VICTORIAN COLLEGE OF PHARMACY LTD

Established 1881

Handbook 1987

VICTORIAN COLLEGE OF PHARMACY LTD

Incorporated in Victoria

381 Royal Parade, Parkville, Victoria 3052
Telephone: (03) 387 7222

Recognised by the Pharmacy Board of Victoria in accordance with the provisions of the Pharmacists Act 1974
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### PRINCIPAL DATES 1987

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<tr>
<th>Month</th>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>January</td>
<td>2</td>
<td>College re-opens after Christmas</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Australia Day holiday - College closed</td>
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<tr>
<td>February</td>
<td>26</td>
<td>First term begins (first year students only)</td>
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<tr>
<td>March</td>
<td>2</td>
<td>First term begins (second and third year students)</td>
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<td></td>
<td>9</td>
<td>Labour Day - College open, lectures continue</td>
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<tr>
<td></td>
<td>18</td>
<td>Opening Address and Prize-giving</td>
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<tr>
<td>April</td>
<td>9</td>
<td>Last day of entry for Pharmacy III May Examination</td>
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<td></td>
<td>9</td>
<td>Last day of entry for May Final Examination</td>
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<td></td>
<td>17</td>
<td>Good Friday - College closed</td>
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<td></td>
<td>22</td>
<td>Lectures resume after Easter recess</td>
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<tr>
<td>May</td>
<td>5</td>
<td>Conferring of Degrees</td>
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<tr>
<td></td>
<td>8</td>
<td>First terms ends</td>
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<td></td>
<td>13</td>
<td>Pharmacy II Examination - Biochemistry</td>
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<td>14</td>
<td>Progress Examinations begin</td>
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<tr>
<td></td>
<td>18</td>
<td>Pharmacy III Examination begins</td>
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<tr>
<td></td>
<td>18</td>
<td>Final Examination begins</td>
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<tr>
<td>June</td>
<td>1</td>
<td>Second term begins</td>
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<td>8</td>
<td>Queens Birthday - College open, lectures continue</td>
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<tr>
<td>July</td>
<td>24</td>
<td>Last date of entry for Pharmacy I, II and III Examinations</td>
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<tr>
<td>August</td>
<td>7</td>
<td>Second term ends</td>
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<td>31</td>
<td>Third term begins</td>
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<td>31</td>
<td>Pharmacy III Examinations - Forensic Pharmacy, Financial Management</td>
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<tr>
<td>September</td>
<td>18</td>
<td>Applications for admission to Bachelor of Pharmacy course 1988 close with VUAC</td>
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<td></td>
<td>24</td>
<td>Show Day - College open, lectures continue</td>
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<tr>
<td>October</td>
<td>2</td>
<td>Last day of entry for Final Examination</td>
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<td></td>
<td>16</td>
<td>Third term ends</td>
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<tr>
<td></td>
<td>19</td>
<td>Final Examination begins</td>
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<td></td>
<td>26</td>
<td>Pharmacy I, II and III Examinations begin</td>
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<tr>
<td>November</td>
<td>3</td>
<td>Cup Day - College open, examinations continue</td>
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<tr>
<td></td>
<td>30</td>
<td>Applications for admission to Graduate Diploma in Hospital Pharmacy course close</td>
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<td></td>
<td>30</td>
<td>Applications for admission to Graduate Diploma in Community Pharmacy course close</td>
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<tr>
<td></td>
<td>30</td>
<td>Last day for return of locker keys and removal of apparatus</td>
</tr>
<tr>
<td>December</td>
<td>7</td>
<td>Supplementary examinations commence</td>
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</tbody>
</table>
Victorian College of Pharmacy Ltd

THE COUNCIL 1986-87

G M Oscar, AM, PhC, FPS, FAIPM, President

J A Ware, PhC, MPS, Vice-President

B L Butcher, PhC, MPS, Honorary Treasurer

W R S Briggs, DipChemEng. BSc(Hons). Phd, ASTC, ARACI

V Constable, PhC, MPS

R A Hughes, BPharm, MPS

A I K Lloyd, RFD, ED, PhC, FPS FAIPM, JP

F J Mitchelson, MSc, PhD, PhC, MPS

N W Naismith, PhC, MPS, FSHPA

D B Newgreen, BPharm, MBA, PhC, MPS

J R Poynter, Chevalier des Palmes Academiques, MA, BA, PhD, FASSA, FAHA

G N Vaughan, MSc, PhD, FRACI, FPS, FSHPA, MPSGB, MAITEA

Secretary to Council

R Burnet, BA, MBA, MAITEA, FAIPM, Associate Director and Registrar
PAST PRESIDENTS

