize

Established in 1994, the Oracle Database prize is awarded to the Bachelor of Science in Computing Science student who achieves the highest aggregate mark in the subjects Distributed Databases and Client Server Computing, and Database Design. The prize has a cash value of $1,000.

Westpac Information Systems Award

This prize was established in 1987 by the Westpac Banking Corporation. It is awarded annually to the full-time Bachelor of Science in Computing Science student who develops the best IT strategic plan based on his or her Industrial Training experience. The prize has a cash value of $500.

School contacts

All staff of the School of Computing Sciences are located in Building 4, City campus (Broadway). For calls made from outside the University, all extension numbers should be prefixed with 9514. All e-mail addresses should be suffixed with '@socs.uts.edu.au'.

Name	Ext	Room	E-mail
Director, Graduate Education			
Mr Peter Bebbington	1828	353	peterb
Secretary/WPO			
Ms Lyn Chamas	2154	335	lynette
Mr Jeff Clark	1827	355	clark
Mr John Colville	1854	524	colville
Deputy Head of School and Director, Postgraduate Studies			
Professor John Debenham	1837	437	debenham
Head of School			
Associate Professor Jenny Edwards	1844	340	jenny
Mr Jamal El-Den	1830	366	jamal
Dr George Feuerlicht	1835	363	jiri
Mr Nigel Hamilton	1833	362	nige
Mrs Judy Hammond	1822	359	judy
Professor Igor Hawryszkiewycz	1809	372	igorh
Associate Professor Tom Hintz	1865	548	hintz
Director, Undergraduate Studies			
Dr Bruce Howarth	1859	530	bruce
Professor John Hughes	1329	436	hughes
Dr Barry Jay	1814	514	cbj
Mr Sanjay Jha	1858	520	sanjay
Mr Chris S Johnson	1834	360	chrisj
Mr Chris W Johnson	1855	522	chris
Mrs Elaine Lawrence	1861	533	elaine
Dr Tom Osborn	1852	519	osborn
Dr Sattiraju Prabhakar	1851	515	prabhakar
Mr Richard Raban	1829	365	richard
Mr Cedric Richardson	1866	368	cedric
Dr Robert Rist	1849	516	rist
Mr Lin Smith	1864	536	lsmith
Dr Kevin Suffern	1845	512	kevin
Director, Australian Transputer Centre			
Mr Ury Szewcow	1862	534	ury
Mr John Tu	1856	523	vohao
Mr Jim Underwood	1831	356	jim
Dr Ron van der Meyden	1850	514	ron
Mr David Wilson	1832	354	davidw
Mr Bernard Wong	1825	357	bernard
Executive Assistant			
Ms Marie Woessner	1258	335	marie
Interface Room	1869	447	

Undergraduate courses

Bachelor of Science in Computing Science

Course code: MC02

This course aims to provide a sound education in all aspects of computing for students who intend to make a career in the profession. It is intended that the course will provide a suitable background covering all aspects of information technology, short of the actual design and construction of hardware systems.

The course provides an in-depth study of computing science and its applications and, in addition, support subjects are included to enable graduates to fulfil an appropriate function in the sphere of business activity. It is intended that the formal studies will be treated in a manner that will encourage initiative. Not only will the course provide a suitable framework for a professional career, it will also form a basis from which postgraduate studies may begin.

The course consists of six academic semesters of full-time study or the equivalent in part-time attendance, and a period of Industrial Training.

Holders of the degree are granted exemption from the Associate examinations of the Australian Computer Society.

Grading of awards

Students are graded for awards by a two-stage process involving first qualifying and then grading students.

The subjects to be included in the grading process are the core subjects, excluding those normally taken during Stages 1 and 2 of the part-time course or the first year of the full-time course. All core subjects must be passed. Any of those subjects that have been failed and subsequently passed will be included with a raw mark of 50 per cent.

Qualifying

Pass degree

A student who has accumulated 144 credit points and has an average raw mark of 50 per cent or greater will qualify for a Pass degree.

Grading

Honours degree

The average raw marks required to achieve the Honours grades in 1995 and 1996 were:

First Class Honours: 75 per cent
Second Class Honours: 68 per cent

The grading of qualifying students is carried out by the School's Examination Review Committee on an individual basis. The Committee is provided with the following information on each qualifier:

- any failures, including subject details and whether or not a failure was of a technical nature;
- the subject details and marks for all electives undertaken;
- the time taken to complete the course in terms of stages, excluding periods of leave of absence; and
- the average mark for each stage during the course.

Industrial Training

All students in the BSc in Computing Science are required to pass two Industrial Training subjects. The prerequisites for Industrial Training are noted in the 'Subject descriptions' section for the School of Computing Sciences in this handbook. Full-time students normally undertake Industrial Training after completing Year 2 of the course, part-time students after completing Year 4.

To gain credit for Industrial Training, students are required to obtain an approved, full-time job within the information industry. The duration of Industrial Training is a minimum of nine months for full-time students or 18 months for part-time students. During Industrial Training, students are required to behave in a professional manner, and to keep the School informed of the status of their employment at all times so that the School is able to assess their experience. Each year the School of Computing Sciences publishes an *Industrial Training Student Guide* (for full-time students) which sets out in detail what is required to pass the subject. Students will receive a copy of this Guide at the Industrial Training information session held in May each year.

Although the securing of suitable employment during Industrial Training is the student's responsibility, the School provides assistance to all Industrial Training students. Students who wish to benefit from the direct assistance of the School in finding an Industrial Training position should refer to the *Industrial Training Student Guide* for the procedure to be followed.

Students who wish to seek an Industrial Training position without the direct assistance of the School should first make an appointment to see the Industry Liaison Officer, who will provide a description of the requirements of an Industrial Training position. If a student finds employment, a second appointment must be made to see the Industry Liaison Officer to obtain certification that the employment is suitable for Industrial Training.

Full-time Industrial Training students are assessed by members of the academic staff who normally visit students during the first semester of their employment.

In general, students find Industrial Training extremely beneficial in relating the final year of coursework to the practical needs of the information industry, and this experience can be cited when applying for graduate career positions.

Exemptions

Exemptions may be granted on the basis of recent academic study (within the last three years) towards a degree. Students must be able to demonstrate that the knowledge is current. Exemption from core subjects may be granted where subjects successfully completed previously coincide with BSc subjects.

Students are expected to apply for exemptions, for which they believe they are eligible, at the commencement of their first year of study. Exemptions are usually processed by the School immediately following enrolment.

Exemptions for holders of TAFE Associate Diplomas and Diplomas

Holders of TAFE Associate Diplomas and Diplomas who are admitted to the course will be eligible for the following exemptions, provided the qualifications were gained within three years of the date of entry to UTS.

Associate Diploma of Business (Commercial Data Processing)

31414	Information Systems	6cp
2402C	*Systems Analysis and Design 1*	
2402D	*Computing 1*	
31417	Computing Practice	6cp
2402D	*Computing 1*	
2402A	*Programming Concepts*	
2402Y	*Computers in Business and Society*	
8559C	*Business Communication*	
31429	Procedural Programming	6cp
2402A	*Programming Concepts*	
2402J	*Programming Workshop*	
2402P	Programming Option – C	
22615	Accounting Information Systems	4cp
2402C	*Systems Analysis and Design 1*	

To obtain the exemption in 31417 Computing Practice, students must demonstrate knowledge of UNIX commands and utilities.

Unspecified CS/IS electives: 20cp

Total: 42cp

Associate Diploma of Business (Microcomputer Systems)

31414	Information Systems	6cp
8519K	*Business Systems*	
2403AG	*Data Fundamentals*	
31417	Computing Practice	6cp
2403A	*Microcomputer System Usage*	
2403AC	*Single-User Operating Systems*	
2403AD	*Electronic Spreadsheets*	
8559H	*Business Communications Writing*	

To obtain the exemption in 31417 Computing Practice, students must demonstrate knowledge of UNIX commands and utilities.

Unspecified electives: 16cp

Total: 28cp

Associate Diploma of Engineering (Electronic Engineering)

31416	Computer Systems Architecture	6cp
2840BC	*Computer Principles*	
2840CN	*Digital Computers 1*	
2840CP	*Digital Computers 2*	
2840AL	*Electronic Communications Systems*	
2840BB	*Computer Data Communications 1*	

Unspecified electives: 24cp

Total: 30cp

Elective exemptions

Exemption from electives may only be granted on the basis of recent academic study towards a degree or TAFE award. Students must be able to demonstrate to the Subject Coordinators that their knowledge is current.

At the discretion of the Director, Undergraduate Studies, exemption from some electives may be

granted where a student has successfully completed:

- specific computing elective subjects where either the subject was previously completed at UTS, or the subject is substantially the same as a UTS subject in content and level;
- subjects that correspond in content and level to some subjects in a formal UTS sub-major, provided that the remaining subjects in the sub-major are taken to a total of 24 credit points;
- subjects that correspond in content and level to some subjects in a coherent staged group of UTS subjects in another discipline, provided that the remaining subjects in the group are taken to a total of 20 credit points in the discipline; or
- a coherent staged group of elective subjects for which there is no equivalent at UTS.

Pre-1989 course

Students who commenced the BSc prior to 1989 should consult the Director, Undergraduate Studies, to determine their course program.

Program for students who commenced before 1995

Recommended full-time program

This program is included to assist pre-1995 students. **These subjects are no longer offered, and cannot be claimed for exemptions.**

Year 1

Autumn semester

31611	Information Systems	4cp
31613	Computer Systems Architecture 1	4cp
31614	Programming Principles	5cp
31615	Discrete Mathematics	4cp
31617	Accounting Fundamentals	4cp
51370	Human Communication	3cp

Spring semester

31621	Systems Analysis	4cp
31622	Commercial Programming Development	4cp
31623	Computer Systems Architecture 2	4cp
31624	Data Structures and Algorithms	4cp
31625	Software Engineering	4cp
31626	Probability and Statistics	4cp

Year 2

Autumn semester

31631	Database	4cp
31632	Communications and Networks	4cp
31633	Operating Systems	4cp
31636	Simulation and Modelling	4cp
	CS/IS Elective 1	4cp
	Elective 1	4cp

Spring semester

31641	Systems Design	4cp
31642	On-line Systems	4cp
31647	Management Control Systems	4cp
31648	Business Tools and Applications	4cp
	CS/IS Elective 2	4cp
	Elective 2	4cp

Year 3

Autumn semester

31696	Industrial Training	0cp

Spring semester

31697	Industrial Training	0cp

Year 4

Autumn semester

31653	Communications Software	4cp
31655	Theory of Computer Science	4cp
31658	Project Management	4cp
	CS/IS Elective 3	4cp
	Elective 3	4cp
	Elective 4	4cp

Spring semester

31662	Information Systems Case Study	5cp
31666	Performance Evaluation	4cp
31669	Social Implications of Computers	3cp
	CS/IS Elective 4	4cp
	Elective 5	4cp
	Elective 6	4cp

Recommended part-time program

This program is included to assist pre-1995 students. **These subjects are no longer offered, and cannot be claimed for exemptions.**

Year 1

Autumn semester

31611	Information Systems	4cp
31615	Discrete Mathematics	4cp
31617	Accounting Fundamentals	4cp

Spring semester

31613	Computer Systems Architecture 1	4cp
31614	Programming Principles	5cp
51370	Human Communication	3cp

Year 2

Autumn semester

31621	Systems Analysis	4cp
31622	Commercial Programming Development	4cp
31623	Computer Systems Architecture 2	4cp

Spring semester

31624	Data Structures and Algorithms	4cp
31625	Software Engineering	4cp
31631	Database	4cp

Year 3

Autumn semester

31632	Communications and Networks	4cp
	CS/IS Elective 1	4cp
	Elective 1	4cp

Spring semester

31626	Probability and Statistics	4cp
31648	Business Tools and Applications	4cp
31633	Operating Systems	4cp

Year 4

Autumn semester

31641	Systems Design	4cp
31642	On-line Systems	4cp
	CS/IS Elective 2	4cp

Spring semester

31636	Simulation and Modelling	4cp
31647	Management Control Systems	4cp
	Elective 2	4cp

Year 5

Autumn semester

31655	Theory of Computer Science	4cp
31658	Project Management	4cp
	CS/IS Elective 3	4cp
31698	Industrial Training	0cp

Spring semester

31653	Communications Software	4cp
	Elective 3	4cp
	Elective 4	4cp
31698	Industrial Training	0cp

Year 6

Autumn semester

31669	Social Implications of Computers	3cp
31666	Performance Evaluation	4cp
	CS/IS Elective 4	4cp
31699	Industrial Training	0cp

Spring semester

31662	Information Systems Case Study	5cp
31699	Industrial Training	0cp
	Elective 5	4cp
	Elective 6	4cp

Pre-1995 course electives information

Electives provide the opportunity for students to include in their program some advanced computing subjects, subjects of personal interest which need not be related to computing, or subjects to form a sub-major in another discipline. A total of 40 credit points is allocated to elective subjects.

A student is required to take:

- a computing elective stream of 16 credit points. This may be chosen from Information Systems, Computer Science, or both. A strand taken predominantly from a single area is preferred over a collection of unrelated subjects;

  and

- a further stream of 24 credit points which will be one of the following:

  (a) a formal sub-major of 24 credit points from a UTS faculty;

  or

  (b) at the discretion of the Director, Undergraduate Studies, or the Electives Coordinator, a number of subjects from another UTS discipline or another institution, at least 20 credit points of which form a coherent staged group. A staged group is one where there is a pattern of prerequisites between the subjects that show progression of at least three levels. A coherent group is one in which all subjects are from the one area of knowledge. This may leave the student with four credit points to take a 'free' subject from any discipline. (Special arrangements may be made for the study of a foreign language at another university);

  or

  (c) at least 16 credit points of electives from the School of Computing Sciences (in addition to the 16 compulsory School of Computing Sciences elective credit points referred to above). This choice will leave students with up to eight 'free' credit points to complete the 24 credit points of 'other' electives that are needed to complete the second part of the elective requirement.

For the purposes of determining completion of elective requirements, the School will award four credit points for every three hours of electives completed up until the end of 1992.

Transferring to the post-1995 course

The programs that students should undertake, according to their year of commencement and attendance pattern, are shown in the table below:

Full-time

Commenced ↓	1997	1998
1994	new 4F	
1995	IT	new 4F

Part-time

Commenced ↓	1997	1998	1999	2000
1992	new 6P			
1993	new 5P	new 6P		
1994	new 4P[1]	new 5P	new 6P	
1995	new 3P	new 4P	new 5P	new 6P

Note: 1F indicates the first year of full-time study, 2P indicates the second year of part-time study etc.

[1] These students will take an elective instead of 22615 Accounting Information Systems.

Approximate equivalents between pre-1995 and post-1995 BSc subjects

Post-1995		Pre-1995	
22615	Accounting Information Systems	31617	Accounting Fundamentals
31414	Information Systems	31611 31621	Information Systems Systems Analysis
31415	Principles of Software	31614	Programming Principles Development A
31416	Computer Systems Architecture	31613 31623	Computer Systems Architecture 1 Computer Systems Architecture 2
31417	Computing Practice	No equivalent	
31424	Systems Modelling	31621 31641 31858	Systems Analysis Systems Design Object-oriented Analysis and Design
31425	Principles of Software	31615 31625	Discrete Mathematics Development B Software Engineering
31428	Quantitative Modelling	31626 31636	Probability and Statistics Simulation and Modelling
31429	Procedural Programming Development	31622 31624 31904	Commercial Programming Data Structures and Algorithms Systems Programming
31434	Database Design	31631	Database
31436	Systems Software and Networks	31632 31633	Communications and Networks Operating Systems
31444	Systems Design and Development	31641 31642	Systems Design On-line Systems
31454	Project Management and the Professional	31658 31669	Project Management Social Implications of Computers
31455	Software Development Case Study	31655 31625	Theory of Computer Science Software Engineering
31464	Information Technology Planning and Design	31662	Information Systems Case Study

Program for students who commenced from 1995 onwards

Recommended full-time program

Year 1

Autumn semester

31414	Information Systems	6cp
31415	Principles of Software Development A	6cp
31416	Computer Systems Architecture	6cp
31417	Computing Practice	6cp

Spring semester

31424	Systems Modelling	6cp
31425	Principles of Software Development B	6cp
31428	Quantitative Modelling	6cp
31429	Procedural Programming	6cp

Year 2

Autumn semester

22615	Accounting Information Systems	4cp[1]
31434	Database Design	6cp
31436	Systems Software and Networks	8cp
	Electives	8cp

Spring semester

31444	Systems Design and Development	10cp
	Electives	12cp

Year 3

Autumn semester

31696	Industrial Training	0cp

Spring semester

31697	Industrial Training	0cp

Year 4

Autumn semester

31454	Project Management and the Professional	8cp
31455	Software Development Case Study	5cp
	Electives	12cp

Spring semester

31455	Software Development Case Study (cont.)	5cp
31464	Information Technology Planning and Design	6cp
	Electives	12cp

[1] Pre-1995 students who have passed 31617 Accounting Fundamentals should take an elective in place of 22615 Accounting Information Systems.

Recommended part-time program

Year 1

Autumn semester

31415	Principles of Software Development A	6cp
31417	Computing Practice	6cp

Spring semester

31416	Computer Systems Architecture	6cp
31425	Principles of Software Development B	6cp

Year 2

Autumn semester

31414	Information Systems	6cp
31428	Quantitative Modelling	6cp

Spring semester

31424	Systems Modelling	6cp
31429	Procedural Programming	6cp

Year 3

Autumn semester

31434	Database Design	6cp
	Elective	4cp

Spring semester

31436	Systems Software and Networks	8cp
	Elective	4cp

Year 4

Autumn semester

31444	Systems Design and Development	10cp
	Elective	4cp

Spring semester

22615	Accounting Information Systems	4cp
	Electives	8cp

Year 5

Autumn semester

31455	Software Development Case Study	5cp
	Electives	8cp
31698	Industrial Training	0cp

Spring semester

31455	Software Development Case Study (cont.)	5cp
	Elective	4cp
31698	Industrial Training	0cp

Year 6

Autumn semester

31454	Project Management and the Professional	8cp
	Elective	4cp

31699	Industrial Training	0cp

Spring semester

31464	Information Technology Planning and Design	6cp
	Electives	8cp
31699	Industrial Training	0cp

Electives

Students should refer to the post-1995 Bachelor of Science prerequisite chart.

Students must do a minimum of 44 credit points of electives, of which 16 credit points must be taken from the School of Computing Sciences. The remaining elective credit points (minimum 28) may also be taken from the School of Computing Sciences. Alternatively, a student may opt to take a coherent staged group of subjects, normally a formally approved sub-major from another school or faculty. Typically, these are from the Faculties of Business, Engineering, Humanities and Social Sciences, and Science, and the School of Mathematical Sciences. (It should be noted that the norm for electives is 44 credit points, but as subjects in other faculties have a variety of credit points, a student's total elective credit points may exceed 44.) Students should be aware that they may enrol in subjects in another faculty, only if a class place is available. This applies particularly to the Faculties of Business, and Humanities and Social Sciences.

Projects

In lieu of one or two elective subjects, students may take one 4cp project, two 4cp projects, or one 8cp project over one or two semesters. In many cases, these projects may be completed over the Christmas or between-semester breaks, if desired. Please note that a **maximum** of eight credit points may be taken as projects.

A list of projects nominated by various staff members may be viewed on the SUNs, by logging in as **projects** and following the instructions. Students should also complete a Project Registration form, available from the Projects Coordinator, who will answer any queries. Students who have their own ideas for projects may approach relevant staff members to be their supervisors and must also see the Projects Coordinator for approval. Enrolment will not be allowed without an approved Project Registration form.

Students may not use work done in the normal course of duties as an Industrial Training student, or as a part-time student, as a project. Students may, however, do a project that is related to their work if it is done outside normal work hours. In this case, the student's work supervisor would probably become a joint supervisor of the project.

As a general guide, a student doing a 4cp project is expected to spend a **minimum** of 100 hours on the project.

Sub-majors

University-wide sub-majors

Aboriginal Studies sub-major (24cp)

Telephone 9514 2057

The Faculties of Humanities and Social Sciences and Education offer a range of Aboriginal Studies subjects that may be taken as a sub-major, or as elective subjects, as appropriate, within any undergraduate course.

The sub-major provides Aboriginal and non-Aboriginal students with an opportunity to study subjects that are culturally appropriate to an understanding of Aboriginal culture, history and social/political structures. These initial studies serve as a basis for applying critical analysis skills to Aboriginal and non-Aboriginal perspectives on issues and trends which affect the cultural and social integrity of Aboriginal peoples. Consideration is also given to other indigenous people, including Torres Strait Islanders. The role of the media and written or spoken communication are the major focuses of these analyses.

