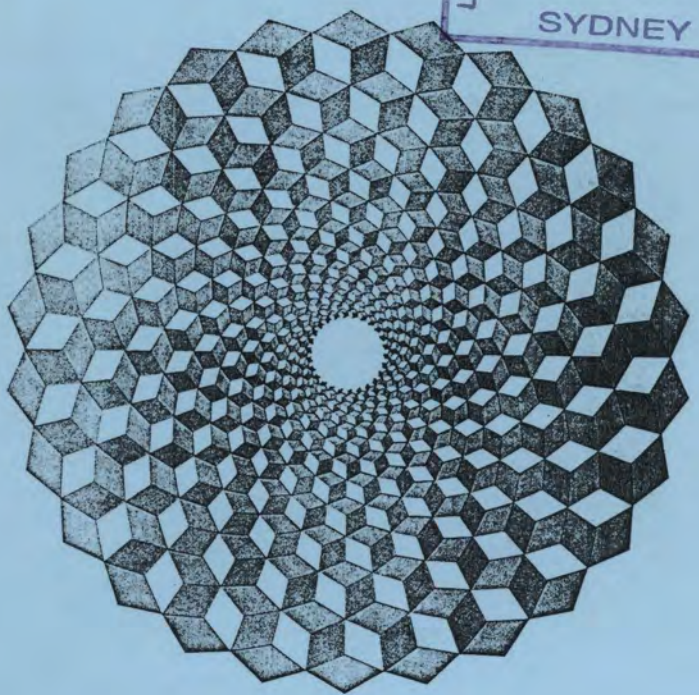
UTS

School of Computing Sciences

Handbook 1989



COVER CREDITS: Graphics courtesy Dr. K. G. Suffern

3. - SUBJECT INFORMATION

1. - GENERAL INFORMATION

FACULTY OF MATHEMATICAL AND COMPUTING SCIENCES.

Dean of the Faculty
J. Hughes, B.Sc.(Syd.), M.I.E.E.E., F.A.C.S., M.B.C.S.

SCHOOL OF COMPUTING SCIENCES - ACADEMIC STAFF

Head of School and Head of Department of Information Systems
Professor I.T. Hawryszkiewycz, B.E.(Hons), M.E.(Adelaide), Ph.D.(M.I.T.), M.A.C.S.

Deputy Head of School and Head, Department of Computer Science
Associate Professor T. Hintz, B.Sc.(E.E.)(U.Texas), M.Sc.(E.E.)(New Mex.S.U.), D.Sc.(E.E.).

Director, Key Centre for Advanced Computing Sciences
Associate Professor J.K. Debenham, M.A., M.Sc.(Dub.), Ph.D.(Syd.).

Senior Lecturer, and Director, Co-operative Education Program in Computer Information Systems
M. Fry, M.A.(Cantab.), M.Sc.(Imperial College), D.I.C.

Honorary Associates
J.A. Goddard, Dip.Tech.(Public Admin.)(N.S.W.I.T.), M.S.C.S., F.A.C.S.
W.N. Holmes, B.E.E.(Melb.).

DEPARTMENT OF COMPUTER SCIENCE

Head of Department
Associate Professor T. Hintz, B.Sc.(E.E.)(U.Texas), M.Sc.(E.E.)(New Mex.S.U.), D.Sc.(E.E.).

Senior Lecturers
J. Cady, B.E., M.Eng.Sc.(N.S.W.), M.A.C.S.
J.J. Edwards, M.Sc.(Syd.), M.A.S.O.R., M.A.C.S.
B. Howarth, B.Sc.(N.S.W.), M.Eng.(N'cle), Ph.D.(Calif.), S.M.I.E.E.E., M.A.C.S.
J.M. Potter, B.Sc.(Adel.), M.E., Ph.D.(N'cle.), M.I.E.E.E.
K.G. Suffern, B.Sc.(Hons.), M.Sc.(Monash), M.Sc.(Corn.), Ph.D.(Syd.)., M.A.C.S.

Lecturers
G. Belovari, M.A.(South Florida).
C.L.A. Cheneau, M.Sc.(Paris), M.A.(Lyon), Ph.D.(Paris).
J. Colville, B.Sc., M.Sc.(Melb.), M.B.C.S., M.A.C.S.
C.W. Johnson, M.App.Sc.(N.S.W.I.T.), Grad.R.A.C.I., M.A.C.S.
T.R. Osborn, B.Math., M.Math., Ph.D.(N'cle, N.S.W.), I.N.N.S., A.C.M.
M. Phillips, (Visiting Lecturer), B.Sc.(N.S.W.).
R. Rist, B.Sc.(Hons.)(N.S.W.), B.Sc.(Com.Sc.)(N.S.W.), Grad.Dip.Computer Studies (C.C.A.E.), Ph.D.(Yale).
U. Szewcow, B.Sc., Dip.N.A.A.C.(Syd.), M.Eng.Sc.(N.S.W.), M.I.E.E.E., M.A.C.S.

Senior Tutor
B. Stewart, Dip.Tech.(N.S.W.I.T), M.Eng.Sc.(N'cle), Dip.Econ.Stats.(U.N.E.).

Tutors
D. Haynes
G. Jones, B.Sc.(A.N.U.), Grad.Dip Computer Studies (C.C.A.E.).
M. Murray
B. Srnic, B.Sc, M.Sc.(Belgrade).

DEPARTMENT OF INFORMATION SYSTEMS

Head of Department and Head of School
Professor I.T. Hawryszkiewycz, B.E.(Hons), M.E.(Adelaide), Ph.D.(M.I.T.), M.A.C.S.

Senior Lecturers
J. Feuerlicht, B.Sc.(Lond.), D.I.C., Ph.D.(Imperial College), M.A.C.S.
J.V. Robb, B.Sc.(N.S.W.), M.Sc.(Lond.), M.B.C.S., M.A.C.S.
P.M. Stanley, B.Com.(N.S.W.), M.B.A.(Macq.), A.S.T.C., A.A.S.A.(Snr.), A.C.I.S., M.A.C.S.

Lecturers
R.P. Bebbington, B.Sc.(Tech.), M.Eng.Sc., M.Com.(N.S.W.), M.A.C.S.
J.H. Hammond, B.A., Dip.Tchg.(N.Z.), M.B.C.S., F.A.C.S., M.A.C.E.
D.F. Jinks, B.Sc.(A.N.U.)., M.A.C.S.
J. Underwood, B.Sc.(N.S.W.), Grad.Dip.Rec.Plan., Grad.Dip.Admin.(C.C.A.E.)
D.N. Wilson, B.Sc.(Hons), M.B.C.S., M.A.C.S.
B. Wunderlich, M.Com.(N.S.W.), A.A.S.A.(Snr), C.P.A.
I. Yourlo, Ing.(Ilmen.), B.Sc.(Syd.), Dip.N.A.A.C.(Syd.).

Senior Tutor
H. Mozayani, B.Sc.(Comp.Sci.)(Brighton Polytech)., M.A.C.S.
W.M.H. Richardson, B.App.Sc.(N.S.W.I.T.), M.A.C.S.

Tutors
D. Wilton, B.App.Sc.(N.S.W.I.T.).

Research Assistants
J. Li

ADMINISTRATIVE AND TECHNICAL STAFF

Faculty of Mathematical and Computing Sciences

Graduate Assistant
B. Irvine B.A.(Hons.) Macquarie

Secretary to the Dean

School of Computing Sciences

Administrative Assistant
S. Jenner B.A.(Syd.)

Industrial Liaison Officer
L.D. Edmonds B.A.(N.S.W.)

School Secretaries
L. Chamas
J. Hawker
M.T. Thill

Engineer
G. Redwood B.E.(Hons.)

Technical Officers
J. Tran

Programmers
S. Cosic
A. McGrath
P. van Winsen

Industrial Training Student
A. Basukoski

STAFF CONTACT LIST

Prefix 218-[extension]		EXTENSION	BUILDING 4 ROOM No.
Mr. Artie Basukoski		9178	439
Mr. Peter Bebbington		9543	354
Mr. Gabor Belovari		9505	366
Mr. Wray Buntine		9581	446F
Mr. John Cady		9451	343
Mrs. Lynette Chamas		9433	G30
Dr. Christian Cheneau		9233	371
Mr. John Colville		9448	342
Mr. Stevan Cosic		9178	435
Assoc. Professor John Debenham		9562	437
Mrs. Lindsey Edmonds		9496	G30B
Ms. Jenny Edwards		9560	338
Dr. George Feuerlicht		9539	362
Mr. Michael Fry		9446	341
Mrs. Judy Hammond		9501	345
Ms. Janine Hawker		9433	G30
Mr. David Haynes			
Professor Igor Hawryszkiewycz		9428	G32B
Associate Professor Tom Hintz		9508	335
Dr. Bruce Howarth		9498	374
Mr. John Hughes		9479	G29
Mr. Bruce Irvine		9609	G30C
Mrs. Sharyn Jenner		9425	G30A
Ms. Deidrie Jinks		9503	351
Mr. Chris Johnson	*	9497	373
Mr. Geoffrey Jones		9582	361
Mr. Joe Li (D/Base Lab)		281 2552	446C
Mr. Tony McGrath		9178	435
Mr. Amir Mozayani		9430	360
Mr. Michael Murray			
Dr. Tom Osborn	**	9561	364
Mr. Mark Phillips		9200	365
Dr. John Potter		9908	336
Mr. Graham Redwood		9452	231
Mrs Wendy Richardson		9510	356
Dr. Robert Rist		9447	344
Miss Jean Robb		9541	363
Mr. Harley Roberts		9489	346
School Office		9433/9425	G30
Ms. Biljana Srnic		9449	369
Mr. Phil Stanley		9500	353
Mrs. Bobbie Stewart		9449	368
Dr. Kevin Suffern		9559	337
Mr. Ury Szewcow	* **		
Ms. Marie Thill		9427	G30D
Mr. John Tran		9444	228
Mr. Jim Underwood		9538	357
Ms. Pauline van Winsen		9581	446A
Mr. David Wilson	*	9566	358
Ms. Davina Wilton		9582	361
Bruce Wunderlich		9542	348
Mr. Igor Yourlo		9488	352

* Academic staff on Leave during Autumn 1989
** Academic staff on Leave during Spring 1989

FACULTY BOARD IN MATHEMATICAL AND COMPUTING SCIENCES

EX-OFFICIO MEMBERS

The Dean of the Faculty of Mathematical and Computing Sciences
Mr. J. Hughes (Chair)

Head, School of Mathematical Sciences
Professor B.S. Thornton

Head, School of Computing Sciences
Professor I.T. Hawryszkiewycz

Deputy Head, School of Computing Sciences
Associate Professor T. Hintz

Associate Head, School of Mathematical Sciences
Associate Professor A. Shannon

Director, Key Centre for Advanced Computing Sciences
Associate Professor J.K. Debenham

Sub-Dean
Vacant

NOMINATED MEMBERS

Dr. W. Kalceff
School of Physical Sciences

Dr. A. Seneviratne
School of Electrical Engineering

Mr. J. Richards
I.R.S. Representative

Mr. M. Schueler
School of Accounting

Mr. G. Eisenhuth
School of Humanities and Social Sciences

Mr. A. Wynack
Registrar's Representative

ELECTED MEMBERS

Mr. P. Bebbington
Lecturer
School of Computing Sciences

Dr. G.L. Cohen
Senior Lecturer
School of Mathematical Sciences

Mrs. J. Hammond
Lecturer
School of Computing Sciences

Mr. J. Hogg
Lecturer
School of Mathematical Sciences

Dr. S. Huxham
Senior Lecturer
School of Mathematical Sciences

Mr. T. Langtry
Lecturer
School of Mathematical Sciences

Mr. E. Lidums
Lecturer
School of Mathematical Sciences

Dr. T. Osborn
Lecturer
School of Computing Sciences

Dr. P. Petocz
Lecturer
School of Mathematical Sciences

Miss J. Robb
Senior Lecturer
School of Computing Sciences

Mr. R. Sorli
Lecturer
School of Mathematical Sciences

D. K. Sufferm
Senior Lecturer
School of Computing Sciences

Mr. I. Yourlo
Lecturer
School of Computing Sciences

Ms. P. Mundy
Student Representative
School of Computing Sciences

Ms. M. Duggan
Student Representative
School of Mathematical Sciences

Mr. G. van Herten
Student Representative
School of Mathematical Sciences

COMPUTING SCIENCES COURSE ADVISORY COMMITTEE

Ex-Officio Members

Head, School of Computing Sciences
Professor I.T. Hawryszkiewycz (Chair)

Dean of the Faculty
Mr. J. Hughes

Head, School of Mathematical Sciences
Professor B.S. Thornton

Registrar and Secretary's Representative
Vacant

Other Members

M. Alexander, Managing Director,
Expertise Australia

C. Connaughton,
CSA Pty. Ltd.

D. Easter, Systems Development Manager,
Westpac

J. Goddard, Assistant Director Computing,
Public Service Board

H. Meredith, Computer Editor,
The Australian

A. Stark, Manager R&D,
Stowe Computing Australia Pty. Ltd.

P. Steele, Manager, Systems Services,
Totalizator Agency Board

INFORMATION FOR STUDENTS

1. Academic Advisors
2. Academic Staff
3. Administrative Matters
4. Admission Requirements
5. Attendance Pattern
6. Calendar - Other Rules
7 Careers and Appointments Service
8. Computer Access
9. Computing Services Division
10. Computer Society
11. Confirmation of Academic Programme
12. Correspondence
13. Electives
14. Examination Results
15. Examination Timetables
16. Exclusion
17. Exemptions
18. Fees
19. Financial Assistance
20. Graduation Assessment
21. Graduation Requirements
22. Identification Cards
23. Leave of Absence
24. Library
25. Location of Classes
26. Noticeboards
27. Notification of Changes
28. Postgraduate Courses
29. Probation
30. School Office
31. Student Advice and Enquiries
32. Students' Association
33. Student Services
34. Equal Opportunity
35. Timetables
36. University Union
37. Variation of Course Programme
38. Weighted Average Mark (W.A.M.)
39. Withdrawal from the Course
40. Withdrawal from a Subject

1. ACADEMIC ADVISORS

Academic Advisers for 1989 are as follows:

Undergraduate Full-Time
Mr. John Colville
Mr. Mark Phillips
Undergraduate Part-Time
Mr. Jim Underwood
Prospective students for 1990
Mr. Peter Bebbington
Grad.Dip.D.P. -
Mrs. Judy Hammond
Masters Degree -
Associate Professor John Debenham

The functions of the Academic Advisers are:

1) To advise students regarding their course programme and academic progression.
2) To approve changes to enrolment details.
3) To advise, when necessary, in personal matters.
4) To arrange specialist tutorial assistance or counselling.

Each Advisor has specific consultation times. These, and location details, are displayed on the Ground Floor Noticeboards.

2. ACADEMIC STAFF

Most of the lecturing staff offices are located on the 3rd Floor of Building 4. A directory of staff offices is displayed at each end of the floor.

3. ADMINISTRATIVE MATTERS

The Student Administrative Unit of UTS is responsible for administering rules of the University which relate specifically to the student body. Enquiries regarding any of these matters may be directed to the Student Administrative Unit, Level 3A, Building 1 at the Broadway Campus. Copies of your Academic Record may be obtained from the Student Administrative Unit. A fee is charged.

4. ADMISSION REQUIREMENTS

Admission to the courses offered by the School will be in accordance with the general requirements for admission to the University as set out in The Calendar. There are no formal subject requirements for the students presenting with the Higher School Certificate although a level of 2 Unit Mathematics will be assumed and 3 Unit Mathematics is recommended. Good communication skills are essential.

Students may enter the courses with advanced standing. Admission is determined in individual cases based on merit. However, a minimum of two-thirds of the prescribed course must be completed in order to qualify for an award unless prior approval is granted by Academic Board.

5. ATTENDANCE PATTERN

Two basic attendance patterns are available. The first of these involves full-time attendance for twenty-four hours per week. Under this pattern a Stage of a course may be completed in one semester.

The second pattern involves part-time attendance for an average of 12 hours per week, and under this pattern a Stage may be completed in two semesters. Employers normally release part-time students for at least one-half day per week for attendance at classes.

6. CALENDAR - OTHER RULES

Details of rules applicable to students of the University are contained in the Calendar, which may be purchased from the University Co-operative Bookshop, 11 Broadway. Copies are also available for viewing in the Library, the Faculty Office and the Student Information Office.

7. CAREERS AND APPOINTMENTS SERVICE

The University Union has established this service to assist students in all aspects of their career development from career choice to graduate employment. The service is provided free of charge with professionally trained staff in attendance to assist students, it operates throughout the year and is open from 8.30am to 6.00pm every weekday.

Location: Level 5, Building 1
Phones: 218-9588, 218-2867

Some of the areas of assistance are:

- a directory of employers seeking full time, part time and casual staff;
- a register of students seeking employment;
- a library containing information on organisations which employ student graduates;
- a campus interview programme
- Interview Skills Workshop
- careers counselling for students wishing to review or clarify their original career choice
- a casual employment service.

In order to keep up to date with the latest vacancies students are advised to regularly check Noticeboards at the CAS office and those within the School as well as the CAS newsletter which is produced once a fortnight.

NOTE Full time students undertaking Industrial Training subjects in the School of Computing Sciences **MUST REGISTER WITH Ms. LINDSEY EDMONDS AND NOT THE CAS.**

8. COMPUTER ACCESS

Hours for computer access are follows:

Amdahl Computer
Building 4 -
9.00am - 9.00pm weekdays
Tower Building Level 10 or
Building 2, Level 5 -
Consult "Hours of Operation" bulletins on Level 9, as hours vary throughout the year.

After-hours access (i.e after 10.00pm) may be obtained at certain periods of the year by leaving your student I.D. card at the front security desk, Building 1, and obtaining a special pass.

Minicomputers Gould and IBM
Building 4 -
9.00am - 9.00pm weekdays

9. COMPUTING SERVICES DIVISION

The Computing Services Division provides facilities for all Schools, Divisions and Departments within the University. Services provided include processing of computer jobs, both batch and remote, data preparation, User Interface Rooms for submission and collection, a library of over 700 volumes for reference and loan, preparation, publication and distribution of information to users and a consulting service on systems design and programming. The

Computer Centre is located on Level 9, Tower Building.

10. COMPUTER SOCIETY

The Computer Society is the body which represents the 'cultural' interests of both the students and staff of the School. The term, 'cultural' is exploited mercilessly in order to provide a wide range of diversions from the drudgery of assignments and lectures. We also hope that the Society will begin to act as a student voice on such issues as the extension of computer facilities with respect to both after hours access and actual physical resources.

Membership fee (this makes us more exclusive) for each year is a paltry $2 which is usually paid at the first Wine and Cheese night. So don't be an individual, join up so we can ask the Union to fund us with lots of money (essentially we are funded on a per student basis). Just before this Wine and Cheese night we usually abuse the democratic systems and appoint volunteers to be President, Vice-President, Treasurer and Secretary, plus representatives from each year. Tradition and practicality has dictated that the President be a 2nd year but this does not have to be the case. If you feel you have sufficient motivation, imagination and just a drop of corruption please make yourself known. We also attempt to cater for part-timers. If you are a part-timer with an interest in our activities we would appreciate your suggestions and attendance. If you want to know more details please consult our notices.

11. CONFIRMATION OF ACADEMIC PROGRAMME

Students have a number of opportunities to check their enrolment details.

i) at the beginning of the year you enrol in a programme for Autumn and Spring semesters.
ii) several times during each semester.
iii) before exams start programmes for all enrolled students are displayed within the School on noticeboards for you to check.