1857-58 Frederick Cooper
1858-59 Joseph Bosisto
1859-60 George Lewis
1860-61 William Ford
1861-63 George Wragge
1864-73 William Johnson
1874-76 Joseph Bosisto
1877-78 William Johnson
1978-80 Cuthbert Robert Blackett
1881-83 William Bowen
1884-85 Thomas Huntsman
1885-86 William Bowen
1887-89 Thomas Huntsman
1890-91 Henry Thomas Tompsitt
1891-95 Joseph George
1896-97 Thomas Mordey Blackett
1897-1900 William Witt
1901-02 Edwin Thomas Church
1903-05 Arthur Rudolph Bailey
1906-08 John Champion
1909-10 Duncan Rankin
1911-12 John Charles Pickford
1912-13 Edwin Thomas Church
1913-15 Arthur Rudolph Bailey
1915-19 David Alexander Cossar
1919-21 Henry Budge Taylor
1921-22 Charles G Imes
1922-23 Walter Charles Kernot
1923-24 Frederick Lee
1924-25 Arthur Rudolph Bailey
1925-28 Arthur Leslie Jones
1928-30 Alexander McCamey Hadden
1930-32 Ebenezer Connal McClelland
1932-33 Alexander Washington McGibbony
1933-34 Albert Dorman
1934-35 Ebenezer Connal McClelland
1935-38 Charles Penrose Acteson Taylor
1938-41 William Francis Begg Gough
1941-45 Samuel James Baird
1945-48 Vivian George Morieson
1948-51 Leonard Long
1951-53 Albert George Davis
1953-55 Ivan James Thompson
1955-60 Eric Scott
1960-63 Frederick William Johnson
1963-65 John Rudelhoff Oxley
1965-67 Alan Louis Hull
1967-70 Alistair Ian Kingswell Lloyd
1970-72 Raymond Basil Grinlington
1972-75 Geoffrey Malcolm Oscar
1975-78 Graham James Duffus
1978-81 Neil Wighton Naismith
1981-83 Thomas James Lynden-Bell
1983-85 Neil Wighton Naismith
Aims and objectives

The Victorian College of Pharmacy Ltd aims to:

- achieve excellence in all of its programmes in pharmacy education, which include undergraduate programmes, graduate programmes, and, in conjunction with the Pharmaceutical Society of Australia (Victorian Branch) Ltd, continuing education programmes. The objectives of these programmes are directed to the education of pharmacists for all areas of practice to meet community needs;
- maintain and develop significant programmes in research and development in the pharmaceutical and allied sciences;
- provide an environment that will enable its students to grow to maturity in a way that will enable them to contribute effectively to a changing society;
- interact and co-operate effectively with other educational institutions, governments, professional associations, and other sections of the community, for the benefit of the community.
ACADEMIC STAFF

Dean and Director of the College, Kansas Professor of Pharmacy
G N Vaughan, MSc, PhD, FRACI, FPS, FSHPA, MPSGB, MAITEA

School of Pharmaceutical Chemistry
Dean (Chemistry) and Head of the School, Kansas Professor of Medicinal Chemistry
P R Andrews, BSc(Hons), PhD, FRACI

Lectorial Staff
D J Craik, BSc(Hons), PhD, ARACI
J V Hurley, MSc, DipEd, ARACI
H. Dowd, MSc, PhC, ARACI
M Needleman, BSc(Hons), PhD

Tutorial Staff
B Danylec, MSc, SRN
K A Higgins, BSc(Hons)
M N Iskander, MSc, PhD
G P Moloney BSc(Hons)

Laboratory Manager
R Bothof, Dip App Biol, BSc (App Biol)