T5110	Aboriginal Cultures and Philosophies	8cp
54230	Aboriginal Social and Political History	8cp
	plus at least one of	
54231	Aboriginal People and the Media	8cp
54330	The Politics of Aboriginal History	8cp
54331	Aboriginal Forms of Discourse	8cp

Mathematical Sciences

Contact person: J Hogg

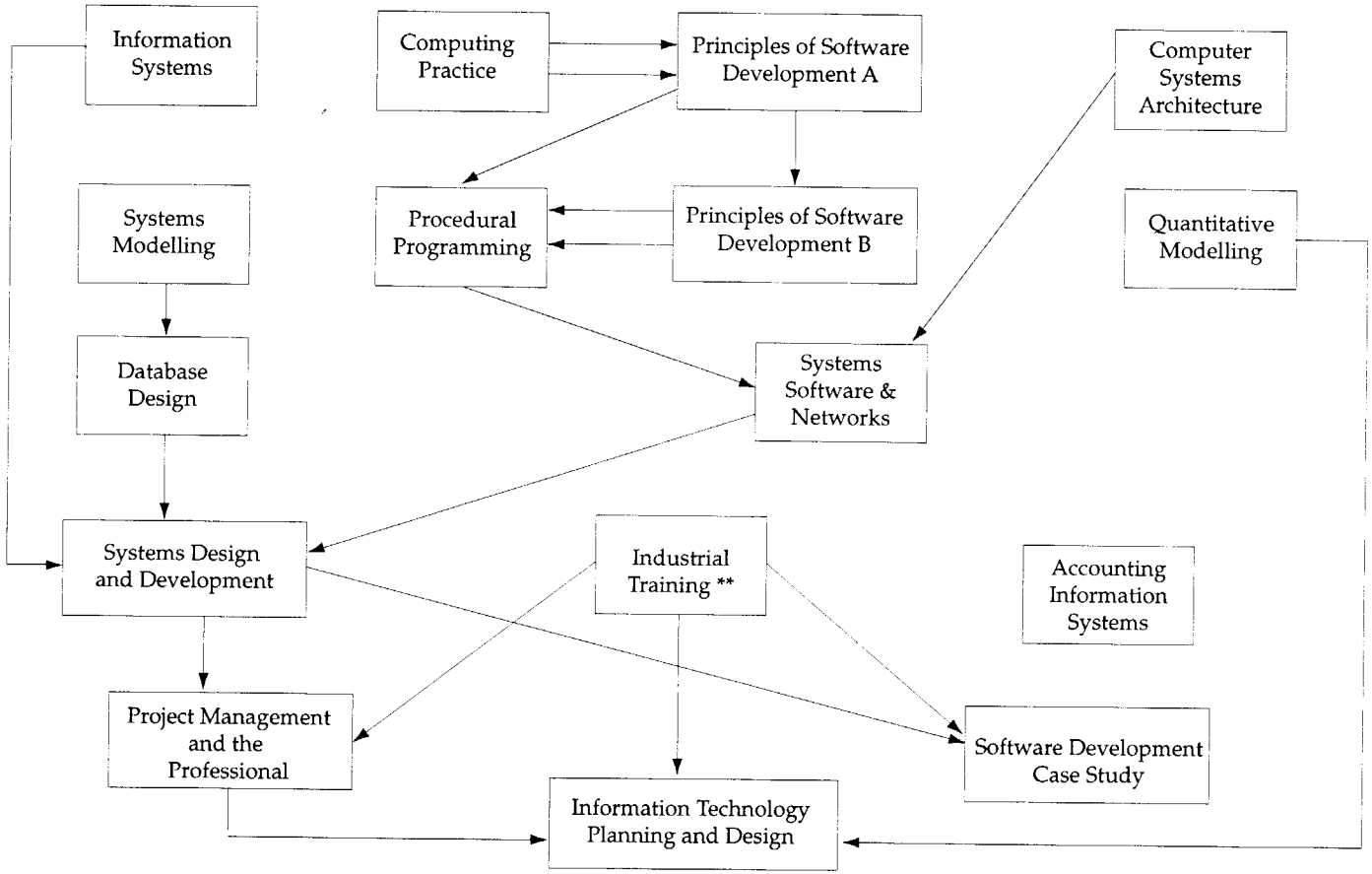
Telephone 9514 2238; Room 1524, Building 1

Operations Research sub-major (24cp)

Compulsory subjects

33401	Mathematics for Computing	6cp
35241	Mathematical Programming 1	6cp
35340	Operations Research Practice	6cp
35344	Network Optimisation	6cp

BSc (Computing Science) prerequisite chart



** Prerequisites for Industrial Training are: Computing Practice, Information Systems, Database Design, and Systems Software and Networks and its prerequisites.

→ Prerequisite or Corequisite

Statistics

Compulsory subjects

33401	Mathematics for Computing	6cp
35252	Statistics 2	6cp
35353	Regression Analysis	6cp
35361	Probability and Stochastic Processes	6cp

With the exception of the subject pair 33401 Mathematics for Computing and 35241 Mathematical Programming 1, students are **not** permitted to take individual subjects from the School of Mathematical Sciences but must enrol for a sub-major.

Humanities and Social Sciences

The Faculty of Humanities and Social Sciences offers the following sub-majors to students in the School of Computing Sciences. Students should be aware that subjects whose numbers are in the sequence 54xxx are **not** graded. Students may prefer to undertake the equivalent subjects numbered in the sequence 52xxx which **are** graded. For further information, students are advised to consult the Faculty of Humanities and Social Sciences Student Centre on 9514 2277.

Communication, History, Politics and Society (24cp)

200 Level

54201	Communication, Culture and the Law	8cp
54210	International Politics	8cp
54211	Australian Politics	8cp
54212	Power and Social Regulation	8cp
54213	Australian History	8cp
54230	Aboriginal Social and Political History	8cp
53212	Australian History	8cp
51369	Technical and Professional Communications	6cp
	or	
50712	Communication Skills in English	6cp
	or	
59326	Professional Communication	4cp
59325	Science, Technology and Human Values	8cp
	or	
59324	Issues in Science Technology and Human Values	8cp
	or	
52231	Industrial Relations	8cp
	or	
59329	Issues in Industrial Relations	4cp

300 Level

54300	Communication History	8cp
54301	International Communication	8cp
54302	Media, Culture and Identity	8cp
54310	Issues in Australian Politics	8cp
54311	Asian and Pacific Politics	8cp
54312	The Making of the Third World	8cp
54314	Australia in the World Economy	8cp
54315	Comparative Religions	8cp
54316	Power, Race and Ethnicity	8cp
54318	Urban Culture	8cp
54319	Public and Social Policy	8cp
54320	Social Movements	8cp
54330	The Politics of Aboriginal History	8cp
52339	Organising EEO	8cp
	or	
59335	Issues in Organising EEO	4cp

Public Relations (24cp)

56013	Public Relations Process and Practice	6cp
56011	Public Relations Strategies and Management	6cp
56012	Public Relations Contexts and Applications	6cp
56014	Public Relations Professional Practice	6cp

Business

The following sub-majors are offered to Computing Science students by the Faculty of Business. Students may undertake other sub-majors if they have the necessary prerequisites. Further information on these sub-majors can be obtained from the Student Liaison Unit, Faculty of Business, or by telephoning the relevant School as indicated.

Students are advised to check the Faculty of Business timetable at the time of enrolment for any changes in subject numbers/names.

School of Accounting

Telephone 9514 3560

Financial Reporting (22cp)

22205	Accounting B	4cp
22320	Accounting for Business Combinations	6cp
22420	Accounting Standards and Regulation	6cp
	plus one of the following	
22319	Issues in Financial Statement Analysis	6cp
22240	International Accounting	6cp
22206	Government Accounting	6cp
22610	Accounting for Insolvency	6cp

Management Reporting (22cp)

22205	Accounting B	4cp
22318	Contemporary Issues in Management Accounting	6cp
22321	Cost Management Systems	6cp
22421	Managerial Decisions and Control	6cp

Small Business Accounting (22cp)

22205	Accounting B	4cp
22566	Accounting for Small Business 1	6cp
22309	Accounting for Overseas Transactions	6cp
22567	Accounting for Small Business 2	6cp

Note: 22615 Accounting Information Systems will be accepted as the prerequisite subject for 22205 Accounting B.

These combinations have a value of 22 credit points. A sub-major must consist of a minimum of 24 credit points. It is suggested that students take the subject 31902 Auditing the Computer 4cp to complete the sub-major.

School of Finance and Economics

Telephone: 9514 3633

Economics (26cp)

25209	Macroeconomics	4cp
25210	Microeconomic Theory and Policy	6cp
25303	Industry Economics	6cp
25110	Microeconomics	4cp
25309	Macroeconomic Theory and Policy	6cp

School of Management

Contact: 9514 3600

Employment Relations (24cp)

21125	International Business Environment	4cp
21130	Management and Organisations	4cp
21306	International Employment Relations	6cp
21407	Strategic Human Resource Management	6cp
31734	Information Systems and Organisations	4cp

International Management (24cp)

21125	International Business Environment	4cp
21130	Management and Organisations	4cp
21591	International Management	6cp
21531	Managing the International Organisation	6cp
31734	Information Systems and Organisations	4cp

School of Marketing

Telephone: 9514 3422

Introductory Advertising (28cp)

24105	Marketing Principles	4cp
24202	Consumer Behaviour	6cp
24210	Advertising and Promotions Management	6cp
24309	Introductory Marketing Research	6cp
59330	Advertising Practice	6cp
	or	
59333	Advertising Strategies	6cp

Introductory Marketing (28cp)

24105	Marketing Principles	4cp
24202	Consumer Behaviour	6cp
24205	Business Marketing	6cp
24220	International Marketing	6cp
24309	Introductory Marketing Research	6cp

School of Leisure and Tourism Studies

Telephone 9514 5367

Leisure Management *(offered at Kuring-gai campus)* (24cp)

27126	Leisure in Australia	6cp
27216	Leisure Services Management	6cp
27523	Leisure Tourism Planning	6cp
	plus one of the following	
27179	Festivals and Special Events	6cp
27306	Marketing Leisure Services	6cp
27316	Leisure and Fitness Centre Operations	6cp
27628	Law for Leisure, Sport and Tourism	6cp

Sports Management *(offered at Kuring-gai campus)* (24cp)

27161	Sports Marketing	6cp
27177	Event and Facility Management	6cp
27307	The Administration of Australian Sport	6cp
	plus one of the following	
27103	The Olympic Games	6cp
27172	Applied Sports Psychology	6cp
27316	Leisure and Fitness Centre Operations	6cp
27628	Law for Leisure, Sport and Tourism	6cp

Tourism Management (24cp)

27184	Introduction to Tourism Systems	6cp
27631	Tourism Services Management	6cp
27648	The Tourism Industry	6cp
	plus one of the following	
27185	Introduction to Tourist Behaviour	6cp
27523	Leisure and Tourism Planning	6cp
27628	Law for Leisure, Sports and Tourism	6cp
27642	Tourism Services Marketing	6cp

Science

Physics (General) (24cp)

This sub-major provides a grounding in general physics. It is of benefit to students contemplating a career in the programming of scientific and engineering problems.

The minimum of 24 credit points may be made up as follows:

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
68711	Physics 1 S	A,S	8	6	
68721	Physics 2 S	A,S	8	6	Physics 1 S or permission
	plus two of the following				
68731	Physics 3 S	A	4	3	Physics 2 S
68732	Applied Optics S	A	4	3	Physics 2 S
68743	Thermodynamics and Energy S	S	4	3	Physics 1 S
68741	Quantum Physics 1 S	S	4	3	Physics 3 S
68751	Nuclear Physics S	A	4	3	Quantum Physics 1 S

Electronics (24cp)

This sub-major enables students to complement knowledge of software with a knowledge of hardware. It is useful to students contemplating a career in microprocessors or computer interfacing.

The minimum of 24 credit points may be made up as follows:

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
68713	Physics for Electronics S	A,S	8	6	
68734	Electronics 1S	S, A	8	6	Physics 2 S
68744	Electronics 2S	S, S	4	3	Electronics 1S
68754	Microprocessors in Instrumentation S	S, A	4	3	Electronics 2 S

Engineering

Electrical Computer Systems (21cp)

Contact persons: Ms E With; Mr J Leaney

Telephone 9514 2432, Room 2423, Building 1; telephone 9514 2389, 2221A, Building 1

The Faculty of Engineering offers an Electrical Computer Systems sub-major to Computing Science students.

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
Compulsory subjects					
33401	Mathematics for Computing	A	6	3	31415, 31428
45163	Real Time Software and Interfacing	A,S	3	3	45143
45364	Digital Systems	A,S	3	3	45143
45372	Computer Systems Analysis	S	3	3	45143, 33401
45382	Computer Systems Design	A	6	6	45372

This combination has a value of 21 credit points. A sub-major must consist of a minimum of 24 credit points. Students should undertake a four credit point elective subject offered by the School of Computing Sciences to complete the sub-major.

Note: One of the subjects in this sub-major is 33401 Mathematics for Computing offered by the School of Mathematical Sciences.

Electives from other universities

Students wishing to do electives outside the University **must** see the Electives Coordinator to discuss the proposal. Special approval must be sought well before the intended semester of study. Students may undertake subjects outside the University as electives **only** if no comparable subject is offered by the University.

Bachelor of Information Technology

Course code: MC03

This course is a cooperative education program in computer information systems and has been developed by the School of Computing Sciences in cooperation with a group of private and public sector employers. The course is of three years' duration and involves four semesters of full-time study at the University and two semesters of full-time study and practical experience in industry. The industry-based semesters are of 24 weeks' duration, and a 42-week academic year is the norm for the course.

Year	Semester 1	Semester 2
1	UTS	Industry
2	UTS	UTS
3	Industry	UTS

The program differs from existing cooperative education courses in that during the industry-based semesters, students will follow a structured program designed jointly by the University and the employer group, including formal coursework taught in industry. This coursework is assessed to University and business standards and familiarises students with business needs and requirements. During the industry-based semesters, students will be exposed to real problems within an environment quite different from that of the University. The resources of industry will be available to support the education of students.

The central curriculum of the course is information systems; this is supported by studies in management, accounting, finance and marketing as well as the necessary background subjects in computing science and programming. The active participation of industry practitioners in course design and course delivery will further ensure that graduates of the course are well equipped with skills that are relevant to present and future industry needs.

The two industry-based semesters will be spent with two different companies. Students are not employees of the company, and will not be obliged to find employment with a given company on completion of their studies. Nevertheless, students are encouraged to find employment within the group of sponsoring employers.

The number of students admitted each year will be limited by the number of sponsorship commitments secured from employers to a maximum of 50 places.

Each student admitted to the course will receive a scholarship for the duration of the course, subject to satisfactory performance and to certain conditions detailed further in this handbook. Each of the industry partners undertakes to sponsor a stated number of students, and contributes the full amount of their scholarship to a fund administered by the University.

The industry partners also provide the industry-based semester facilities for each of the students assigned to them.

Selection to the course is based on HSC results and on performance at an interview. Interviews are conducted by panels comprising representatives of the University and the industry group. Applicants will be assessed for their suitability to the industrial as well as the academic components of the course.

The Bachelor of Information Technology satisfies all of the requirements for associate membership of the Australian Computer Society, the industry's professional body.

Grading of awards

The BInfTech is awarded as a Pass degree, a degree with Credit, or a degree with Distinction.

The grading is based on the Weighted Average Mark (WAM) of core subjects, with the exception of the industry-based semester and Contemporary Information Technology 1 and 2, and performance in the final industry-based semester.

The grading of qualifying students is carried out by the School's Examination Review Committee on an individual basis. This Committee takes account of input from the BInfTech Course Steering Committee. The Examination Review Committee is provided with the same information as that made available for the grading of BSc in Computing Science students, with one important addition: the overall assessment, by industry, of the final industry-based semester.

Program for students who commenced from 1995 onwards

Year 1

Autumn semester – UTS

31414	Information Systems	6cp
31415	Principles of Software Development A	6cp
31416	Computer Systems Architecture	6cp
31718	Contemporary Information Technology 1	6cp

Spring semester – Industry

31722	Commercial Programming	5cp
31770	Industry Project 1	5cp
31771	Business Requirements Analysis	5cp
31779	Applications of Information Technology 1	5cp

Year 2

Summer

31729	Information Systems Practice	2cp

Autumn semester – UTS

22615	Accounting Information Systems	4cp
31434	Database Design	6cp
31436	Systems Software and Networks	8cp
31734	Information Systems and Organisations	4cp
	Elective	4cp

Spring semester – UTS

22321	Cost Management Systems	6cp
31424	Systems Modelling	6cp
31444	Systems Design and Development	10cp
31443	Distributed Databases and Client–Server Computing	4cp
31737	Business Process Transformation	4cp

Year 3

Autumn semester – Industry

31756	Project Management	5cp
31781	Business Systems Design	5cp
31789	Applications of Information Technology 2	5cp
31790	Industry Project 2	5cp

Spring semester – UTS

24105	Marketing Principles	4cp
31464	Information Technology Planning and Design	6cp
31764	Information Technology Strategy	4cp
31769	Contemporary Information Technology 2	4cp
	Elective	4cp

Note: The subject 31729 Information Systems Practice requires a commitment of time over the summer period between Years 1 and 2, in order to complete the 42-week requirement of the course.

Electives

Electives may be taken from the Faculty of Law, Faculty of Business or the School of Computing Sciences, subject to the approval of the Bachelor of Information Technology Coordinator.

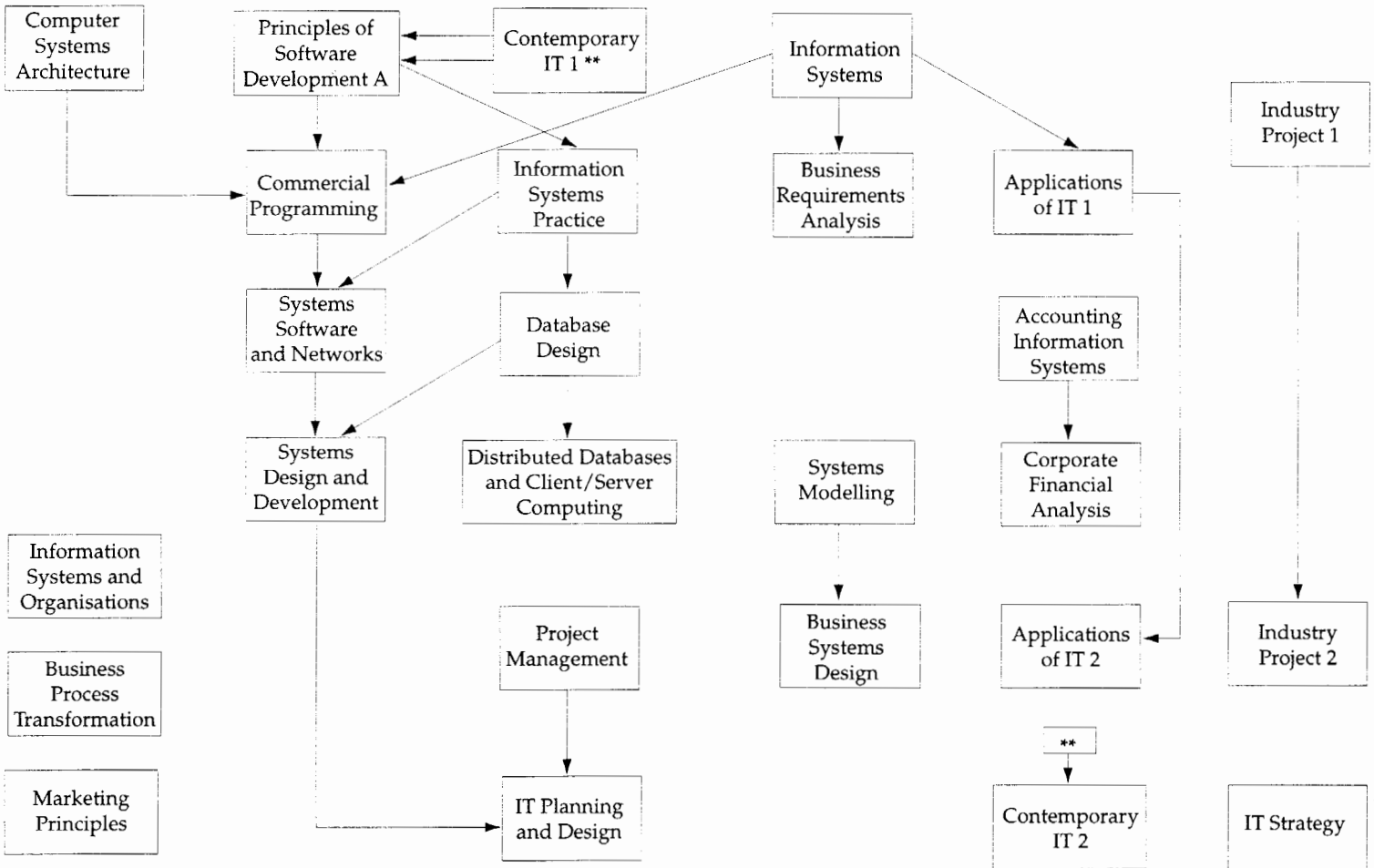
Special conditions

There are special conditions relating to students enrolled in the Bachelor of Information Technology.

Leave of absence will not normally be granted to students, except under extraordinary circumstances and subject to satisfactory arrangements being possible. Likewise, **withdrawal** from the course and subsequent re-admission is not normally granted. Students are reminded that withdrawal without penalty from any course at the University is only possible up to the deadlines imposed by the University. After such deadlines, students will be expected to complete all assessment tasks for subjects in which they are enrolled.

Variations to the approved program of study for the Bachelor of Information Technology are restricted. No industry-based subject may be deleted from the program, except under extraordinary circumstances and at the discretion of the Course Steering Committee and the School of Computing Sciences. No industry-based subject may be taken during a University-based semester. The taking of additional subjects during an industry-based semester is seen as unusual and may only be

Bachelor of Information Technology prerequisite chart



done at the discretion of the Course Steering Committee and the School.

The School will not recommend probation for unsatisfactory academic performance. Instead, the School will recommend to the Faculty Board that a student be **excluded** under any of the following circumstances:

- a student fails any subject for the second time;
- a student gains less than 50 per cent of the credit points for which he or she is enrolled in that assessment period;
- a student fails any subject that is part of the program of an industry-based semester (there is provision for a supplementary examination to be taken in these subjects following a failure on the first attempt) or a student performs unsatisfactorily during an industry-based semester; or
- immediately prior to the commencement of an industry-based semester, a student has still to complete more than one subject in the normal program of the course to that stage.

Appeals against exclusion will be dealt with by the University's Appeals Committee (of the Academic Board), which will take into account the recommendation of the Course Steering Committee.

Industry semesters

The dates of the industry-based semesters for 1997 are as follows:

Autumn semester (third-year students): Monday 13 January 1997–Friday 27 June 1997

Spring semester (first-year students): Monday 7 July 1997–Friday 19 December 1997

Students are expected to attend their assigned sponsoring company on a full-time basis throughout these periods. Students cannot expect any absences to be approved during the industry-based semesters.

Personal details

Students must inform the University should their name or address change. BInfTech students **must** also inform Des Saunders, Industry Liaison Officer, of any changes to personal details. Students who wish to change the method of payment of the scholarship should contact the Salaries Office of the University's Financial Services Unit on 9514 2852.