12. CORRESPONDENCE

All correspondence, e.g. withdrawal from course, sickness or application for Leave of Absence, should be addressed to The Registrar, University of Technology, Sydney, P.O. Box 123, Broadway, 2007.

13. ELECTIVES

Students in the B.App.Sc. (who commenced full-time before 1989 or part-time before 1988) have 24 hours of electives to complete. These begin in Year 2. All other B.App.Sc. students do 30 hours of electives. Full details are given in a separate elective handout. Associate Professor T. Hintz is the co-ordinator of electives and any queries should be directed to him. Students may choose electives from other Faculties, subject to availability. At least 15 hours of electives **MUST** be done as a staged coherent stream. PLEASE NOTE CERTAIN ELECTIVES ARE FORBIDDEN TO COMPUTING SCIENCE STUDENTS. The list is available outside the School Office

14. EXAMINATION RESULTS

Examination results are sent to each student through the mail following the examination period at the end of each semester. Results are also displayed on the School Noticeboard, Ground Floor, Building 4. Examination results are **NOT** given over the phone. The University buildings are normally open from 7.00am to 9.30pm weekdays.

15. EXAMINATION TIMETABLES

Provisional and final examination timetables are displayed on the School noticeboards several weeks before the examination period commences. It is the student's responsibility to notify the Registrar if a clash of times occurs in the student's examination timetable. Provisional timetables are not available prior to Week 10.

16. EXCLUSION

Exclusion from a course may occur if (i) a student placed on probation (see 29) does not obtain a W.A.M greater than 40 in the student's next assessment period, i.e 1 semester for a full-time student and 2 semesters for a part-time student, (ii) a student on probation for two consecutive assessment periods has a W.A.M. for the second assessment period on probation less than 50, (iii) a student fails a subject for the third time (regardless of his/her W.A.M.). A student may appeal against exclusion if clearly relevant, accredited evidence can be brought forth.

17. EXEMPTIONS

The basis for exemptions is equivalent tertiary study. The way to go about getting exemptions is through the School. You may apply for exemption (from core subjects) ONLY at the time of first enrolment. *The policy on elective exemptions is under review.*

Exemptions are not counted towards final assessment for grade of award. You are allowed exemptions up, to one third of the course, only if you can produce documentation to show that you have studied an equivalent subject(s) before.

18. FEES

Students undertaking tertiary education courses at universities and colleges in 1989 are required by the Commonwealth Government to contribute towards the cost of their education under the HECS scheme.

In Autumn semester 1989, new and continuing students will be required on the day that they enrol to make a decision, in writing, either to pay by cash/cheque by March 23, 1989 or pay later through the Australian taxation system. Some students are not liable for HECS or will be exempt from - please refer to yellow information sheet sent to all students.

The cost in 1989 is $1,800 per year for a student undertaking a standard annual programme i.e. $900 per semester. A standard annual programme is the prescribed work load for a full-time student in a particular year of a course. For a student not taking a standard annual programme a pro-rata liability will be incur, based on the proportion of the standard annual programme.

The HECS liability/charge is calculated EACH semester on the basis of the Autumn subjects in which the student is enrolled as at March 30, 1989 and the Spring subjects in which the student is enrolled as at August 30, 1989. For students who choose to pay by cash/cheque by March 23 in Autumn semester the cost will be initially calculated on the basis of the subjects in which you are enrolled as at March 10, 1989 and adjusted, if necessary, on March 30.

For further information please contact the Central Information Service 218-9071.

Fees are payable each year to the Union and the Student's Association. Fees for 1988 were:
Union - $100
Students' Association - $37

Details on fees were not available at the time of printing. This information will be given to students at enrolment sessions. Students will be required to pay Union and Students' Association fees before enrolment.

In cases of hardship the Registrar has, in previous years, extended the date for payment of Union and Students Association fees. Applications must be made for this extension of time.

In 1989 it is likely that students will have to pay the HECS fee.

19. FINANCIAL ASSISTANCE

Full-time students who qualify subject to a means test can receive assistance under the AUSTUDY Scheme Students may direct enquiries to:-

The Director,
N.S.W. State Office,
Commonwealth Dept of Education
Sydney Plaza Building,
59 Goulburn Street,
Sydney.
P.O. Box 596, Haymarket, 2000
Telephone: 218 8800
OR
Student Services Unit,
telephone 20930, extension 9145,
OR
the Education Officer,
telephone 20930 extension 9064/9846 at the University.

20. GRADUATION - GRADING OF DEGREE

The School of Computing Sciences grades students for awards by a two stage process, qualifying then grading.

The set of subjects to be included in the grading process are the core subjects, excluding those normally taken during Stages 1 and 2 part-time or 1st year full-time. All core subjects must be passed. Any of those subjects which have been failed and subsequently passed, will be included with a raw mark of 50%. The marks for these subjects will be normalised to minimise variability across subjects and years.

* Qualifying

Pass Degree
A student will qualify for a pass degree with an average raw mark of 50% or greater. Raw marks are used here to avoid the situation where a student may have passed each subject individually, but may have a normalised result less than 50%.

Honours 2 Degree
A student must achieve an average of 65% or greater on the normalised set of marks.

Honours 1 Degree
A student must achieve an average of 75% or greater on the normalised set of marks.

* Grading

The raw marks required to achieve the Honours grades in 1987 and 1988 were:

	1987	1988
Honours 1	75%	75%
Honours 2	68.3%	69%

The grading of qualified students will be done by the School's Exam Review Committee on an individual basis. The committee will be provided with the following information on each qualifier:

i) Any failures, including subject details and whether or not a failure was of a technical nature.
ii) The subject details and marks for all electives undertaken.
iii) The time taken to complete the course in terms of stages, excluding leave of absence.
iv) The average mark for each stage during the course.

21. GRADUATION REQUIREMENTS

In order to become eligible for any award, students are required to satisfactorily complete the course programme for the course in which they are enrolled. They should (i) obtain at least pass level for the subjects, or (ii) be granted exemption from subjects not attended, or (iii) complete alternative subjects with approval of the Head of School.

In order to graduate students must complete the Application for Award form by 1st October of the year before they expect to graduate. These forms are available from the School Office and the Registrar's Division.

It is the student's responsibility to apply for graduation, as this is not automatic.

22. IDENTIFICATION CARDS

An identification (ID) card will be issued to students during enrolment. Carry this with you at all times as such identification is required for the use of computer and library facilities and for admission to formal exams. A lost card will be replaced on payment of a fee.

23. LEAVE OF ABSENCE

Students who wish to withdraw temporarily from a course must make application directly to the Registrar in writing. Leave of Absence is not granted for periods longer than two years, and a student who has not completed the programme set down for the first year of enrolment is not normally eligible for Leave of Absence. Any request for Leave of Absence should state semesters for which Leave is required and the reason why Leave is being requested. Applications close on 30th March, 1989 for Autumn Semester 1989.

24. LIBRARY

The University's library services are organised by the Information Resources Service. Library locations are:

MARKETS CAMPUS:
Cnr. Quay Street and Ultimo Road, Haymarket.
GORE HILL:
4th Floor, Dunbar Building.

25. LOCATION OF CLASSES

Courses are conducted mainly in Building 4 which is located on the corner of Thomas and Harris Streets (directly behind the Tower Building). The main entrance to Building 4 for the School of Computing Sciences is in Thomas Street, while a second entrance is located in Harris Street. The School Office is located in Building 4, Ground Floor, Room G/30. The School Office is expected to move to the Third Floor.

26. NOTICEBOARDS

The lift-foyer on the Ground Floor at the Thomas Street side of Building 4 has glass-covered noticeboards which have Timetable, Examination and Enrolment information which students require. Please familiarise yourself with the notices, as there is no compensation given for not having read notes addressed to students.

Notices are updated frequently and students should consult them to keep abreast of any changes.

Careers and employment for Industrial Year students, as well as other information for Industrial Year students, can be found on the noticeboard in the corridor between rooms G30 and G32 on the Ground Floor, Building 4.

Urgent messages to students can be posted on the noticeboard outside Room G30. Staff and students can place notices there and when received these should be removed immediately. Students should check this noticeboard at least daily, as it is often difficult for staff to find students when urgent messages are asked to be conveyed.

27. NOTIFICATION OF CHANGE OF ADDRESS, NAME, ETC.

Keep student records (Registrar's Branch) up to date on all changes to address, name, etc. by submitting such information in writing to the Registrar.

The University does not accept responsibility for mail's not reaching you due to a failure to notify change of address.

28. POSTGRADUATE COURSES

Enquiries regarding post-graduate courses within the Faculty of Mathematical and Computing Sciences should be directed either to Mr. B. Irvine, who is currently located in Building 4, Ground Floor, Room G30, phone number 20930 extension 9609, or the Student Information Office, extension 9071 or 9072.

29. PROBATION

Students may be placed on probation if during an assessment period: (i) the student's W.A.M. (see 38) is less than 45, (ii) the student fails all subjects in which enrolled, or (iii) a subject is failed for the second time, regardless of the W.A.M.

Students on probation will continue on probation: (i) if the W.A.M. at the end of the next assessment period is less than 50, (ii) if a subject is failed for the second time while the student is on probation, or (iii) until the

subject is next attempted and passed, or the student is excluded.

30. SCHOOL OFFICE

The School Office is located on the Ground Floor Building 4, Room G30. The hours of operation are 9.00am-5.00pm Monday to Friday. If you need advice and are not able to contact your Academic Advisor, the Admin. Assistant, Sharyn Jenner, may be able to help you. She may be contacted by calling in person or by ringing 218-9425 during office hours. The School Office will probably move to the Third Floor.

31. STUDENT ADVICE AND ENQUIRIES

Students requiring advice or information in relation to the courses offered by the School of Computing Sciences should consult the Admin. Assistant who is located in the School Office, Building 4, Ground Floor, Room 30, or by phoning 218-9425.

32. STUDENTS' ASSOCIATION

The Students' Association is a collective body of the University students governed by an elected body of students called the Students' Representative Council (SRC). You become a member of the Students' Association through payment of a compulsory membership fee at enrolment. ($37.00 per annum in 1988.)

As a member of the Students' Association you may take advantage of a number of services such as: typing; a secondhand book agency; car parking concessions; interest free loans to needy students; support to clubs and societies; functions at Orientation and other times; NEWSWIT, AUSTUDY and education problems; research and resource materials (contact the Education Research Officer).

The Students' Association will also liaise with academic and administrative staff on your behalf should you encounter any difficulties.

The offices of the Students' Association are located at Level 3A of the Tower Building. An office is also situated at Markets Campus.

33. STUDENT SERVICES

Student Services Unit, located on Level 3A of the Tower Building, offers such services as student counselling, student health and general enquiries.

Student counsellors are available for students with any kind of problem - family, personal, social, career. Interviews are strictly confidential. The counsellors are particularly well equipped to help with stress, tension and anxiety problems; call in any time or make an appointment, particularly if you wish to see a counsellor after 5.00pm, by phoning extension 9145/7. A doctor and nursing sister are also available on this extension.

The Student Information Office, also located on Level 3A, (moving sometime in 1989) can help with information relating to admission, enrolment, examinations, travel concessions, course information, variation of course programme, withdrawal from course, graduation, or Leave of Absence. Contact them by ringing extension 9071 or 9072.

The University has a child care centre for which there is a heavy demand.

34. EQUAL OPPORTUNITY/ AFFIRMATIVE ACTION

It is the policy of the University of Technology, Sydney to provide equal opportunity for all persons regardless of race, sex, marital status, physical disability or homosexuality.

35. TIMETABLES

Computing Sciences timetables are posted on the ground floor noticeboards before the beginning of the respective semester and stay on the noticeboards until the end of the respective semester. These timetables are regularly updated. The School does not provide individual timetables, and no information concerning timetables is given over the telephone.

36. UNIVERSITY UNION

The Union aims to be the social, cultural and sporting heart of the University. It provides food services, lounges, and recreational areas. The Union has an Activities Department which provides a programme of concerts, dances, creative leisure courses and other recreational activities. The Union Shop sells calculators, stationery and technical drawing equipment. Also available are a typewriter loan service, photo service, table tennis and snooker areas.

All of the above services are available at the Broadway Campus, Level 3, Tower Building. The Union Sports Department supervises the Sports Centre which is located in the Lower Ground Floor of Building 4 extending into the quadrangle. The Centre contains 5 squash courts, gymnasium, weights room, sauna and other facilities. To make SQUASH BOOKINGS PHONE 218-9600.

The Sports Department manages the Union's oval at Prince Henry Hospital, organises intramural and intercollegiate sports competitions and provides fitness classes.

Financial support is provided to a wide range of sporting and recreational clubs.

All students (and staff) are members of the Union.

37. VARIATION OF COURSE PROGRAMME

To vary your approved subject programme you must complete the appropriate "variation form", available from the School Office or Student Information Office. In 1989 there will be a complex set of rules relating to the addition and deletion of subjects and liability of HECS charges. Each student will be notified of these rules.

Forms must taken IN PERSON to an Academic Adviser to be signed.

Please make sure to use the **CORRECT SUBJECT NUMBERS** as coding of the forms is done by number.

38. WEIGHTED AVERAGE MARK

A student's performance in any assessment period (1 or 2 semesters), is measured by a Weighted Average Mark. The Weighted Average Mark (W.A.M.) measures the performance in a particular assessment period

and is calculated from the results of all subjects taken in that assessment period.

W.A.M. is calculated as follows:

$$W.A.M. = \frac{(W.F. \times Mark)}{W.F.}$$

where W.F. is the subject weighting factor, which is usually the number of class hours required in a subject per semester, and Mark is the subject assessment (%).

Computing Sciences Assessment periods (in semesters)

$$\frac{P/T}{2} \quad \frac{F/T}{1}$$

39. WITHDRAWAL FROM COURSE

Submit a "Notification of Withdrawal" form to

The Registrar,
University of Technology,
Sydney,
P.O. Box 123,
Broadway, 2007

Attach your student ID card as you may be eligible for a partial refund of fees. If you do this before Week Seven of the Autumn Semester you will have nothing on your academic record for the semester in which you withdraw. If you do this AFTER Week 7, you may be given an "L" result for your subject(s) meaning withdrawal has been granted after the normal period.

However withdrawal from the course after Week 7 is not automatic, and requires Head of School approval. In this case you should provide a supporting letter, outlining your reasons for withdrawing late. If withdrawal is not granted "fail" results will be given for the subjects in which you are enrolled.

If you withdraw from the course, but at a later date wish to re-enrol in the course, you will have to APPLY FOR RE-ADMISSION through U.C.A.C. and take your chances with everybody else. You should be certain that you want to give up the course instead of applying for Leave of Absence.

40. WITHDRAWAL FROM A SUBJECT

Variation forms for withdrawal from a subject without penalty are available from the Student Information Office, or the School Office.

These must be completed and submitted to an Academic Advisor by March 30 in the Autumn Semester and the August 30 in the Spring Semester. If you do not withdraw by these dates your academic record will indicate a "fail" result; in other words you are considered to have failed the subject.

PRINCIPAL DATES 1989

The Academic Year is divided into two semesters, Autumn and Spring, each containing twenty weeks. The semesters are separated by a three week recess in July. Tutorial weeks are scheduled twice in each semester, and although these are generally regarded as "break weeks", some lectures are still held. Students should check with the lecturers regarding this. Principal dates throughout the year are as follows:

AUTUMN SEMESTER - February 13 to June 30

January	31	Enrolment for continuing students
February	1	Enrolment for new students
	13	Autumn classes commence for continuing students and all postgraduate students
	14	Orientation Day
	20	Autumn classes commence for new undergraduate students
March	10	Last day for adding subjects to approved programme (Week 4)
	15	Liability Notices available
	13-17	Tutorial week
	24-27	Easter
	31	Last day for withdrawal from subjects or course without penalty (Week 7)
April	21	Last day to resolve enrolment queries with Central Administration
	25	Anzac Day
May	3	Graduation Ceremony (3.00pm)
	1-5	Tutorial week
	29	Information Evening
June	12	Queen's Birthday
	13	Formal examinations commence
	30	Last day of formal examinations
July	1-23	Recess Examination Results posted

SPRING SEMESTER - July 24 to December 8

July	24	Classes commence
August	18	Last day for adding subjects to approved programme
	28-Sept 1	Tutorial week
August	30	Last day for withdrawal from a subject or course without penalty
September	29	Applications close for admission to the B.App.Sci. (Computing) in 1990 with U.C.A.C.
October	2	Eight-hour Day
	9-13	Tutorial Week
November	20	Formal examinations commence
December	8	Last day of formal examinations
	22	Results available

2. - COURSE INFORMATION

THE SCHOOL OF COMPUTING SCIENCES

The School of Computing Sciences is one of 7 Key Centres for Teaching and Research established by the Federal Government in 1985. It was the first federally funded Centre for Advanced Computing Sciences in Australia.

The School of Computing Sciences offers a degree course in Computing Science leading to the award of Bachelor of Applied Science. In 1988, at the request of government and industry, a new degree course was introduced, leading to the award of Bachelor of Technology in Information Systems. In addition, the School offers a graduate course leading to the award of a Graduate Diploma in Data Processing.

The School offers a three year, part-time course leading to a Master of Applied Science (Information Science) by course work. In addition, the School offers two degrees by research and thesis: the Master of Applied Science (by Thesis) and the Doctor of Philosophy.

Prospective applicants for graduate courses should firstly ascertain from the Graduate Studies Officer whether they conform with the general University requirements for admission before consulting with the School about special requirements.

The School has appointed a number of academic advisors: two for undergraduate full-time students; one for undergraduate part-time students; one for Graduate Diploma students; one for Masters students; and one to advise prospective students.

The functions of the academic advisors are: (i) to advise students regarding course progress and academic progression; (ii) to approve changes to enrolment details; (iii) to advise, when necessary, on personal matters; (iv) to arrange specialist tutorial assistance or counselling

The School provides subjects in Computer Science for other Faculties.

Double Degree in Business and Computing Sciences

From 1989 a double degree in Business and Computing Science will be offered. Students enrol initially in the normal Bachelor of Business degree and take the Computing Science sub-major. On satisfactory completion of the Business Degree and the Computing Science sub-major, a student should then apply to be admitted to the Bachelor of Applied Science (Computing Science). On admittance, the student would be granted advanced standing in view of (a) the student's Computing Science sub-major and (b) since part of the student's Business major would be used in lieu of the requirement for external electives in the B.App.Sc.(Comp.Sc.).

BACHELOR OF APPLIED SCIENCE (COMPUTING SCIENCE)

The object of the course is 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 computing science, short of the actual design and construction of "hardware" systems.

The course has been designed to provide for the study in depth of computing science and its applications, and, in addition, support subjects are included to enable the graduate to fulfil an appropriate function in the sphere of business activity. It is intended that the formal studies will be treated in a manner which will encourage initiative. Not only will the course provide a suitable framework for a professional career, but it will also form a basis from which post-graduate studies may begin.

The course comprises six academic semesters of full-time study or the equivalent in part-time attendance.

Holders of the degree are granted exemption from the Associate examinations of the Australian Computer Society.

INDUSTRIAL TRAINING

All students in the B.App.Sc.(Computing Sciences) are required to enrol in, and pass, the two Industrial Training subjects. There are a substantial number of pre-requisites for Industrial Training; these pre-requisites are noted in the subject description section. Full-time students normally undertake Industrial Training after completing Semester 4; the Industrial Training subject numbers for the full-time attendance pattern are 31696 and 31697. Part-time students normally undertake Industrial Training after completing Stage 4; the Industrial Training subject numbers for the part-time attendance pattern are 31698 and 31699. (These numbers will change during 1989.)