School of Pharmaceutics
Dean (Pharmaceutics) and Head of the School, Vacant

M A Nicholas Industrial Professor
Kansas Professor of Biopharmaceutics
B L Reed, BPharm, PhD, PhC, FPS, MI Biol, MIPharmM, MSHP, MCPP

Lectorial Staff
P C Bury, BSc, MSc, PhD
B C Finnin, BPharm, PhD, PhC, FPS
I P Griffith, MA, PhD, MASM
D J Morgan, MSc, PhD, PhC, MPS
R C Oppenheim, BSc, PhD, DipEd, FRACI
L Roller, BPharm, MSc, PhD, DipEd, PhC, FPS, AMPsS, ARACI, MCPP
W J Thiel, BSc(Hons), PhD, ARACI

Tutorial Staff
May R Admans. MPharm, PhC, MPS
C J London, BSc(Hons), MSc, MASM, CBiol, MI Biol
Dawn W Sayers, PhC, FPS
S.D. Scott, BPharm, MSHPA
R H Smallwood, BPharm, DipCompSci, M Biomed E, PhC, MPS
R J Tait, MPharm, MPS

Laboratory Manager
J C Myers, MAAPP
School of Pharmacology
Dean (Pharmacology) and Head of the School,
Kansas Professor of Pharmacology and Toxicology
C Raper BPharm(Hons), PhD, PhC, MPS

Lectorial Staff
I M Coupar, BPharm(Hons), PhD
N P Madsen, MSc, PhD
E Malta, BSc(Hons), PhD
F J Mitchelson, MSc, PhD, PhC, MPS
D A Taylor BSc(Hons), PhD

Tutorial Staff
L K Choo, BSc(Hons) MPPharm
A L Gardner, BPharm
M J Quinn, BSc(Hons)
B J Stanton, BSc(Hons)

Laboratory Manager
M D Hutson, BSc, MBA

Sigma School of Pharmacy Practice
K Raymond, MPPharm, PhD, MPS

Special Subject Lecturers
C B Chapman, BPharm, BVSc, PhD
S N Leyshon, BEc, AUA(Pharm), DipEd, MPS, AASA, CPA
P J Lumley, BPharm, PhC, FPS
N Martin, ACA
D B Newgreen, BPharm, MBA, PhC, MPS

LIBRARY STAFF

Librarian
M E Williams, BA, ALAA
C P Hyne, BA(Hons) ALAA
S C Walker, BA, ALAA

ADMINISTRATIVE STAFF

Associate Director and Registrar
R Burnet, BA, MBA, MAITEA, FAIPM

Executive Officer
A I K Lloyd, RFD, ED, PhC, FPS, FAIPM, JP

Business Manager
J E Cott, BCom, AASA, MAITEA

Property Manager
R McLaren

Administrative Officer
M L Duncan, MAITEA

Projects Officer
W J Horsfall, PhC, MPS
The Victorian College of Pharmacy was established in 1881 as the school of the Pharmaceutical Society of Victoria. That Society had itself been founded in 1857 by early immigrant British pharmacists to control and develop the professional aspects of pharmacy in the rapidly developing colony. The College was founded on similar lines to those existing at the London School of Pharmacy which in turn was owned and operated by the Pharmaceutical Society of Great Britain.

The College was initially established in the Melbourne Technological Museum, moved to Fitzroy for a short period, and was ultimately housed in the County Court building at 360 Swanston Street. The Pharmaceutical Society had purchased the building in 1882 and had carried out adequate renovations to commence classes at that site in 1884.

The first classes were established under an apprenticeship system which involved attendance at the College for tuition in chemistry, botany, materia medica and pharmacy. Students could enter the course at any date and pursue an independent course of study leading to a registration examination conducted by the Pharmacy Board of Victoria. A compulsory syllabus was formalised within the Medical Act 1915 and subsequently led to a four year apprenticeship and study requirement for registration.

In 1960 great changes took place in pharmacy education. The College, still as the School of the Pharmaceutical Society of Victoria, moved to new premises in Parkville. In the same year the Pharmacy Board approved a full-time three year course in pharmacy and abandoned the apprenticeship system of training.