Scholarship

The scholarship will be paid at three different and increasing levels; all first-year students will start at Level 1. At the end of each year, all BInfTech students with satisfactory progress will move from their current level to the next level.

The levels for 1997 are as follows:

Level 1:	$10,000 per annum
Level 2:	$10,500 per annum
Level 3:	$11,000 per annum

The scholarship paid to BInfTech students has been ruled as tax exempt. The reference for the ruling by the Australian Tax Office is 6/SCHOLS/24, dated 29 February 1988.

Bachelor of Science in Computing Science/ Bachelor of Arts in International Studies

Course code: MC05

This course combines the Bachelor of Science in Computing Science with the University's Bachelor of Arts in International Studies. Computing Science is integrated with a major in the language and culture of another country. The course is of six years' duration, and students spend the fourth year of study at a university overseas. The fifth and sixth years are completed part time.

Studies in Computing Sciences

The Computing Science component of the combined degree aims to provide a sound education in all aspects of computing for students who intend to follow a career in the profession. It is intended that the course will provide a suitable background covering all aspects of information technology, short of the actual design and construction of hardware systems.

For further information, see the course outline for the Bachelor of Science in Computing Science in this handbook.

International Studies

The Bachelor of Arts in International Studies is designed to increase awareness and understanding of the non-English-speaking world.

Students take one of the following majors in the International Studies program: China, Eastern Europe, Indonesia, Japan, Latin America, Malaysia, South China, South-East Asia, Spain, Taiwan, Thailand or Western Europe. They study an appropriate language and culture; learn about the contemporary society of their country of specialisation; and then spend an academic year of study at a university in their country of specialisation. The costs of tuition and travel are borne by UTS. In many cases, there will be no additional costs for students. However, those studying in countries or regions where the cost of living is high – notably Japan, Argentina, Hong Kong and Taiwan – should be prepared to pay additional costs for accommodation and maintenance.

For native speakers, there may be opportunities for students to undertake Industrial Training during In-country Study.

Course structure

The structure of the six-year course in Computing Science and International Studies is derived from the combination of the Bachelor of Science in Computing Science with the Bachelor of Arts in International Studies.

All arrangements currently in force for both the Bachelor of Science in Computing Science and the Bachelor of Arts in International Studies apply equally to the combined degree program in Computing Science and International Studies.

To graduate, a student is required to have completed 240 credit points: 144 credit points in Computing Science and 96 credit points in International Studies.

All students enrolled in the Bachelor of Science in Computing Science are required to pass two Industrial Training subjects. There are a substantial number of prerequisites for Industrial Training, which in this combined degree program is normally undertaken in part-time Years 5 and 6. To gain credit for Industrial Training, students are required to obtain an approved, full-time job within the information industry.

The Bachelor of Arts in International Studies requires undergraduates to study a major – a region or country of specialisation – over a minimum of three years. Students study language and culture for at least two years in Sydney, and this is followed by a period of study overseas. In 1997 the following range of majors will be available: China, Eastern Europe, Indonesia, Japan, Latin America, Malaysia, South China, South-East Asia, Spain, Taiwan, Thailand and Western Europe. The specialisation on Western Europe is only available to students who have previously completed HSC studies or equivalent in either French, German or Italian. The Eastern Europe specialisation is available only to students with an existing sound working knowledge of an appropriate Eastern European language.

Each of the specialisations within the International Studies program is 96 credit points, and includes 32 credit points (four subjects) of instruction in an appropriate Language and Culture; 16 credit points (two subjects) of the study of Contemporary Society and its context; and 48 credit points (two semesters) of study at a university or institution of higher education in the country or region of specialisation.

The International Studies subjects listed in the course structure are subjects of enrolment referring to common units of instruction across the University.

Language and Culture

Study of Language and Culture at UTS depends on the individual student's level of language proficiency before entry to the UTS program. There is a range of entry levels to the various Language and Culture programs available. Most are available at beginner's and post-HSC levels, and some at more advanced levels.

For 1997 the following Language and Culture programs will be available at UTS as part of the International Studies program: Cantonese, Chinese, Indonesian, Japanese, Malay, Modern Standard Chinese and Spanish. (Modern Standard Chinese is a program for students who are either complete beginners or who started to learn Chinese at school in Australia.) In addition, arrangements have been made for the delivery of Croatian, French, German, Greek, Italian, Polish, Russian, Serbian, Slovenian, Ukrainian and Thai.

Contemporary Society

For each specialisation of the International Studies program, students have a prescribed pair of units of instruction in Contemporary Society, taught by the Institute for International Studies in cooperation with the Faculty of Humanities and Social Sciences.

The first is a subject on Modernisation and Globalisation that provides a general

introduction to comparative social and political change. It is designed to locate further study of the major in its intellectual and physical contexts.

The second is a subject that provides a more detailed introduction to the area of specialisation, and which is specific for each major:

- China: *Contemporary China*
- Eastern Europe: *Contemporary Eastern Europe* or *Modern Greek History and Society* or *Contemporary Russia*
- Indonesia: *Contemporary South-East Asia*
- Japan: *Contemporary Japan*
- Latin America: *Contemporary South America*
- Malaysia: *Contemporary South-East Asia*
- South China: *Chinese East Asia*
- South-East Asia: *Contemporary South-East Asia*
- Spain: *Contemporary Europe*
- Taiwan: *Chinese East Asia*
- Thailand: *Contemporary South-East Asia*
- Western Europe: *Contemporary Europe*

In-country Study

Arrangements for students to spend two semesters of study at an institution of higher education in the country or region of specialisation have already been made, or are in train. The first semester will largely be concerned with further language development and cultural appreciation. The second semester will continue the study of language and culture but, where possible, will attempt to direct study towards subjects related to the computing sciences. Where students have reached an appropriate level of language competence, arrangements may be made to substitute one or two semesters of industrial experience for periods of In-country Study. In-country industrial experience undertaken in this way will be assessed by UTS in a manner similar to subjects of In-country Study, though through cooperation between the Institute for International Studies and the School of Computing Sciences.

Course program

For details of International Studies subjects, students should refer to the School of Mathematical Sciences' 'Subject descriptions' section in this handbook.

Year 1

Autumn semester

31414	Information Systems	6cp
31415	Principles of Software Development A	6cp
31416	Computing Systems Architecture	6cp
31417	Computing Practice	6cp

Spring semester

31424	Systems Modelling	6cp
31425	Principles of Software Development B	6cp
31428	Quantitative Modelling	6cp
31429	Procedural Programming	6cp

Year 2

Autumn semester

31434	Database Design	6cp
59341	Modernisation and Globalisation	8cp
971xxx	Language and Culture 1	8cp
	Computing Science elective	4cp

Spring semester

31436	Systems Software and Networks	8cp
972xxx	Language and Culture 2	8cp
	Computing Science elective	4cp

Year 3

Autumn semester

31444	Systems Design and Development	10cp
973xxx	Language and Culture 3	8cp
	Computing Science elective	4cp

Spring semester

22615	Accounting Information Systems	4cp
974xxx	Language and Culture 4	8cp
976xxx	Contemporary Society	8cp
	Computing Science elective	4cp

Year 4

Autumn semester

977xxx	In-country Study 1	24cp

Spring semester

978xxx	In-country Study 2	24cp

Year 5

Autumn semester

31455	Software Development Case Study	5cp
31698	Industrial Training	0cp
	Computing Science electives	8cp

Spring semester

31455	Software Development Case Study (cont.)	5cp
31698	Industrial Training	0cp
	Computing Science elective	4cp

Year 6

Autumn semester

31454	Project Management and the Professional	8cp
31699	Industrial Training	0cp
	Computing Science elective	4cp

Spring semester

31464	Information Technology Planning and Design	6cp
31699	Industrial Training	0cp
	Computing Science electives	8cp

Bachelor of Science in Computing Science/ Bachelor of Laws

Course code: LL06

The BSc LLB is offered jointly with the Faculty of Law. The course is of five years' duration and is offered only on a full-time basis (although students will be expected to attend some evening lectures). The program will allow students the option of undertaking a legal practice major as part of their undergraduate studies.

The course will be submitted to the Australian Computer Society as satisfying the requirements of the Society for admission as an associate member.

Students enrol with the Faculty of Law, and are required to complete a total of 240 credit points, 94 in Computing Science and 146 in Law. In addition, students must complete a period of industrial training before graduation, ideally in a legal environment.

Students will be awarded **two** degrees and therefore will receive **two** testamurs on graduation. Students who elect not to complete the joint degree may be permitted to complete a Bachelor of Science in Computing Science or a Bachelor of Laws as a stand-alone degree.

The Faculty of Law administers the course. The current program is shown below. For full details of law subjects, students should consult the *Faculty of Law Handbook*. Inquiries should be directed to the Faculty of Law on 9281 2699.

Course program

Year 1

Stage 1

31415	Principles of Software Development A	6cp
31417	Computing Practice	6cp
70105	Legal Research	4cp
70113	Legal Process and History	10cp

Stage 2

31425	Principles of Software Development B	6cp
31429	Procedural Programming	6cp
70211	Law of Contract	8cp
70217	Criminal Law	6cp

Year 2

Stage 3

31414	Information Systems	6cp
31416	Computer Systems Architecture	6cp
70311	Law of Tort	8cp
70616	Federal Constitutional Law	8cp

Stage 4

31424	Systems Modelling	6cp
31428	Quantitative Modelling	6cp
70317	Real Property	8cp
70318	Personal Property	4cp

Year 3

Stage 5

31434	Database Design	6cp
31436	Systems Software and Networks	8cp
70617	Administrative Law	8cp
70417	Corporate Law	8cp

Stage 6

31444	Systems Design and Development	10cp
70516	Equity and Trusts	8cp
76xxx	Elective subject 1	6cp

Year 4

Stage 7

31455	Software Development Case Study[1]	5cp
71005	Practice and Procedure	4cp
71216	Law of Evidence	6cp
76xxx	Elective subject 2	6cp
76xxx	Elective subject 3	6cp

Stage 8

31464	Information Technology Planning and Design[1]	6cp
31455	Software Development Case Study (cont.)[1]	5cp
71116	Remedies	6cp
76xxx	Elective subject 4	6cp

Year 5

Stage 9

31454	Project Management and the Professional Industrial experience	8cp

Stage 10

	Legal practice major (PLT) or four law electives	24cp

[1] These subjects may be replaced by Computing Science electives with the approval of the Head of School of Computing Sciences.

Double degree in Business and Computing Science

Students initially enrol in the Bachelor of Business degree and take the 'Programming and Design' sub-major offered by the School of Computing Sciences. On satisfactory completion of the Business degree and the 'Programming and Design' sub-major, students may then apply for admission to the Bachelor of Science in Computing Science degree. If admitted, students will receive exemptions for the computing core subjects they completed in the Programming and Design sub-major. They will also receive 24cp of exemptions for electives, the equivalent of a Business sub-major in the Computing Science degree.

Full details of the Bachelor of Business degree are contained in the *Faculty of Business Handbook*.

Postgraduate courses

General inquiries should be directed to either the University Graduate School, telephone 9514 1523, or the Faculty's Graduate Studies Officer, telephone 9514 1806. Applicants for research degrees should discuss their proposed research with either the Director, Postgraduate Studies, or their chosen supervisor before submitting applications. The Faculty's Graduate Studies Officer can assist applicants in contacting members of staff, and in completing the application form.

POSTGRADUATE RESEARCH DEGREES

Research areas

Areas of particular interest for work towards research degrees in the School of Computing Sciences include:

- artificial intelligence, expert systems, knowledge bases
- computer graphics, image processing
- computer performance evaluation
- computer-supported cooperative work
- distributed and object databases
- distributed multimedia
- distributed systems
- information processing strategy, systems management
- local networks and network interface technology
- neural networks
- object-oriented systems development methodologies
- parallel processing and transputers
- quality of systems and software
- semantics and design of programming languages
- usability of systems and software

Computing Sciences research laboratories

Within the School, a wide range of information technology research is supported by a variety of research laboratories. Graduate research students, academics, visiting researchers and research assistants undertake collaborative research within these laboratories. The quality and relevance of research in the laboratories is enhanced by well-established links, both with industry and with overseas research institutions.

The major laboratories are:

Parallel Processing Laboratory – examines and applies transputer technology to real-world tasks, distributed operating systems and compilation. The laboratory is part of the Australian Transputer Centre (supported by Inmos) that has a configuration of over 40 transputer systems (contact: Ury Szewcow).

Computer Graphics Laboratory – using seven Silicon Graphics workstations, this laboratory is concerned with the development of realistic images and computer animation. Other areas include efficient contour algorithms, human movement, image animation and textual modelling (contacts: Dr Kevin Suffern).

Cooperative Systems Laboratory – focuses on the implementation and data modelling of distributed databases, client-server computing and cooperative workgroup systems. Development of methods for integrating databases with expert systems, modelling of constraints and development of design tools. Integration of groupware with databases (contacts: Dr George Feuerlicht or Professor Igor Hawryszkiewycz).

Software Research Laboratory – includes three groups:

Algorithms and Languages Group – investigates programming languages and paradigms, concurrency, software engineering and formal methods, and category theory (contact: Dr Barry Jay).

Artificial Intelligence Group – interests include AI in design, Case-based Reasoning, cognitive modelling, Knowledge Engineering, PROLOG and LISP (contact: Professor John Debenham).

Adaptive Methods Group – applies neural networks, genetic programming and other machine learning methods to problems of varying complexity, including image analysis, forecasting and natural language (contact: Dr Tom Osborn).

CRC Distributed Systems Technology Laboratory – the primary focus is management security and performance for controlled and

efficient access to the resources of distributed systems such as database, collaboration software and distributed software tools (contact: Associate Professor Mike Fry).

Distributed Multimedia Laboratory – examines technology, protocols and implementation issues for very high-bandwidth multimedia technology over computer networks. Work includes distance interaction of design editing and performance groups and network traffic performance, supporting diverse components (contact: Associate Professor Mike Fry).

Usability Laboratory – investigates the methods and measurement techniques for developing effective and usable human–computer interaction methods, for different kinds of operating environments including design and system development (contacts: David Wilson or Judy Hammond).

COTAR – conducts research in object-oriented software engineering, object-oriented information systems and object-oriented computing. It also provides a focus for collaborative work with industry (contact: Associate Professor Jenny Edwards).

Doctor of Philosophy

Course code: MC54

The Doctor of Philosophy (PhD) is intended for students who wish to pursue research at the highest level; such research is expected to demonstrate significant originality and make a substantial contribution to computing knowledge. For specific areas of interest of research in the School of Computing Sciences, refer to the 'Research areas' section above.

Attendance pattern

The Doctor of Philosophy degree is available on both a full-time and a part-time basis. The normal duration of enrolment is three years for full-time attendance and six years for part-time attendance. Candidates who already possess a degree at the Master's level may be permitted to complete their PhD in two years of full-time research, or three years of part-time research. The maximum duration of enrolment is five years for full-time students and seven-and-a-half years for part-time students.

The School of Computing Sciences has a strong preference for research work that proceeds at a full-time pace. This preference should not be seen as a deterrent to those students who wish to remain in employment. Students who are working in a full-time job are encouraged to select a topic for their research which is closely aligned with their professional work. Once such a topic has been selected, the School usually requires that the student's employer provide a statement to the effect that at least half of the student's working week will be devoted to work which is directly relevant to the research. The student is then expected to contribute some of his or her own time to the project so that the total number of hours devoted to research is that expected of full-time attendance.

How to apply

Application forms for all postgraduate courses may be obtained from the UTS Information Service. Applicants should hold a First Class or Second Class (Division 1) Honours degree with a major computing component, or a Master's degree in an appropriate area, or have previously undertaken other postgraduate studies in computing. Prospective applicants are expected to have developed interests in a specific area of research, and should have one or more outline proposals for research work in that area. Before submitting a formal application for admission to this degree course, applicants should first seek the approval of the School for their proposed research work. To gain this approval, applicants should initially:

Either send a summary proposal of at least 1,000 words to the Director, Postgraduate Studies, School of Computing Sciences, containing references to seminal works in the area of proposed research. If the proposal is appropriate for the School, the Director will then refer the applicant to a suitable member of staff for further detailed discussion;

or approach a suitable member of the School's academic staff directly and discuss the proposed research area.

All Doctor of Philosophy students at UTS are required to have at least two supervisors for their research work, one of whom should be an academic staff member of the University and, normally, one of whom should hold a Doctoral degree. Of the two supervisors, one will be the principal supervisor, and the other the co-supervisor.

Prospective applicants should seek agreement from a member of the School's academic staff to act as a (principal) supervisor for the proposed research if the application is

successful. Once this agreement has been obtained, applicants may then apply formally for admission by completing an Application for Candidature Doctoral Degrees form and the Faculty's Supplementary Doctoral Application form. These forms must be signed by the applicant, the proposed supervisor and the Head of School.

Course fees

Fees will be levied in accordance with University policies and DEETYA guidelines. Details will be available in early 1997.

Progress reports

All Doctor of Philosophy students are required to submit, in consultation with their supervisors, a progress report at the end of each semester. The University Graduate School contacts each student and their supervisor/s to initiate this process.

Submission of thesis

All candidates for the degree of Doctor of Philosophy should give the Registrar two months' written notice of intention to submit their written thesis. Appropriate forms and the information brochure *Presentation and Submission of Theses for Higher Degrees* are available from the University Graduate School.

Recent theses

Ma, X W 1994, A design and analysis aid environment for parallel computations.

Jalloul, G 1995, Concurrent object-oriented systems: a disciplined approach.

Marriot, N L 1995, DANCE – Describing, Animating, Notating, Classical, Enchainements.

Stewart, B 1996, Learning of probabilistic models from data.

Master of Science

Course code: MC51

The Master of Science degree enables graduates to extend and deepen their knowledge of a specialised area in computing by undertaking research under the supervision of a member of the academic staff. For specific areas of interest in research work in the School of Computing Sciences, refer to the 'Research areas' section above.

Attendance pattern

This degree is available on both a full-time and a part-time basis. The normal duration of enrolment for this degree is two years for full-time attendance or three years for part-time attendance. The maximum time to complete the course is three years for full-time students and four-and-a-half years for part-time students.

The School of Computing Sciences has a strong preference for research work that proceeds at a full-time pace. This preference should not be seen as a deterrent to those students who wish to remain in employment. Students who are working in a full-time job are encouraged to select a topic for their research which is closely aligned with their professional work. Once such a topic has been selected, the School usually requires that the student's employer provide a statement to the effect that at least half of the student's working week will be devoted to work which is directly relevant to the research. The student is then expected to contribute some of his or her own time to the project which brings the total number of hours devoted to research within that expected of full-time attendance.

How to apply

Application forms for all postgraduate courses may be obtained from the UTS Information Service. Applicants should hold a First Class or Second Class (Division 1) Honours degree with a major computing component, or have previously undertaken other postgraduate studies in computing. Prospective applicants are expected to have developed interests in a specific area of research, and should have one or more outline proposals for research work in that area. Before submitting a formal application for admission to this degree course, applicants should first seek the approval of the School for their proposed research work. To gain this approval, applicants should initially:

Either send a summary proposal of at least 1,000 words to the Director, Postgraduate Studies, School of Computing Sciences, containing references to seminal works in the area of proposed research. If the proposal is appropriate for the School, the Director will then direct the applicant to a suitable member of staff for further detailed discussion;

or approach a suitable member of the School's academic staff directly and discuss the proposed research area.

Every Master of Science student at UTS is required to have at least two supervisors for their research work, one of whom should be an academic staff member of the University. Of the two supervisors, one will be the principal supervisor, and the other the co-supervisor.

Prospective applicants should seek agreement from a member of the School's academic staff to act as a supervisor for the proposed research if the application is successful. Once this agreement has been obtained, applicants may then apply formally for admission by completing an Application for Admission – Graduate Courses form and the Faculty's Details of Proposed Study form. These forms must be signed by the applicant, the proposed supervisor and Head of School.

Course fees

Fees will be levied in accordance with University policies and DEETYA guidelines. Details will be available in early 1997.

Progress reports

All thesis students are required to submit, in consultation with their supervisors, a progress report at the end of each semester. The University Graduate School contacts each student and their supervisor/s to initiate this process.

Submission of thesis

Each candidate for the degree of Master of Science should give the Registrar two months' written notice of their intention to submit their written thesis. Appropriate forms and the information brochure *Presentation and Submission of Theses for Higher Degrees* are available from the University Graduate School.

Recent theses

Blair, A 1992, Managing business rules and integrity constraints in relational database applications.

Lindley, C A 1992, The knowledge analyst's assistant: a computer-aided knowledge engineering tool.

Phillips, M T 1993, Dynamic load sharing: A prototype.

Wilson, D N 1993, Project management for a prototyping environment.

Hargreave, G D 1994, Aspects of computer security modelling.

Linn, C N 1994, A performance model for loosely coupled heterogeneous distributed information systems.

Pearson, N R 1995, A general purpose parallelising compiler for sequential code.

Ward, J A 1995, The composer's assistant.

Fuller, A L 1996, Class based domain modelling.

Hallewell Haslwanter, J D 1996, Systems development methodologies in the context of HCI.

Charif, A 1996, Genetic logic programming for natural language understanding.

POSTGRADUATE COURSEWORK PROGRAMS

Master of Science in Computing

Course code: MC53

The Master of Science in Computing is a professional course. Graduates select a program of study that suits their individual career goals. For example, a program may be chosen which develops specialised expertise in computer systems, which provides a general update of information systems, or which equips the student for a position in corporate management.

Attendance pattern

The course is offered on a part-time basis only, over six semesters (three years), because it is considered important that students remain in professional employment while undertaking this course. Attendance is normally required at lectures for at least two evenings per week. As the course is only available part time, all timetabled sessions are held in the evenings. These are usually held between 6.00 p.m. and 9.00 p.m.

How to apply

The course is intended for computing professionals. Applicants should have **both:**

- a Bachelor's degree from the University of Technology, Sydney, or equivalent, preferably with a major computing component. Applicants are required to submit evidence to the effect that the

extent of their formal knowledge of computing is equivalent to that of a graduate from the UTS Bachelor of Science in Computing Science;

and

- an established professional career within the information industry. As a guide, the extent of the applicant's professional experience should be equivalent to that of an Associate Member of the Australian Computer Society of at least two years' standing.