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 nine months for full-time students and eighteen months for part-time students. During Industrial Training students are required to behave in a professional manner, and, to enable the School to assess their experience, are required to keep the School informed of the status of their employment at all times. Each year the School of Computing Sciences published an Industrial Training "Student Guide" which sets out in detail what is required to pass these two subjects; students are advised to obtain a copy of this guide and to study it carefully.

Although the securing of suitable employment during Industrial Training is the student's responsibility, the School will assist students in obtaining a placement.

Those who wish to seek an Industrial Training position without the direct assistance of the School should first make an appointment to see the School's Industrial Liaison Officer who will provide a description of the requirements of an Industrial Training position. If a student finds employment an appointment should be made to see the School's Industrial Liaison Officer and to obtain certification that the employment is suitable for Industrial Training.

Students who wish to benefit from the direct assistance of the School in finding an Industrial Training position should obtain a copy of the Industrial Training "Student Guide" from the School Office and carefully study the procedure to be followed.

Industrial Training students are assessed by senior members of the academic staff.

In general, students find Industrial Training extremely beneficial in relating their final year of course work to the practical needs of the Information Industry, and this experience can be cited when applying for their career positions.

STUDENTS WHO COMMENCE IN 1989 OR LATER

There are a number of changes to the B.App.Sc. course which come into effect in 1989. Depending on what year or stage a student is in, some of these changes may affect students who began the course before 1989. Full details of how the changes affect existing students will be given in this handbook.

ELECTIVES
(for students who commenced Full-time B.App.Sc. before 1989 or part-time B.App.Sc. before 1988)

Students are required to complete a total of 24 semester hours of approved electives as part of their degree course. These will normally be taken as two elective subjects per semester for full-time students (after Year 1) and one per semester for part-time students (after Year 2). Students may take their electives from other Faculties. A minimum of 15 hours MUST be taken in an approved sequence or sub-major from within the School of Computing Sciences or from another School or Faculty in the University. The remaining nine (9) hours may be taken from further courses within the School or elsewhere.

Students in the School of Computing Sciences are not permitted to enrol in certain subjects as electives where there is a substantial overlap with any core subjects. In general, this applies to any service subject taught by the Faculty of Mathematical and Computing Sciences. Some examples of non-approved subjects are Simulation Techniques, Statistics 1, Computing 1, Data Processing, etc. If you are in any doubt, you should consult the electives handout or check with the Electives Co-ordinator, Associate Professor Tom Hintz .

ELECTIVES
(for students in the revised course, i.e. those who commenced full-time B.App.Sc. from 1989 onwards or part-time B.app.Sc. from 1988 onwards)

Students in the revised course will be required to take 30 semester hours of electives, of which 12 semester hours must be taken within the School of Computing Sciences. The remaining 18 semester hours may be taken within the School, in another School or externally. The exact details will be available later in 1989.

OUTSIDE ELECTIVES

Students wishing to do electives outside the University MUST see the Electives Co-ordinator (Associate Professor Tom Hintz) to discuss the proposal. Special approval must be sought well before the intended semester of study. You may undertake subjects outside the University as electives ONLY IF no comparable subject is offered by the University.

LABORATORY SESSIONS

These sessions are designed to gain formal tuition in using the systems and to give practical experience of the course work. Every laboratory session is attached to a specific subject. (For example, Commercial Programming is 5 semester hours, lectures being scheduled for 3 hours and the laboratory session being 2 hours.) Full-time students have laboratory sessions totalling 6 hours per week scheduled in each semester, excluding the Industrial Year, and part-time students have laboratory sessions of three hours per week scheduled in each semester.

PRIZES - B.APP.SC. (COMPUTING SCIENCES)

The following prizes are awarded within the School of Computing Sciences. A separate prize brochure is issued to all students

CABS Information Systems Case Study
C.S.A. Prize
Stowe Computing Australia Prize for Technical Excellence
Stowe Computing Australia Prize for Systems Analysis
Stowe Scholarships
Westpac Information Systems Award

RECOMMENDED FULL-TIME PROGRAMME

YEAR 1 for students who commenced before 1989

AUTUMN SEMESTER		Hours/Week
31401	Mathematics 1	3
31818	Computer Systems 1	2
31841	Information Systems 1 (Lab)	5
31850	Programming Principles 1 (Lab)	9
31914	Financial Methods 1	3
51370	Human Communication	2
SPRING SEMESTER		
31814	Programming Principles 2	4
31816	Information Systems 2	3
31842	Commercial Programming 1 (Lab)	7
31845	Mathematics 2 (Lab)	7
31915	Financial Methods 2	3

YEAR 2 for students who commenced before 1989

AUTUMN SEMESTER		
31819	Systems Analysis and Design 1	3
31832	Data Communications and Computer Networks	3
31843	Programming Techniques (Lab)	6
31844	Operating Systems (Lab)	6
	Elective	3
	Elective	3
SPRING SEMESTER		
31820	Systems Analysis and Design 2	3
31835	Programming Packages	3
31852	Commercial Programming 2 (Lab)	6
31861	Information Systems 3 (Lab)	6
	Elective	3
	Elective	3

YEAR 3 for students who commenced before 1989

AUTUMN SEMESTER		
31696	Industrial Training	6
SPRING SEMESTER		
31697	Industrial Training	6

YEAR 4 for students who commenced before 1989

AUTUMN SEMESTER		
31761	Theoretical Computer Science	3
31833	Simulation	3
31846	Communications Programming (Lab)	6
31848	Languages and Processors (Lab)	6
	Elective	3
	Elective	3

SPRING SEMESTER

31133	Social Implications of Computers	2
31759	Information Systems Case Study	5
31834	Economic and Industrial Analysis	2
31847	Performance Evaluation (Lab)	6
31825	Data Processing Management	3
	Elective	3
	Elective	3

PART-TIME PROGRAMME

YEAR 1 for students who commenced before 1988

AUTUMN SEMESTER

31401	Mathematics 1	3
31841	Information Systems 1 (Lab)	5
31914	Financial Methods 1	3
51370	Human Communication	2

SPRING SEMESTER

31818	Computer Systems 1	2
31850	Programming Principles 1 (Lab)	9

YEAR 2 for students who commenced before 1988

AUTUMN SEMESTER

31814	Programming Principles 2	4
31842	Commercial Programming 1 (Lab)	7

SPRING SEMESTER

31816	Information Systems 2	3
31845	Mathematics 2 (Lab)	7
31915	Financial Methods 2	3

YEAR 3 for students who commenced before 1988

AUTUMN SEMESTER

31832	Data Communications and Computer Networks	3
31843	Programming Techniques (Lab)	6
	Elective	3

SPRING SEMESTER

31819	Systems Analysis and Design 1	3
31844	Operating Systems (Lab)	6
	Elective	3

YEAR 4 for students who commenced before 1988

AUTUMN SEMESTER

31820	Systems Analysis and Design 2	3
31852	Commercial Programming 2 (Lab)	6
	Elective	3

SPRING SEMESTER

31835	Programming Packages	3
31861	Information Systems 3 (Lab)	6
	Elective	3

YEAR 5 for students who commenced before 1988

AUTUMN SEMESTER		
31761	Theoretical Computer Science	3
31848	Languages and Processors (Lab)	6
31698	Industrial Training	3
	Elective	3
SPRING SEMESTER		
31833	Simulation	3
31846	Communications Programming (Lab)	6
31698	Industrial Training	3
	Elective	3

YEAR 6 for students who commenced before 1988

AUTUMN SEMESTER		
31133	Social Implications of Computers	2
31834	Economic and Industrial Analysis	2
31825	Data Processing Management	3
31699	Industrial Training	3
	Elective	3
SPRING SEMESTER		
31759	Information Systems Case Study	5
31847	Performance Evaluation (Lab)	6
31699	Industrial Training	3
	Elective	3

NOTE: Each Laboratory session is scheduled for three hours with mandatory attendance and graded assignments.

STUDENTS WHO COMMENCE IN 1989 OR LATER

As mentioned earlier, students who start in 1989 or later will undertake the following programme. Some parts of this programme may also be applicable to students who were enrolled before 1989.

Electives

All students must take four electives from within the School of Computing Sciences. These are indicated in the programme as CS/IS Electives 1-4 and would normally be taken one per semester in Years 2 and 4 for full-time students and one per Stage in Stages 3-6 for part-time students, depending on the availability of a student's choices. It is hoped that students would follow a major strand for these electives.

In addition all students must do a further 18 semester hours of electives. These may all be taken within the School of Computing Sciences or as an approved 18 hour sub-major or sequence from another School or Faculty within the University or an approved external sequence.

A RECOMMENDED FULL-TIME PROGRAMME

Year 1		
AUTUMN	SEMESTER	Hours/Week
31615	Discrete Mathematics	5
31617	Accounting Fundamentals	3
31611	Information Systems	4
31613	Computer Systems Architecture 1	3
31614	Programming Principles	7
51370	Human Communications	2
SPRING	SEMESTER	
31626	Probability and Statistics	3
31621	Systems Analysis	3
31622	Commercial Programming Development	5
31623	Computer Systems Architecture 2	5
31624	Data Structures and Algorithms	5
31625	Software Engineering	3
YEAR 2		
AUTUMN	SEMESTER	
31636	Simulation and Modelling	4
31631	Database	4
31632	Communications and Networks	5
31633	Operating Systems	5
	CS/IS Elective 1	3
	Elective 1	3
SPRING	SEMESTER	
31641	Systems Design	4
31647	Management Control Systems	4
31642	On-Line Systems	5
31648	Business Tools and Applications	5
	CS/IS Elective 2	3
	Elective 2	3
YEAR 3		
AUTUMN	SEMESTER	
31696	Industrial Training	6
SPRING	SEMESTER	
31697	Industrial Training	6
YEAR 4		
AUTUMN	SEMESTER	
31655	Theory of Computer Science	4.5
31658	Project Management	4.5
31653	Communications Software	6
	CS/IS Elective 3	3
	Elective 3	3
	Elective 4	3

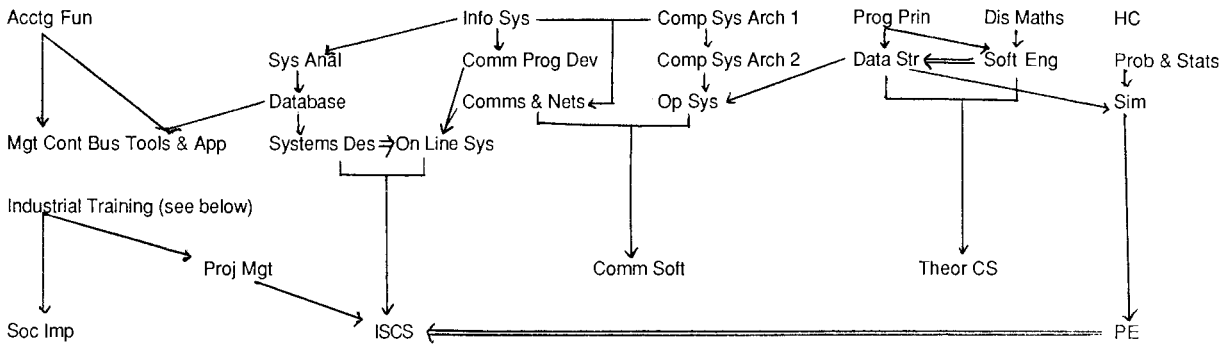
SPRING SEMESTER		
31662	Information Systems Case Study	6
31669	Social Implications of Computers	3
31666	Performance Evaluation	6
	CS/IS Elective 4	3
	Elective 5	3
	Elective 6	3

A RECOMMENDED PART-TIME PROGRAMME

YEAR 1		
AUTUMN SEMESTER		Hours/Week
31615	Discrete Mathematics	5
31617	Accounting Fundamentals	3
31611	Information Systems	4
SPRING SEMESTER		
31613	Computer Systems Architecture 1	3
31614	Programming Principles	7
51370	Human Communications	2
YEAR 2		
AUTUMN SEMESTER		
31621	Systems Analysis	3
31622	Commercial Programming Development	5
31623	Computer Systems Architecture 2	5
SPRING SEMESTER		
31624	Data Structures and Algorithms	5
31625	Software Engineering	3
31626	Probability and Statistics	3
YEAR 3		
AUTUMN SEMESTER		
31631	Database	4
31632	Communications and Networks	5
	CS/IS Elective 1	3
SPRING SEMESTER		
31633	Operating Systems	5
31648	Business Tools and Applications	5
	Elective 1	3
YEAR 4		
AUTUMN SEMESTER		
31641	Systems Design	4
31642	On-Line Systems	5
	CS/IS Elective 2	3
SPRING SEMESTER		
31636	Simulation and Modelling	4
31647	Management Control Systems	4
	Elective 2	3

YEAR 5		
AUTUMN SEMESTER		
31655	Theory of Computer Science	4.5
31658	Project Management	4.5
	CS/IS Elective 3	3
31698	Industrial Training	3
SPRING SEMESTER		
31633	Communications Software	6
	Elective 3	3
	Elective 4	3
31698	Industrial Training	3
YEAR 6		
SPRING SEMESTER		
31133	Social Implications of Computers	3
31666	Performance Evaluation	6
	CS/IS Elective 4	3
31699	Industrial Training	3
SPRING SEMESTER		
31759	Information Systems Case Study	6
	Elective 5	3
	Elective 6	3
31699	Industrial Training	3

Prerequisite Chart for Core Subjects in the B App Sc (Comp Sc)



A horizontal arrow Subject 2 ⟸ Subject 1 means that Subject 2 cannot be done **before** Subject1.

Prerequisites for Industrial Training are that four fulltime semesters or equivalent should have been completed and, before registering, students must have passed (or been exempted from) a mimimum of thirteen core subjects including Systems Analysis, Commercial Programming Development, Operating Systems, Data Structures & Algorithms and all their prerequisites.

Implementation Plan for Changes in the B App Sc (Comp Sc)

The numbers in brackets indicate the year a normal progression student commenced the course

1989	new year 1 (1989)	old year 2 (1988)	old year 4 (1986)			
	new stage 1 (1989)	new stage 2 (1988)	old stage 3 (1987)	old stage 4 (1986)	new stage 5 (1985)*	old stage 6 (1984)
1990	new year 1 (1990)	new year 2 (1989)	new year 4 (1987)#			
	new stage 1 (1990)	new stage 2 (1989)	new stage 3 (1988)	old stage 4 (1987)	new stage 5 (1986)*	new stage 6 (1985)^
1991	new year 1 (1991)	new year 2 (1990)	new year 4 (1988)#			
	new stage 1 (1991)	new stage 2 (1990)	new stage 3 (1989)	new stage 4 (1988)	new stage 5 (1987)*	new stage 6 (1986)^
1992	new year 1 (1992)	new year 2 (1991)	new year 4 (1989)			
	new stage 1 (1992)	new stage 2 (1991)	new stage 3 (1990)	new stage 4 (1989)	new stage 5 (1988)	new stage 6 (1987)^
1993	new year 1 (1993)	new year 2 (1992)	new year 4 (1990)			
	new stage 1 (1993)	new stage 2 (1992)	new stage 3 (1991)	new stage 4 (1990)	new stage 5 (1989)	new stage 6 (1988)

\# instead of compulsory electives student will do (FT)Simulation in Autumn and (FT)Software Engineering in Spring

* instead of compulsory elective student will do (PT)Simulation in Spring

^ instead of compulsory elective student will do (PT)Software Engineering in Spring

BACHELOR OF TECHNOLOGY IN INFORMATION SYSTEMS.

This course was first offered in 1988. It is part of a new co-operative education programme in computer information systems. The course has been developed by the School of Computing Sciences in collaboration 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 semesters are of 24 weeks duration, and a 44 week academic year is the norm for the course.

Year	Semester 1	Semester 2
1	UTS	Industry
2	UTS	UTS
3	Industry	UTS

The programme differs from existing co-operative education courses in that, during the industry-based semesters, students will follow a structured programme designed jointly by the University and the employer group, including formal course work subjects taught in industry. This course work is assessed to University and business standards. This familiarises students with business needs. During the industry periods students will be exposed to real problems within an environment quite different to 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, and is also supported by the necessary background subjects in computing science and programming. The active participation of industry practitioners in course design and course delivery will further insure that graduates of the course are well equipped with skills relevant to present and future industry needs.

The two industry 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 fifty.

Each student admitted to the course will receive a scholarship of $8,000 per annum for the duration of the course. This is 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. Each company also provides the industry semester facilities for the number of students being sponsored.

Selection to the course is based on HSC result and on performance at 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.

RECOMMENDED PROGRAMME

SEMESTER 1 - UTS

		Hours/Week
31717	Accounting Fundamentals	3
31721	Systems Analysis	3
31711	Information Systems	4
31714	Programming Principles	7
31715	Discrete Mathematics	5
31713	Computer Systems Architecture	3

SEMESTER 2 - INDUSTRY

31722	Commercial Programming	5
31771	Business Requirements Analysis	3
31779	Applications of Information Technology 1	3
31770	Industry Project 1	14

SEMESTER 3 - UTS

23106	Economics	3
24201	Principles of Marketing	3
31738	Management Principles for IT Professional	3
31731	Database	4
31732	Communications and Networks	5
31733	Operating Systems	5

SEMESTER 4 - UTS

31747	Management Control Systems	3
31788	Organisation Theory for IT Professionals	3
31741	Systems Design	4
31742	On-Line Systems	5
31725	Software Engineering	6
31726	Probability and Statistics	3

SEMESTER 5 - INDUSTRY

31758	Project Management	3
31781	Business Systems Design	3
31789	Applications of Information Technology 2	3
31780	Industry Project 2	14

SEMESTER 6 - UTS

25301	Financial Management	3
31767	Auditing the Computer	6
31768	Business Planning for IT Professionals	3
31761	Technology Planning	3
31769	Social Implications of Computers	3
31766	Performance Modelling and Management	6

CONDITIONS RELATING TO STUDENTS ENROLLED IN THE BACHELOR OF TECHNOLOGY (INFORMATION SYSTEMS).

Students enrolled in the Bachelor of Technology (Information Systems) are notified here of certain special conditions.

Leave of absence will not normally be granted to students, except under exceptional circumstances and subject to satisfactory arrangements being possible. Likewise, withdrawal from the course followed by re-admission is not normally granted. Students are reminded that withdrawal without penalty from any course at the University is only possible to a defined date in any semester. In 1989 the date prescribed in University rules is likely to be March 31 in the first semester and August 31 in the second semester**. After that date a student's academic record will indicate failure for any subject not completed.

Variations to the approved programme for the Bachelor of Technology (Information Systems) are restricted. No industry-based subject may be deleted from the programme, except under extraordinary circumstances and at the discretion of the course Steering Committee and the School of Computing Sciences. No industry-based subject can 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 done at the discretion of the Steering Committee and the School.