The College affiliated with the Victoria Institute of Colleges in 1966 and was granted permission to award the Bachelor of Pharmacy degree in 1967. The College thus became the first non-university school in Australia to offer a bachelors degree. A Master of Pharmacy degree followed in 1970.

Prior to 1967 the College had run as a private institution. It was funded primarily from student fees with some government assistance and the generosity of benefactors. In 1967, by an agreement between the Federal and State Governments, the College received its first appreciable government financial assistance which supplemented student fees. In 1974 the Federal government abolished fees in tertiary institutions and took over the full responsibility of funding tertiary education at all levels.

The Swanston Street building and the original development at Parkville was funded by the Pharmaceutical Society through the generosity of its members, the pharmaceutical industry, various benefactors and with large State government assistance. The latest laboratory block on the Parkville site was built entirely from government money but was furnished and equipped by the Pharmaceutical Society of Victoria through an appeal launched to its members and the pharmaceutical and allied industries.

In accordance with government requirements the College became an independent organisation in 1977. It became a company limited by guarantee, The Victorian College of Pharmacy Ltd, and now operates under the Companies Act.

The academic activities of the College have been governed by the Medical Act, the Pharmacists Act and the Victoria Institute of Colleges Act.
Through the repeal of the Victoria Institute of Colleges Act in 1980 the College is now responsible to the Victorian Post-Secondary Education Commission and is required to operate in accordance with the Post-Secondary Education Act 1980. The College was declared for the purposes of accrediting its own courses of study from 1 January, 1984. Some important dates in the history of the College are listed below:

1839 First pharmacy (Cotter’s) established in Melbourne
1842 London School of Pharmacy established
1843 Pharmaceutical Society of Great Britain received charter
1857 Pharmaceutical Society of Victoria founded
1876 Pharmacy Board of Victoria established through the Medical Act
1877 First meeting of the Pharmacy Board of Victoria
1881 Victorian College of Pharmacy established as the School of the Pharmaceutical Society of Victoria, first lectures given at the Technological Museum
1882 J Kruze appointed Director, classes transferred to 60 Hanover Street, Fitzroy
1882 County Court Building, 360 Swanston Street, purchased from the Government (£400)
1884 Classes start at Swanston Street, H Shillinglaw appointed first Secretary/Registrar
1886 First Issue, Australian Journal of Pharmacy
1887 A H Jackson appointed College Director
1887 Compulsory pharmacy course introduced for medical students
1890 S Plowman appointed College Director
1895 Major building additions at Swanston Street
1897 First female graduate
1910 Cyril Tonkin awarded his second gold medal
1913 C L Butchers appointed Secretary/Registrar
1913 Major additions to Swanston Street building
1915 Four-year apprenticeship system commences in accordance with the Medical Act
1920 A T S Sissons appointed first Dean, retires 1962
1927 Pharmacy Guild of Australia established
1928 Further building additions at Swanston Street site
1929 Fellowship course introduced (FPS by examination)
1936 The last of the major building alterations made at Swanston Street
1941 F C Kent appointed Secretary/Registrar
1943 C L Butchers Library established
1951 Property at Parkville purchased
1957 Centenary, Pharmaceutical Society of Victoria
1958 War Memorial Building Appeal Launched
1960 Full-time, three-year course commences
1960 College moves to new War Memorial Building, Royal Parade, Parkville
1962 Completion of the Sissons Mural
1963 N C Manning appointed Dean retires 1978
1963 Three autonomous Schools established within the College (Pharmaceutics, Pharmacology, Pharmaceutical Chemistry)
1965 A H Kelly appointed Secretary/Registrar
1965  Further Parkville property purchased
1966  College affiliates with the Victoria Institute of Colleges
1967  Federal Government finance received
1967  Furnish and Equip Appeal
1968  Bachelor of Pharmacy degree awarded as the first non-university degree in Australia
1969  H V Feehan appointed Secretary/Registrar
1970  Master of Pharmacy degree approved
1970  Intersearch programme established with the University of Kansas.
1970  Graduate School founded
1971  Further Parkville property purchased
1971  New laboratory block opened
1972  Commonwealth Pharmaceutical Association Conference, Melbourne
1973  R Burnet appointed Registrar of College
1974  Pharmacists Act replaces Part III of the Medical Act (1958)
1975  Institute of Drug Technology founded
1976  College incorporates as a Company to become an independent, autonomous College of Advanced Education
1976  Pharmaceutical Society of Australia founded
1977  Centenary, Pharmacy Board of Victoria
1978  Graduate Diploma in Hospital Pharmacy commences
1978  Victorian Post-Secondary Education Act
1979  G N Vaughan appointed Dean of College
1981  Centenary, Victorian College of Pharmacy
1982  Centenary Banquet, 23 May 1981, Great Hall, National Gallery of Victoria
1982  Centenary Plaque installed
1983  Sigma School of Pharmacy Practice established
1983  Graduate Diploma in Community Pharmacy commences
1984  Buildings on Parkville campus named SISSONS, SCOTT and MANNING
1984  College becomes a Declared Institution; it thus accredits its own courses.
1985  Reader position included in the academic staff establishment
1986  Institute of Drug Technology Ltd changes to Institute of Drug Technology (Aust) Pty Ltd with College holding a minority equity
Bachelor of Pharmacy Course