Each semester the School publishes the *MSc in Computing (by coursework)* Course Guide. This Course Guide contains much administrative information as well as a detailed statement of the course regulations. Students and prospective applicants are advised to obtain a copy of the Course Guide and to study it carefully. From August each year an 'Admission package' containing a copy of the Course Guide, the application forms and other relevant information is available from the UTS Information Service. Please note that completed application forms must be submitted to the University by the published deadline, which is usually the last week of October in the year prior to that in which admission is sought. Applicants may be required to attend an interview.

Course fees

The Master of Science in Computing is offered with a fixed quota of student places and the course fees have been set in accordance with University policy. For students commencing in 1997, tuition fees will be set at $1,440 per semester for a normal attendance pattern. Course fees are revised from year to year in accordance with University and government policy. Details of the current fee structure may be obtained from the University Graduate School.

Prerequisite knowledge

All subjects in the Master of Science in Computing course are presented at the postgraduate level. Students are expected to be familiar with the undergraduate material that lies behind the postgraduate work.

For the subjects offered by the School of Computing Sciences, before the start of each semester a set of references to the presumed undergraduate material is given by each lecturer. It is important to note that these references are not 'pre-reading', but are a summary of the undergraduate knowledge required for each subject. Students are responsible for ensuring that they are completely familiar with the undergraduate knowledge implied by those references. If they are not, then they should defer their enrolment in that subject and should attend suitable remedial undergraduate lectures as advised by the Director, Postgraduate Studies.

For a subject offered by faculties or schools other than the School of Computing Sciences, students are advised to contact that subject's Coordinator before the start of semester, to determine whether they possess the prerequisite knowledge for that subject. If students do not possess the prerequisite knowledge, they should seek advice from those schools or faculties on the feasibility of a remedial program. The Director, Postgraduate Studies, will assist in obtaining this advice.

Course structure

Students are required to complete a total of 72 credit points, consisting of 60 credit points from coursework and 12 credit points from the Project subject. The Project subject is normally taken in the sixth semester and must be completed by all students. In special circumstances, the Director, Postgraduate Studies, may approve a program of 72 credit points, consisting of 48 credit points from coursework and 24 credit points from the Project subject. Students who are allowed to undertake a 24-credit-point project must have the strong support of their Project Supervisor as a part of these 'special circumstances'.

Each student's program of study will be subject to approval by the Director, Postgraduate Studies. The subjects chosen by a student must form a coherent plan of study and must be consistent with the student's professional career goals. When approving a student's program of study, the Director, Postgraduate Studies, will not permit a student to enrol in a subject in the Master of Science in Computing if that student has already completed a similar subject in another course.

Principal subjects in the Master's course are subjects offered by the School of Computing Sciences on a regular basis. Elective subjects in the Master's course are subjects offered by the School of Computing Sciences on a periodic basis; the elective subjects may vary from year to year depending on the availability of specialist staff.

To gain their credit points from coursework (normally amounting to 60 credit points), students are required to gain at least 36 credit points by passing a selection of principal subjects; with the balance, which will thus be at most 24 credit points, to be made up as follows:

- by passing postgraduate subjects which are made available to students in the Master of Science in Computing course by the School of Mathematical Sciences or by other faculties;

  or

- by including and passing elective subjects up to a total of 12 credit points only. (In special cases, when the student has specific requirements, the Director, Postgraduate Studies, may extend this to a total of 18 credit points of elective subjects but no further.)

Subject outline timetable

The principal subjects are as follows:

Subject number	Subject name	CP	Semester offered
Computer Science			
32901	Recent Advances in Computer Science	6	A98, A97
Computing Methods			
32106	Object-oriented Software Development	6	A97
32107	Formal Reasoning for Software Development	6	S97
32108	Specialist Topics in Artificial Intelligence	6	S98
Computer Systems			
32306	Capacity Management	6	A98
32307	Operating Systems	6	S98
32308	Computer Architecture	6	S97
Information Systems			
32902	Recent Advances in Information Systems	6	A97, A98
Information Systems Technology			
32204	Advanced Data Management	6	A98
32205	Computer Communication Systems	6	S98
32206	Advanced Information Systems Modelling	6	S97
Information Systems Management			
32207	Information Management	6	A97
32208	Information Processing Strategy	6	S97
32402	Information Technology Environment	6	S98
32912	Project	12	All
32924	Project	24	All

Each principal subject is of one semester's duration. Principal subjects are offered once every two years, with the exception of 32901 Recent Advances in Computer Science and 32902 Recent Advances in Information Systems which are offered each year. At present the intention is to offer the above principal subjects on a two-year cycle; however, the Master's program is constantly under review, and it is expected that the list of principal subjects offered will be expanded, and that the contents and sequence of existing principal subjects may be modified.

The elective subjects in the proposed course will present specialised material and so will depend on the availability of specialist staff. At present it is proposed to offer a selection chosen from the following elective subjects.

Elective subjects

32501	Computer Graphics	6cp
32502	Advanced Computer Graphics Techniques	6cp
32503	Distributed Databases and Client/Server Computing	6cp
32506	Knowledge Systems	6cp
32507	Performance Evaluation	6cp
32508	Software Quality Management Systems	6cp
32509	Human–Computer Interaction in Information Systems	6cp
32510	Principles of Object-oriented Programming in C++	6cp
32511	Principles of Object-oriented Programming in Smalltalk	6cp
32512	Advanced Knowledge Technology	6cp
32513	Advanced Machine Learning	6cp
32514	Advanced Case-based Reasoning	6cp
32516	Internet Programming	6cp

Subjects from other schools or faculties

The following subjects from other schools or faculties are available to students in the MSc in Computing as electives. Students should contact the relevant school or faculty for prerequisites.

School of Mathematical Sciences

35443	Mathematical Programming 3	4cp
35448	Dynamic Optimisation	4cp
35457	Multivariate Statistics	4cp
35459	Linear Models and Experimental Design	4cp
35466	Advanced Stochastic Processes	4cp
35467	Time Series Analysis	4cp
35485	Advanced Financial Modelling	4cp

Faculty of Business

21702	Industrial Relations	6cp
21718	Organisation Analysis and Design	6cp
21719	Organisational Behaviour	6cp
21720	Employment Relations	6cp
21722	Leadership and Management Action	6cp
21724	Human Resource Management	6cp
21741	Operations Management	6cp
22747	Accounting for Managerial Decisions	6cp
22751	Corporate Accounting Issues	6cp
24734	Managerial Marketing	6cp
24737	Marketing Information Management	6cp
25706	Economics for Management	6cp
25707	Government Business Relations	6cp
25741	Capital Markets	6cp
25742	Financial Management	6cp

Faculty of Humanities and Social Sciences

55901	Research and Data Analysis	6cp
55902	Information Behaviour	6cp
55903	Information Production and Presentation	6cp
55907	Information Retrieval	6cp
55908	Information Project Development	6cp
55910	User Documentation 1	6cp
55911	User Documentation 2	6cp

Faculty of Law

72100	Legal Process	12cp
77816	Design Law	12cp
77819	Copyright Law	12cp
79708	Contemporary Business Law	6cp
79741	Marketing Legislation in Australia	6cp
79749	Law for Managers	6cp

Choosing a program in 1997

Students may find this presentation of principal subject offerings useful when choosing their program. It is usually easiest to choose the principal subjects first because most of these are only available every two years, and then to select the remaining subjects. Students should be sure to take the prerequisites into account (see 'Subject descriptions' section for the School of Computing Sciences). Ideally, there should be two subjects chosen per semester for the first two years. During the final year, students normally take the Project subject and two coursework subjects.

Semester	Computer Methods	Computing Systems	Information Systems Technology	Information Systems Management
A 97	Object-oriented Software Development	Recent Advances in Computer Science	Recent Advances in Information Systems	Information Management
S 97	Formal Reasoning for Software Development	Computer Architecture	Advanced Information Systems Modelling	Information Processing Strategy
A 98	Recent Advances in Computer Science	Capacity Management	Advanced Data Management	Recent Advances in Information Systems
S 98	Specialist Topics in Artificial Intelligence	Operating Systems	Computer Communication Systems	Information Technology Environment
A 99	Object-oriented Software Development	Recent Advances in Computer Science	Recent Advances in Information Systems	Information Management
S 99	Formal Reasoning for Software Development	Computer Architecture	Advanced Information Systems Modelling	Information Processing Strategy

Note: The program shown for 1998 is provisional.

Project

The project entails a substantial investigation of a topic in an area of current research interest in Information Technology that is related to the student's professional career goals. All students are required to enrol in and pass the Project subject. The project is normally undertaken in the final year of study after the completion of at least two years of coursework.

The topic for the project should be:

- of direct interest to the student,

  and
- of value to the student's professional development.

Students may wish to select a topic that is closely related to their current employment. Alternatively, students may wish to choose a topic that would be of value to their future career. The project should be a vehicle for importing the knowledge learnt from the coursework into the student's professional life. The topic should be chosen with this professional goal in mind. Students are advised to seek the assistance of the lecturing staff in finalising the topic for their project.

Before beginning the project work a student must:

- obtain the agreement of a member of the lecturing staff to act as project supervisor,

  and
- deliver a 500-word description of the project to the Director, Postgraduate Studies, for approval.

Once approved, the project will proceed 'in the manner of a Master's thesis', and students are advised to discuss their work with their project supervisor regularly. The role of the project supervisor is to:

- advise on the general direction of the investigation;
- advise on a work schedule;
- advise on a framework for writing up the work;

  and
- criticise draft sections of work.

It is usual for the project work to extend over more than one semester. Students should enrol in the project for the semester in which they hope to submit their completed project. Students should note the requirement, stated below, for the project to be submitted before the end of the tenth week of the semester in which they wish to have their project examined. The examination of the project must be completed before the School's Examination Review Committee meeting for that semester. This meeting takes place towards the end of each semester. If a student is enrolled in the Project subject at the time of the School's Examination Review Committee meeting, and if the examination of their project has not been completed in time for that meeting, then the enrolment in the Project subject for that semester will be cancelled.

Students usually enrol in a 12-credit-point project. If, in the opinion of the project supervisor, the topic chosen merits a more substantial investigation then the supervisor should make a case to the Director, Postgraduate Studies, for the credit points of the project to be extended to 24. Students should not enrol in the 24-credit-point project unless they have written permission to do so from the Director, Postgraduate Studies.

The project will result in:

- the preparation of an extensive written report, three copies of which should be lodged with the Director, Postgraduate Studies, before the end of the tenth week of the semester in which the student wishes to be examined. All three copies will be retained by the School; one of these will be placed in the University Library. The final version of the report should be typed and bound in accordance with the University's specification for theses (available from the University Graduate School). Students may have their written report bound before submitting it for examination although, to avoid the possible expense of rebinding, three copies of a typed but unbound report may be submitted for examination. When submitted, the written report should be accompanied by a 'Certificate of Originality' and a 'Retention of Report' form. These forms are available from the Director, Postgraduate Studies;
- the presentation of a research seminar of 40 minutes followed by a 20-minute discussion with the examiners. A day will be set for the research seminars each semester. The research seminar day will usually be early in the semester; that is the seminars will be presented by students who submitted their written report in the previous semester. This is to avoid overloading staff and students at the end of semester. Students will be given a mark for their project when they submit their written report; however all students are required to present their research seminar at a satisfactory standard before they will be permitted to graduate. The research seminar should consist of a discussion of the more highly controversial or technical issues found within the written report. When delivering the research seminar, students should assume that their audience is familiar with the contents of their written report. Note that students do not need to enrol in the Project subject to present their research seminar.

The project will be examined on the content and standard of presentation of the written report and the research presentation. The mark for the Project subject will be determined on the basis of the written report alone.

Subject failure

Students are permitted, at the most, two failures during the MSc in Computing. Note the resolution of the Faculty Board, FBMC/92/70, that any Master's degree candidate enrolled in the MSc in Computing who records any three failures will have his or her registration from the course discontinued. In addition, students are bound by the Rules of the University, and are advised to refer to them.

Minimum and maximum time

There are two important University Rules concerning minimum and maximum time of which students should be aware:

- A Master's degree candidate shall not normally be eligible for the award of a Master's degree by coursework until he or she has completed at least six semesters of a part-time course. A student who is specially qualified in a relevant discipline may, with the approval of the Academic Board, be allowed to complete the course in less than the minimum time (Rule 3.3.5.2).
- A student who fails to complete all of the work prescribed for the higher degree within nine semesters from the time of his or her registration as a part-time Master's

degree candidate will only be permitted to continue with the approval of the University Graduate School Board (Rule 3.3.7.1).

Master of Business in Information Technology Management

Course code: MC85

Graduate Diploma in Information Technology Management

Course code: MC75

Graduate Certificate in Information Technology Management

Course code: MC63

Offered for the first time in 1994, these courses form a joint program between the School of Computing Sciences and the School of Management in the Faculty of Business. Administration of these courses is the responsibility of the School of Computing Sciences. All inquiries regarding these courses should be directed to Alison Stevens, Program Manager, on 9514 1925 or David Wilson, Director, Management Development Program, on 9514 1832.

The courses aim to:

- develop professional skills necessary for successfully undertaking the role of manager in terms of people, resources and processes in a variety of organisational contexts (which may include business, community, public, manufacturing, consultancy or professional contexts);
- enable the acquisition of conceptual and analytical understanding of the corporate/organisational needs from the differing perspectives of individuals and groups within the organisation, necessary for successful management;
- provide a well-balanced selection of subjects from both advanced information technology (IT) and management, in an integrated program which is relevant to the current and future demands of the IT industry;
- develop an understanding of the IT business environment and to extend the knowledge and skills in specialist areas of management related to management of IT in business; and
- enhance and develop a partnership between UTS and the IT industry.

Admission requirements

Master's

- A recognised Bachelor's degree (or equivalent) in an appropriate discipline such as Business or Computing, plus a minimum of two years' experience in the IT industry;

  or
- the prior successful completion of the Graduate Diploma in Information Technology Management (such students will therefore be exempt from Semesters 1, 2, 3 and 4);

  or
- the successful completion of an approved bridging program for non-graduate entry; that is the Graduate Certificate in Information Technology Management with passes in all subjects, and a credit average over the entire course.

Graduate Diploma

- A recognised Bachelor's degree (or equivalent) in an appropriate discipline such as Business or Computing, plus a minimum of two years' experience in the IT industry;

  or
- the prior successful completion of the Graduate Certificate in Information Technology Management (such students will therefore be exempt from Semesters 1 and 2), where entry to the Graduate Certificate was based on a recognised Bachelor's degree (or equivalent) in an appropriate discipline such as Business or Computing;

  or
- the successful completion of an approved bridging program for non-graduate entry; that is the Graduate Certificate in Information Technology Management with passes in all subjects, and a credit average over the entire course.

Graduate Certificate

- A recognised Bachelor's degree (or equivalent) in an appropriate discipline such as Business or Computing, plus a minimum of two years' experience in the IT industry;

  or

- evidence of general and professional qualifications, such as other post-secondary school qualifications that can establish the applicant's aptitude, knowledge and practical experience, which will satisfy the Faculty Board in Mathematical and Computing Sciences that the applicant possesses the educational preparation and capacity to pursue postgraduate studies. (Experience in the IT industry will be especially important in this regard e.g. five years' minimum vocational experience.)

It should be noted that applicants for these courses may be required to attend an interview.

Presumed knowledge and prerequisites

Subjects in the Graduate Certificate, Graduate Diploma and Master's courses are presented at postgraduate level. Students are expected to be familiar with the undergraduate material on which the postgraduate work is based. For the subjects offered by either the School of Computing Sciences or the School of Management, before the start of each semester a set of references to the presumed undergraduate material is given by each lecturer. It is important to note that these references are not 'pre-reading', but are a summary of the undergraduate knowledge required for each subject. Students are responsible for ensuring that they are completely familiar with the undergraduate knowledge implied by those references. If they are not, then they should seek advice from the Director, Management Development Program, in the first instance and may then be advised to contact the Subject Coordinator before the start of semester, to determine whether they possess the prerequisite knowledge for that subject.

For subjects offered by faculties or schools other than the School of Computing Sciences and the Faculty of Business, students are advised to contact that subject's Coordinator before the start of semester, to determine whether they possess the prerequisite knowledge for that subject. If students do not possess the prerequisite knowledge, then they should seek advice from that school or faculty on the feasibility of a remedial program. The Director, Management Development Program, will assist in obtaining this advice.

In addition, there are prerequisite requirements within the structure of the course itself (see 'Course structure' section).

Fees

Full tuition fees will be charged for students in the above courses. The fee is $1,500 per subject (module).

Course structure

All subjects will be assessed to the Master's standard, regardless of the course in which a student is enrolled. Therefore, a student who takes several individual subjects may later gain credit towards a Graduate Certificate.

The courses have been designed to allow freedom of choice at the individual subject level. The subjects at the Graduate Certificate level aim to teach the student skills and competencies for IT management. At the Graduate Diploma level, the subjects aim to focus on organisational strategies and planning. At the Master's level, the subjects are related to organisational development and research for the IT industry.

The full Master's degree course is normally completed in three years (six semesters) of part-time study. The Project is normally commenced in the fifth semester, together with one subject related to research methodology and Master's seminars on up-to-date issues in information technology.

Core subjects are to be offered by the Faculties of Mathematical and Computing Sciences and Business on a regular basis. Additional subjects available on an **elective** basis will be offered depending on demand and the availability of specialist staff. There may be other postgraduate subjects available to students enrolled in the program, offered by other schools within the Faculties of Mathematical and Computing Sciences and Business, which may be selected by students with the approval of the Director, Management Development Program. The industrially linked Project must build on the core/elective subjects already taken by the student and should ideally be related to his or her place of work.

In all cases, the subjects chosen must form a coherent plan of study and must be consistent

with the student's professional career goals. Each student's program of study will be discussed with, and approved by, the Director, Management Development Program, at the time of entry into a course. If a student has already completed an equivalent core subject in another course, he or she will be required to do an alternative subject from the electives available. Exemptions may only be considered on the basis of successfully completed subjects from these courses at Level 1 or above.

Level 1 – Non-Award

A student may take any number of subjects relevant to his or her professional needs. Subject prerequisites, if any, will need to be taken into account.

All subjects will be presented and assessed to the Master's level. Therefore, a student who takes several appropriate subjects may later gain credit towards a Graduate Certificate.

No formal qualification will be awarded by UTS.

Level 2 – Graduate Certificate in Information Technology Management (24cp)

A student must complete the following **three core** subjects:

21788	Effective People Management	6cp
21789	Contemporary Management Practices	6cp
32601	Advanced Project Management	6cp

plus one elective subject selected from

24704	Managing Client Relations	6cp
32602	Impact of Information Technology	6cp
32603	Software Quality Management	6cp
32604	Systems Integration	6cp
32605	Managerial Analysis and Evaluation of Information Systems	6cp
32701	Advances in Information Technology	6cp
32702	Contemporary Telecommunications	6cp
32703	Information Technology Strategy	6cp

or

an elective approved by the Director, Management Development Program

Level 3 – Graduate Diploma in Information Technology Management (48cp)

A student must complete the requirements for the Graduate Certificate in Information Technology Management (24cp);

plus complete the following **three core** subjects:

21806	Managing Organisational Change	6cp
21807	Total Quality and Productivity Management	6cp
21808	Strategic Business Management	6cp

plus one elective subject selected from the electives listed under Level 2 or an elective approved by the Director, Management Development Program.

Level 4 – Master of Business in Information Technology Management (66cp)

A student must complete the requirements for the Graduate Diploma in Information Technology Management (48cp);

plus complete the following subjects:

21751	Management Research Methods	6cp
32806	Project A	6cp
32812	Project B	6cp

The major Project must involve applied organisational research and development in the IT industry. It must be industrially linked and conducted in conjunction with the student's industry sponsor.

As part of the Project, a student must also attend associated Master's seminars. Expert speakers may be available to run seminars on such topics as 'Major Economic Trends' or 'International Competitiveness in the IT Industry'.

A student must make one oral presentation of his or her project work at a satisfactory standard during the final year of enrolment in the Master's course.

An example of a selected program of study for the Master of Business in Information Technology Management is as follows:

Year 1

21788	Effective People Management	6cp
21789	Contemporary Management Practices	6cp
32601	Advanced Project Management	6cp
	Elective	6cp

Year 2

21806	Managing Organisational Change	6cp
21807	Total Quality and Productivity Management	6cp
21808	Strategic Business Management	6cp
	Elective	6cp

Year 3

21751	Management Research Methods	6cp
32806	Project A	6cp
32812	Project B	6cp

In all cases the subjects chosen must form a coherent plan of study and must be consistent with the student's professional career goals. Each student's program of study will be discussed with, and approved by, the Director, Management Development Program, at the time of entry into a course. If a student has already completed an equivalent core subject in another course, he or she will be required to do an alternative subject from the electives available.

Project

The project entails a substantial investigation of a topic, in an area of current research interest in information technology and related to the student's professional career goals. The project is normally taken in the last part of the Master's course and must be taken and passed by all Master's students.

A student may wish to select a topic that is closely related to his or her current employment. Alternatively, a student may wish to choose a topic that should be of value to his or her future career. The project should be a vehicle for importing the knowledge learnt from the coursework into the student's professional life. The topic should be chosen with this professional goal in mind. Students are advised to seek the assistance of the lecturing staff in finalising the topic for their project.

Graduate Diploma in Information Technology

Course code: MC52

The Graduate Diploma in Information Technology is intended to provide students with the basic knowledge and skills required for a professional career in the computing and/or information systems area. It is designed for people who have already taken a first degree in which computing has not been included, or only covered lightly.

It is anticipated that students entering the course will have previously studied courses from a wide range of disciplines. Some will have graduated with no previous contact with computing; for such, the course is essentially a re-training degree, aiming to lay the foundations for a new career in the computing and/or information systems area. Other students entering the course will have had some familiarisation with computing, while still others will be familiar with computing concepts in areas such as programming, systems analysis and information retrieval, and will be seeking to consolidate and extend their present knowledge by attaining a formal computing qualification. It is not intended that applicants have extensive computing experience, given the re-training emphasis of the course.