The School will not recommend probation for unsatisfactory academic performance. Instead, the School will recommend to the Academic Board that a student be excluded under the following circumstances:

* a student fails any subject for the second time

* a student has a Weighted Average Mark of less than 45% at the end of any assessment period

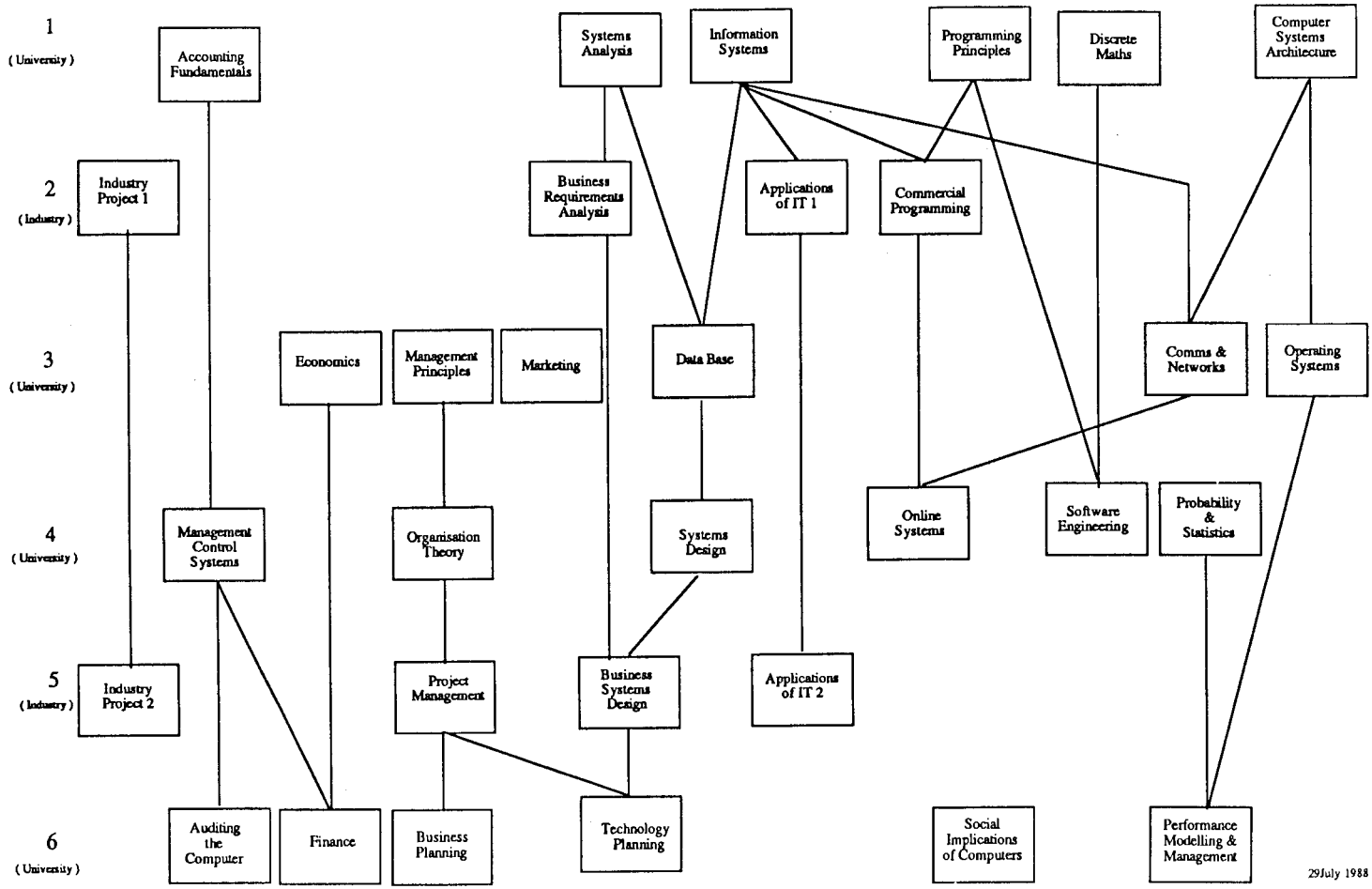
* a student fails any subject that is part of the programme of an industry-based semester (there is provision for a supplementary examination to be taken in these subjects following a failure at the first attempt), or a student performs unsatisfactorily during an industry-based semester

* a student who, immediately prior to the commencement of an industry-based semester, has still to complete more than one subject in the normal programme of the course to that stage.

Appeals against exclusion will be dealt with at the Exclusion Appeals Committee, who will take into account the recommendation of the course Steering Committee.

* *At the time of publication the legislation for the Higher Education Contribution Scheme had not been finalised. This legislation determines the last date in any semester at which withdrawal from a course without penalty will be allowed.*

B.Tech. (Information Systems) Curriculum: 1989



29July 1988

POSTGRADUATE COURSES

GRADUATE DIPLOMA IN DATA PROCESSING

This course aims to provide students with the basic knowledge and skills required for a professional career in programming and/or systems work. 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 and data processing; some will have had some familiarisation with computing; and others will be familiar with computing concepts in areas such as programming, and will be seeking to consolidate their present knowledge by attaining a formal qualification.

The pre-requisite for entry to the Graduate Diploma course is a working knowledge of Pascal or a similar higher level structured language **AND** COBOL. For intending applicants who do not have the required knowledge in COBOL and Pascal, extension courses are offered in these areas each semester. There is a cost attached to these which may be ascertained by contacting the School or Continuing Education at UTS. In addition, applicants should have graduate status, equivalent to an undergraduate 3 year degree from the University of Technology, Sydney. If in any doubt about the ranking of your qualification, you should contact the Graduate Studies Office or the Admissions Branch at the University, or write to the Committee on Overseas Professional Qualifications in Canberra.

Mode and length of study.

The course may be undertaken on a part-time attendance pattern over either two or three years. In exceptional circumstances it may be undertaken on a full-time attendance pattern over one year.

The three-year part-time attendance pattern would be:

Part-time 3 years

Year 1	Semesters 1 and 2	Academic period at UTS
Year 2	Semesters 1 and 2	Academic period at UTS
Year 3	Semesters 1 and 2	Academic period at UTS

For this pattern students would be expected to attend the University for six hours per week which falls either as two evenings or one evening and one afternoon per week.

The attendance pattern for the two-year programme comprises nine hours per week, two evenings and one afternoon. The attendance pattern for the full-time programme is eighteen hours per week.

Students will not normally be permitted to spend more than eight semesters from initial registration to complete this course (see Rule 3.2.6).

All applications should be well documented, including proof of graduate status and the applicant's academic record.

Students may be permitted to enter the course with advanced standing but, in order to qualify for an award, a student must complete at least twenty four semester hours of the prescribed thirty six hours for the course.

Exemptions will normally be granted only where a student has partially completed a similar Graduate Diploma elsewhere. A maximum of 12 (twelve) semester hours **ONLY** may be exempted. Where a student can demonstrate proficiency in a subject area, substitution of Semesters 1, 2 and 3 subjects by other approved subjects from the undergraduate course will be permitted.

The course is not open to students who have already completed the Diploma of Technology (Information Processing), Bachelor of Applied Science (Computing Sciences), or a similar course at an equivalent level.

Holders of the Graduate Diploma are granted exemption from the Associate examinations of the Australian Computer Society.

STUDENTS WHO COMMENCE IN 1989 OR LATER

There are a number of changes to the Graduate Diploma in Data Processing course which come into effect in 1989. Depending on what year or semester a student is in, some of these changes may affect students who began the course before 1989.

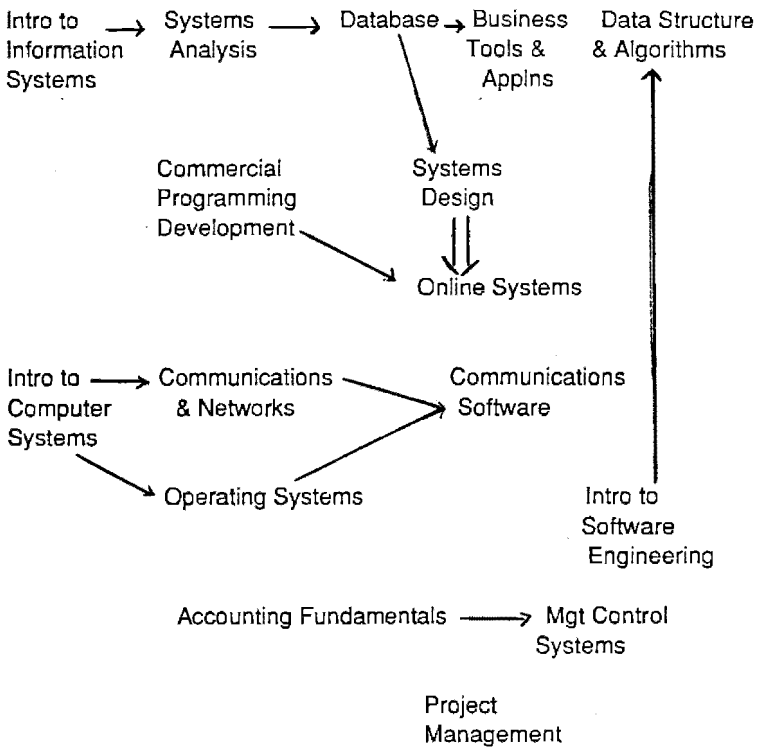
A RECOMMENDED PART-TIME PROGRAMME FOR STUDENTS WHO COMMENCE IN 1989 OR LATER

SEMESTER 1 (Autumn)		Hours/Week
31071	Introduction to Information Systems	3
31073	Introduction to Computer Systems	3
SEMESTER 2 (Spring)		
31021	Systems Analysis	3
31022	Commercial Programming Development	3
SEMESTER 3 (Autumn)		
31031	Database	3
31032	Communications and Networks	3
	or	
31017	Accounting Fundamentals	3

SEMESTER 4 (Spring)**		
31041	Systems Design	3
31042	On-Line Systems	3
31048	Business Tools and Applications	3
31047	Management Control Systems	3
31033	Operating Systems	3
31025	Introduction to Software Engineering	3
SEMESTER 5 (Autumn)**		
31041	Systems Design	3
31042	On-Line Systems	3
31058	Project Management	3
31017	Accounting Fundamentals	3
31032	Communications and Networks	3
31053	Communications Software	3
31033	Operating Systems	3
SEMESTER 6 (Spring)**		
31041	Systems Design	3
31042	On-Line Systems	3
31058	Project Management	3
31048	Business Tools and Applications	3
31047	Management Control Systems	3
31053	Communications Software	3
31033	Operating Systems	3
31025	Introduction to Software Engineering	3
31024	Data Structures and Algorithms	3

** In Semesters 4, 5 and 6 students may choose two subjects from the range of subjects offered or may, with approval, undertake other approved subjects from the B.App.Sc. undergraduate course, subject to satisfactory completion of subject pre-requisites.

Prerequisite Chart for Graduate Diploma in Data Processing (New Course)



⇒ Systems Analysis must be done before or concurrently with Online Systems

MASTER OF APPLIED SCIENCE DEGREE (BY THESIS)

The M.App.Sc.(by thesis) 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. Areas of particular interest for research in the School of Computing Sciences include:

- Operating Systems
- Computer Performance Evaluation
- Office Automation Systems
- Computer Graphics, Image Processing
- Artificial Intelligence, Expert Systems, Fifth Generation Technology
- Local Networks and Network Interface Technology
- Neural Networks
- Information Modelling
- Auditing Large Data Bases
- Transputers
- Microprocessors and their Applications
- Distributed Database
- Computer Systems Security

This degree is available on a full-time, part-time and external basis. The normal duration of enrolment for this degree is two years on full-time attendance or three years on part-time attendance.

Applicants should hold a first degree with a major computing component or should have previously undertaken other postgraduate studies in computing. Prospective applicants are expected to be interested in a specific area of research, and should have one or more particular 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.

Application forms may be obtained from the Student Enquiry Centre. General enquiries should be directed to either the Student Enquiry Centre, phone 20930 ext. 9145/9262, or the Faculty Graduate Assistant, phone 20930 ext. 9609. Note that all prospective applicants should obtain approval for their proposed research work BEFORE submitting an application form for this course.

MASTER OF APPLIED SCIENCE DEGREE (BY COURSE WORK) IN INFORMATION SCIENCE.

The M.App.Sc.(by course work) in Information Science enables a graduate to select a programme of study which suits the individual career goals. For example, a programme may be chosen which develops specialised expertise in computer systems, which provides a general update of Information Science technology or one which equips the student for a position in corporate management as an information scientist.

The course is intended for Computing Professionals. Applicants should have both:-

1) a bachelor's degree from the University of Technology, Sydney (formerly New South Wales Institute of Technology), or equivalent, preferably with a major computing component. Those 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 Bachelors degree in computing.

and

2) 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.

The course is offered on a part-time basis only, over 6 semesters (3 years), as it is considered important that students remain in professional employment whilst undertaking their graduate studies in Information Science. Attendance is required for at least two evenings per week for lectures, and at the periodical seminar evenings. Each semester the School publishes the M.App.Sc.(by course work) in Information Science Handbook. This Handbook 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 this Handbook and to study it carefully. Copies may be obtained from the Centre for Graduate and External Studies within the School.

The minimum total duration of the course is 54 semester hours, consisting of the following:

(a) Formal lectures and laboratory requirements will total a minimum of 40 semester hours;

(b) There is a specific requirement for seminar attendance for one hour per week throughout the time the candidate is enrolled. Thus, depending on the duration of the course, this will add a minimum of six semester hours to the total contact time in the course.

(c) The remainder of the course will be comprised of the equivalent of eight semester hours of Project work.

The course work is structured into four "strands". These four strands comprise the fundamental areas of Computer Systems, Information Systems and Computing Methods, as well as a Management strand. Students select a total of ten subjects. This selection will contain at least one subject from each of the four strands, and at least one entire strand.

Students enrol in the Seminar subject each semester, and are required to attend at least 70% of the research seminars

presented in any semester to be eligible to take examinations at the end of that semester.

The Project is undertaken during the last year of enrolment.

Any Master's Degree candidate enrolled in the M.App.Sc.(by course work) Information Science who records two failures at any stage will be excluded from the course absolutely.

GENERAL COURSE DESCRIPTION

Students select a programme from the following subjects:

COMPUTING METHODS

31200	Advanced Programming Techniques
32101	Intelligent Systems
32104	Decision Making and Modelling
32105	Specialist Topics in Artificial Intelligence

INFORMATION SYSTEMS

32200	Information Processing Strategy
32201	Data Base
32202	Communication Systems
32203	Information Management

COMPUTER SYSTEMS

32304	Computer Languages
32301	Performance Evaluation
32302	Computer Architecture
32305	Operating Systems

MANAGEMENT

21718	Organisation Analysis and Design
22729	The Legal Environment of Business
32400	Accounting for Management
32401	Management Policy and Strategy

PRIZES - M.APP.SC.(INFO. SC.)

The following prizes are awarded within the School of Computing Sciences. A separate prize brochure is issued to all students.

Stowe Computing Australia Masters Project Award
IBM Prize for Computing Research Seminar

DOCTOR OF PHILOSOPHY (BY THESIS)

In general terms, the Ph.D. degree entails a more extensive investigation than the M.App.Sc.(by thesis) degree. In addition, the Ph.D. students are expected to demonstrate significant originality in the conduct of their research work. Areas of particular interest for research towards the Doctor of Philosophy (by thesis) degree in the School of Computing Sciences include:

- Operating Systems
- Computer Performance Evaluation
- Office Automation Systems
- Computer Graphics, Image Processing
- Artificial Intelligence, Expert Systems, Fifth Generation Technology
- Local Networks and Network Interface Technology
- Neural Networks
- Information Modelling
- Auditing Large Data Bases
- Transputers
- Microprocessors and their Applications
- Distributed Data Bases
- Computer Systems Security

The Doctor of Philosophy degree is available on both a full-time and a part-time basis. The normal duration of enrolment for this degree is three years on either attendance pattern; however, candidates who already possess a degree at the Masters level may be permitted to complete in two years. The maximum duration of enrolment is five years for full-time students and six years for part-time students.

Applicants should hold a first class, or second class division one, Bachelor's degree with a major computing component, or should hold a Master's degree in an appropriate area, or should have previously undertaken other post-graduate studies in computing. Prospective applicants are expected to be interested in a specific area of research, and should have one or more particular 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.

Application forms may be obtained from the Student Information Office. General enquiries should be directed to either the Student Information Office, phone 20930 ext. 9071/9072, or the Faculty Graduate Assistant, phone 20930 ext. 9609. Note that all prospective applicants should contact the Faculty Graduate Assistant BEFORE submitting an application to this course.

EXTENSION COURSES

The School offers four courses which run regularly each semester for fifteen weeks, one evening per week, in:

UNIX/C
COBOL
Pascal
Computers for Small Business

The School also offers other extension courses at various times during the academic year. These include:

Database Design
Using Relational and E-R Models
C and UNIX for the Professional
Expert Systems Design
Introduction to Capacity Planning
4th Generation Languages and Application Building
OCCAM and the Transputer
BASIC Programming.

In addition, the School offers weekly "State of the Art" seminars, usually on Wednesday afternoons. Visitors are welcome.

COMPUTING FACILITIES

The School has its own Computer installation which includes an IBM 9370 with 32 terminals; a Gould 32/67 with 4MByte memory, 3x340 MByte drives and 24 terminals; several computers running Unix; a Graphics Laboratory with Textronix Graphics Terminals and hard copy units, plotters, a Raster Technologies frame buffer, a Dunn Film Recorder, and several INMOS Transputer systems; a Logic Design Laboratory with 18 Digital Logic Trainers; several microcomputer laboratories which contain 30 Apple Macintoshes, 18 XT computers and a laboratory of 10 ESC.286 (IBM compatible) networked computers. This networked laboratory includes a file/print server and connects to the University Local Area Network. A laboratory of Sun 3/50s and 3/60s is being installed. The Key Centre also has an Office Automation System based on a Data General MV4000. The University facilities include an Amdahl complex with 167 terminals and numerous PC clones. All computers are connected the University's Ungermann-Bass Local Area Network.