The requirements for the Bachelor of Pharmacy course are specified by the Pharmacists Act 1974 and the Regulations made thereunder. The Act and the Regulations are administered by the Pharmacy Board of Victoria.

Entry Requirements (1988 and 1989)

The College receives more applications than it has places available, and it is therefore necessary to select applicants on the basis of academic merit. In order to be eligible for admission to the Victorian College of Pharmacy applicants from Victoria must fulfill the following basic requirements:

(a) Full-time candidates under 21 years of age. A full time candidate undertaking Victorian Certificate of Education (formerly HSC or TOP) courses of study who is under 21 years of age on 31 December in the year in which examinations are undertaken must obtain Grade D or above* in four Group 1 subjects approved for university entrance, including the following subjects, at the one attempt:

   English, Chemistry, a branch of Mathematics

(b) Candidates under 21 years of age who are in full-time employment. Candidates undertaking Victorian Certificate of Education (formerly HSC or TOP) studies who are in full-time employment and who are under 21 years of age on 31 December in the year in which they first present for examination must obtain Grade D or above* in four Group 1 subjects approved for university entrance, including the following subjects, but not necessarily at the one attempt:

   English, Chemistry, a branch of Mathematics

(c) Candidates over 21 years of age. Candidates undertaking Victorian Certificate of Education (formerly HSC or TOP) studies who are over 21 years of age on 31st December in the year in which they first present for examination must obtain Grade D or above in English, Chemistry and a branch of Mathematics, provided that at least two of the three subjects are obtained at the one sitting.

In order to select the best qualified applicants for admission the College calculates a selection score for each applicant by adding the marks obtained in the subjects Chemistry and a branch of Mathematics to the marks obtained in the applicant’s two next best Group 1 subjects approved by the Victorian universities for the purposes of university entrance. It is believed that the VCE subjects Biology and Physics provide a useful background for students commencing the pharmacy course.

For full-time VCE candidates the “best four” total thus obtained will be increased by adding 10 per cent of the mark obtained in any other Group 1 subject approved by the Victorian universities for the purposes of university entrance in which a mark of at least 40 per cent is obtained at the same attempt.

For part-time VCE candidates the “best four” total thus obtained will be increased by ten marks.

* It is possible to satisfy entrance requirements by compensation in cases where Grade E is obtained in English or the fourth Group 1 subject. However, Grade D or above must be obtained in the subjects Chemistry and Mathematics.
Interstate applicants

Interstate applicants will be evaluated on the basis of their local Year 12 (HSC) examination results, which must include passes in English, Chemistry, and a branch of Mathematics. Such applicants will only be selected if they provide good reasons for wishing to study in Victoria.

Overseas applicants

In order to be considered for admission, overseas applicants are expected to have obtained academic qualifications considered by the College to be equivalent to three good (Grade C) General Certificate of Education Advanced Level passes in Chemistry and Mathematics and Physics or Biology. In addition, applicants should have obtained an Ordinary Level pass in English.