Satisfactory completion of the course leads to the award of Graduate Diploma in Information Technology. It is anticipated that holders of this award will be granted exemption from the Associate examinations of the Australian Computer Society.

Admission requirements

The Graduate Diploma in Information Technology is offered on the basis of a Spring semester intake only.

Applicants should have a first degree, equivalent to an undergraduate three-year degree from the University of Technology, Sydney. Candidates who are unsure of the exact ranking of their degree should either contact the University Graduate School on 9514 1523, or write to the National Office of Overseas Skills Recognition, PO Box 25, Belconnen, ACT 2616.

The number of applicants for the Graduate Diploma is expected to be in excess of the number of places. In addition to the Application for Admission to Graduate Coursework form, applicants should complete a Supplementary Application form, and support their application with whatever documentation they consider to be appropriate. The selection committee may invite some applicants in for an interview.

For further information, applicants should contact Bruce Irvine, the Faculty's Graduate Studies Officer, on 9514 1806, or Peter Bebbington, Director, Graduate Education, on 9514 1828.

Fees

In 1997 the fee for the course will be set at $5,760 for 48 credit points (that is, $120 per credit point) for Australian citizens and permanent residents. For overseas students, the fee will be set at $14,500 per annum. All fees are subject to annual review.

Attendance pattern

The course is normally taken on a part-time basis over two years, and will usually entail attending three to four evenings per week. Occasionally one afternoon per week (plus two to three evenings per week) may be required, depending on the choice of subjects. Some students may be unable to pursue the normal attendance pattern, or may wish, for some reason, to take longer to complete the course; this is allowable, but students must be aware of the University's maximum time rule which is described in the 'Progression rules' section below.

Exemptions

Under normal circumstances, exemption from any core subject may be granted on the basis of equivalent study. A maximum of 16 credit points may be exempted. Students will **not** be granted exemption from elective subjects.

Progression rules

All students enrolled in this course should be aware of the following University Rules under which a student's registration will be discontinued.

Maximum time

Students will have their registration discontinued for failure to complete the course within four semesters from initial registration in the case of a full-time student, or within eight semesters from initial registration in the case of a part-time student. This is not inclusive of periods of approved leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any three failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Course structure

To gain the Graduate Diploma, students must complete a minimum of 48 credit points.

In the first academic year, students must take the following core subjects.

Spring semester

31940	Introduction to Systems Modelling	4cp
31942	Introduction to Computer Systems Architecture	4cp
31943	Introduction to Information Systems	4cp

Autumn semester

31934	Introduction to Database Design	4cp
	and at least one of	
31415	Principles of Software Development A	6cp
31941	Introduction to Procedural Programming	4cp

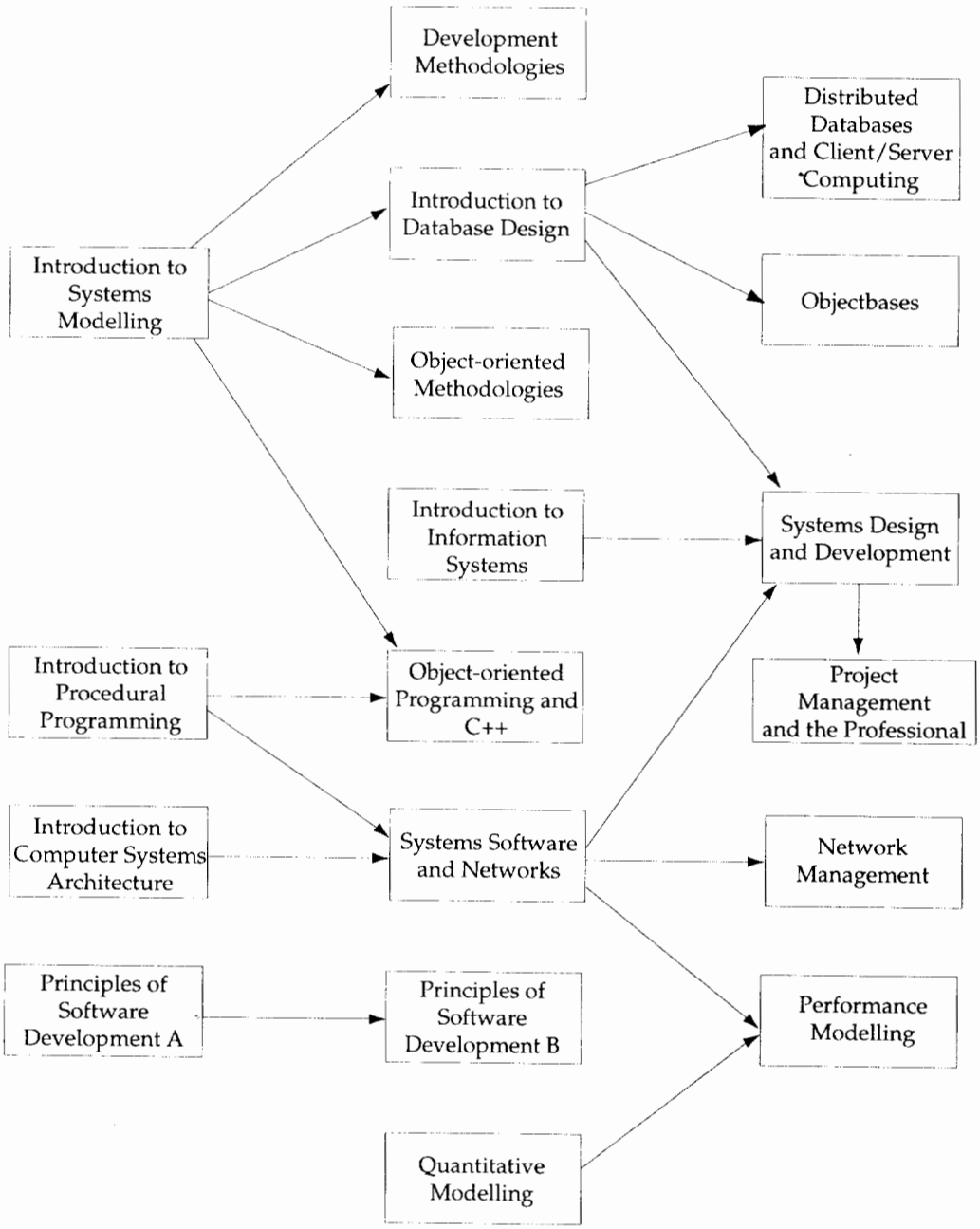
The only prerequisite for the core subjects is that 31940 Introduction to Systems Modelling **must** precede 31934 Introduction to Database Design.

The remaining 26 to 28 credit points are taken as electives. These electives may be taken from any elective, and most undergraduate, subjects offered by the School of Computing Sciences. Students must have completed the appropriate prerequisites for the electives chosen and the choice must be approved by the Director, Graduate Education. The subject 31436 Systems Software and Networks is strongly recommended. Some suggestions are:

31140	Introduction to Computer Graphics	4cp
31163	Knowledge Technology	4cp
31240	Topics in Computer Graphics	4cp
31425	Principles of Software Development B	6cp
31428	Quantitative Modelling	6cp
31436	Systems Software and Networks	8cp
31443	Distributed Databases and Client Server Computing	4cp
31444	Systems Design and Development	10cp
31454	Project Management and the Professional	8cp
31860	Object-oriented Programming and C++	4cp
31875	Parallel Programming	4cp
31876	Operating Systems Facilities	4cp
31902	Auditing the Computer	4cp
31904	Systems Programming	4cp
31923	Office and Group Support	4cp
31925	Smalltalk	4cp

Students should refer to the 'Numerical listing of subjects' section for the School of Computing Sciences for details of elective offerings. All students are permitted to take any modules they wish from the subject 31417 Computing Practice. These modules, which will not be liable for fees, will be additional to

Graduate Diploma in Information Technology prerequisite chart



the standard course program and credit will not be given.

Recommended part-time program

Year 1

Spring semester

31940	Introduction to Systems Modelling	4cp
31942	Introduction to Computer Systems Architecture	4cp
31943	Introduction to Information Systems	4cp

Autumn semester

31934	Introduction to Database Design	4cp
	Elective	4cp
31941	Introduction to Procedural Programming	4cp

Year 2

Spring semester

31436	Systems Software and Networks	8cp
	Elective	4cp

Autumn semester

	Two or three electives	12cp

GRADUATE CERTIFICATES

Graduate Certificate in Advanced Information Technology

Course code: MC62

This course allows students to build upon foundations in information systems and/or computer science. The prerequisite for the course is either the Graduate Certificate in Information Systems and/or the Graduate Certificate in Computer Science, or their equivalents. The course enables students to develop advanced skills in more specialised areas of information technology.

Length and attendance pattern

This is a one-year part-time course. Depending on demand, the course, or individual subjects, may be offered in flexible attendance modes. The course is usually offered as part of the School's normal programs, provided that class space is available.

Admission requirements

Applicants are normally expected to have completed the Graduate Certificate in Information Systems and/or the Graduate Certificate in Computer Science. Applicants with demonstrable, equivalent backgrounds may be considered on a case-by-case basis.

Course structure

The course consists of a coherent set of four subjects taken from the Graduate Diploma in Information Technology and approved by the Director, Graduate Education (see the Graduate Diploma in Information Technology's 'Course structure' section). The total requirement for the Graduate Certificate is 16 credit points.

Students should note that this structure is currently under review. Information on the revised course structure will be available early in 1997.

For further information, contact Peter Bebbington, Director, Graduate Education, on 9514 1828.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of part-time students, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any two failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

Full tuition fees will be charged. In 1997, the fee for this course has been set at $3,200. This fee is subject to annual review.

Graduate Certificate in Applied Computing

Course code: MC57

This course provides students with the practical skills and knowledge that are necessary to operate effectively at entry level in a computing environment. On completion of the three subjects, graduates will have acquired sound knowledge of, and experience and skills in: Foundations of Computing and Programming; Systems Analysis and Design; and Database. It is anticipated that graduates may wish to further their knowledge by attending follow-on Graduate Certificates offered by the School of Computing Sciences.

Length and attendance pattern

The course is one year part time, i.e. four semester hours per week per six-credit-point subject, and is usually offered as part of the School's normal program for Information Studies students.

Admission requirements

The course is intended for non-computing professionals. Applicants should have a Bachelor's degree (or equivalent) from a recognised university, with no major computing content. Consideration may be given to applicants whose background does not fit the above requirements, provided that a case can be made to establish that their knowledge and practical experience are equivalent to that which is implied by these requirements.

Course structure

The total requirement for the Graduate Certificate is 18 credit points. The course consists of the following subjects:

31521	Foundations of Computing and Programming	6cp
31531	Systems Analysis and Design	6cp
31551	Database	6cp

This structure is currently under review. Information on any revision to the course structure will be available early in 1997.

For further information, contact Peter Bebbington, Director, Graduate Education, on 9514 1828.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of part-time students, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any two failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

Full tuition fees will be charged. In 1997, the fee for this course has been set at $1,800. This fee is subject to annual review.

Graduate Certificate in Computer Science

Course code: MC60

This course provides students with a foundation in Computer Science. This foundation can later be consolidated by the Graduate Certificate in Advanced Information Technology, and/or complemented by the Graduate Certificate in Information Systems.

Length and attendance pattern

This is a part-time course. Depending on demand, the course, or individual subjects, may be offered in flexible attendance modes. The course is usually offered as part of the School's normal programs, provided class space is available. The precise attendance pattern will be developed as part of the business plan for any given course offering. It will take a minimum of three semesters to complete the Graduate Certificate – this is subject to the student being a competent programmer in a language such as Pascal or C.

Admission requirements

Applicants with a recognised Bachelor's degree (or equivalent) are normally deemed eligible for the course. Consideration may be given to applicants whose background does not fit this requirement, provided that a case can be made to establish that their aptitude, knowledge and practical experience are

sufficient. Experience in the information technology industry is especially important in this regard. Nonetheless, to achieve non-graduate entry, applicants may be asked to take an aptitude test or complete an approved bridging program.

Course structure

The course consists of a coherent set of subjects taken from the Graduate Diploma in Information Technology and approved by the Director, Graduate Education (see the Graduate Diploma in Information Technology's 'Course structure' section). The total requirement for the Graduate Certificate is 16 credit points.

For further information, contact Peter Bebbington, Director, Graduate Education, on 9514 1828.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of part-time students, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any two failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

Full tuition fees will be charged. In 1997, the fee for this course has been set at $3,200. This fee is subject to annual review.

Graduate Certificate in Human–Computer Interaction

(Not offered in 1997)

Course code: MC65

This course is designed for professional upgrade. The course provides students with the required knowledge of human–computer interaction and the practical skills that are necessary to effectively achieve better usability in the software and systems design and development process. The course focuses on HCI principles and techniques for improving usability aspects of software and systems, and on operational issues associated with implementing HCI in organisations. Students who are members of the Australian Computer Society will be credited with PCP points on completion of this certificate.

Length and attendance pattern

The is a one-year part-time course that has a total of 18 credit points made up of three subjects, each worth six credit points.

Students attend one evening per week in the first semester and two evenings per week in the second semester. In the second semester, for the subject 31863 HCI Tools and Techniques, students attend two evenings a week for six weeks, followed by the subject 31864 Implementation of HCI, for which students attend two evenings a week for the following six weeks.

This pattern is important and follows a natural sequence which culminates in the final subject of the Graduate Certificate. The subject 31864 Implementation of HCI integrates what has been studied in the subjects 31862 Fundamentals of HCI and 31863 HCI Tools and Techniques. It also requires students to complete a practical HCI project on a topic of interest to them.

Admission requirements

The course is intended for information industry professionals, and applicants should have **both**:

- a Bachelor's degree from UTS, or equivalent, preferably with a substantial information systems and/or computing component. Applicants whose degrees do not have a major information systems and/or computing component will be required to submit evidence to the effect that the extent of their formal knowledge of computing is equivalent to that of a graduate from the University's Bachelor of Science in Computing Science;

  and

- an established professional career within the information technology industry (as a guide, the extent of the applicant's professional experience should be equivalent to that of an Associate Member of the Australian Computer Society of at least two years' standing).

Consideration may be given to applicants whose backgrounds do not fit these requirements, provided that a case can be

made to establish that their information systems and/or computing knowledge and practical experience are equivalent to the above.

Course structure

The structure of the Graduate Certificate in Human–Computer Interaction is as follows:

Autumn semester

31862	Fundamentals of Human–Computer Interaction	6cp

Spring semester

31863	Human–Computer Interaction Tools and Techniques	6cp
31864	Implementation of Human–Computer Interaction	6cp

For further information, contact Peter Bebbington, Director, Graduate Education, on 9514 1828.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of part-time students, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any two failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Graduate Certificate in Information Systems

Course code: MC61

This course provides students with a foundation in Information Systems. This foundation can be later consolidated by the Graduate Certificate in Advanced Information Technology.

Length and attendance pattern

This is a one-year part-time course. Depending on demand, the course, or individual subjects, may be offered in flexible attendance modes. The course is usually offered as part of the School's normal programs, provided that class space is available. The precise attendance pattern will be developed as part of the business plan for any given course offering.

Admission requirements

Applicants with a recognised Bachelor's degree (or equivalent) are normally deemed eligible for the course. Consideration may be given to applicants whose background does not fit the above requirements, provided that a case can be made to establish that their aptitude, knowledge and practical experience are sufficient. Experience in the information technology industry is especially important in this regard. Nonetheless, to achieve non-graduate entry, applicants may be asked to take an aptitude test or complete an approved bridging program.

Course structure

The course consists of a coherent set of subjects taken from the Graduate Diploma in Information Technology and approved by the Director, Graduate Education (see the Graduate Diploma in Information Technology's 'Course structure' section). The total requirement for the Graduate Certificate is 16 credit points.

For further information, contact Peter Bebbington, Director, Graduate Education, on 9514 1828.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of part-time students, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any two failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

Full tuition fees will be charged. In 1997, the fee for this course has been set at $3,200. This fee is subject to annual review.

Graduate Certificate in Programming Practice

Course code: MC64

This course addresses modern business programming theory and practice and the commercial issues of data communications. It has been designed as a follow-on from the Graduate Certificate in Applied Computing. Students will study Commercial Programming and Data Communications.

Length and attendance pattern

This is a one-year part-time course (i.e. six semester hours per week per six-credit-point subject).

The course is usually offered as part of the School's normal program for Information Studies students.

Admission requirements

The course is intended for non-computing professionals. Applicants should have a Bachelor's degree (or equivalent) from a recognised university, with no major computing content. Consideration may be given to applicants whose background does not fit the above requirements, provided that a case can be made to establish that their knowledge and practical experience are equivalent to the above.

Course structure

The course consists of a coherent set of three subjects taken from the Graduate Diploma in Information Technology and approved by the Director, Graduate Education (see the Graduate Diploma in Information Technology's 'Course structure' section). The total requirement for the Graduate Certificate is 12 credit points.

This structure is currently under review. Information on the revised course structure will be available early in 1997.

For further information, contact Peter Bebbington, Director, Graduate Education, on 9514 1828.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of part-time students, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any two failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

Full tuition fees will be charged. In 1997, the fee for this course has been set at $1,200. This fee is subject to annual review.

Graduate Certificate in Software Quality Assurance

Course code: MC56

This course is designed to provide a professional upgrade. It will provide students with the practical knowledge and skills that are necessary to effectively measure and control the quality of software products. The course focuses on the procedures and disciplines of a software quality system and the operational issues associated with implementing such a system in an organisation. Students who are members of the Australian Computer Society will be credited with PCP points on completion of the certificate.

Length and attendance pattern

This is a one-year part-time course.

Students undertake formal studies for two evenings per week in the first semester and one evening per week in the second.

Rationale and aims

A primary objective of this course is to assist computing professionals to implement a software quality system that complies with Australian Standard AS3563.

On successful completion of this course, students will be able to:

- understand the need for quality assurance of software products;
- specify the role of the quality assurance function in software development and maintenance;
- understand the nature of software quality and the problems of assessing the level and presence of software quality;

- ensure that adequate quality control of software development is achieved; and
- produce and implement a quality assurance plan for software.

Admission requirements

The course is intended for information technology professionals and applicants should have **both**:

- a Bachelor's degree from UTS, or equivalent, preferably with a major computing component. Applicants whose degrees do not have a major computing component will be required to submit evidence to the effect that the extent of their formal knowledge of computing is equivalent to that of a graduate from the University's Bachelor of Science in Computing Science;

  and
- an established professional career within the information technology industry (as a guide, the extent of the applicant's professional experience should be equivalent to that of an Associate Member of the Australian Computer Society of at least two years' standing).

Consideration may be given to applicants whose background does not fit these requirements, provided that a case can be made to establish that their computing knowledge and practical experience are equivalent to the above.

Course structure

The course consists of three subjects:

31855	Software Quality Assurance Principles	4cp
31856	Quality and Software Engineering	4cp
31857	Software Quality Techniques	4cp

Each subject carries four credit points and consists of three semester hours per week. Thus the total course requirement is 12 credit points.

For further information, contact Peter Bebbington, Director, Graduate Education, on 9514 1828.

Maximum time rule

Students will have their registration discontinued for failure to complete the course in three semesters from the time of registration in the case of part-time students, not inclusive of periods of leave of absence (Rule 3.2.6.1).

Unsatisfactory progress

Students will have their registration discontinued for any two failures in the course (unsatisfactory progress as defined by the Faculty Board resolution, FBMC/94/80) (Rule 3.2.6.2).

Fees

Full tuition fees will be charged. In 1997, the fee for this course has been set at $2,100. This fee is subject to annual review.

Subject descriptions

Guide to subject descriptions

The subject descriptions shown below indicate the subject number and name, the number of credit points for the subject (e.g. 3cp), the duration of the subject, indicated as semester weeks, if applicable, and the number of formal contact hours per week (e.g. 4hpw). For some subjects, there may also be practical components off-campus, and this is indicated in the text. Also shown are the prerequisites or corequisites, if any, the method of assessment and name of the subject coordinator, if known, and a brief outline of the content.

Prerequisites are subjects that must be completed before taking the subject to which they refer. Corequisites may be completed before or be taken concurrently with the subject to which they refer.

Subjects offered by the School of Computing Sciences are listed first, followed by those offered by other faculties.

Subjects offered by the School of Mathematical Sciences and those offered by the Institute for International Studies as part of the Bachelor of Science in Computing Science/Bachelor of Arts in International Studies can be found in the School of Mathematical Sciences' 'Subject descriptions' section in this handbook.

31140

Introduction to Computer Graphics

4cp; 3hpw; prerequisites: 31425 Principles of Software Development B; 31429 Procedural Programming or 31624 Data Structures and Algorithms or graduate subject 31941; coordinator: Dr K Suffern

Provides a thorough introduction to the computer representation, manipulation and display of pictorial information. Topics covered include passive and interactive graphics, hardware devices and programming; mathematical tools for two- and three-dimensional graphics; two- and three-dimensional graphics and algorithms; graphics standards; human–computer interaction and graphical design; application areas of computer graphics.

31163

Knowledge Technology

4cp; 3hpw; prerequisites: 31425 Principles of Software Development B; 31429 Procedural Programming or 31624 Data Structures and Algorithms; 31625 Software Engineering or graduate subject 31941; coordinator: Professor J Debenham

Knowledge representation: state space graphs, And/Or graphs, productions, semantics nets, frames, logic. Inference. Search: various strategies. Uncertainty: probability, hypothetical reasoning, temporal logic, evidence, inference nets. Inexact reasoning: inference nets, certainty factors, Dempster-Shafer theory. Fuzzy logic, fuzzy sets.

31240

Topics in Computer Graphics

4cp; 3hpw; prerequisite: 31140 Introduction to Computer Graphics; coordinator: Dr K Suffern

For students who have passed 31140, this subject provides a study of several additional computer graphics topics, with an emphasis on image synthesis techniques. Topics covered include fractals, illumination models, ray tracing, textures, anti-aliasing, half-toning and ordered dither, hidden line and surface removal algorithms, computer animation and radiosity.