3. - SUBJECT INFORMATION

ALPHABETICAL LISTING OF COMPUTING SUBJECTS

BACHELOR OF APPLIED SCIENCE FOR 1989 ONWARDS

Core Subjects

Subject Number		Subject Name
31617		Accounting Fundamentals
31648		Business Tools and Applications
31622		Commercial Programming Development
31632		Communications and Networks
31653		Communications Software
31613		Computer Systems Architecture 1
31623		Computer Systems Architecture 2
31624		Data Structures and Algorithms
31631		Database
31615		Discrete Mathematics
51370	*	Human Communication
31696-7		Industrial Training 1 and 2 Full-time
31698-9		Industrial Training 1 and 2 Part-time
31611		Information Systems
31662		Information Systems Case Study
31647		Management Control Systems
31642		On-line Systems
31633		Operating Systems
31666		Performance Evaluation
31626		Probability and Statistics
31614		Programming Principles
31658		Project Management
31636		Simulation and Modelling
31669		Social Implications of Computers
31625		Software Engineering
31621		Systems Analysis
31641		Systems Design
31655		Theory of Computer Science

* Serviced by other Faculties

Elective Subjects

Subject Number	Subject Name
31885	Advanced Mathematics
31882	Advanced Theoretical Computer Science
31896	Artificial Intelligence Programming
31901	Artificial Intelligence Theory
31902	Auditing the Computer
31768	Business Planning for IT Professionals
31893	Comparative Programming Languages
31900	Computer Aided Information Systems Engineering
31897	Computer Systems Architecture 3
31854	Distributed Data Bases
31140	Introduction to Computer Graphics
31163	Knowledge-Based Systems
31888	Logic Design 1
31889	Logic Design 2
31738	Management Principles for IT Professionals
31898	Microprocessors and Applications
31895	Numerical Analysis
31853	Office Automation
31788	Organisation Theory for IT Professionals
31894	Project (Also 31350, 31351, 31352)
317xx	Resources Management for IT Professionals
31899	Systems Architecture
31904	Systems Programming
31240	Topics in Computer Graphics

BACHELOR OF APPLIED SCIENCE (OLD)

Core Subjects

Subject Number	Subject Name
31852	Commercial Programming 2 Lab.
31846	Communications Programming Lab.
31832	Data communication and Computer Networks
31825	Data Processing Management
31834	Economic and Industrial Analysis
31861	Information Systems 3 Lab.
31759	Information Systems Case Study
31848	Languages and Processors Lab.
31844	Operating Systems Lab.
31847	Performance Evaluation Lab.
31835	Programming Packages
31843	Programming Techniques Lab.
31833	Simulation
31133	Social Implications of Computers
31819	Systems Analysis and Design 1
31820	Systems Analysis and Design 2
31761	Theoretical Computer Science

BACHELOR OF TECHNOLOGY IN INFORMATION SYSTEMS

Subject Number		Subject Name
31717		Accounting Fundamentals
31779		Applications of Information Technology 1
31789		Applications of Information Technology 2
31767		Auditing the Computer
31768		Business Planning for IT Professionals
31771		Business Requirements Analysis
31781		Business Systems Design
31722		Commercial Programming
31732		Communications and Networks
31713		Computer Systems Architecture
31731		Database
31715		Discrete Mathematics
23106	*	Economics
31770		Industry Project 1
31780		Industry Project 2
31711		Information Systems
31747		Management Control Systems
31738		Management Principles for IT Professionals
31742		On-Line Systems
31733		Operating Systems
31788		Organisation Theory for IT Professionals
31766		Performance Modelling and Management
24201	*	Principles of Marketing
31728		Probability and Statistics
31714		Programming Principles
31756		Project Management
31769		Social Implications of Computers
31725		Software Engineering
31721		Systems Analysis
31741		Systems Design
31761		Technology Planning

* Serviced by other Faculties

GRADUATE DIPLOMA IN DATA PROCESSING COMMENCING 1989

Subject Number	Subject Name
31017	Accounting Fundamentals
31048	Business Tools And Applications
31022	Commercial Programming Development
31032	Communications and Networks
31053	Communications Software
31024	Data Structures and Algorithms
31031	Database
31073	Introduction to Computer Systems
31071	Introduction to Information Systems
31025	Introduction to Software Engineering
31047	Management Control Systems
31042	On-Line Systems
31033	Operating Systems
31026	Probability and Statistics
31058	Project Management
31021	Systems Analysis
31041	Systems Design

Subject Number		Subject Name
32400		Accounting for Management
32100		Advanced Programming Techniques
32202		Communication Systems
32302		Computer Architecture
32304		Computer Languages
32201		Data Base
32104		Decision Making and Modelling
32203		Information Management
32200		Information Processing Strategy
32101		Intelligent Systems
22729	*	Legal Environment of Business
32401		Management Policy and Strategy
32300		Microprocessor Applications
32305		Operating Systems
32303		Operating Systems and Languages
21718	*	Organisation Analysis and Design
32301		Performance Evaluation
32908		Project
32912		Project
32916		Project
32999		Seminar
32105		Specialist Topics in AI

* Serviced by other Faculties

SERVICE SUBJECTS

Subjects taught by Computing Sciences to other Schools/ Faculties

Subject No.	Subject Name	School/Faculty
31799	Computing 1	Science

Subject taught by other Schools/Faculties to Computing Sciences.

Subject No.	Subject Name	School/Faculty
23106	Economics	Business
24201	Principles of Marketing	Business
51370	Communication Studies	Humanities

SUB-MAJORS

Sub-major in Computing Science available to students in the Faculty of Business.

From 1989, there will be one Computing Science sub-major only available to students in Business. This will be composed entirely of subjects from the B.App.Sc.(Comp.Sci.). This will make it easier for students who wish to undertake further studies in Computing Science.

For students electing the Computing Science sub-major (and only those students), Information Systems 31611 must be taken in place of Business Information Systems 1 (22220) and Systems Analysis (31621) must be taken in place of Information Systems (22565).

Students in the sub-major will gain credit for 18 semester hours. The first 11 semester hours are compulsory.

Number	Subject Name	Semester Hours
31611	Information Systems	4
31621	Systems Analysis	3
31631	Database	4

The remaining seven semester hours credit may be made up from combinations of the following subjects:

31641	Systems Design	4
31902	Auditing the Computer	3
31853	Office Automation	3
31618	Business Tools and Applications	5
31622	Commercial Programming Development	5
31614	Programming Principles	7
31658	Project Management	4.5

It is suggested that Accounting majors should take:

31902	Auditing the Computer	3
	AND	
31641	Systems Design	4
	OR	
31618	Business Tools and Applications	5

Non-accounting majors who are interested in programming should take:

31641	Systems Design	4
	AND	
31622	Commercial Programming Development	5
	OR JUST	
31614	Programming Principles	7

Management students should select from:

31902	Auditing the Computer	3
31853	Office Automation	3
31618	Business Tools and Applications	5
31658	Project Management	4.5

STUDENTS IN AN EXISTING SUB-MAJOR

Depending on the level reached in the sub-major, students may try to finish it with equivalent subjects or preferably, transfer as best as possible to the new sub-major. Either combination, if successfully completed, will lead to the award of the sub-major. Of the subjects in the "old" sub-majors:

31902	Auditing the Computer	remains unchanged
31631	Database	is equivalent to 31838 Information Systems 3
31621	Systems Analysis	is equivalent to 31819 Systems Analysis and Design 1

The following subjects are no longer offered:

31224	Data Processing	suggest 31611 Information Systems
31525	Systems Analysis	suggest 31621 Systems Analysis
31325	Commercial Programming	suggest 31631 Database
31816	Information Systems 2	suggest one of the choices
31226	Fortran Programming	suggest one of the choices

SUB-MAJORS - MATHEMATICAL SCIENCES

Sub-majors available to students enrolled in the School of Computing Sciences from the School of Mathematical Sciences. All completed sub-majors must total at least 18 semester hours.

A. MATHEMATICS - OPERATIONS RESEARCH (6 SUBJECTS)

Core Subjects		Semester Offered	Hours/Week
31885	Advanced Mathematics	A	3
34480	Introduction to O.R. Models	A,S	3
34532	Linear Programming	A,S	3
Elective Subjects			
34636	Decision Theory	S	3
34634	Network Optimisation	A	3
34633	Dynamic Optimization	S	3
34635	Inventory Control	A	3
34531	Optimization Techniques	S	3
34547	Stochastic Processes	A	3
34452	Financial Modelling Techniques	A	3

B. MATHEMATICS - STATISTICS (7 SUBJECTS)

		Semester Offered	Hours/Week
Core Subjects			
31885	Advanced Mathematics	A	3
34342	Statistics 2	S	3
34343	Theory of Probability	S	3
34544	Regression Analysis	A	3
34548	Industrial Statistics	A	3
34545	Design of Experiments	S	3
34547	Stochastic Processes	A	3
Elective Subjects			
34642	Statistics 3	S	3

C. MATHEMATICS - OPERATIONS RESEARCH/STATISTICS (6 SUBJECTS)

Core Subjects			
31885	Advanced Mathematics	A	3
34342	Statistics 2	S	3
34343	Theory of Probability	S	3
34480	Introduction to O.R. Models	A,S	3
34532	Linear Programming	A,S	3
34547	Stochastic Processes	A	3
Elective Subjects			
34636	Decision Theory	S	3
34634	Network Optimisation	A	3
34633	Dynamic Optimization	S	3
34635	Inventory Control	A	3
34531	Optimization Techniques	S	3
34642	Statistics 3	S	3

Students who have passed Discrete Mathematics (31615), Probability and Statistics (31626) and Advanced Mathematics (31885) in the School of Computing Sciences are deemed to satisfy the knowledge requirement for any subjects which have prerequisites of 34100 (Algebra 1), 34101 (Calculus 1), and 34141 (Statistics 1).

N.B. Advanced Mathematics (31885) is a compulsory pre-requisite for any subject to be undertaken from the School of Mathematics. Furthermore, Introduction to OR Models (45580) must then be taken BEFORE any other OR subject.

SUB-MAJORS - HUMANITIES

Computing Science students may take EITHER individual Humanities courses as electives OR complete Humanities sub-major as part of the degree. Students wishing to undertake a sub-major in Humanities are strongly advised to read the School handbook on electives to ensure that the proposed programme meets the requirements of the School of Computing Sciences.

Sub-majors are organised into sequences and are structured on three levels.

Level 1:

51370 Human Communications is a pre-requisite for entry into all computing sub-majors.

Level 2:

Each sub-major has its own 'gateway' courses. At least one of these must be completed before enrolment in a Level 3 course. In the case of sub-majors with a choice of gateway courses, you must complete at least one and may do more.

Level 3:

These are advanced courses and enrolment will only be permitted only if Levels 1 and 2 have been completed.

SOCIAL AND POLITICAL STUDIES

		Hours/Week
Level 1		
51370	Human Communications	2
Level 2		
51512	Australian Society	3
51610	Australian Social History	3
50715	Aboriginal Studies	4
51339	Technology and Society	3
51519	Industrial Relations	3
Level 3		
50502	International Politics	4
50512	Comparative Religion	4
50581	Australian Politics	4
50520	Asian and Pacific Politics	4
50510	Culture, Race, Ethnicity	4

ADVERTISING

Level 1		
51370	Human Communications	2
Level 2:		
50330	Advertising Practice	4
50331	Advertising Copywriting (Print)	4
50332	Advertising Copywriting (TV, Radio, Film)	4
50333	Advertising Strategies	4

PUBLIC RELATIONS

Level 1		
51370	Human Communications	2

Level 2:

50354	Publicity Practice	4
59350	PR: Process and Practice	4
59351	PR: Research and Communication	4
59352	PR: Issues and Management	4

Level 3:

50353	PR Project	4
	Pre-requisites: 50350 plus TWO of 50354, 50351, 50352	

SOCIAL STUDIES IN SCIENCE AND TECHNOLOGY

		Hours/Week
Level 1		
51370	Human Communications	2
Level 2:		
51339	Technology and Society	3
51367	Oral Communication	3
	OR	
51369	Technical and Professional Communication	3
Level 3:		
At least THREE of the following		
51630	Health, Technology and Society	3
51519	Industrial Relations	3
51621	Histories of Technologies	4
50716	Writing for Science and Technology	3
50717	Magic and Healing	4

SUB-MAJORS - BUSINESS

The following sub-majors are offered to Computing Science students by the Faculty of Business.

Advertising Management
Applied Psychology
Banking
Banking and Finance
Business Economics
Business Law
Economics
Employment Relations
Finance
Insurance
International Marketing
Operations Management
Organisation and Management
Public Sector Management

The information published here refers to SELECTED SUB-MAJORS ONLY. If you require more details of any of the above sub-majors, please contact the Faculty of Business

ADVERTISING MANAGEMENT
Co-ordinator: Dr. J.R. Rossiter
Room C212, Extension 9737

Compulsory Subjects			Hours/Week
24201		Principles of Marketing	3
24302		Consumer Behaviour (24201)	3
24411		Advertising Management (24201)	3
24510		Advertising Research Methods (21241, 24411)	3
24604	*	Advertising Project (24510)	3

* Advertising Project is modified to include computing Science skills.

Plus any ONE of the following subjects offered by the Faculty of Humanities and Social Sciences:

		Hours/Week
50330	Advertising Practice	3
50331	Advertising Copywriting (Print)	3
50332	Advertising Copywriting (TV, Radio, Film)	3
50333	Advertising Strategies: Visual and Verbal Persuasion	3

Prior approval of Co-ordinator is required.

APPLIED PSYCHOLOGY
Co-ordinator: Mr. J. Crawford
Room C418, extension 9765

21101	Organisational Psychology	3
21423	Behavioural Science Research Methods*	3
21624	Applied Psychology Project** (21101, 21423)	3

Plus any THREE of the following subjects

21424	Cognitive Processes (21101)	3
21425	Industrial Psychology (21101)	3
21426	Personality and Development (21101)	3
21427	Psychology of Communication (21101)	3

* 24403 Fundamentals of Marketing Research may be substituted.
** Undertaken in the final stage.

BUSINESS LAW
Co-ordinator: Dr. K. Cutbush-Sabine
Room C336, extension 9829

For all students there are six subjects required for the Sub-major, which may be chosen from the following:

22262	Marketing and Consumer Protection (22160, 24201)	3
22362	Company Law (22161)	3
	OR	
22361	Company Law Administration (22160)	3
22365	Administrative Law 1 (22160)	3
22366	Administrative Law 2 (22160)	3
22367	Property Law 3 (22160)	3

22460	Insurance Contracts (22160, 22261)	3
22461	Life Insurance Law (22160, 22261)	3
22465	Property Law 2 (22160)	3
22466	Trade Law (22160, 22362)	3
22467	The Law of Trusts (22160, 22261, 22362 or 22361)	3
22468	Labour Law	3
22510	Company Law 2	3
22564	Taxation 2 (22362, 22463)	3
22612	Corporate Control and Power	3
22660	Property Law 1	3
22661	Advanced Labour Law (22160, 22468)	3
22663	Advanced Income Tax	3
22664	Indirect Taxes	3

ECONOMICS
Co-ordinator: Dr. P. Wilson
Room C430, extension 9824.

Compulsory Subjects			Hours/Week
23204		Macroeconomics (23105)	3
23310	*	Microeconomic Policy (23105)	3

* In the Employment Relations major, an alternative economics subject is compulsory.

Plus at least FOUR subjects taken from the following:

23308	Macroeconomic Policy (23105, 23204, 21241)	3
23412	Business Forecasting (21241, 23105, 23204)	3
23311	Commodity Economics (23105)	3
23401	Comparative Economic Systems (23105, 23204)	3
23406	International Economics (23105, 23204)	3
23402	Industry Economics (23105)	3
23403	Theory and Application of Labour Economics (23105, 23204)	3
23414	Real Estate Investment Decisions (23105, 23204)	3

EMPLOYMENT RELATIONS
Co-ordinator: Mr. B. Marx
Room C437, extension 9736.

21101	Organisational Psychology	3
21421	Australian Industrial Relations	3
21422	Personnel Management (21105)	3
22468	Labour Law	3

Plus any TWO of the following

21304	Government and Employment Relations	3
21305	Industrial Relations Patterns and Practices	3
21420	Industrial Relations Skills (21421)	3
21526	Human Resource Management Issues (21422)	3
21527	Personnel Management Skills (21105)	3

FINANCE
Co-ordinator: Mrs. W. Bui
Room C411, extension 9836.

25301	Financial Management (22101, 23105, 21241)	3
25401	Financial Management and Policy (25301)	3
25521	Investment Analysis and Portfolio Management (25401)	3
25541	Financial Institutions and Markets	3

Plus any TWO of the following subjects:

23412	Business Forecasting (21241, 23105, 23204)	3
25501	Financial Planning Models (25401)	3
25505	Securities Market Regulation (25541)	3
25510	Current Issues in Finance (25541, 25521)	3
25531	International Finance (25401)	3

OPERATIONS MANAGEMENT
Co-ordinator: Ms. N. Harrison
Room C406, extension 9766.

		Hours/Week
21105	Introduction to Business	3
21343	Quantitative Management	3
21447	Operations Management	3
21547	Operations Management Policy (21447)	3
31819	Systems Analysis and Design 1 (31525)	3

Plus any ONE of the following:

21421	Australian Industrial Relations	3
21422	Personnel Management (21105)	3
21446	Ergonomics (21101 or 21241)	3
23412	Business Forecasting (21241)	3
21695	Operations Management Project (21447, 21547)	3

ORGANISATION AND MANAGEMENT
Co-ordinator: Mr. N. Barnwell
Room C409, extension 9788.

21101	Organisational Psychology	3
21105	Introduction to Business	3
21402	Organisation Analysis (21105)	3
21406	Management Skills (21101)	3
21601	Organisation and Management Project (21422)	3

Plus any ONE of the following:

21343	Quantative Management (21241)	3
21361	Government A	3
21421	Australian Industrial Relations	3
21422	Personnel Management (21105)	3
21447	Operations Management	3
21591	International Management	3
21696	Contemporary Issues in Management	3

SUB-MAJORS - PHYSICS

The Department of Physics offers three official sub-majors (A, B and C) to students in the School of Computing Sciences.

Interested students should study this handout in the first instance. If further advice is needed, you are welcome to consult:

	Dr. D. Blair	Room 1/1232	218-9944	- preferably
OR	Dr. R. Woolcott	Room 1/1233	218-9516	

In particular, consult Physics staff if it is unclear whether you have sufficient background to enrol in a subject.

REGISTRATION

At the beginning of each semester in which you take a Physics subject other than Physics 1 and 2, you should register with the Department of Physics by completing a form at the Junior Physics Office (Room 1/1122) on Enrolment Day or within a couple of days thereafter. Registration is ESSENTIAL if you take either of the subjects Physics for Electronics or Electricity and Magnetism.

YOU WILL ALSO NEED TO OFFICIALLY ENROL in the subject(s); this is done on Enrolment Day through your own School.

CODES (used in the Tables below).

Some subjects are available in JUST ONE OF THE TWO SEMESTERS; remember this when planning ahead. Under the heading "Semester" the codes mean:

A: subject available in Autumn semester
S: subject available in Spring semester
Y: subject available spread over a year.

Note that when a subject is taken spread over a year the subject number given in parentheses must be used, e.g. 63212 in the case of Physics 1.

A. SUB-MAJOR IN PHYSICS (GENERAL)

This sub-major provides a grounding in general physics together with some advanced study in a specialised area selected by the student. The sub-major is of benefit to students contemplating a career in programming of scientific and engineering problems; applying mathematics to such problems; or high-school teaching.

At least 18 semester hours as follows:

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisite
Core Subjects				
63211 } (63212) }	Physics 1	A,S,Y	6	
63221 } (63222)}	Physics 2	A,S,Y	6	Physics 1
	OR			
63172	Electricity and Magnetism	A (S)	3	Physics 1
Elective Subjects				
63331	Physics 3	A	4	Physics 2 or Electricity and Magnetism
	OR			
63194	Atomic Physics	A	2	Physics 2 or Electricity and Magnetism
63153	Energy Technology	A,S	3	Physics 3 or Atomic Physics
63341	Quantum Physics 1	S	3	Physics 3 or Atomic Physics
63366	Nuclear Physics	S88 A89, S89	2	Physics 3 or Atomic Physics

The new subject:
63381 Computational Analysis of Physical Data may be of special interest to some students.

B. SUB-MAJOR IN ELECTRONICS

This sub-major enables students, particularly Computing Science students, to complement knowledge of software with a knowledge of hardware. It is useful to students contemplating a career in the areas of microprocessors and computer interfacing.

At least 18 semester hours as follows:

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisite
63116	Physics for Electronics	A	6	
63332	Electronics	A,S	6	Physics for Electronics
31888	Logic Design 1		3	31814, 31818
	OR			
63352	Digital Electronics	S	3	Electronics

Elective Subjects

63361	Microprocessors in Instrumentation A		3	Electronics, Logic Design 1 or Digital Electronics
63342	Principles of Instrumentation S		3	Electronics, Logic Design 1 or Digital Electronics

NOTE: Logic Design 2 CANNOT be taken in this sub-major.

For students who have consistently achieved a WAM exceeding 55 and have passed Programming Principles 2, the following less rigid pre- and co-requisites apply:

63361 Microprocessors in Instrumentation:
Pre-requisite: Electronics only

63342 Principles of Instrumentation:
Pre-requisite: Electronics
Co-requisites: Logic Design 1 or Digital Electronics

C. SUB-MAJOR IN ATOMIC AND NUCLEAR PHYSICS

This sub-major studies the principles governing the behaviour of matter at the microscopic level. The sub-major is useful for a career in programming of scientific and engineering problems; applying mathematics to such problems, or high-school teaching.