Overseas students applying from overseas must apply through their local Australian overseas post by 31 August of the year preceding that in which enrolment is desired. These applications will be processed in the initial instance by the Australian Overseas Student Office.

Transfer students

Persons who have completed or partially completed a post-secondary education course will be assessed on individual merit. Exemptions (if any) from subjects in the pharmacy course will be determined after a person has been selected to commence the course. Applicants in this category should, in addition to lodging a completed application form with the Victorian Tertiary Admissions Centre, forward a letter to the Registrar of the College explaining their reasons for wishing to study pharmacy at the College.

Application forms for admission may be obtained from the Victorian Tertiary Admissions Centre at 40 Park Street, South Melbourne, 3205. The completed forms must be lodged with the VTAC prior to 18 September of the year preceding that in which enrolment is desired. (Note: the College’s academic year runs from late February to December).
Curriculum
The academic course occupies three years of full-time study. Four grades of pass 
will be awarded in the following subjects of the course (High Distinction, Distinction, 
Credit, Pass):

First Year
- Pharmaceutics I (including Human Behaviour)
- Pharmaceutical Chemistry I
- Physiology
- Mathematics

Second Year
- Pharmaceutics II (including Microbiology)
- Pharmaceutical Chemistry II
- Pharmacology I (including Biochemistry)

Third Year
- Pharmaceutics III
- Pharmaceutical Chemistry III
- Pharmacology II
- Pharmacy Practice

Details of subjects will be found on Page 17

Final Examination, Pharmacy Board of Victoria
Having completed the above requirements for the Bachelor of Pharmacy degree, 
in order to register as a pharmacist, graduates must complete a period of practical 
training and pass the Final Examination conducted by the Pharmacy Board of Victoria. 
Details of these requirements will be found on Page 74.
Courses of Study

Council’s policy concerning courses of study at the Victorian College of Pharmacy Limited.

1. The Pharmacy Board of Victoria
   (a) determines the educational requirements for entry to the Bachelor of Pharmacy degree course, the course of study and the subjects which shall be studied for the prescribed examinations.
   (b) appoints the Board of Examiners; and
   (c) controls and directs examinations at the Victorian College of Pharmacy Limited.

2. The College controls and supervises students admitted to a course of study, and matters relating to a course of study, except those referred to in clause 1 above, will be decided at the absolute discretion of the Council.

3. Subject to these rules, a student must pass the examinations in all the subjects prescribed for study during the first year of the course before the College will admit to the course of study in the subjects prescribed for the next year of the course and likewise for each succeeding year.

4. A candidate who fails to attain the standard set by the examiners at the examinations in any year may be admitted to repeat the course of study in the following year or may be excluded from the course.

5. The privilege of repeating a year will only be extended with the approval of Council.

6. A candidate who fails to attain the standard set by the examiners at the annual examinations on more that one occasion or who fails to attain the standard set by the examiners at the annual examinations after having been granted advanced standing in the pharmacy course or having failed in another tertiary institution may be excluded from the course.

7. Candidates who present themselves initially for the whole of the Pharmacy III Examination may, at the discretion of the Board of Examiners, be granted credit for single subjects in which they have attained the standard set by the examiners.

8. The single subject credits referred to in rule 7 may not be held beyond the Pharmacy III Examination held in November the following year, after which time re-entry for the whole examination shall be required.

9. After two years have elapsed following the candidate’s initial entry to the Pharmacy III Examination, the College will not accept a further enrolment from the candidate.

10. Where sickness or other circumstances warranting compassion arise, candidates for examinations must furnish written information to the Registrar immediately. In the case of sickness a medical certificate is required and must be forwarded to the Registrar within forty-eight hours of the time of consultation.

11. A candidate must observe the examination rules published on page 63 of this handbook by the Pharmacy Board of Victoria and the Victorian College of Pharmacy Limited.
The Council of the College and the Pharmacy Board of Victoria will publish the results of examinations but the Council of the College may, in the case of a candidate's failing to observe the examination rules published on page 55 of this handbook, omit the results of the said candidate and/or exclude the said candidate from further courses of study at the College.