31350

Project (2 semesters)

8cp; 6hpw; prerequisite: 31444 Systems Design and Development or 31641 Systems Design; coordinator: to be advised

31351

Project (1 semester)

8cp; 6hpw; prerequisite: 31444 Systems Design and Development or 31641 Systems Design; coordinator: to be advised

31352

Project

4cp; 3hpw; prerequisite: 31444 Systems Design and Development or 31641 Systems Design; coordinator: to be advised

A project is intended to give a student experience in working independently, and

responsibility for scientific research or the development of a small system from initial analysis to user documentation. Projects may be drawn from any area of computer science or information systems. Each project is supervised by a member of academic staff.

31414

Information Systems

6cp; 4hpw; coordinator: Mr C S Johnson

This subject deals with information systems in their organisational context.

The effects of information systems on society, organisations and individuals are discussed. Examples from typical organisations are used to illustrate information systems concepts. Techniques for analysing and describing user requirements are introduced.

Throughout the subject there is an emphasis on human activities, the importance of the user in the analysis phase and the usability of systems. Another theme is communication skills i.e. the ability of the analyst and designer of an information system to interview, to write reports and manuals, to design efficient and effective interfaces, and to give presentations on the system.

31415

Principles of Software Development A

6cp; 7hpw; corequisite: 31417 Computing Practice; coordinator: Dr K Suffern

The principles and practice of object-oriented software construction are introduced using the programming language Eiffel. Topics include the object-oriented concepts of classes, objects, clients and suppliers, inheritance, genericity, dynamic binding and polymorphism. The mathematics of discrete objects and models is discussed. Topics covered include propositional and predicate logic, methods of proof, sets, relations and functions. Functional programming is used to illustrate the mathematical concepts introduced. Program testing methods are emphasised throughout the subject, as are aspects of software quality such as usability.

31416

Computer Systems Architecture

6cp; 6hpw; coordinator: Mr C W Johnson

This subject provides a sound basis for understanding how computer hardware and data communications support higher level software constructions. All software undergoes a process of translation or interpretation which reduces it to primitive operations capable of being performed by the 'hardware'. In this subject, these primitive operations, and the organisation and design of computer systems that execute these operations, are examined. The SPARC architecture, together with its assembly language, is studied as an example of a contemporary (and real) computer architecture. This subject also presents some fundamental concepts in data communications, as a basis for later subjects which treat the topic in greater depth.

31417

Computing Practice

6cp; 4hpw; coordinator: Mr J Colville

Principles of responsible computer use. Computer skills: Touch typing. DOS commands. Microsoft Windows. The Macintosh environment. Introductory word processing, spreadsheets and graphics. The Unix environment, ftp, telnet, electronic mail. File conversions. Backups. Introductory library research skills. Introduction to report writing.

31424

Systems Modelling

6cp; 3hpw; coordinator: Mr J El-Den

This subject introduces information system concepts including their static and dynamic components. It describes how these concepts can be used to model information systems to correctly capture their structure and needs. It outlines how the ability to capture information about the system in ways understood by its eventual users will improve the final quality of the system.

The subject introduces analysis using various approaches found in contemporary system development, including object-oriented methods, data flow diagrams and Entity-Relationship modelling, and describes the relationships between these techniques and their application.

31425

Principles of Software Development B

6cp; 6hpw; prerequisite: 31415 Principles of Software Development A; coordinator: Dr K Suffern

The specification and implementation of stacks, queues, lists, and trees are discussed as abstract data types. Formal mathematical specification of software, and program

correctness are discussed. Program testing methods are emphasised throughout the subject, as are aspects of software quality such as usability.

31428

Quantitative Modelling

6cp; 5hpw; coordinator: Dr T Osborn

Reasoning with data, descriptive statistics, probability theory, distributions, estimation, hypothesis testing, spreadsheet exercises, report writing, principles of modelling, queuing models, utility models, adaptive methods, and case studies of some basic models.

31429

Procedural Programming

6cp; 4hpw; prerequisite: 31415 Principles of Software Development A; corequisite: 31425 Principles of Software Development B; coordinator: Dr B Howarth

Top-down structured program design techniques, and their application to the development of commercial programming applications. Emphasis will be on quality and usability of the resultant systems. Debugging and testing skills are developed. The language used is C.

31434

Database Design

6cp; 3hpw; prerequisite: 31424 Systems Modelling or graduate subject 31940; coordinator: Dr G Feuerlicht

This subject introduces the students to basic database design and implementation concepts. Database design techniques including relational design and E-R analysis are presented. Relational databases and object-oriented databases are described and the applicability of each approach to various problem domains is discussed.

31436

Systems Software and Networks

8cp; 6hpw; prerequisites: 31425 Principles of Software Development B; 31429 Procedural Programming; 31416 Computer Systems Architecture or graduate subjects 31941, 31942; coordinator: Mr U Szewcow

This subject builds on Computer Systems Architecture to provide an understanding of the operating system and communications hardware and software that provide support for user applications. Particular attention is paid to the role of systems software in distributed systems.

31443

Distributed Databases and Client/ Server Computing

4cp; 3hpw; prerequisite: 31434 Database Design or graduate subject 31934; coordinator: Dr G Feuerlicht

This subject introduces the students to basic distributed databases and client/server concepts. The classical approach to distributed databases is described in detail, and supported with both theoretical and practical exercises. Modern client/server and database server techniques are introduced.

31444

Systems Design and Development

10cp; 2hpw; prerequisite: 31434 Database Design or graduate subject 31934; corequisite: 31436 Systems Software and Networks; coordinator: Mr C Richardson

This is a project-based subject which guides students through an information systems development process. The requirements for the information system are specified in a series of Use Cases. The development involves designing the user interface and data system and then designing and implementing the system. The emphasis throughout the development is on meeting the user's requirements, implementing a distributed solution and integrating the new systems with the existing information systems infrastructure. Attention to quality of the system outcomes is maintained throughout the development process. Students will work in managed teams of 10. There are no formal lectures and no exams in this subject; staff/ student contact takes place at regular structured project meetings and discussion meetings. Students are expected to have at least four hours of contact with their team each week and, given that this is a 10-credit-point subject, to do significant work outside of this contact time.

31454

Project Management and the Professional

8cp; 4hpw; prerequisite: 31444 Systems Design and Development; coordinator: Mr D Wilson

This subject covers the management of the development and implementation of infor-

mation technology solutions, with particular emphasis on information systems project management, managing software quality assurance and the professional ethics of software developers.

31455

Software Development Case Study

10cp; 6hpw; prerequisite: 31444 Systems Design and Development; coordinator: Dr B Jay

In the first semester, lectures will run in two strands: one devoted to projects, and the other to automata theory and new theory and skills. Laboratories will work on the projects.

The major project will incorporate the following stages: modular decomposition of the system; development of interfaces to the user (GUIs), between modules, to class libraries, and to other applications (code-wrapping); coping with change of specifications; detailed coding; and verification, documentation and testing. This is a full-year subject.

31464

Information Technology Planning and Design

6cp; 5hpw; prerequisites: 31428 Quantitative Modelling; 31436 Systems Software and Networks; 31444 Systems Design and Development; 31454 Project Management and the Professional; 31697 Industrial Training; coordinator: Mr C S Johnson

This subject is a capstone subject for the course and incorporates knowledge gained in previous subjects, including industrial experience. Students are required to work in groups to produce a large report based on case study material. The objective is to produce a strategic solution to the problem presented in the case study involving both planning and design. The subject emulates the commercial environment in that students work in project groups and hold weekly project review meetings. A presentation to management occurs at the end of the subject.

31504

Business Information Systems Design

6cp; 4hpw; coordinator: Mr C S Johnson

This subject deals with information systems in their organisational context.

The effects of information systems on society, organisations and individuals are discussed. Examples from typical organisations are used to illustrate information systems concepts. Techniques for analysing and describing user requirements are introduced.

Throughout the subject there is an emphasis on human activities, the importance of the user in the analysis phase and the usability of systems. Another theme is communication skills i.e. the ability of the analyst and designer of an information system to interview, to write reports and manuals, to design efficient and effective interfaces and to give presentations on the system.

31505

Business Information Systems Management

6cp; 3hpw; coordinator: Mr J El-Den

This subject introduces information system concepts including their static and dynamic components. It describes how these concepts can be used to model information systems to correctly capture their structure and needs. It outlines how the ability to capture information about the system in ways understood by its eventual users will improve the final quality of the system.

The subject introduces analysis using various approaches found in contemporary system development, including object-oriented methods, data flow diagrams and Entity-Relationship modelling, and describes the relationships between these techniques and their application.

31506

Business Information Systems Implementation

6cp; 4hpw; coordinator: Mr L Smith

COBOL language syntax and structures. Report layout principles. Indexed file concepts, design and implementation of a simple on-line inquiry/update package.

31521

Foundations of Computing and Programming

6cp; 4hpw; coordinator: Mr L Smith

Provides an understanding of the basic concepts of hardware design, data storage and transmission, and introduces third-generation language programming in file-processing and report-production applications.

31531

Systems Analysis and Design

6cp; 4hpw; coordinator: Mr L Smith

This subject is concerned with the systems development life cycle, the tools and techniques used in the analysis of systems' requirements, and the determination of alternate implementation strategies.

31541

Commercial Programming

6cp; 4hpw; prerequisites: 31521 Foundations of Computing and Programming; 31531 Systems Analysis and Design; coordinator: Mr L Smith

COBOL language syntax and structures. Report layout principles. Indexed file concepts, design and implementation of a simple on-line inquiry/update package.

31551

Database

6cp; 4hpw; prerequisite: 31531 Systems Analysis and Design; coordinator: Mrs E Lawrence

Introduces database models and the principles of database design and management. Practical experience is given in designing and implementing a database using commercial packages such as Oracle.

31561

Data Communications

6cp; 4hpw; prerequisites: 31521 Foundations of Computing and Programming; 31531 Systems Analysis and Design; coordinator: Mr S Jha

Information coding and signal transmission codes. Voice and digital communications. Communications software. Data communications services. Network configurations. Local area networks. Network design and planning. Network management.

31654

Languages and Translators

4cp; 3hpw; prerequisites: 31416 Computer Systems Architecture; 31425 Principles of Software Development B; 31429 Procedural Programming or 31613 Computer Systems Architecture 1; 31624 Data Structures and Algorithms or graduate subjects 31941, 31942, 31425; coordinator: Mr J Colville

Translation and execution of expressions and statements. Syntactic analysis and parsing. Attribute grammars. Compile-time type checking. Syntax and table-driven compilers. Compiler-compilers. Code generation, error diagnostics and error correction of code. Code optimisation. Memory allocation during compilation and execution.

31696

Industrial Training (F/T)

0cp; 6hpw; prerequisites: 31414 Information Systems; 31417 Computing Practice; 31424 Systems Modelling; 31434 Database Design; 31436 Systems Software and Networks and its prerequisites or 31621 Systems Analysis; 31622 Commercial Programming Development; 31624 Data Structures and Algorithms; 31633 Operating Systems; 51370 Human Communication; at least four other core subjects from the BSc program; coordinator: Mr D Wilson

For subject details see 31697 Industrial Training (F/T).

31697

Industrial Training (F/T)

0cp; 6hpw; prerequisite: 31696 Industrial Training (F/T) (first semester); coordinator: Mr D Wilson

The first and second semesters of Industrial Training are a compulsory requirement for the course. All full-time students must enrol in these subjects and obtain a minimum of nine months of full-time employment. Students must normally have completed the equivalent of at least four full-time semesters before obtaining employment.

31698

Industrial Training (P/T)

0cp; 3hpw; prerequisites: see 31696; coordinator: Mr D Wilson

For subject details see 31699 Industrial Training (P/T).

31699

Industrial Training (P/T)

0cp; 3hpw; prerequisite: 31698 Industrial Training (P/T) (first semester); coordinator: Mr D Wilson

The first and second years' Industrial Training are a compulsory requirement for the course, normally taken for a total of four semesters in Stages 5 and 6. All part-time students must enrol in these subjects and obtain a minimum of 18 months of full-time employment.

31718

Contemporary Information Technology I

6cp; 6hpw; coordinator: Mr D Wilson

This is a self-paced learning subject that provides basic skills that students will use in a variety of other subjects and in industry – skills include word processing, spreadsheets, graphics, e-mail etc. The self-paced learning will be complemented by lectures from partner organisations about the industry and the first industry semester.

31722

Commercial Programming

5cp; 5hpw; prerequisites: 31414 Information Systems; 31415 Principles of Software Development A; coordinator: Mr C Richardson

Commercial structured design techniques and commercial programming in either a batch or on-line environment. Students will be taught the design technique and language of the particular industry organisation using approved assignment work.

31729

Information Systems Practice

2cp; 2hpw; prerequisite: 31415 Principles of Software Development A; coordinator: Mr D Wilson

This subject covers Entity-Relationship modelling, structured programming techniques and the development of commercial programs in C. The emphasis is on the quality and usability of developed systems.

31734

Information Systems and Organisations

4cp; 3hpw; coordinator: Mr J Underwood

This subject introduces theories of organisations such as businesses, government departments and voluntary organisations. We deal with the behaviour of people in organisations, the structure of organisations, and the relation between the two. Emphasis is given to applications of organisation theory to the management of the IT function in organisation.

31737

Business Process Transformation

4cp; 3hpw; coordinator: Mr J Underwood

This subject covers the restructuring of organisational processes through the innovative use of information systems and information technology. Current proposals for organisation restructuring are introduced and evaluated through comparison with previous theories of restructuring.

31743

Machine Learning

4cp; 3hpw; prerequisite: 31428 Quantitative Modelling; coordinator: Dr T Osborn

This subject is concerned primarily with Machine Learning: automatic construction of computable models from data. Symbolic and non-symbolic methods are studied. Topics include statistical learning, clustering and correlations; neural networks methods; genetic algorithms; genetic programming; Shannon information; rule induction; and first-order learning.

31744

Case-based Reasoning

4cp; 3hpw; prerequisite: 31163 Knowledge Technology; coordinator: Dr R Rist

This subject builds on fundamental work in knowledge technology and introduces students to the concepts of case-based reasoning. Neural architecture, human memory. Semantic nets. Memory indexing. Case-based reasoning: case finding, case evaluation, case adaptation, building a case base. Planning: adaptation, correctness. Case-based planning. Expectations. Explanation-based learning.

31745

Knowledge-based Systems

4cp; 3hpw; prerequisite: 31743 Machine Learning or 31744 Case-based Reasoning; coordinator: Dr S Prabhakar

This subject addresses the important issues relating to the design of flexible Knowledge-Based Systems (KBS). These include understanding analytical techniques for KBS, bases for deep level representation of the world, knowledge acquisition techniques, design principles and case studies of how these principles are implemented in the current KBS.

31746

Artificial Intelligence Applications

4cp; 3hpw; prerequisite: 31743 Machine Learning or 31744 Case-based Reasoning; coordinator: Dr S Prabhakar

This subject builds on fundamental work in knowledge technology and introduces students to issues in building a substantial artificial intelligence system. Use of artificial intelligence languages. Knowledge acquisition. Application selection. Knowledge engineering, computer assisted knowledge engineering. Designing for maintainability. Truth maintenance systems. Review of artificial intelligence applications.

31748

Programming on the Internet

4cp; 3hpw; prerequisite: 31436 Systems Software and Networks; coordinator: Dr G Feuerlicht

This subject covers programming in Java, Website Administration, HTML authoring, CGI programming and network security.

31756

Project Management

5cp; 3hpw; prerequisite: 31788 Organisation Theory for IT Professionals; coordinator: Mr D Wilson

Provides students with the practical knowledge and skills that are necessary to effectively manage project teams and software development projects. The major topics are: planning a software project, software time and cost estimation, controlling a software project, development aids and alternatives, leadership and people management. This subject will provide an essential understanding of project management issues and identify the knowledge required of a project manager in the IT industry.

31764

Information Technology Strategy

4cp; 3hpw; coordinator: Mr D Wilson

This subject provides students with an awareness of the problems in developing corporate strategies, in general, and information strategies, in particular. It also develops skills in the selection and use of appropriate strategic planning techniques.

31769

Contemporary Information Technology 2

4cp; 3hpw; prerequisite: 31718 Contemporary Information Technology 1; coordinator: Mr D Wilson

This subject covers topical issues in the development and implementation of information systems and the professional ethics of software developers.

31770

Industry Project 1

5cp; 14hpw; coordinator: Mr B Wong

Provides students with an understanding of the function of the Information Systems Department in an organisation and also of at least one user business function serviced by IS. Understanding is through a number of strategies such as interviewing, observation and work experience. Students will be taught human communication skills in conjunction with the project work, with special emphasis on oral and written communication. Training will also be provided in a variety of development tools used in the information systems development process in order to build up a defined skills profile in conjunction with the subject 31790 Industry Project 2.

31771

Business Requirements Analysis

5cp; 3hpw; prerequisite: 31414 Information Systems; coordinator: Mr J Clark

Applications of systems analysis (data flow diagrams, relational modelling etc.) in a business setting; the roles of the business analyst and the systems analyst; systems research and requirements analysis (interviewing, document analysis etc.) for data processing, management information systems etc. top-down enterprise-wide perspective; evolution of the business environment; business, product and other life cycles. Industry case studies.

31777

Human–Computer Interaction

4cp; 3hpw; prerequisite: 31444 Systems Design and Development or 31641 Systems Design; coordinator: Ms J Hammond

Focuses on human factors and information systems aspects of user-centred systems development and design. Provides students

with HCI principles, concepts, tools and techniques needed to build user-centred systems, particularly in terms of the design of interfaces that satisfy user needs and create usable products that support user tasks and goals. Major topics include the role and scope of HCI, HCI methods such as requirements analysis, task analysis and usability testing, usability evaluation, and user-centred design support.

31778

Resources Management for IT Professionals

4cp; 3hpw; coordinator: Mr D Wilson

Aims to instil the knowledge and skills required for effective management of hardware and software resources within an information system organisation. The major topics include resource acquisition, developing software, workplace environments, hardware and software security, operations management, and EDP accounting.

31779

Applications of Information Technology 1

5cp; 3hpw; prerequisite: 31414 Information Systems; coordinator: Mr C S Johnson

Formal and practical exposure to, and understanding of, a variety of specific applications of information technology, such as management information systems, databases, decision support systems, process control, graphics etc. Subject material will complement that of 31789 Applications of Information Technology 2 to ensure a common level of experience for all students. This is an industry subject for BInfTech.

31781

Business Systems Design

5cp; 3hpw; prerequisite: 31424 Systems Modelling or 31641 Systems Design; coordinator: Mr J Underwood

Understanding systems design in a business setting; performance and quality criteria; alternative implementation strategies; approaches to systems construction and estimation (including package evaluation and prototyping); implementation issues; productivity issues; methods engineering; information technology in business; industry and product differences. Case studies. This is an industry subject for BInfTech.

31789

Applications of Information Technology 2

5cp; 3hpw; prerequisite: 31779 Applications of Information Technology 1; coordinator: Mr C S Johnson

Formal and practical exposure to, and understanding of, a variety of specific applications of information technology, such as management information systems, databases, decision support systems, process control, graphics etc. Subject material will complement that of 31779 Applications of Information Technology 1 to ensure a common level of experience for all students.

31790

Industry Project 2

5cp; 14hpw; prerequisite: 31770 Industry Project 1; coordinator: Mr B Wong

Students gain practical 'hands-on' experience of the role of members of an information systems development team in relation to business organisational goals and objectives; students are incorporated as members of a project team in a sponsoring company. Training will also be provided in a variety of development tools in order to build up a defined skills profile in conjunction with the subject 31770 Industry Project 1.

31855

Software Quality Assurance Principles

4cp; 3hpw; coordinator: Mr D Wilson

Provides students with the practical knowledge and skills in the definition of quality for software products, quality characteristics and their relationships, setting measurable and testable quality attributes, the importance of being able to measure quality, different approaches to quality metrics, methods of defining suitable metrics, examples of typical metrics and the relationship between the QA Function, Software Developers and Management. The major topics are: Total Quality Management, principles of software quality, software metrics and estimation. This is one of three subjects that comprise a full-fee-paying course which is designed for professional upgrade leading to the award of a Graduate Certificate.

31856

Quality and Software Engineering

4cp; 3hpw; prerequisite: 31855 Software Quality Assurance Principles; coordinator: Mr B Wong

The subject looks at the role of engineering methods and tools in the software development process, advantages and disadvantages of different approaches, contribution of engineering disciplines to the achievement of quality. This is one of three subjects that comprise a full-fee-paying course which is designed for professional upgrade leading to the award of a Graduate Certificate.

31857

Software Quality Techniques

4cp; 3hpw; prerequisite: 31855 Software Quality Assurance Principles; coordinator: Mr B Wong

Provides students with the practical knowledge and skills in Verification, Validation and Test (VV&T) methods and techniques, VV&T tools, relation of VV&T to all phases of the software development life cycle, the processes of VV&T appropriate to each of the life-cycle phases, characteristics and documentation of SQA plans, quality standards, configuration management, quality audit and the effectiveness and cost of SQA. The major topics are: verification, validation and test, configuration management, software quality plans and standards, implementing SQA. This is one of three subjects that comprise a full-fee-paying course which is designed for professional upgrade leading to the award of a Graduate Certificate.

31860

Object-oriented Programming and C++

4cp; 3hpw; prerequisites: 31424 Systems Modelling; 31429 Procedural Programming or graduate subjects 31940, 31941; coordinator: Dr K Suffern

Introduces C++ as a language to implement object-oriented programming. The subject covers objects, classes, inheritance, polymorphism and memory management in C++. Students will build upon their object-oriented experience in Eiffel, and their syntax knowledge of C.

31862

Fundamentals of Human–Computer Interaction

6cp; 3hpw; coordinator: Ms J Hammond

Introduces students to the fundamental knowledge required to understand the nature and scope of HCI, the contribution to HCI of human factors, language and communication, and ergonomics, and the role of HCI in the software and systems design and development process. Approaches to incorporate HCI into the software design and systems development process will be examined with an emphasis on how HCI can ensure more usable software and systems.