At least 18 semester hours as follows:

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisite
Core Subjects				
63211 } (63212) }	Physics 1	A,S,Y	6	
63172	Electricity and Magnetism	A (S)	3	Physics 1
63331	Physics 3	A	4	Electricity and Magnetism
	OR			
63194	Atomic Physics	A	2	Electricity and Magnetism
63341	Quantum Physics 1	S	3	Physics 3 or Atomic Physics

Elective Subjects

63153	Energy Technology	A,S	3	Physics 3 or Atomic Physics
63366	Nuclear Physics	S88, A89, S89	2	Physics 3 or Atomic Physics
63354	Solid State Physics	A	4	Quantum Physics 1

NOTE: This sub-major replaces the sub-major in Atomic and Solid State Physics. Students who have started the older programme should discuss the choice of subjects with the Department of Physics.

SUB-MAJOR IN ELECTRICAL COMPUTER SYSTEMS

The sub-major in Electrical Computer Systems consists of the following subjects:

Core Subjects		Semester hours
41615	Digital Techniques	3
41622	Microcomputer Engineering 1	3
41732	Operating Systems 2	3
41746	Digital Systems	3

Plus two of the following Electives

42157	Robots and Flexible Manufacturing	3
41756	Computer Integrated Systems	3
41758	Computer Aided Engineering 3	3

Students who complete Computer Integrated Systems (41756), may with the approval of the School of Electrical Engineering, take

41764	Industrial Systems Design	3

instead of Robots and Flexible Manufacturing (42157) or Computer Aided Engineering 3 (41758)

FACULTY OF MATHEMATICAL AND COMPUTING SCIENCES

SCHOOL OF COMPUTING SCIENCES

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisites	Co-requisites
31133	Social Implications of Computers	A,S	2		31834
31140	Introduction to Computer Graphics	A	3	31843	
31163	Knowledge-Based Systems	A	3	31896, 31901	
31240	Topics in Computer Graphics	S	3	31140	
31350	Project (31350, 31351, 31352 and 31894)	A,S	3 or 6	31820	
31757	Languages and Processors	A	3	31831*, 31805* or 31814*	
31758	Communications Programming	A,S	3	31829, 31832	
31759	Information System Case Study	S	5	31820 31832 31861	31847 & 31825
31760	Performance Evaluation	S	3	31829 31833	
31761	Theoretical Computer Science	A	3		
31799	Computing 1 (For Science students only)	A,S			
31820	Systems Analysis and Design 2	A,S	3	31819*	
31825	Data Processing Management	A,S	3	31998	
31829	Operating Systems	A	3	31814* or31805*	31831*
31832	Data Communications and Computer Networks	A	3	31802* or 31841*	
31833	Simulation	A,S	3	31845*	
31834	Economic and Industrial Analysis	A,S	2	31915*	31133
31835	Programming Packages	S	3	31815* or 31842	
31836	Commercial Programming 2	A,S	3	31815*	
31838	Information Systems 3	S	3	31819*	31820
31843	Programming Techniques Lab	A	6	31850*	

* Subject has been altered or replaced in the restructured course

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisites	Co-requisites
31844	Operating Systems Lab	A,S	6	31814*	31843
31846	Communications Programming Lab	A	6	31832 31844	
31847	Performance Evaluation Lab.	A	6	31844 31833	
31848	Languages and Processors Lab.	A	6	31814* 31843	
31852	Commercial Programming 2 Lab.		6	31842*	
31853	Office Automation	S	3	31820	
31854	Distributed Databases	A	3	31861 31832	
31861	Information Systems 3 Lab	S	6	31819*	31820
31882	Advanced Theoretical Computer Science		3	31761	
31885	Advanced Mathematics	A	3	31401* 31845*	
31888	Logic Design 1	A	3	31814* 31818*	
31889	Logic Design 2	S	3	31888	
31893	Comparative Programming Languages	S	3	31843 or 31831*	
31895	Numerical Analysis	E	3	31885	
31896	Artificial Intelligence Programming	A	3	31831* or 31843 Pre- or Co-requisite	
31897	Computer Systems Architecture 3	E	3	31829 or 31844	
31898	Microprocessors and Applications	S	3	31814*, 31888	
31899	Systems Architecture	E	3	31897	
31900	Computer-aided Information Systems Engineering	E	3	31835 (advisable but not essential)	
31901	Artificial Intelligence Theory	S	3	31896, 31845* and 31843 or 31831*	
31902	Auditing the Computer	A,S	3	31914, 31915 or 31913	
31904	Systems Programming	S	3	31844 or 31829	
31913	Accounting Systems	A,S	3		
51370	Human Communication	A,S	2		

* Subject has been altered or replaced in the restructured course

NEW SYNOPSES FOR B.APP.SC. FOR 1989

Subject Number	Subject Name	1989 Semester Offered	Semester Hours	Pre-requisites	Co-requisites
31611	Information Systems	A	4		
31613	Computer Systems Architecture 1	A,S	3		
31614	Programming Principles	A,S	7		
31615	Discrete Mathematics	A	5		
31617	Accounting Fundamentals	A	3		
31621	Systems Analysis	A,S	3	31611	
31622	Commercial Programming Development	A,S	5	31614, 31611	
31623	Computer Systems Architecture 2	A,S	5	31613	
31624	Data Structures and Algorithms	S	5	31614, 31615 31625-*c-b*	
31625	Software Engineering	S	3	31614, 31615	
31626	Probability and Statistics	S	3		
31631	Database		4	31621	
31632	Communications and Networks	A	5	31611, 31613	
31633	Operating Systems	A	5	31623, 31624	
31636	Simulation and Modelling		4	31626, 31624	
31641	Systems Design		4	31631	
31642	On-Line Systems		5	31622, 31632, 31641 -b-c	
31647	Management Control Systems		4	31617	
31648	Business Tools And Applications		5	31631, 31617	
31653	Communications Software	S	6	31633 31632	
31655	Theory of Computer Science	A	4.5	31624, 31625	
31658	Project Management	A	4.5	31696-7 or 31698-9	
31662	Information System Case Study	A	6	31658, 31641, 31642 31666 - b-c	
31666	Performance Evaluation		6	31636	

-b-c should be done before or concurrently

Subject Number	Subject Name	1989 Semester Offered	Semester Hours	Pre-requisites	Co-requisites
31669	Social Implications of Computers			31696-7 or 31698-9	
31696	Industrial Training (F/T)		6	31621 31622 31624 31633 plus at least nine other core subjects from the B.App.Sc.	
31697	Industrial Training (F/T)		6	31696	
31698	Industrial Training (P/T)	3 for 2 semesters		31621, 31622, 31624, 31633 plus **at least** nine other core subjects from the B.App.Sc.	
31699	Industrial Training (P/T)	3 for 2 semesters		31698	

SUBJECT SYNOPSES FOR BACHELOR OF TECHNOLOGY IN INFORMATION SYSTEMS

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisites	Co-requisites
31711	Information Systems	A	4		
31713	Computer Systems Architecture	A	3		
31714	Programming Principles	A	7		
31715	Discrete Mathematics	A	5		
31717	Accounting Fundamentals	A	3		
31721	Systems Analysis	A	3	31711 -b-c	
31722	Commercial Programming	S	5	31711, 31714	
31725	Software Engineering	S	6	31714, 31715	
31726	Probability and Statistics	S	3		
31731	Database	S	4	31721, 31711	
31732	Communications and Networks	A	5	31711, 31713	
31733	Operating Systems	A	5	31713	
31738	Management Principles for IT Professionals	A	3		
31741	Systems Design	S	4	31731	
31742	On-Line Systems	S	5	31722, 31732, 31741-b-c	
31747	Management Control Systems	S	3	31717	
31758	Project Management	A	3	31788	
31761	Technology Planning	S	3	31758, 31781	
31766	Performance Modelling and Management	S	6	31733, 31726	
31767	Auditing the Computer	S	6	31747	
31768	Business Planning for IT Professionals	S	3	31758	

-b-c should be done before or concurrently

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisites	Co-requisites
31769	Social Implications of Computers	S	3		
31770	Industry Project 1	S	14		
31771	Business Requirements Analysis	S	3	31721	
31779	Applications of Information Technology 1	S	3	31711	
31780	Industry Project 2	A	14	31770	
31781	Business Systems Design	A	3	31771, 31741	
31788	Organisation Theory for IT Professionals	S	3	31738	
31789	Applications of Information Technology 2	A	3	31779 -b-c	

-b-c should be done before or concurrently

SUBJECT SYNOPSES FOR GRADUATE DIPLOMA IN DATA PROCESSING COMMENCING 1989

Subject Number	Subject Name	Semester Offered	Semester Hours	Pre-requisites	Co-requisites
31017	Accounting Fundamentals	A	3		
31021	Systems Analysis	S	3	31071	
31022	Commercial Programming Development	S	3	31071, Pascal COBOL	
31024	Data Structures and Algorithms	A	3	31025	
31025	Introduction to Software Engineering	S	3		
31026	Probability and Statistics	S	3		
31031	Database	A	3	31021	
31032	Communications and Networks	A	3	31073	
31033	Operating Systems	A,S	3	31073, 31071	
31041	Systems Design	A,S	3	31031	
31042	On-Line Systems	A,S	3	31022, 31032, 31041 -b-c	
31047	Management Control Systems	S	3	31017	
31048	Business Tools And Applications	S	3	31031, 31017	
31053	Communications Software	A,S	3	31033, 31032	
31058	Project Management	A,S	3		
31071	Introduction to Information Systems	A	3		
31073	Introduction to Computer Systems	A	3		

-b-c should be done before or concurrently

MASTERS DEGREE

Subject Number	Subject Name	Semester Offered (Year)	Semester Hours	Pre-requisites
21718	Organisation Analysis and Design	S(90)	3	
22729	The Legal Environment of Business	S(89)	3	
31677	Thesis (F/T)	A,S	22	
31678	Thesis (P/T/Ext)	A,S	11	
32100	Advanced Programming Techniques	A(89)	4	
32101	Intelligent Systems	S(89)	4	
32104	Decision Making and Modelling	A(90)	4	Operations Research, Statistics
32105	Specialist Topics in Artificial Intelligence	S(90)	4	
32200	Information Processing Strategy	S(89)	4	32201,32202 and 32203
32201	Data Base	A(90)	4	31838
32202	Communication Systems	S(90)	4	31832
32203	Information Management	A(89)	4	
32300	Microprocessor Applications		4	31805 & 31889
32301	Performance Evaluation	A(89)	4	31760
32302	Computer Architecture	S(89)	4	31829 & 31897
32303	Operating Systems and Languages		4	31757 & 31829
32304	Computer Languages	A(90)	4	
32305	Operating Systems	S(90)	4	
32400	Accounting for Management	A(90)	4	
32401	Management Policy and Strategy	A(89)	4	
32908	Project	A,S	8	
32912	Project	A,S,E	12	
32916	Project	A,S,E	16	
32999	Seminar	A,S	1	

Approximate Equivalences Between "Old" and "New" Subjects

New Subject		Old Subject	
31615	Discrete Mathematics	31401	Mathematics 1
31617	Accounting Fundamentals	31914	Financial Methods 1
31611	Information Systems	31841	Information Systems 1
31613	Computer Systems Architecture 1	31818	Computer Systems 1
31614	Programming Principles	31850	Programming Principles 1
51370	Human Communications	51370	Human Communications
31626	Probability & Statistics	31845	Mathematics 2
31621	Systems Analysis	31819	Systems Analysis & Design 1
31622	Commercial Programming Development	31842	Commercial Programming 1
31623	Computer Systems Architecture 2	31814	Programming Principles 2
31624	Data Structures & Algorithms	31843	Programming Techniques
31625	Software Engineering		new
31636	Simulation & Modelling	31833	Simulation
31631	Database	31861	Information Systems 3
31632	Communications & Networks	31832	Data Comm & Computer Networks
31633	Operating Systems	31844	Operating Systems
31641	Systems Design	31820	Systems Analysis & Design 2
31647	Management Control Systems	31915	Financial Methods 2
31642	On Line Systems	31852	Commercial Programming 2
31648	Business Tools & Applications	31912	Business Appns for Micros & InfoSys 2
31655	Theory of Computer Science	31761	Theoretical Computer Sc & some Languages and Proc
31658	Project Management	31825	Data Processing Management
31653	Communications Software	31846	Communications Programming
31662	Informations Systems Case Study	31759	Information Systems Case Study
31669	Social Implications of Computers	31133	Social Imps & Econ& Industrial Analysis
31666	Performance Evaluation	31847	Performance Evaluation

Students in the "old" B.App.Sc. who have failed Information Systems 2 will be required to take the elective Auditing the Computer in lieu. If any student with a failure in IS2 has already completed this elective, one of the Management strand of electives may be substituted. Any student with a failure in Languages and Processors after Autumn 1989 will be required to take the new elective, Language Translators which will run in the Spring Semester.

SYNOPSES OF SUBJECTS
(Old) B.App.Sc. (Comp.Sc.) and electives

COBOL Extension Course
Three semester hours
Students are trained in the use of computers to deal with problems which confront them in a commercial environment. The COBOL language is an internationally standardised commercial language. In all practical work, the emphasis will be on good programming technique, adequate testing, appropriate documentation and correct syntax.

Pascal Extension Course G. Jones
Three semester hours
An introduction to the analysis and design of computer algorithms and their implementation in Pascal. The practical work will cover numeric and non-numeric aspects of computing, with the emphasis on writing well-structured and documented programmes.

UNIX/C Extension Course B. Howarth
Three semester hours
An introduction to the C programming language and the Unix* operating system. Students enrolling in this course are expected to have programming experience.

[C] UNIX is a trademark of AT&T and Bell Laboratories.

31133 Social Implications of Computers J. Edwards
Two semester hours
Co-requisite: Economic and Industrial Analysis (31834)
This subject aims to identify areas of society where the use of computer technology is of concern, to develop an awareness of computing from the standpoint of other disciplines, and to apply an understanding of these social issues to the work situation. Topics include: history of computing (social and economic factors), effects on workforce, professionalism, social responsibility of computer practitioners, privacy, the DP workforce.

31140 Introduction to Computer Graphics (Elective) K. Suffern
Three semester hours
Co-requisite: Programming Techniques Lab. (31843)
This subject provides a thorough introduction to the field of computer graphics. Topics covered are: passive and interactive graphics hardware devices and programming; mathematical tools for two and three dimensional graphics; two and three dimensional vector and raster graphics algorithms, colour in computer graphics; graphics standards; graphics packages; applications of computer graphics - business graphics, computer aided design, cartography, animation and advertising.

31163 Knowledge-Based Systems (Elective) R. Quinlan
Three semester hours
Pre-requisites: Artificial Intelligence Programming (31896), Artificial Intelligence Theory (31901)

This subject introduces the student to recent developments in artificial intelligence based on the representation and manipulation of knowledge. The student will obtain an understanding of the principles of expert systems together with some experience constructing small knowledge-based systems with the aid of current development tools. Topics: Representation of knowledge; Plausible reasoning; Knowledge acquisition; Development methodologies; Evaluation of current tools.

31240 Topics in Computer Graphics (Elective) K. Suffern
Three semester hours
Pre-requisite: Introduction to Computer Graphics (31140)

For students who have passed 31140, this subject provides a study of several additional computer graphics topics, some elementary, and some of a more advanced nature. These topics include: raster algorithms - antialising techniques and clipping algorithms; hidden line and surface algorithms; computer animation techniques; realistic image synthesis techniques - illumination and shading models, ray tracing and transparency, texture mapping, modelling of natural phenomena; current research directions in computer graphics.

31350 Project (31350, 31351, 31352 and 31894) (Elective)
Three or six semester hours J. Edwards
Pre-requisite: Systems Analysis and Design 2 (31820)

A project is intended to give a student experience in working independently and responsibility for the complete development of a small system from the initial analysis through to the user documentation. Students will be required to attend several introductory lectures on research methods, report writing etc. Projects may be drawn from any area of the course or suggested by the student's industrial experience.

31759 Information System Case Study
Five semester hours
Pre-requisites: Systems Analysis and Design 1 (31820), Data Communications and Computer Networks (31832) and Information Systems Lab (31861)
Co-requisites: Performance Evaluation Lab (31847) and Data Processing Management (31825)

This case study deals with the issues involved in strategic level anaysis and design in a corporate wide information systems environment. It reinforces material previously studied while giving groups of students scope to use their own judgment in applying their knowledge. It stresses the development and assessment of alternative approaches to a system strategy and senior management communication skills.

31761 Theoretical Computer Science J. Debenham
Three semester hours
Advanced topics from the theory of machines, the theory of languages, the theory of algorithms, programmes and data, the complexity of problems. Applications of the theory.

31799 Computing 1 (For Science students only) G. Feuerlicht
The aim of this subject is to provide a general introduction to computers for science students. Programming skills will be developed using FORTRAN 77 on the University Amdahl Unix system. The emphasis in this subject is on structured programming techniques. The subject contains a significant element of practical programming work with assignments relevant to topics in science and engineering.

The emphasis is on structured programming techniques, and the subject contains a significant element of practical programming work. Examples will be presented in the lectures with relevance to topics in science and engineering.

31819 Systems Analysis and Design 1 I. Hawryszkiewycz
Three semester hours
Pre-requisites: Information Systems 1 Lab (31841)
Introduces systems concepts and a range of techniques used in systems analysis. Covers the techniques used to analyse all discrete systems data functions and flows inclusive of data flow diagrams, relational analysis and normalisation and E-R modelling. Describes systems life cycles and the role of these techniques within life cycles in evaluating requirements and proposals and setting objectives for new systems.

31820 Systems Analysis and Design 2 J. Underwood
Three semester hours
Pre-requisite: Systems Analysis and Design 1 (31819)
This subject develops one of the options produced by the analysis (covered in SAD1) from a systems model to a physical design. Computer Systems Design covers the tools and qualities of structured design, including packaging, testing and implementation. Human aspects of Systems Design covers screen and forms design, operations, procedures, etc.

31825 Data Processing Management P. Bebbington
Three semester hours
Pre-requisite: Industrial Training (31697 Or 31688)
Develops skills in managing a DP system, in establishing effective controls and in making written presentations.

31832 Data Communications and Computer Networks J. Robb
Three semester hours
Pre-requisites: Information Systems 1 Lab (31841)
The study of data communication in computer and terminal networks. Basic data communication concepts, network components, network design, telecommunication facilities, introduction to communication protocols and network architectures.

31833 Simulation J. Edwards
Three semester hours
Pre-requisite: Mathematics 2 Lab (31845)
Principles and practice of modelling - analysis, data gathering, solution, validation, implementation. Specific areas such as forecasting, inventory, corporate modelling, queueing theory, continuous simulation, simulation languages.

31834 Economic and Industrial Analysis B. Stewart
Two semester hours
Pre-requisite: Financial Methods 2 (31915)
Co-requisite: Social Implications of Computers (31133)
Macroeconomics, particularly in Australia. Government fiscal, and monetary policy and its effects on Australian industry, unemployment, etc. Economic milieu.

31835 Programming Packages
Three semester hours
Pre-requisites: Commercial Programming 1 Lab (31842)
The economics and design of packages are covered. Packages from selected areas are discussed and used.

31843 Programming Techniques Lab. G. Belovari
Six semester hours
Pre-requisite: Programming Principles 1 Lab (31850)
Structured programming techniques such as modular design, documentation and layout, programme specification and verification. The basic data types are covered and associated searching, selecting, sorting, additions and deletion methods for manipulating data in these structures are given, analysed for efficiency and proved correct. The subject serves to introduce the systematic solution of common problems as well as providing an introduction to programme analysis and verification.

31844 Operating Systems Lab. M. Fry
Six semester hours
Pre-requisite: Programming Principles 2 (31814)
Co-requisite: Programming Techniques Lab (31843)
Introduces the student to the concepts and facilities available in computer operating systems. The subject includes scheduling, multiprogramming, protection and resource control.