Supplementary examinations will be held when necessary at the discretion of the Board of Examiners. Individual examiners may prescribe additional examinations, either written, oral, or practical when and as required. Candidates are therefore advised to be available after the completion of the annual examinations and pending publication of the examination results.

Rules and Regulations
The regulations relating to the Bachelor of Pharmacy course will be found on page 65, while general rules relating to student conduct will be found on Page 60.

FEES
Students enrolling for the BPharm course will be required to meet the following charges:

Government Administration Charge $250
Apparatus deposit* $40
Annual student membership of Pharmaceutical Society of Australia (Victorian Branch) $10
Annual subscription to the Victoria Pharmacy Students Association $20
Service fee $36

*$Refundable, less cost of breakages, at the termination of the course.

In addition to the above fees, approximately $600 per annum is required for textbooks, dissecting instruments, stationery, etc.

Overseas students are also required to pay tuition fees amounting to circa $4666 per annum.

Australian Government means-tested allowances
Information on the Government living, incidentals, dependants, and travel allowances may be obtained from:

Regional Director
Victorian State Office
Department of Education
17 Yarra Street
Hawthorn Vic 3122
Telephone: 810 0555

Royal Australian Chemical Institute (RACI)

Bachelor of Pharmacy graduates from the Victorian College of Pharmacy Ltd, after a period of practical experience, are eligible to become Associates of the Royal Australian Chemical Institute. This means that such graduates are able to practise in many areas of industry as professional chemists, and receive the salaries determined for Associates of RACI.
First Year

PHARMACEUTICS I

A course of 75 lectures, 75 hours of practical work and 12 tutorials.

1. Pharmacy Practice

A series of 15 lectures and 27 hours practical work.

*The prescription.* The model prescription, the legal requirements of a prescription, types of prescriptions, common pharmaceutical Latin abbreviations. Trade names, generic names. The role of the pharmacist in relation to the physician, the prescription and the patient.

*Weights and measures.* The metric system of weights and measures, pharmaceutical calculations, mass-volume relationships, alcohol and acid dilutions, percentage formulae, wet and dry attenuations, alligation.

*Errors and tolerances.* Introduction to the Weights and Measures Act. The prescription balance sensitivity, legal tolerances in weighing and measuring, calculation of per cent error in weighing.

*Dispensing.* The qualities of a properly dispensed medicine and dispensing drill as applied to practical pharmacy.

*Legal aspects of pharmacy.* Sources of formulae, legal precedents for standards introduction to the Pharmacists Act and regulations, the Drug, Poisons and Controlled Substances Act, Schedules to the Act and Regulations.

*Posology.* Principles of drug administration, effects of varying biological factors, children's dose rules, the doses and uses of some common drugs. The role of the pharmacist in dealing with inappropriate dosages.

*Dose Forms.* The oral, rectal and topical routes of drug administration. Bulk powders, individual powders, capsules, pills, tablets, ointments, creams, emulsions, solutions, suspensions and drops (eye, ear and nose).

2. Materials Science

A series of 11 lectures, and 15 hours practical work.

*Properties of solids.* Intermolecular forces, crystalline and amorphous structures, polymorphism. Stress and strain, elastic and plastic deformation.

*Properties of fluids.* Hydrostatics. Fluid flow, continuity and Bernoulli's equation. Stoke's Law, Turbulent and laminar flow.

*Rheology.* Shear stress, strain and strain rate. Newtonian, plastic, pseudoplastic and dilatant flow. Thixotropy.

*Surface properties.* Surface energy and surface tension. Wetting and capillarity. Surfactants, micellisation, solubilisation and detergency. Insoluble films.

3. Pharmaceutics of Solutions

A series of 25 lectures and 33 hours of practical work.

*Introduction to biopharmaceutics.* Rate limiting steps, the importance of the dose form.

*Solutions and solvents.* Pharmaceutical solvents; solutes, mechanisms of solution, concentration. Factors affecting solubility, including temperature, pH, complexation, solubilisation and cosolvency.

Isotonic solutions Osmotic injury of tissues, freezing point depression and osmotic pressure, osmotic calculations. The Wells approximate Liso values. The limitations of physico-chemical methods of adjusting isotonicities, the haemolytic method of Husa, the haematocrit method of Setnikar and Telmelcou.