31863

Human–Computer Interaction Tools and Techniques

6cp; 3hpw; prerequisite: 31862 Fundamentals of Human–Computer Interaction; coordinator: Ms J Hammond

Introduces students to the knowledge and skills required to use a variety of HCI tools and techniques used in different phases of the software design and systems development process, and to use methods and metrics for evaluating the usability of software and systems. The role of usability guidelines and standards in the systems design process is examined.

31864

Implementation of Human–Computer Interaction

6cp; 3hpw; prerequisite: 31862 Fundamentals of Human–Computer Interaction; corequisite: 31863 Human–Computer Interaction Tools and Techniques; coordinator: Ms J Hammond

Provides students with the knowledge and practical skills to implement HCI approaches in the software and systems design and development process and integrate them into organisational and business contexts. Students undertake a substantial project to gain practical experience of how HCI can be implemented, and how usability can be measured through testing and evaluation. The implementation of usability guidelines and standards in conjunction with industry-wide quality assurance standards is examined.

31875

Parallel Programming

4cp; 3hpw; prerequisites: 31429 Procedural Programming; 31436 Systems Software and Networks or 31624 Data Structures and Algorithms; 31633 Operating Systems or graduate subjects 31941, 31436; coordinator: Dr B Howarth

An introduction to parallel programming covering the following topics: a parallel programming language and program development system; modularising a problem into a set of cooperating sequential processes running in parallel; the prevention of deadlock; orderly termination of a set of parallel processes; use of multiple intercommunication processors; and comparison of performance under different physical configurations.

31876

Operating Systems Facilities

4cp; 3hpw; prerequisites: 31429 Procedural Programming; 31436 Systems Software and Networks or 31624 Data Structures and Algorithms; 31633 Operating Systems or graduate subjects 31941, 31436; coordinator: Dr B Howarth

The development of applications to make use of the facilities offered by an operating system offering support for a graphical user interface, such as Microsoft Windows or Macintosh, will be covered. Included is the methodology involved in building applications that are driven by user actions such as the mouse as well as input from a keyboard. Issues related to inter-application communication will also be explored.

31894

Project

4cp; 3hpw; prerequisite: 31444 Systems Design and Development or 31641 Systems Design; coordinator: Mr J Pouflis

A project is intended to give a student experience in working independently and responsibility for scientific research or the development of a small system from initial analysis to user documentation. Projects may be drawn from any area of computer science or information systems. Each project is supervised by a member of academic staff.

31897

Computer Systems Architecture 3

4cp; 3hpw; prerequisite: 31436 Systems Software and Networks or 31633 Operating Systems; coordinator: Associate Professor T Hintz

A systematic treatment of more advanced topics in machine organisation and systems architecture. Particular emphasis is placed on parallelism in general and its exploitation in a number of special purpose machines. Some practical work with a distributed parallel system will be included.

31902

Auditing the Computer

4cp; 3hpw; prerequisite: 22615 Accounting Information Systems or 31617 Accounting Fundamentals; coordinator: Mr J Clark

Audit concepts and techniques in the EDP audit field. Control measures that must be embedded in computer accounting and information systems. Different systems of control, administrative, operational and security. Audit techniques and the DP audit function. Risk analysis, quality assurance.

The emphasis is oriented to control measures possible and desirable in various computer systems e.g. billing, creditors, payroll etc. and non-monetary information systems.

31904

Systems Programming

4cp; 3hpw; prerequisite: 31429 Procedural Programming or graduate subject 31941; coordinator: Mr U Szewcow

This subject is intended to enhance the student's C and UNIX system knowledge. The student learns advanced C features, UNIX system calls, system utilities, shell and perl programming.

31917

Commercial Programming

4cp; 4hpw; prerequisite: 31429 Procedural Programming or graduate subjects 31941 or 31415; coordinator: Mr J El-Den

Top-down structured program design techniques, and their application to the development of commercial programming applications. Emphasis will be on quality and usability of the resultant systems. Debugging and testing skills will be developed. The language used will be Cobol.

31918

Development Methodologies

4cp; 4hpw; prerequisite: 31424 Systems Modelling or graduate subject 31940; coordinator: Mr R Raban

This subject deals with the ways system development becomes part of the operation of the modern day enterprise. It outlines how system development processes fall into and support everyday operations in an enterprise and how they are managed within the enterprise. There is particular emphasis on re-engineering existing systems into client needs using existing systems whenever possible, and minimising development costs through reuse of existing modules and the use of productivity tools that minimise development time while improving system quality.

31919

Distributed Software Programming

4cp; 4hpw; prerequisites: 31436 Systems Software and Networks; 31920 Network Management; coordinator: Mr U Szewcow

This subject builds on material learnt in Systems Software and Networks and the Network Management elective. It furthers an understanding of distributed systems software. Students design and develop distributed applications.

31920

Network Management

4cp; 4hpw; prerequisite: 31436 Systems Software and Networks; coordinator: Mr J Colville

Instruction in network concepts, and the concepts and practical issues of network management. Students will have access to a laboratory where some aspects of network management can be tried out in a practical way.

31921

Objectbases

4cp; 3hpw; prerequisite: 31434 Database Design or graduate subject 31934; coordinator: Dr G Feuerlicht

This subject introduces the students to OODB concepts. We review the basic OO principles and discuss their application to databases. The theoretical discussion of the topic will be supported with practical exercises using a commercially available OODBMS.

31922

Object-oriented Methodologies

4cp; 3hpw; prerequisite: 31424 Systems Modelling or graduate subject 31940; coordinator: Mr R Raban

This subject introduces the object-oriented methods of analysing the problem domain and creating an implementation independent formal representation of the system requirements. As elements of the object-oriented analysis (OOA) process, OOA representation and OOA complexity management are introduced and compared with the related concepts of structured analysis methodologies. The differences between the two approaches, and the advantages and disadvantages of each of them, are discussed. Various object-oriented modelling methodologies are compared and their applicability to different application domains is assessed. The transition from implementation independent results of the OOA to the object-oriented design (OOD) for different implementation platforms is also covered.

31923

Office and Group Support

4cp; 3hpw; prerequisite: 31424 Systems Modelling or graduate subject 31940; coordinator: Professor IT Hawryszkiewycz

The subject describes evolution of systems towards distributed environments with more emphasis on supporting cooperation between distributed workers. It describes how people work together and the changes to work practices resulting from distribution of such work using information technology. The subject covers the ways of using collaboration technology such as LOTUS Notes or the Internet to support distributed work and the design processes followed to construct computer-based cooperative systems.

31924

Performance Modelling

4cp; 4hpw; prerequisites: 31432 Systems Software and Networks; 31428 Quantitative Modelling; 31696–7 or 31698–9 Industrial Training; coordinator: Dr B Howarth

This subject teaches concepts and practice of mathematical modelling for discrete-event systems. Students will gain experience in applying queuing theory models and discrete-event simulations to computer systems, and

analysing the results. An important application of modelling is capacity planning, and students will be introduced to this topic.

31925

Smalltalk

4cp; 3hpw; prerequisites: 31415 Principles of Software Development A; 31424 Systems Modelling or graduate subjects 31940, 31415; coordinator: Dr R Rist

This subject provides an introduction to the Smalltalk programming language and environment. Topics include the syntax and semantics of Smalltalk, the Smalltalk programming tools, the Smalltalk class library, Smalltalk programming style and design, and adding graphical interfaces to Smalltalk programs.

31926

Paradigms of Intelligence

4cp; 3hpw; coordinator: Dr R Rist

Topics include fundamental issues in modelling intelligent behaviour; intentionality and knowledge-level; intelligent system as a problem solver; intelligence as adaptation and evolution; intelligence as belief revision; intelligence as an interaction with environment; memory and analogical reasoning; intelligent systems as learning systems; modelling the external world and the user environment; and psychological, philosophical, computational and scientific issues in modelling intelligence.

31927

Applications Development with Visual Basic

4cp; 3hpw; prerequisite: 31414 Information Systems and one of 31415 Principles of Software Development A or 31429 Procedural Programming or 31729 Information Systems Practice; corequisite: 31424 Systems Modelling or 31434 Database Design; coordinator: Mr J Underwood

This subject aims to give students exposure to various business uses of microcomputers. Students will be required to apply software tools and packages which have different strengths and weaknesses to create an application. The technical environment for this subject is Microsoft Excel and Visual Basic.

31928

Applications Development with Delphi

4cp; 3hpw; prerequisite: 31414 Information Systems and one of 31415 Principles of Software Development A or 31429 Procedural Programming or 31729 Information Systems Practice; corequisite: 31424 Systems Modelling or 31434 Database Design; coordinator: Mr P Bebbington

This subject aims to give students exposure to the development of user-orientated databases using visual programming languages. Students will be required to apply software tools and packages which have different strengths and weaknesses to create an application. The technical environment for this subject is Borland Delphi and a database package.

31931

Software Quality Assurance

4cp; 3hpw; prerequisite: 31424 Systems Modelling or 31621 Systems Analysis or graduate subject 31940; coordinator: Mr C S Johnson

Aims to provide students with the practical knowledge and skills that are necessary to effectively measure and control the quality of software products. Major topics are quality assurance principles, quality metrics, verification, validation and testing, implementing quality assurance, and software engineering methods and tools.

31934

Introduction to Database Design

4cp; 4hpw; prerequisite: 31940 Introduction to Systems Modelling; coordinator: Dr G Feuerlicht

The subject introduces the students to basic database design and implementation concepts. Database design techniques including relational design and E-R analysis are presented. Relational and object-oriented databases are described and the applicability of each approach to various problem domains discussed.

31940

Introduction to Systems Modelling

4cp; 4hpw; coordinator: Mr J El-Den

Introduces information system concepts including their static and dynamic components. It describes how these concepts can be used to model systems to correctly

capture their structure and needs. It outlines how the ability to capture information about the system in ways understood by its eventual users will improve the final quality of the system.

Introduces analysis using various approaches found in contemporary system development including object-oriented methods, data flow diagrams and Entity-Relationship modelling, and describes the relationships between these techniques and their application.

31941

Introduction to Procedural Programming

4cp; 3hpw; coordinator: Dr B Howarth

Top-down structured program design techniques, and their application to the development of commercial programming applications. Emphasis will be on quality and usability of the resultant systems. Debugging and testing skills are developed. The language used is C.

31942

Introduction to Computer Systems Architecture

4cp; 3hpw; coordinator: Mr C W Johnson

This subject provides a sound basis for understanding how computer hardware and data communications support higher level software constructions. All software undergoes a process of translation or interpretation which reduces it to primitive operations capable of being performed by the 'hardware'. In this subject, the organisation and design of computer systems that execute these operations are examined. This subject also presents some fundamental concepts and technology in data communications, which alone is a good grounding in the area or which can serve as a basis for later subjects that treat communications and networks in greater depth.

31943

Introduction to Information Systems

4cp; 4hpw; coordinator: Mr J Underwood

This subject deals with information systems in their organisational context.

The effects of information systems on society, organisations and individuals are discussed. Examples from typical organisations are used to illustrate information systems concepts. Techniques for analysing and describing user requirements are introduced.

Throughout the subject there is an emphasis on human activities, the importance of the user in the analysis phase and the usability of systems. Another theme is communication skills i.e. the ability of the analyst and designer of an information system to interview, to write reports and manuals, to design efficient and effective interfaces, and to give presentations on the system.

32106

Object-oriented Software Development

6cp; 3hpw; coordinator: Mr R Raban

Basic principles of object-oriented software development. Classes as modules and classes as types. OO analysis and design. Software design as object modelling through abstract data type definition. Design by contract and subcontracting. The different forms of inheritance. OO programming. Static vs. dynamic typing; static vs. dynamic binding. Comparison of OO programming languages. Software development environments. Support for OO methods and techniques. OO models of the software development process. Project management for OO. Designing for reusability. Abstraction and generalisation. Models of application domains as the basis for OO frameworks for fast application development.

32107

Formal Reasoning for Software Development

6cp; 3hpw; coordinator: Dr B Jay

Promote a methodology where correctness is established before efficiency is considered. Specification languages allow the precise description of systems, while abstracting away from implementation concerns. Formal refinement allows programs to be developed from specifications, while preserving correctness. Semantics of languages provide a basis for reasoning about their correct implementation. Reasoning about concurrency is difficult; formal models of concurrency will be introduced.

32108

Specialist Topics in Artificial Intelligence

6cp; 3hpw; coordinator: Dr S Prabhakar

This subject covers some important areas of Artificial Intelligence and their applications. These areas include, broadly, knowledge representation, problem solving, planning, knowledge-based systems, dealing with uncertainty, explanation facilities, machine learning, and applications of AI. The subject quickly introduces students to the basic AI techniques and then deals with individual topics in-depth. The subject may specialise in one or more sub-areas of AI.

32204

Advanced Data Management

6cp; 3hpw; coordinator: Dr G Feuerlicht

This subject covers a range of advanced database topics, including: relational, object-oriented database systems and distributed databases. The subject area is treated mainly from a technological viewpoint, but also includes discussions of management issues.

32205

Computer Communication Systems

6cp; 3hpw; coordinator: Associate Professor M Fry

Historical evolution. Architectural models. Standards. Requirements analysis and specification. Principles of design. Sizing estimates and calculations. Regulatory environment. Inter-organisational computer communications. Computer communications existing and emerging technologies. Integrated broadband networks. Computer communications management.

32206

Advanced Information Systems Modelling

6cp; 3hpw; coordinator: Mr R Raban

Information systems requirements can be modelled in many different ways. The modelling method used should be suitable to the class of the system. The modelling methods differ in terms of their expressive power and ability to describe requirements in specific application domains. This subject presents and compares the information systems modelling methods used in structured and object-oriented methodologies. Formal and de facto industry standards for modelling information systems are also covered.

32207

Information Management

6cp; 4hpw; coordinator: Mr P Bebbington

This subject covers three broad topics: management of the information resources of an organisation, management of the development and maintenance of systems using those resources, and management of IT personnel and users of the information resources. Management of information resources requires the calculation of the costs and benefits of such resources, both in accounting and qualitative terms, and the controlling and recovering of costs so that services can be used in an efficient and effective manner. It also includes the security, privacy and legal matters which are part of data management. Management of system development and maintenance includes project management and control, systems development methodologies and tools, and IT organisation structures. The emphasis in IT personnel and client relationship management is on the effective use of IT staff in an increasingly user-oriented world.

32208

Information Processing Strategy

6cp; 3hpw; prerequisite: 32207 Information Management; coordinator: Mr D Wilson

This subject is designed to provide students with an awareness of the problems in developing corporate strategies for information processing and to develop skills in the selection and use of appropriate techniques. Topics include the following: tools for strategic planning, a review of strategic planning tools such as Business Systems Planning, Economic Analysis and Critical Success Factors; corporate needs for information technology, covering the potential role of information technology in organisations of the 1990s such as competitive strategies, client-server systems, multimedia and outsourcing; and strategic planning, a review of state-of-the-art methodologies and frameworks for developing information processing strategies.

32306

Capacity Management

6cp; 3hpw; coordinator: Dr B Howarth

Introduces students to the concept of capacity management, and relates this management tool to the broader management areas of corporate planning and systems development.

32307

Operating Systems

6cp; 3hpw; coordinator: Dr B Howarth

Topics in modern operating systems: concurrency in multiprocessor operating systems, programming support environments, user-friendly system interfaces, object-based systems, fault tolerant systems, and secure systems.

32308

Computer Architecture

6cp; 3hpw; coordinator: Associate Professor T Hintz

Current directions in machine architecture, and the relationship between machine architecture, task structure and system performance.

32402

Information Technology Environment

6cp; 3hpw; coordinator: Mr J Underwood

This subject deals with trends and issues in the management of IT. Typical issues are: IT within the company – user and expert cultures; competition vs. collaboration in the IT industry; relations between suppliers and customers; hardware manufacturers and software houses; downsizing and outsourcing; encouraging innovation; IT as a global industry; social impacts of IT; employment effects; and IT as a leading part of the economy.

32501

Computer Graphics

6cp; 3hpw; coordinator: Dr K Suffern

Demonstrates why computer graphics are important and, through the lectures and practical work, gives students a working knowledge of elementary two- and three-dimensional graphics programming algorithms.

32502

Advanced Computer Graphics Techniques

6cp; 3hpw; prerequisite: 32501 Computer Graphics; coordinator: Dr K Suffern

Gives students a working knowledge of ray tracing, which is one of the two major image synthesis techniques. It also gives students practical experience with a commercial rendering and animation package.

32503

Distributed Databases and Client/Server Computing

6cp; 3hpw; coordinator: Dr G Feuerlicht

This subject covers a range of topics in distributed databases and client/server computing. The main topics include discussion of distributed database design, distributed transactions and queries, and data replication strategies. Modern client/server and database server techniques are introduced.

32504

Tool-based Systems Development

6cp; 3hpw; coordinator: Dr G Feuerlicht

The current industry trend is away from the traditional programming-oriented approach towards a tool-based approach to system analysis and development. Central to this approach is the use of repositories to define and maintain information about application systems and the use of tools to develop applications. This elective subject focuses on system development methodologies and techniques and the use of commercially available tools for systems development.

32508

Software Quality Management Systems

6cp; 3hpw; coordinator: Mr C S Johnson

Provides students with the practical knowledge and skills necessary to manage the quality of software products. It will provide an essential understanding of software quality management, which is a key strategy in enabling the Australian IT industry to compete both nationally and internationally.

32509

Human–Computer Interaction in Information Systems

6cp; 3hpw; coordinator: Ms J Hammond

Provides students with an understanding of the principles, concepts, tools and techniques needed to manage the development of information systems from a human–computer interaction perspective. Usability is considered throughout information systems development from initial systems concepts to implementation.

32510

Principles of Object-oriented Programming in C++

6cp; 3hpw; prerequisite: 32106 Object-oriented Software Development; coordinator: Dr K Suffern

Review of object-oriented design principles and practice. Objects, classes, run-time instantiation, inheritance, information hiding, polymorphism and libraries and their implementation in C++.

32511

Principles of Object-oriented Programming in Smalltalk

6cp; 3hpw; prerequisite: 32106 Object-oriented Software Development; coordinator: Dr R Rist

The Smalltalk language and programming environment are covered in the first half of the subject. The second half uses the Smalltalk class library to build an interactive system with a graphical user interface (GUI).

32512

Advanced Knowledge Technology

6cp; 3hpw; coordinator: Professor J Debenham

Knowledge representations: state space graphs, And/Or graphs, productions, semantic nets, frames, logic. Inference. Search: various strategies. Uncertainty: probability, hypothetical reasoning, temporal logic, evidence, inference nets. Inexact reasoning: inference nets, certainty factors, Dempster-Shafer theory. Fuzzy logic, fuzzy sets.

32513

Advanced Machine Learning

6cp; 3hpw; prerequisite: 32512 Advanced Knowledge Technology; coordinator: Dr T Osborn

This subject is concerned primarily with machine learning: automatic construction of computable models from data. Symbolic and non-symbolic methods are studied. Topics include statistical learning, clustering and correlations; neural networks methods; genetic algorithms; genetic programming; Shannon information; rule induction; and first-order learning.

32514

Advanced Case-based Reasoning

6cp; 3hpw; prerequisite: 32512 Advanced Knowledge Technology; coordinator: Dr T Osborn

Neural architecture, human memory. Semantic nets. Memory indexing. Case-based reasoning: case finding, case evaluation, case adaptation, building a case base. Planning: adaptation, correctness. Case-based planning. Expectations. Explanation-based learning.

32516

Internet Programming

6cp; 3hpw; coordinator: Dr G Feuerlicht

Internet Programming covers programming in Java, Website Administration, HTML authoring, CGI programming and network security. Students implement a system, preferably in their work environment, that interfaces a database to the World Wide Web using Java.

32601

Advanced Project Management

6cp; 3hpw; coordinator: Mr D Wilson

Provides an essential understanding of advanced project management issues and identifies the knowledge required of a project manager in the information technology industry.

32602

Impact of Information Technology

6cp; 3hpw; coordinator: Mr D Wilson

Reviews the effect of the introduction of computer technology into workplaces, improved efficiency of work organisations, increased occupational health hazards for computer terminal operators, and increased potential for computer crimes. Physical, psychological and environmental factors that contribute significantly to conditions such as RSI are explained in depth. The effects of information technology on employment patterns are examined. We define and categorise computer crime and discuss the difficulties associated with its prevention and detection, and with subsequent legal actions. Measures to ensure the protection of privacy are explained in this unit.

32603

Software Quality Management

6cp; 3hpw; coordinator: Mr D Wilson

Provides the students with the practical knowledge and skills necessary to manage the quality of software products.

32604

Systems Integration

6cp; 3hpw; prerequisite: 32601 Advanced Project Management; coordinator: to be advised

Systems integration can be defined as the business of adding value to a specific project, by assuming responsibility for combining information products and services into a specified business solution. The system integrator takes the responsibility and risk for the project. This subject examines the project from the set of user requirements right through to the final output solution, delivered on time, within budget and having achieved the expected performance criteria.

32605

Managerial Analysis and Evaluation of Information Systems

6cp; 3hpw; coordinator: Mr B Wong

Presents a range of fundamental accounting, risk analysis and performance criteria for information systems. This subject is intended to provide basic skills in evaluating computer-based information systems. For students who are involved in management, it is important that they are aware of what information systems can provide and how to rate them and how to specify their requirements for their organisation's advantage.

32701

Advances in Information Technology

6cp; 3hpw; coordinator: to be advised

Looks at the technology trends affecting information processing and delivery, to provide the student with the vision to ensure that not only is their company well served in the present by its technology environment, but that it is also able to take up the opportunities of the future.

32702

Contemporary Telecommunications

6cp; 3hpw; coordinator: Associate Professor M Fry

Introduction to data communications and networks. Network architecture and standards. New communications technologies. Internetworking. Domestic and international communications environment. Application-oriented services. Network resource architectures. Client/server systems. Introduction to distributed processing. Distributed databases. Criteria for selection of communications systems. GOSIP. Migration to integrated systems.