31846 Communications Programming Lab. J. Colville
Six semester hours
Pre-requisites: Data Communications and Computer Networks (31832) and Operating Systems Lab (31844)
Discusses the mechanics of operation of communications systems using the ISO reference model for layered protocols. Some aspects of communications systems implementation, and the effects of design decisions on system users are also covered.

31847 Performance Evaluation Lab. B. Howarth
Six semester hours
Pre-requisites: Operating Systems Lab (31844) and Simulation (31833)
This subject reviews considerations involved in configuring, selecting or upgrading a computer system in the most cost effective way. Operating systems and other software factors affecting computer performance are also studied. Measurement and modelling techniques are emphasised.

31848 Languages and Processors Lab. J. Cady
Six semester hours
Pre-requisites: Programming Principles 2 (31814) and Programming Techniques Lab (31843)
Provides an introduction to language processors,e.g. compilers and the study of programming languages. Students are set an assignment consisting of the writing of a compiler for a simple language.

31852 Commercial Programming 2 Lab. D. Jinks
Six semester hours
Pre-requisite: Commercial Programming 1 Lab (31842)
This subject covers the life cycle of on-line commercial application systems from a programmer's point of view. It includes design, development, testing, implementation and maintenance issues with particular emphasis on structured design using COBOL. Students work in project teams to produce a working on-line system.

31853 Office Automation (Elective) B. Wunderlich
Three semester hours
Pre-requisite: Systems Analysis and Design 1 (31820)
Covers the advanced concepts of office automation at the corporate level. Corporate integration concerns the link between office systems and corporate information systems and databases. Office level issues concern the integration of data from multiple inputs into single documents and the integration of office procedures that lead to the concept of the paperless office. Methods of arranging and designing integrated systems and the hardware and software solutions for such systems will be covered.

31854 Distributed Databases (Elective) G. Feuerlicht
Three semester hours
Pre-requisite: Information Systems Lab 3 (31861) and Data Communications and Computer Networks (31832)
Describes the characteristics and methods of designing distributed databases. Covers important distribution issues including location transparency, replication and concurrency and the problems associated with querying and updating distributed databases. Design issues such as conceptual models of distributed databases and systems dictionaries are covered as well as the managerial issues of implementing them. Practical examples of access to distributed databases through high level languages are covered.

31861 Information Systems 3 Lab G. Feuerlicht
Six semester hours
Pre-requisite: Systems Analysis and Design 1 (31819)
Co-requisite: Systems Analysis and Design 2 (31820)
This subject provides a comprehensive introduction to database management, discussing the basic components of database environment and database management systems. A brief review of data modelling and database design methodologies is provided in the early part of the subject, with the major portion of the material presented devoted to practical issues concerning database implementation. The subject will cover database management systems currently used in commercial applications including hierarchical, network and relational systems with practical assignments using relational database management systems. The students will gain extensive skills in using the Structured Query Language (SQL). Subject material will also address problems of performance, security and management of large databases.

31882 Advanced Theoretical Computer Science (Elective)
Three semester hours J. Debenham
Pre-requisite: Theoretical Computer Science (31761)
To review advanced work in the theory of machines, theory of languages, theory of programmes and theory of data.

31885 Advanced Mathematics (Elective) T. Osborn
Three semester hours
Pre-requisite: Mathematics 1 (31401),
Mathematics 2 Lab (31845)
This subject is a compulsory pre-requisite for a Maths sub-major or any subjects in the School of Mathematics.

Linear Mathematics: matrices, determinants, eigenvalues and eigenvectors, inversion, pivotting and conditioning, complex numbers and functions.

Probability and statistics: binomial, Poisson, chi-square and hypergeometric distributions, combinatorial methods, hypothesis testing, confidence intervals and types of errors, correlation and regression, sampling theory and ANOVAs.

Other: Calculus methods and theory, ordinary and partial differential equations.

31888 Logic Design 1 (Elective) T. Hintz
Three semester hours
Pre-requisites: Programming Principles 2 (31814) and
Computer Systems 1 (31818)
To provide an introduction to the concepts of logic design, gates, Boolean algebra, minimisation, combinational and sequential circuits.

31889 Logic Design 2 (Elective)
Three semester hours
Pre-requisite: Logic Design 1 (31888)
A continuation of Logic Design 1 to include the concepts of machine structure as a controlled combination of registers and gates.

31893 Comparative Programming Languages (Elective) J. Potter
Three semester hours
Pre-requisite: Programming Techniques Lab (31843)
Programming language constructs, their syntax and semantics. A comparative study of different language styles through particular languages: for example Prolog, Lisp C, Modula 2, Smalltalk, Occam.

31895 Numerical Analysis (Elective)
Three semester hours
Pre-requisite: Advanced Mathematics (31885)
Errors, numerical linear algebra, interpolation and approximation, solution of non-linear equations in one and many unknowns, numerical differentiation and integration, numerical solution of ordinary and partial differential equations. Computer implementation of numerical algorithms and use of packages.

31896 Artificial Intelligence Programming (Elective)
Three semester hours T. Osborn
Co-requisite or Pre-requisite: Programming Techniques Lab (31843)
The subject provides a thorough coverage of the two main languages used to implement AI systems PROLOG and LISP. AI also provides the context for many of the tutorial exercises and assignments.

31897 Computer Systems Architecture 3 (Elective) T. Hintz
Three semester hours
Pre-requisites: Operating Systems Lab (31844)
A systematic treatment of more advanced topics in machine organisation and systems architecture.

31898 Microprocessors and Applications (Elective) M. Phillips
Three semester hours
Pre-requisite: Programming Principles 2 (31814), Logic Design 1 (31888)
An examination of the current range of microprocessors and the applications of micros in embedded systems. The subject is highly practical. The student should develop skills in the construction of micro applications solutions, using standard device 'families' and software logic.

31899 Systems Architecture (Elective)
Three semester hours
Pre-requisite: Computer Systems Architecture 3 (31897)
In-depth study at the architectural level of one or more state-of-the-art or experimental computer systems.

31901 Artificial Intelligence Theory (Elective) J. Potter
Three semester hours
Pre-requisites: Artificial Intelligence Programming (31896), Mathematics 2 Lab (31845) and Programming Techniques Lab (31843)
This subject covers Artificial Intelligence to give a professional basis in the basic methods and algorithms of the

subject. It includes knowledge representation, machine reasoning, planning, problem solving and research, constraint based systems, learning robotics and computer vision.

31902 Auditing the Computer (Elective) P. Stanley
Three semester hours
Pre-requisites: Accounting Systems (31913)
An introduction to audit concepts and techniques in the EDP audit field of activity. 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 (Elective) J. Colville
Three Semester Hours
Pre-requisite: Operating Systems Lab (31844) or
Operating Systems (31829)
The role of the systems programmer. Comparison of programming languages for systems programming. UNIX operating system. C programming language. Comparison of using tools vs writing a new programme.

31912 Business Applications for Microcomputers (Elective)
Three semester hours P. Bebbington
Designed to make students familiar with the use of microcomputers associated peripherals, application packages, and languages in the business environment.

51370 Human Communication
Two semester hours
This subject is designed to improve the student's understanding of the subject of interpersonal communication and the way these affect human interaction at work and in society. Through workshops, seminars and practical applications, students will gain experience in discussion, questioning, argument and decision making. A second strand of the subject will examine the role and influence of the communication media in our society.

NEW SYNOPSES FOR B.APP.SC. FOR 1989

31611 Information Systems I. Yourlo
Four semester hours
This subject focuses on the use of computer based systems in an organisational context. Typical computer based systems: data processing and information systems, office support systems, personal computers, embedded systems. Organisational benefits of computer based systems, objectives, costs and risks. On-line, off-line, real time systems. Batch, interactive and transaction processing. Description of data flows: process flow charting. Introduction to simple business applications and the commercial system development life cycle. Operational issues.

31613 Computer Systems Architecture 1 M. Phillips
Three semester hours
This subject is an introduction to computer hardware and software systems. The relationship between hardware and software is discussed by considering the structure of the computer, the inter-relationship of the various components and the processing by the computer of data and programme.

31614 Programming Principles K. Suffern
Seven semester hours
This subject provides an introduction to computer operating systems and to problem analysis and solution on the computer. Students gain experience at using the Unix operating system. Methods of problem analysis, pseudocoding, coding, debugging, testing and documentation are introduced through the use of the procedural language Pascal. The concepts of programme compilation and execution and interactive and noninteractive processing are introduced. The principles of object oriented programming will be discussed.

31615 Discrete Mathematics J. Potter
Five semester hours
This subject develops the mathematics needed for software engineering. Logic: propositions, truth tables, predicate logic, proof techniques. Set theory: sets, relations, relational algebra, functions, iteration, recursive definitions and inductive proof, partial orders and equivalence relations. Discrete structures: natural numbers, lists, trees. Functional programming is used to illustrate the mathematical concepts introduced; a brief comparison with logic programming is given.

31617 Accounting Fundamentals B. Wunderlich
Three semester hours
This subject provides a general introduction to financial accounting and business law. Accounting related applications are the backbone of many commercial computing systems and an understanding of business law facilitates the study of business methods.

31621 Systems Analysis I. Hawryszkiewycz
Three semester hours
Pre-requisites: Information Systems (31611)
Introduces systems concepts and a range of techniques used in systems analysis. Covers the techniques used to analyse all discrete systems data functions and flows inclusive of data flow diagrams, relational analysis and normalisation and E-R modelling. Describes systems life cycles and the role of these techniques within life cycles in evaluating requirements and proposals and setting objectives for new systems.

31622 Commercial Programming Development J. Robb
Five semester hours
Pre-requisites: Programming Principles (31614),
Information Systems (31611)
This subject covers structured design techniques and their application to COBOL programming in an offline commercial environment.

31623 Computer Systems Architecture 2 B. Howarth
Five semester hours
Pre-requisite: Computer Systems Architecture 1 (31613)

This subject is a continuation of Computer Systems Architecture 1. The concepts introduced there are elaborated and assembler language programming is practised; additional requirements of architectures for performance enhancement and support of high level languages and operating systems are discussed.

31624 Data Structures and Algorithms T. Osborn
Five semester hours
Pre-requisites: Programming Principles (31614), Discrete Mathematics (31615), Introduction to Software Engineering (31625) *should be done before or concurrently*

Structured approach to programming including: abstract modelling, modular design, step-wise refinement, documentation and layout, complexity analysis of algorithms for efficiency, programme correctness. Abstract and dynamic data types are covered notionally and formally, with associated insertion, deletion, selection, searching and sorting methods and algorithms for manipulating data in these structures. Systematic methods for attempting common problems.

31625 Software Engineering J. Potter
Three semester hours
Pre-requisites: Programming Principles (31614), Discrete Mathematics (31615)

This subject introduces the formal aspects of modern software engineering. Topics: an overview of the software engineering environment, the practice of formal mathematical specification, programme development via refinement of specifications, programmes correctness, machine executable specifications, an overview of software testing and reliability.

31626 Probability and Statistics T. Osborn
Three semester hours

Descriptive statistics. Probability theory, random variables, conditional probabilities, independence and Bayes' theorem, and modelling of uncertainty, measures of central tendency and dispersion, moments. Processes and distributions: binomial, Poisson, normal and sampling. Theorems: Chebychev, central limit. Applied statistics: estimation, confidence intervals, hypothesis testing and types of errors; problem solving by theory, statistical tables and machine packages.

31631 Database G. Feuerlicht
Four semester hours
Pre-requisites: Systems Analysis (31621)

Designing database applications given a set of user requirements. Describes how models of data are converted to databases and methods used to maintain data in databases. Included are conversion to relational databases and the use of SQL for data retrieval and updates and the controls necessary to maintain

data integrity during updates. Development of application programmes using application generators with SQL interface. Introduction to network and hierarchical databases and methods used to design such databases.

31632 Communications and Networks J. Robb
Five semester hours
Pre-requisites: Information Systems (31611), Computer Systems Architecture 1 (31613)

This subject introduces communication concepts and terminology. It describes the problems involved in the Physical and Data Link Layers of communication and their solutions. It discusses network architectures, topologies and carrier services.

31633 Operating Systems M. Fry
Five semester hours
Pre-requisites: Computer Systems Architecture 2 (31623), Data Structures and Algorithms (31624)

An introduction to the student of the concepts and facilities available in computer operating systems. The subject includes scheduling, multiprogramming, protection and resource control.

31636 Simulation and Modelling J. Edwards
Four semester hours
Pre-requisites: Probability and Statistics (31626), Data Structures and Algorithms (31624)

Principles and practice of modelling: analysis, data gathering, solution, validation, implementation. Modelling in and of computer systems, queueing theory, continuous simulation, languages, corporate modelling, forecasting and inventory.

31641 Systems Design J. Underwood
Four semester hours
Pre-requisite: Database (31631)

This subject develops a systems model to a structured physical design. A variety of implementation strategies are introduced such as fourth generation languages, prototyping, information centres and end-user tools. Human aspects of systems design covers screen and forms design, operations, procedures, etc.

31642 On-Line Systems D. Jinks
Five semester hours
Pre-requisites: Commercial Programming Development (31622), Communications and Networks (31632), Systems Design (31641) *should be done before or concurrently*

This subject covers the life cycle of on-line commercial application systems from a programmer's point of view. It includes design, development, testing, implementation and maintenance issues with particular emphasis on structured design using COBOL. Students work in project teams to produce a working on-line system.

31647 Management Control Systems
Four semester hours
Pre-requisite: Accounting Fundamentals (31617)
The principles and techniques of cost accounting, budgeting and financial planning and their use in computer based accounting and business decision making systems.

31648 Business Tools And Applications
Five semester hours
Pre-requisites: Database (31631),
Accounting Fundamentals (31617)
This subject aims to give students familiarity with microcomputers in the office and business environment and as stand alone machines or workstations. The problems of linking microcomputers into local communication networks, the use of database and file management programmes and the physical operation of microcomputers are discussed. Students will become familiar with specific packages such as business databases and spreadsheets and programme development aids.

31653 Communications Software J. Colville
Six semester hours
Pre-requisites: Operating Systems (31633),
Communications and Networks (31632)
This subject discusses the services provided by the various layers of a communications system and the protocols used to implement these services. Discussion is based, primarily, around the use of the ISO reference model for Open System Interconnection. Some aspects of the effect of design decisions on systems users are also covered.

31655 Theory of Computer Science J. Debenham
Four and one half semester hours
Pre-requisites: Data Structures and Algorithms (31624)
Introduction to Software Engineering (31625)
Topics from the theory of machines, the theory of languages - syntax and semantics, the theory of processes, the theory of data, the complexity of problems. Applications of the theory particularly in the area of language translation and compiler writing.

31658 Project Management D. Wilson
Four and a half semester hours
Pre-requisite: Industrial Training 31696-7 or 31698-9
Defines the role of the project manager/leader and introduces project management techniques. Students will gain an overall view of information systems development from project conception through to successful implementation and an understanding of the qualities of an effective leader.

31662 Information System Case Study
Six semester hours
Pre-requisites: Project Management (31658), Systems Design (31641), On-Line Systems (31642), Performance Evaluation (31666) - *should be done before or concurrently*

This case study deals with the issues involved in strategic level anaysis and design in a corporate wide information systems environment. It reinforces material previously studied while giving groups of students scope to use their own judgment in applying their knowledge. It stresses the development and assessment of alternative approaches to a system strategy and senior management communication skills.

31666 Performance Evaluation B. Howarth
Six semester hours
Pre-requisites: Simulation and Modelling (31636)

This subject reviews considerations involved in configuring, selecting or upgrading a computer system in the most cost effective way. Operating systems and other software factors affecting computer performance are also studied. Measurement and modelling techniques are emphasised.

31669 Social Implications of Computers J. Edwards
Three semester hours
Pre-requisite: Industrial Training 31696-7 or 31698-9

This subject aims to identify areas of society where the use of computer technology is of concern; and to apply an understanding of the social issues to the actual work situation. Topics include: history of computing (social and economic factors), effects on workforce, professionalism, social responsibility of computer practitioners, privacy, the DP workforce.

31696 Industrial Training (F/T - first) J. Hughes
Six semester hours
Pre-requisites: Systems Analysis (31621), Commercial Programming Development (31622), Data Structures and Algorithms (31624), Operating Systems (31633), plus <u>at least</u> nine other core subjects from the B.App.Sc. programme.

31697 Industrial Training (F/T - second)
Six semester hours
Pre-requisites: Industrial Training (F/T first) (31696

The first and second semesters of the compulsory industrial requirement for the course. <u>ALL</u> F/T students must enrol in these subjects and obtain a minimum of 9 months' of full-time employment. Students must normally have completed the equivalent of at least four F/T semesters before obtaining employment.

31698 Industrial Training (P/T - first - Stage 5) J. Hughes
Three semester hours for two semesters
Pre-requisites: Systems Analysis (31621), Commercial Programming Development (31622), Data Structures and Algorithms (31624), Operating Systems (31633), plus **at least** nine other core subjects from the B.App.Sc. programme.

31699 Industrial Training (P/T second - Stage 6)
Three semester hours for 2 semesters
Pre-requisites: Industrial Training P/T -first (31698)

The first and second years of the compulsory industrial requirement for the course, normally taken for a total of four semesters in Stages 5 and 6. ALL P/T students must enrol in these subjects and obtain a minimum of 18 months' of full-time employment.

SUBJECT SYNOPSES FOR BACHELOR OF TECHNOLOGY IN INFORMATION SYSTEMS FOR 1989

31711 Information Systems — I. Yourlo
Four semester hours
This subject focuses on the use of computer based systems in an organisational context. Typical computer based systems: data processing and information systems, office support systems, personal computers, embedded systems. Organisational benefits of computer based systems, objectives, costs and risks. On-line, off-line, real time systems. Batch, inter-active and transaction processing. Description of data flows: process flow charting. Introduction to simple business applications and the commercial system development life cycle. Operational issues.

31713 Computer Systems Architecture — M. Phillips
Three semester hours
This subject is an introduction to computer hardware and software systems. The relationship between hardware and software is discussed by considering the structure of the computer, the inter-relationship of the various components and the processing by the computer of data and program.

31714 Programming Principles — K. Suffern
Seven semester hours
This subject provides an introduction to computer operating systems and to problem analysis and solution on the computer. Students gain experience at using the Unix operating system. Methods of problem analysis, pseudocoding, coding, debugging, testing and documentation are introduced through the use of the procedural language Pascal. The concepts of program compilation and execution and interactive and noninteractive processing are introduced. The principles of object oriented programming will be discussed.

31715 Discrete Mathematics — J. Potter
Five semester hours
This subject develops the mathematics needed for software engineering. Logic: propositions, truth tables, predicate logic, proof techniques. Set theory: sets, relations, relational algebra, functions, iteration, recursive definitions and inductive proof, partial orders and equivalence relations. Discrete structures: natural numbers, lists, trees. Functional programming is used to illustrate the mathematical concepts introduced; a brief comparison with logic programming is given.

31717 Accounting Fundamentals — B. Wunderlich
Three semester hours
This subject provides a general introduction to financial accounting and business law. Accounting related applications are the backbone of many commercial computing systems and an understanding of business law facilitates the study of business methods.

31721 Systems Analysis — I. Hawryszkiewycz
Three semester hours
Pre-requisites: Information Systems (31711)
should be done before or concurrently
Introduces systems concepts and a range of techniques used in systems analysis. Covers the techniques used to analyse all discrete systems data functions and flows inclusive of data flow diagrams, relational analysis and normalisation and E-R modelling. Describes systems life cycles and the role of these techniques within life cycles in evaluating requirements and proposals and setting objectives for new systems.

31722 Commercial Programming — J. Robb
Five semester hours
Pre-requisites: Information Systems (31711),
Programming Principles (31714)
Commercial structured design techniques and third generation commercial programming in a batch environment. Students will be taught the design technique and language of the particular industry organisation using approved assignment work. The Jackson structured design technique will be studies.

31725 Software Engineering — J. Potter
Six semester hours
Pre-requisites: Programming Principles (31714),
Discrete Mathematics (31715)
This subject introduces the formal aspects of modern software engineering. Topics: an overview of the software engineering environment, the practice of formal mathematical specification, program development via refinement of specifications, programs correctness, machine executable specifications, an overview of software testing and reliability.

31726 Probability and Statistics — T. Osborn
Three semester hours
Descriptive statistics. Probability theory, random variables, conditional probabilities, independence and Bayes' theorem, and modelling of uncertainty, measures of central tendency and dispersion, moments. Processes and distributions: binomial, Poisson, normal and sampling. Theorems: Chebychev, central limit. Applied statistics: estimation, confidence intervals, hypothesis testing and types of errors; problem solving by theory, statistical tables and machine packages.

31731 Database — G. Feuerlicht
Four semester hours
Pre-requisites: Systems Analysis (31721),
Information Systems (31711)
Designing database applications given a set of user requirements. Describes how models of data are converted to databases and methods used to maintain data in databases. Included are conversion to relational databases and the use of SQL for data retrieval and updates and the controls necessary to maintain data integrity during updates. Development of application programs using application generators with SQL interface. Introduction to network and hierarchical databases and methods used to design such databases.

31732 Communications and Networks J. Robb
Five semester hours
Pre-requisites: Information Systems (31711),
Computer Systems Architecture (31713)
This subject introduces communication concepts and terminology. It describes the problems involved in the Physical and Data Link Layers of communication and their solutions. It discusses network architectures, topologies and carrier services.

31733 Operating Systems M. Fry
Five semester hours
Pre-requisites: Computer Systems Architecture (31713)
An introduction to the student of the concepts and facilities available in computer operating systems. The subject includes scheduling, multiprogramming, protection and resource control.

31738 Management Principles for IT Professionals P. Stanley
Three semester hours
The environment of business organisations and the challenges facing large and small business. Management theory, evolution and schools of thought. Management principles, style, decision making, mechanistic and organic systems. Personnel management, planning, job analysis and design, selection and training, career planning, appraisal and counselling, compensation and incentives. Operations management.

31741 Systems Design D. Wilson
Four semester hours
Pre-requisite: Database (31731),
Systems Analysis (31721)
This subject develops a systems model to a structured physical design. A variety of implementation strategies are introduced such as fourth generation languages, prototyping, information centres and end-user tools. Human aspects of systems design covers screen and forms design, operations, procedures, etc.

31742 On-Line Systems D. Jinks
Five semester hours
Pre-requisites: Commercial Programming (31722),
Communications and Networks (31732),
Systems Design (31741)
should be done before or concurrently
This subject covers the life cycle of on-line commercial application systems from a programmer's point of view. It includes design, development, testing, implementation and maintenance issues with particular emphasis on structured design using COBOL. Students work in project teams to produce a working on-line system.

31747 Management Control Systems
Three semester hours
Pre-requisite: Accounting Fundamentals (31717)
The principles and techniques of cost accounting, budgeting and financial planning and their use in computer based accounting and business decision making systems.

31758 Project Management B. Wunderlich
Three semester hours
Pre-requisite: Organisation Theory for IT Professionals (31788)
Practical knowledge and skills plus specific techniques required for effective management in the software development project environment. Leadership, people management, communication and control. Planning a software project, life cycles, phases and milestones, development plans. Software time and cost estimation. Controlling a software project. Development aids and alternatives.

31761 Technology Planning
Three semester hours
Pre-requisites: Project Management (31758), Business Systems Design (31781)
The various frameworks within which a business and its information system operates, taking into account goals, objectives and strategies. Enterprise business analysis - high level, in terms of mission, goals strategies; enterprise business modelling - top-down development of function and data models; information systems architecture - development of standard policies within which information systems can be established; business systems planning - prioritising information systems projects to best meet the overall needs of an organisation.

31766 Performance Modelling and Management B. Howarth
Six semester hours
Pre-requisites: Operating Systems (31733), Probability and Statistics (31726)
Understanding the basic techniques of system performance modelling and the application of systems modelling techniques to the assessment of present and future required system capacity; basic principles of capacity management and its importance to IS management and senior management. Simple queueing theory and operational analysis modelling techniques; systems performance analysis - measurement and models; modelling and analysis of on-line systems; workload characterisation; workload forecasting; relations between capacity planning, IS management, corporate planning and corporate management.

31767 Auditing the Computer P. Stanley
Six semester hours
Pre-requisite: Management Control Systems (31747)
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.

31768 Business Planning for IT Professionals
Three semester hours
Pre-requisite: Project Management (31758)
Developing corporate strategies in general, and for information processing in particular. Developing skills in the selection and use of appropriate techniques. Business planning, analysing

business priorities and objectives, models, techniques and performance indicators. Tools for strategic planning, business systems planning, critical success factors. Corporate needs for information technology.

31769 Social Implications of Computers J. Edwards
Three semester hours
This subject aims to identify areas of society where the use of computer technology is of concern; and to apply an understanding of the social issues to the actual work situation. Topics include: history of computing (social and economic factors), effects on workforce, professionalism, social responsibility of computer practitioners, privacy, the DP workforce.

31770 Industry Project 1 J. Underwood
Fourteen semester hours
Understanding the function of the Information Systems Department in an organisation and also of at least one user business function serviced by IS. Understanding is via 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 Industry Project 2.

31771 Business Requirements Analysis
Three semester hours
Pre-requisite: Systems Analysis (31721)
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.

31779 Applications of Information Technology 1
Three semester hours
Pre-requisite: Information Systems (31711)
Formal and practical exposure to, and understanding of a variety of specific applications of information technology, such as management information systems, database, decision support systems, process control, graphics, etc. Subject material will complement that of Applications of IT 2 to ensure a common level of experience for all students.

31780 Industry Project 2
Fourteen semester hours
Pre-requisite: Industry Project 1 (31770)
Experience of work as an analyst/programmer in a real project team. Students must also be able to relate that work experience (via written report) to business' organisational goals and objectives, and to the user function serviced by the

project. 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 Industry Project 1.

31781 Business Systems Design
Three semester hours
Pre-requisites: Business Requirements Analysis (31771)
Systems Design (31741)

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.

31788 Organisation Theory for IT Professionals
Three semester hours
Pre-requisite: Management Principles for IT Professionals (31738)

The basic structural forms of business organisations and the behavioural science foundations that are the basis for improving organisation performance and for facilitating change. Organisation theory, and the information resource - architecture and operation. Organisation development. Groups within organisations. The Information Systems organisation.

31789 Applications of Information Technology 2
Three semester hours
Pre-requisite: Applications of Information Technology 1 (31779)

Formal and practical exposure to and understanding of a variety of specific applications of information technology, such as management information systems, database, decision support systems, process control graphics, etc. Subject material will complement that of Applications of IT 1 to ensure a common level of experience for all students.

SUBJECT SYNOPSES FOR GRADUATE DIPLOMA IN DATA PROCESSING COMMENCING 1989

31017 Accounting Fundamentals B. Wunderlich
Three semester hours
This subject provides a general introduction to financial accounting and business law. Accounting related applications are the backbone of many commercial computing systems and an understanding of business law facilitates the study of business methods.

31021 Systems Analysis I. Hawryszkiewycz
Three semester hours
Pre-requisites: Introduction to Information Systems (31071)
Introduces systems concepts and a range of techniques used in systems analysis. Covers the techniques used to analyse all discrete systems data functions and flows inclusive of data flow diagrams, relational analysis and normalisation and E-R modelling. Describes systems life cycles and the role of these techniques within life cycles in evaluating requirements and proposals and setting objectives for new systems.

31022 Commercial Programming Development J. Robb
Three semester hours
Pre-requisites: Introduction to Information Systems (31071), Pascal1 and COBOL
This subject covers structured design techniques and their application to COBOL programming in an offline commercial environment. Advanced features of COBOL are presented to give the student a complete knowledge of the language.

31024 Data Structures and Algorithms T. Osborn
Three semester hours
Pre-requisites: Introduction to Software Engineering (31025)
Structured approach to programming including: abstract modelling, modular design, step-wise refinement, documentation and layout, complexity analysis of algorithms for efficiency, program correctness. Abstract and dynamic data types are covered notionally and formally, with associated insertion, deletion, selection, searching and sorting methods and algorithms for manipulating data in these structures. Systematic methods for attempting common problems.

31025 Introduction to Software Engineering J. Potter
Three semester hours
This subject introduces the formal aspects of modern software engineering. Topics: an overview of the software engineering environment, the practice of formal mathematical specification, program development via refinement of specifications, programs correctness, machine executable specifications, an overview of software testing and reliability.

31026 Probability and Statistics T. Osborn
Three semester hours
Descriptive statistics. Probability theory, random variables, conditional probabilities, independence and Bayes' theorem, and

modelling of uncertainty, measures of central tendency and dispersion, moments. Processes and distributions: binomial, Poisson, normal and sampling. Theorems: Chebychev, central limit. Applied statistics: estimation, confidence intervals, hypothesis testing and types of errors; problem solving by theory, statistical tables and machine packages.

31031 Database G. Feuerlicht
Three semester hours
Pre-requisites: Systems Analysis (31021)
Designing database applications given a set of user requirements. Describes how models of data are converted to databases and methods used to maintain data in databases. Included are conversion to relational databases and the use of SQL for data retrieval and updates and the controls necessary to maintain data integrity during updates. Development of application programs using application generators with SQL interface. Introduction to network and hierarchical databases and methods used to design such databases.

31032 Communications and Networks J. Robb
Three semester hours
Pre-requisites: Introduction to Computer Systems (31073), Introduction to Information Systems (31071)
This subject introduces communication concepts and terminology. It describes the problems involved in the Physical and Data Link Layers of communication and their solutions. It discusses network architectures, topologies and carrier services.

31033 Operating Systems M. Fry
Three semester hours
Pre-requisites: Introduction to Computer Systems (31073)
An introduction to the student of the concepts and facilities available in computer operating systems. The subject includes scheduling, multiprogramming, protection and resource control.

31041 Systems Design
Three semester hours
Pre-requisite: Database (31031)
This subject develops a systems model to a structured physical design. A variety of implementation strategies are introduced such as fourth generation languages, prototyping, information centres and end-user tools. Human aspects of systems design covers screen and forms design, operations, procedures, etc.

31042 On-Line Systems D. Jinks
Three semester hours
Pre-requisites: Commercial Programming Development (31022),
Communications and Networks (31032),
Systems Design (31041) - *should be done before or concurrently*
This subject covers the life cycle of on-line commercial application systems from a programmer's point of view. It includes design, development, testing, implementation and

maintenance issues with particular emphasis on structured design using COBOL. Students work in project teams to produce a working on-line system.

31047 Management Control Systems
Three semester hours
Pre-requisite: Accounting Fundamentals (31017)
The principles and techniques of cost accounting, budgeting and financial planning and their use in computer based accounting and business decision making systems.

31048 Business Tools And Applications
Three semester hours
Pre-requisites: Database (31031),
Accounting Fundamentals (31017)
This subject aims to give students familiarity with micro-computers in the office and business environment and as stand alone machines or workstations. The problems of linking microcomputers into local communication networks, the use of database and file management programs and the physical operation of microcomputers are discussed. Students will become familiar with specific packages such as business databases and spreadsheets and program development aids.

31053 Communications Software J. Colville
Three semester hours
Pre-requisites: Operating Systems (31033),
Communications and Networks (31032)
This subject discusses the services provided by the various layers of a communications system and the protocols used to implement these services. Discussion is based, primarily, around the use of the ISO reference model for Open System Interconnection. Some aspects of the effect of design decisions on systems users are also covered.

31058 Project Management D. Wilson
Three semester hours
Defines the role of the project manager/leader and introduces project management techniques. Students will gain an overall view of information systems development from project conception through to successful implementation and an understanding of the qualities of an effective leader.

31071 Introduction to Information Systems J. Hammond
Three semester hours
This subject provides a fundamental foundation for the understanding of information systems and their applications to common computer-based business practices and procedures. Elementary system models, and a range of techniques and resources used in developing and designing information systems are examined. Illustrations taken from common business applications are considered.

31073 Introduction to Computer Systems C. Cheneau
Three semester hours
An introduction to the internal components of computers, and how these are interrelated. Assembler language is introduced as a vehicle for describing computer organisations.

SYNOPSES OF SUBJECTS - MASTERS DEGREE BY COURSEWORK
(INFORMATION SCIENCE)

21718 Organisation Analysis and Design
Three semester hours
Historical perspective, components of organisation structure, consequences of structural deficiencies, structural contingencies, limitations of organisation design. Aspects of organisation design-job design, communication differentiation, integration, control and organisation performance. Factors affecting organisation design-ideology of management, technology of design, personal skills of employees, environment of organisation, size of organisation, goals of organisation, politics of organisations. Organisational futures - the development of large-scale organisations and bureaucracies, organisations of the future and "beyond the work ethic".

22729 The Legal Environment of Business
Three semester hours
The subject is structured into two distinct strands. Students are free to enrol in either strand depending on their preference, but strand 2 was specifically designed for M.App.Sc. (Computing) students.

Strand 1 covers the basic principles of the legal system in Australia and its impact on business, introduction to legal reasoning, identification of issues and options to dispute resolutions. Key areas include the Constitution, Parliament and government, contract and tort, the law of principal, agent and partnership and the law of international business in Australia.

In Strand 2 the main emphasis is on Computer Law. Key areas covered include the basic principles of law and the legal system in Australia with emphasis on understanding the law of business and the impact of computers including issues relating to intellectual property (such as copyright protection of computer software, etc).

32100 Advanced Programming Techniques J. Potter
Four semester hours
This subject deals with the logical foundation of programming, the structure of programmes, their verification using a logical formalism, correct construction of programmes from first principles, and programme efficiency. A formal specification and development language will be introduced. The process of programme development and transformation will also be studied within the area of logic programming.

32101 Intelligent Systems T. Osborn
Four semester hours
A subject concentrating on the transfer of research and development in Artificial Intelligence into functional systems. Topics treated include: expert systems, learning systems, natural language understanding, speech recognition and understanding, vision, cognitive modelling, intelligent computer assisted instruction, logic programming, game playing, planning.

32104 Decision Making and Modelling J. Edwards
Four semester hours
This subject looks at the theory and practice of both managerial decision making and modelling processes. Application areas for modelling will include networks, queueing models and corporate and financial models. Mathematical programming and simulation tools will be discussed, as will the role of problem formulation, data collection, sampling and sensitive analysis. An analysis of decision processes will include a study of probabilistic modelling techniques, decision making under uncertainty, decision trees, influence diagrams, utility theory and risk analysis.

32105 Specialist Topics in Artificial Intelligence T. Osborn
Four semester hours
A subject offering in-depth coverage of the theory and practice of selected key areas of Artificial Intelligence: expert systems, learning systems, speech recognition, cognition, natural language understanding, logic programming. The subject will be based on two substantial projects and underlying theory.

32200 Information Processing Strategy D. Wilson
Four semester hours
Pre-requisite: Information Management (32203)
Designed to develop knowledge and skills required to carry out strategic planning for corporate information systems and services. An introduction to corporate and MIS planning is followed by an examination of the applications spectrum and the technology spectrum supported by examinations of appropriate management tools for strategic planning, modelling and control of information processing.

32201 Data Base J. Robb
Four semester hours
Information analysis using data modelling techniques. Logical and physical data base design. Formulation and use of data dictionaries or metadata bases by the analyst, designer and programmer. Relational data bases, advanced query languages and data base standards. Operational design considerations. These considerations to be investigated for centralised and distributed systems, including current advantages and limitations. Tools and techniques for communications and control of data bases, for distributed systems. Trends in hardware for associative memories and back processors, intelligent disc controllers and data base machines, designs for secure data base management.

32202 Communication Systems D. Jinks
Four semester hours
This subject is designed to develop: understanding of typical data communication requirements in an organisation, familiarity with computer communication technologies, under-standing of existing and evolving standards, proficiency in the requirements specification, design, sizing and acquisition of corporate communication facilities. Topics covered include: historical evolution of computer communication, distributed

information systems, ISO-OSI Reference Model, proprietary networking architectures, communication for message transmission, automated offices, etc., local networks, design procedures for corporate communication systems.

32203 Information Management P. Bebbington
Four semester hours
Information as a resource, cost of collection, storage and manipulation, validity and timeliness, security and availability. Consistency and flows of information sets within an organization, integration of functional systems through common flows, access, authorization and encryption. Planning and implementation of enhanced information systems. Project control and estimation techniques, overall system design, implementation, testing and maintenance tools. Post implementation reviews and audits.

32301 Performance Evaluation J. Colville
Four semester hours
Revision and extension of queueing theory. Analytic models of computer systems, and their application to performance evaluation. Operational analysis and its application to performance evaluation. Brief revision of E.D.P. planning principles. Application of performance evaluation principles to capacity management - modelling the growing system.

32302 Computer Architecture T. Hintz
Four semester hours
An examination of the more advanced architectural features available in contemporary computer systems as well as of the likely future implications of current research. The subject will cover such topics as parallelism in processor design, the distribution of intelligence storage technology and the incorporation of high-level language capabilities as well as operating systems features in hardware.

32304 Computer Languages J. Cady
Four semester hours
Compiler techniques and their impact on programming language design. Concurrency facilities. Approaches to modularization. List-structured, non-procedural, functional languages. Object-based systems.

32305 Operating Systems J. Colville
Four semester hours
Topics in modern operating systems. Concurrency in closely coupled and loosely coupled systems. Programming support environments. 'User friendly' system interfaces. Capability systems. Object-based systems. Fault tolerant systems. Secure systems

32400 Accounting for Management P. Stanley
Four semester hours
The managerial aspects of accounting will be the main area of interest. This will involve consideration of the nature of accounting both in its traditional role and as an aid to management. The nature of costs and the various aspects of cost accounting will be covered in some detail. The effects of

inflation on costs, profits and capital replacement decisions will be covered in depth. The use of funds analysis and balance sheet ratios to assess operational efficiency will also be covered.

32401 Management Policy and Strategy P. Stanley
Four semester hours
Management Policy and Strategy is a subject which considers the essential tasks of management in formulating, organising and implementing strategy. Topics covered include: the perspective of top management; assessing situations; formulating policies; discovering opportunities; estimating risks and planning programmes of action; organising and administering personnel; follow-up and reappraisal; the role of top management in the world of the consumer.

Project and Report J. Debenham
32908 Eight semester hours
32912 Twelve semester hours
32916 Sixteen semester hours
All students in the M.App.Sc.(by Course Work) in Information Science are required to enrol in and pass the project subject. 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. Students normally enrol in the eight semester hour project. In exceptional circumstances, and with the support of the project supervisor, permission may be granted for a student to enrol in the twelve or sixteen hour project. The School publishes a substantial set of guidelines for this subject in the Master's course Handbook.

32999 Seminar J. Debenham
One semester hour
All students enrolled in the Master's course must enrol in the Seminar subject each semester. To pass the Seminar subject, students are required to attend the Master's Research Seminars and to make three presentations of a satisfactory standard during their enrolment in the Master's course. Students who have not attended at least 70% of the Research Seminars in any semester will not normally be permitted to sit for examinations in that Semester. The three presentations which students are required to make are a Literature Review, a Research Seminar and an Oral Presentation of their project work.