32703

Information Technology Strategy

6cp; 3hpw; coordinator: Professor L Constantine

Designed to provide students with an awareness of the problems in developing corporate strategies for information processing, and to develop students' skills in the selection and use of appropriate techniques.

32806

Project A

6cp; prerequisite: Graduate Diploma in Information Technology Management; corequisite: 21751 Management Research Methods; coordinator: Professor J Debenham

See 32812 Project B below.

32812

Project B

6cp; prerequisites: 32806 Project A; 21751 Management Research Methods; coordinator: Professor J Debenham

All students in the MBus in IT Management are required to enrol in and pass the project subjects. The project is normally undertaken in the final year of study. The project entails a substantial investigation, under the supervision of a member of the academic staff, and is examined on the quality of both a written report and an oral presentation of the project work. The oral presentation must be made in the final year of enrolment in the Master's course and must be presented at a satisfactory standard. Expert speakers may be available to present Master's seminars as required throughout the final year of the course. Students are required to attend the Master's seminars.

32901

Recent Advances in Computer Science

6cp; 3hpw; coordinator: Dr S Prabhakar

Review of key developments in computer science. Selection of topics from: software engineering, artificial intelligence, knowledge processing, computer graphics, theory of computer science, decision support systems, capacity planning, communications, distributed systems, and computer architecture.

32902

Recent Advances in Information Systems

6cp; 3hpw; coordinator: Mr J Underwood

Reviews some key developments in the information systems discipline. Some likely topics are: new techniques in database design, automated development methodologies, alternative system modelling techniques, system usability, quality in information systems, organisation-wide network design, participative system design, managing the IT function in the next decade, security in information systems, evaluating the economics of information systems, and career paths in IT.

32912

Project

12cp; coordinator: Professor J Debenham

See 32924 Project below.

32924

Project

24cp; coordinator: Professor J Debenham

Nature of research: academic and professional. Research methodologies. Cost of research. Evaluation of research. Significance of research. Timeliness of research. Execution of a research project.

SUBJECTS OFFERED BY OTHER FACULTIES

Students should consult the relevant faculty and its handbook for any late changes to subject information.

015110

Aboriginal Cultures and Philosophies

8cp; 3hpw

This subject will introduce participants to Aboriginal culture and social organisation as expressions of Aboriginal cosmology. Contemporary Aboriginal culture will be presented as an evolving response to colonialism and as a reassertion of cultural empowerment.

21751

Management Research Methods

6cp; 3hpw; prerequisite: Graduate Certificate in Information Technology Management; coordinator: Associate Professor B Ticehurst

This subject will familiarise IT managers with a range of approaches used in management research, with an emphasis on approaches commonly used in practical settings. Advantages and limitations of different research approaches will be examined, as well as their applicability in different IT contexts. Experience will be provided in the design of research studies and in the analysis and interpretation of data and report presentation. Participants will acquire skills which will be useful in the conduct of research agendas in their own IT organisations, and in the critical evaluation of other's research work.

21788

Effective People Management

6cp; 3hpw; coordinator: Mr R Connor

Deals with a range of critical interpersonal management skills, competencies and understandings necessary for effective people management. It seeks to develop enhanced competence in managing others and recognising the importance of continuing personal learning and development in management, and seeks to develop an increased sensitivity and understanding of self and others in organisational contexts.

21789

Contemporary Management Practices

6cp; 3hpw; coordinator: Associate Professor B Ticehurst

This subject addresses a range of management practices appropriate to contemporary organisations. The unit provides students with an understanding of key aspects of current management practices, including: managerial relationships; intercultural management; leadership, status and power; negotiation; interviewing; team building; managerial audits; and managerial ethics.

Students explore a range of strategies for handling management issues e.g. competencies relevant to people, organisational structures and issues, and working in international environments.

21807

Total Quality and Productivity Management

6cp; 3hpw; prerequisite: Graduate Certificate in Information Technology Management; coordinator: Dr T Fisher

Productivity and quality are both key factors in successful performance in the IT industry. This subject aims to develop a clear understanding of the practical and managerial aspects of quality management and productivity management, including the fundamentals of TQM and its relationship to productivity. Students completing this subject will have a sound philosophical and practical basis for evaluating productivity and quality improvement programs and total quality implementation programs.

21808

Strategic Business Management

6cp; 3hpw; prerequisites: Graduate Certificate in Information Technology Management; 21806 Managing Organisational Change; coordinator: to be advised

The nature of strategic issues; arenas of strategy; the information technology industry: context and issues; concepts of strategy; environmental analysis; capability analysis; development of strategic alternatives; evaluation and choice of strategic alternatives; stability, change and transformation; the process of strategy implementation; and strategic control and monitoring.

22321

Cost Management Systems

6cp; 3hpw; coordinator: to be advised

Introduces students to the basic concepts underlying management accounting with a particular emphasis on current developments. Introduces appropriate cost management concepts, techniques and skills such as cost planning, cost behaviour, cost estimation, and cost accumulation and allocation systems (job, process and activity-based costing). Emphasises using accounting information to understand and make decisions about the management of cost structures of organisations.

22615

Accounting Information Systems

4cp; 3hpw; coordinator: to be advised

This subject presents a range of fundamental accounting principles. This subject is intended to provide basic skills in financial accounting and to apply this knowledge of accounting to evaluating computerised accounting systems. An accounting system is an example of an information system.

24105

Marketing Principles

5cp; 3hpw; coordinator: Mr G Taberner

Aims to develop an awareness and understanding of marketing concepts and how these concepts apply to profit and non-profit organisations. To provide the foundations from which a more advanced study of marketing may be pursued. To show the relevance of the need for a marketing orientation in a dynamic and changing business environment. To allow students to test and apply marketing concepts in a dynamic simulated business environment. To develop the skills necessary to formulate a basic marketing plan. The projects also highlight the need for group decision making for effective management.

24704

Managing Client Relations

6cp; 3hpw; coordinator: Professor J Debenham

Reviews the nature of the business development process through focusing upon the specific needs of clients. Explores the complex issues of determining and focusing on client needs as a key activity for IT managers who wish to maximise their impact.

Specific IT-based case material will be used throughout the course to ensure that participants recognise the essential relationship between product and client satisfaction.

54230

Aboriginal Social and Political History

8cp; 3hpw

Examines and analyses the impact of colonialism on indigenous peoples, with particular reference to the Aboriginal inhabitants of this region. The emergence of Aboriginal social and political movements will be presented as the basis for repossession of their traditional heritage in land and culture.

54231

Aboriginal People and the Media

8cp; 3hpw; prerequisites: 01511 0 Aboriginal Cultures and Philosophies; 54230 Aboriginal Social and Political History

Familiarises students with the field of debate in relation to the representation of Aborigines in the media, and with the productions of Aboriginal media organisations. Where possible, some written, video or film production could become part of the course assessment.

54330

The Politics of Aboriginal History

8cp; 3hpw; prerequisites: Aboriginal Studies subjects at 100 and 200 levels

Introduces students to the wide range of historical work by Aboriginal and non-Aboriginal people over the last three decades, and encourages students to develop skills in the critical evaluation of this work in its political and social contexts. Students will enhance their knowledge of primary research materials for the field of Aboriginal history, and will develop their skills in the analysis and use of these sources.

54331

Aboriginal Forms of Discourse

8cp; 3hpw; prerequisites: 01511 0 Aboriginal Cultures and Philosophies; one Aboriginal Studies subject at the 200 level

Familiarises students with a broad range of Aboriginal forms of discourse – novels, plays, films, oral narratives – and introduces them to methods of analysis, of both text and content, deriving from the disciplines of cultural studies and textual studies.

International Studies subjects

Descriptions for subjects comprising the International Studies component of the combined Bachelor of Science in Computing Science/Bachelor of Arts in International Studies degree can be found in the School of Mathematical Sciences' 'Subject descriptions' section in this handbook.

Numerical list of subjects

The following tables indicate the number and name of each subject, the semester or semesters in which it is offered, the credit-point value, the number of contact hours, and the prerequisites and corequisites (indicated by *c*). The letters A and S refer to the Autumn and Spring semesters respectively, and Y is used to indicate a year-long subject. An asterisk (*) indicates that a subject is no longer offered, but is a prerequisite for some current subjects. (The prerequisites for these subjects are not shown.) All prerequisites are in terms of current undergraduate offerings. See the 'Subject descriptions' section for details of other possible prerequisites.

In the case of some elective subjects, no 'Semester offered' is shown. Elective offerings will vary according to demand.

Bachelor of Science in Computing Science – core subjects

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
22615	Accounting Information Systems	A,S	4	3	Nil
31414	Information Systems	A	6	4	Nil
31415	Principles of Software Development A	A	6	6	31417 *c*
31416	Computer Systems Architecture	A,S	6	6	Nil
31417	Computing Practice	A	6	4	Nil
31424	Systems Modelling	S	6	3	Nil
31425	Principles of Software Development B	S	6	7	31415
31428	Quantitative Modelling	A,S	6	5	Nil
31429	Procedural Programming	S	6	4	31415, 31425 *c*
31434	Database Design	A	6	3	31424
31436	Systems Software and Networks	A,S	8	6	31425, 31429, 31416
31444	Systems Design and Development	A,S	10	2	31434, 31436 *c*
31454	Project Management and the Professional	A	8	4	31444, 31697 or 31698
31455	Software Development Case Study	Y	10	6	31444, 31697 or 31698
31464	Information Technology Planning and Design	S	6	5	31428, 31436, 31444, 31436, 31697
31696	Industrial Training (F/T)	A	0	6	31414, 31417, 31424, 31434, 31436, plus[1]
31697	Industrial Training (F/T)	S	0	6	31696
31698	Industrial Training (P/T)	A,S	0	3	31414, 31417, 31424, 31434, 31436, plus[1]
31699	Industrial Training (P/T)	A,S	0	3	31698

Note: The subjects 31698 Industrial Training and 31699 Industrial Training must be taken for two semesters.

[1] Indicates at least four other core subjects from the BSc.

Bachelor of Information Technology

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
22321	Cost Management Systems	S	6	3	Nil
22615	Accounting Information Systems	A	4	3	Nil
24105	Marketing Principles	A	6	3	Nil
31414	Information Systems	A	6	4	Nil
31415	Principles of Software Development A	A	6	7	31718 *c*
31416	Computer Systems Architecture	A	6	6	Nil
31424	Systems Modelling	S	6	3	Nil
31434	Database Design	A	6	3	31729
31436	Systems Software and Networks	A	8	6	31416, 31729
31443	Distributed Databases and Client/Server Computing	S	4	3	31434
31444	Systems Design and Development	S	10	2	31434, 31436 *c*
31464	Information Technology Planning and Design	S	6	5	31756
31718	Contemporary Information Technology 1	A	6	4	Nil
31722	Commercial Programming	S	5	5	31414, 31415
31729	Information Systems Practice	Summer	2	2	31415
31734	Information Systems and Organisations	A	4	3	Nil
31737	Business Process Transformation	S	4	3	Nil
31756	Project Management	A	5	3	31788
31764	Information Technology Strategy	S	4	3	Nil
31769	Contemporary Information Technology 2	S	4	3	31718
31770	Industry Project 1	S	5	14	Nil
31771	Business Requirements Analysis	S	5	3	31414
31779	Applications of Information Technology 1	S	5	3	31414
31781	Business Systems Design	A	5	3	31424
31789	Applications of Information Technology 2	A	5	3	31779
31790	Industry Project 2	A	5	14	31770

Undergraduate electives

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
31140	Introduction to Computer Graphics	A	4	3	31425, 31429
31163	Knowledge Technology	A	4	3	31425 *or* 31429
31240	Topics in Computer Graphics	S	4	3	31140
31350	Project (2 semesters)	A,S	8	6	31444
31351	Project (1 semester)	A,S	8	6	31444
31352	Project	A,S	4	3	31444
31443	Distributed Databases and Client/Server Computing	S	4	3	31434
31654	Languages and Translators	S	4	3	31416, 31425, 31429
31734	Information Systems and Organisations	A	4	3	Nil
31743	Machine Learning	S	4	3	31428
31744	Case-based Reasoning	S	4	3	31163
31745	Knowledge-based Systems	A	4	3	31743 *or* 31744
31746	Artificial Intelligence Applications	A	4	3	31743 *or* 31744
31748	Programming on the Internet	S	4	3	31436
31764	Information Technology Strategy	S	4	3	Nil
31737	Business Process Transformation	S	4	3	Nil
31777	Human–Computer Interaction	A	4	3	31444
31778	Resources Management for IT Professionals	S	4	3	Nil
31860	Object-oriented Programming and C++	S	4	3	31424, 31429
31875	Parallel Programming	S	4	3	31429, 31436
31876	Operating Systems Facilities	A	4	3	31429, 31436
31894	Project	A,S	4	3	31444
31897	Computer Systems Architecture 3	*	4	3	31436
31902	Auditing the Computer	S	4	3	22615
31904	Systems Programming	A	4	3	31429
31917	Commercial Programming	S	4	3	31429
31918	Development Methodologies	*	4	4	31424
31919	Distributed Software Programming	S	4	4	31436, 31920
31920	Network Management	*	4	4	31436
31921	Objectbases	*	4	3	31434
31922	Object-oriented Methodologies	A	4	3	31424
31923	Office and Group Support	A	4	3	31424
31924	Performance Modelling	A	4	4	31428, 31432, 31696-7, 31698–9

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
31925	Smalltalk	S	4	3	31415, 31424
31926	Paradigms of Intelligence	A	4	3	Nil
31927	Applications Development with Visual Basic	A	4	3	31414, 31415 or 31429, 31424 *c*
31928	Applications Development with Delphi	S	4	3	31414, 31415 or 31429, 31424 *c*
31931	Software Quality Assurance	S	4	3	31424

Aboriginal Studies subjects

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
015110	Aboriginal Cultures and Philosophies		8	3	Nil
54230	Aboriginal Social and Political History		8	3	Nil
54231	Aboriginal People and the Media		8	3	015110, 54230
54330	The Politics of Aboriginal History		8	3	See subject description
54331	Aboriginal Forms of Discourse		8	3	See subject description

Note: These subjects comprise the Aboriginal Studies sub-major; they may also be taken as electives.

International Studies subjects

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
59341	Modernisation and Globalisation	A, S	8	4	Nil
97x101	Modern Standard Chinese 1–6	A or S	8	6	See subject descriptions
97x111	Chinese 1–6	A or S	8	6	See subject descriptions
97x121	Cantonese A1–A4, B1–B2	A or S	8	6	See subject descriptions
97x211	Japanese 1–6	A or S	8	6	See subject descriptions
97x311	Indonesian 1–6	A or S	8	6	See subject descriptions
97x331	Malaysian 1–6	A or S	8	6	See subject descriptions
97x501	Spanish 1–6	A or S	8	6	See subject descriptions
976101	Chinese East Asia	S	8	4	Nil
976111	Contemporary China	S	8	5	Nil
976211	Contemporary Japan	S	8	5	Nil
976301	Contemporary South-East Asia	S	8	5	Nil
976401	Contemporary Western Europe	S	8	5	Nil
976501	Contemporary Latin America	S	8	5	Nil

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
976714	Modern Greek History and Society	S	8	5	Nil
976734	Contemporary Russia	S	8	5	Nil

Note: x indicates one of four levels of study. Details of all International Studies subjects can be found in the School of Mathematical Sciences' 'Subject descriptions' section in this handbook.

Graduate Diploma in Information Technology

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
22615	Accounting Information Systems	A, S	4	3	Nil
31415	Principles of Software Development A	A	6	9	Nil
31425	Principles of Software Development B	S	6	7	31415
31428	Quantitative Modelling	A, S	6	5	Nil
31436	Systems Software and Networks	A, S	8	6	31941 or 31415, 31942
31444	Systems Design and Development	A, S	10	3	31943, 31934, 31436
31454	Project Management and the Professional	A	8	3	31444
31934	Introduction to Database Design	A	4	3	31940
31940	Introduction to Systems Modelling	S	4	4	Nil
31941	Introduction to Procedural Programming	S	4	3	Nil
31942	Introduction to Computer Systems Architecture	S	4	3	Nil
31943	Introduction to Information Systems	S	4	4	Nil

Note: Students may select any elective subjects, with the exception of Project, from the list of undergraduate electives.

Master of Science in Computing

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
32106	Object-oriented Software Development	A97	6	3	Nil
32107	Formal Reasoning for Software Development	S97	6	3	Nil
32108	Specialist Topics in Artificial Intelligence	S98	6	3	Nil
32204	Advanced Data Management	A98	6	3	Nil

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
32205	Computer Communication Systems	S98	6	3	Nil
32206	Advanced Information Systems Modelling	S97	6	3	Nil
32207	Information Management	A97	6	3	Nil
32208	Information Processing Strategy	S97	6	3	32207
32306	Capacity Management	A98	6	3	Nil
32307	Operating Systems	S98	6	3	Nil
32308	Computer Architecture	S97	6	3	Nil
32402	Information Technology Environment	S98	6	3	Nil
32501	Computer Graphics	A	6	3	Nil
32502	Advanced Computer Graphics Techniques	S	6	3	32501
32503	Distributed Databases and Client/Server Computing	S	6	3	Nil
32504	Tool-based Systems Development		6	3	Nil
32508	Software Quality Management Systems	S	6	3	Nil
32509	Human–Computer Interaction in Information Systems	A	6	3	Nil
32510	Principles of Object-oriented Programming and C++	S	6	3	32106
32511	Principles of Object-oriented Programming in Smalltalk	S	6	3	32106
32512	Advanced Knowledge Technology	A	6	3	Nil
32513	Advanced Machine Learning	S	6	3	32512
32514	Advanced Case-based Reasoning	S	6	3	32512
32516	Internet Programming	S	6	3	Nil
32901	Recent Advances in Computer Science	A97, A98	6	3	Nil
32902	Recent Advances in Information Systems	A97, A98	6	3	Nil
32912	Project			12	By arrangement
32924	Project	Y		24	By arrangement

Master of Business in Information Technology Management

Subject number	Subject name	Semester offered	CP	HPW	Prerequisites
21751	Management Research Methods	A	6	3	GradCertInfTechM
21788	Effective People Management	A	6	3	Nil
21789	Contemporary Management Practices	S	6	3	Nil
21807	Total Quality and Productivity Management	A	6	3	GradCertInfTechM
21808	Strategic Business Management	S	6	3	GradCertInfTechM, 21806
24704	Managing Client Relations	S	6	3	Nil
32601	Advanced Project Management	A	6	3	Nil
32602	Impact of Information Technology	Summer	6	3	Nil
32603	Software Quality Management	S	6	3	Nil
32604	Systems Integration	S	6	3	32601
32605	Managerial Analysis and Evaluation of Information Systems	S	6	3	Nil
32701	Advances in Information Technology	S	6	3	Nil
32702	Contemporary Telecommunications	S	6	3	Nil
32703	Information Technology Strategy	S	6	3	Nil
32806	Project A	A	6	3	GradDipInfTechM, 21751c
32812	Project B	S	6	3	32806

Alphabetical list of subjects

Undergraduate subjects

Explanatory notes

[1] Subjects taught by other faculties
[2] BInfTech only
[3] GradDipInfTech and Graduate Certificates only
[4] Elective subject
[5] Not offered in 1997
[6] Graduate Certificates only
[7] BSc only
[8] Subjects taught to students of other faculties only
[9] BSc BA subject

Indonesian 6[1,9]	97x311
Industrial Training (F/T)[7]	31696
Industrial Training (F/T)[7]	31697
Industrial Training (P/T)[7]	31698
Industrial Training (P/T)[7]	31699
Industry Project 1[2]	31770
Industry Project 2[2]	31790
Information Systems	31414
Information Systems and Organisations[4]	31734
Information Systems Practice[2]	31729
Information Technology Planning and Design[2,7]	31464
Information Technology Strategy[4]	31764
Introduction to Computer Graphics[4]	31140
Japanese 1[1,9]	97x211
Japanese 2[1,9]	97x211
Japanese 3[1,9]	97x211
Japanese 4[1,9]	97x211
Japanese 5[1,9]	97x211
Japanese 6[1,9]	97x211
Knowledge Technology[4]	31163
Knowledge-based Systems[4]	31745
Languages and Translators[4]	31654
Machine Learning[4]	31743
Malaysian 1[1,9]	97x331
Malaysian 2[1,9]	97x331
Malaysian 3[1,9]	97x331
Malaysian 4[1,9]	97x331
Malaysian 5[1,9]	97x331
Malaysian 6[1,9]	97x331
Marketing Principles[1,2]	24105
Modern Greek History and Society[1,9]	976714
Modern Standard Chinese 1[1,9]	97x101
Modern Standard Chinese 2[1,9]	97x101
Modern Standard Chinese 3[1,9]	97x101
Modern Standard Chinese 4[1,9]	97x101
Modern Standard Chinese 5[1,9]	97x101
Modern Standard Chinese 6[1,9]	97x101
Network Management[5]	31920
Objectbases[5]	31921
Object-oriented Methodologies[5]	31922
Object-oriented Programming and C++[4]	31860
Office and Group Support[4]	31923
Operating Systems Facilities[4]	31876
Paradigms of Intelligence[4]	31926
Parallel Programming[4]	31875
Performance Modelling[4]	31924
Politics of Aboriginal History, The[1,4]	54330
Principles of Software Development A	31415
Principles of Software Development B	31425
Procedural Programming	31429
Programming on the Internet[4]	31748
Project (1 semester) 8cp[4]	31351
Project (2 semesters) 8cp[4]	31350
Project 4cp[4]	31352
Project 4cp[4]	31894
Project Management[2]	31756
Project Management and the Professional	31454
Quality and Software Engineering[5]	31856
Quantitative Modelling	31428
Resources Management for IT Professionals[4]	31778
Smalltalk[4]	31925
Software Development Case Study[7]	31455
Software Quality Assurance[4]	31931
Software Quality Assurance Principles[4]	31855
Software Quality Techniques[5]	31857
Systems Analysis and Design[4]	31531
Systems Design and Development	31444
Systems Modelling	31424
Systems Programming[4]	31904
Systems Software and Networks	31436
Topics in Computer Graphics[4]	31240

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