Milliequivalents millimoles and milliosmoles. The electrolytes of normal serum, electrolyte solutions for intravenous use, notation in prescriptions, calculations.

Buffering in pharmaceuticals. Theory of buffers, chemical and biological buffer systems; physiological aspects of buffering and drug solubility, stability and action.

Solution formulation. Principles of formulation; pharmaceutical colouring, flavouring and preserving agents.

Filtration. Sieving, adhesion, absorption, procedures, types of filters, filter aids, integrity of filters.

Stability of pharmaceuticals. Forms of instability; modes of chemical degradation, hydrolysis, oxidation, photolysis, dehydration, racemisation; prevention of degradation, use of antioxidants; mode of physical degradation; kinetic principles, shelf-life.

Solution dose forms. Oral solutions, parenteral solutions, ophthalmic and nasal solutions; packaging, glass, plastics, metals.


Practical

75 hours of practical work to illustrate the skills required in the preparation of pharmaceutical dose forms; to illustrate the principles of properties of matter, of physical pharmacy and the manufacture of solution dosage forms.

Textbooks


Office Consolidation, Melbourne, Pharmacy Board of Victoria, 2nd ed. 1984.

Pharmaceutics I Laboratory Manual, Melbourne, Victorian College of Pharmacy Ltd, 1987

References

Australian Journal of Hospital Pharmacy
Australian Journal of Pharmacy


4. Pharmacy Practice: Human behaviour

A series of 25 lectures. The course is designed to instill into the students an ability to express concern, compassion, and sensitivity in patient care through understanding of Human Behaviour.

Nature of psychology. Approaches, scope, research and measurement.

Development. Factors governing development, early years, cognitive development, personality and social development, identification, adolescence, search for identity, middle years, old age.

Perception. An overview, perceptual processes in prescription reading.

Consciousness and control. Consciousness, sleep, dreams, psychoactive drugs and consciousness.

Conditioning and learning. Classical, operant conditioning, reinforcement, cognitive and individualising learning.

Remembering. Memory, short term, long term, improving memory, aids to memory, improving patient compliance.

Motivation. Motivational concepts, basic drives, hunger, obesity, sex, theories of motivation, aggression, emotion, emotional expression, motivation and the pharmacist, motivation and the patient.

Mental abilities. Genetic and environmental determinants of intelligence, testing aptitude and achievements, affect of age on body processes and intelligence.

Personality and its assessment. Shaping of personality, approaches to personality, trait, social learning, psychoanalytic, phenomenological, the non-compliant personality.

Abnormal behaviour. An introduction to the classification of psychopathologies as laid down by DSM III.

Conflict and stress. Frustration, anxiety, stress, defence mechanisms.

The therapies. Patients' symptoms, attitudes, means of modifying behaviour in a positive direction.

Assessment of this unit will include a 1500-2000 word essay. Suggested topics are included in the Human Behaviour Handbook 1987. The essay must be completed by the end of second term. An end of year examination will be held.

Textbooks


or


References

Preliminary Reading
PHARMACEUTICAL CHEMISTRY I

A course of 75 lectures, 32 tutorials and 75 hours of practical work.

Physical and Analytical Chemistry

A course of 40 lectures.


Spectroscopy. Atomic emission and absorption. Molecular energy levels, electronic transitions, visible and IR absorptions, the Beer-Lambert law. NMR and mass spectra.


Liquids. Liquefaction of gases, vapour pressure of liquids, latent heat of vaporisation, the Clausius-Clapeyron equation.


Liquids in liquids. Vapour pressure of liquid mixtures, ideal behaviour, Raoult's law. Deviation from ideal behaviour, azeotropes.

Colligative properties of solutions. Osmotic pressure, the van't Hoff coefficient, isotonicity, membrane transport.

Colloidal solutions. Particle size, types of dispersions, lyophilic and lyophobic colloids, adsorption, peptization, coagulation, clays.

Phase equilibria. One component systems. Solid, liquid and vapour equilibria, the water diagram, Gibb's phase rule. Polymorphism, properties of polymorphs.

Two-component systems. Solid solutions, eutectic mixtures. Miscibility of liquid mixtures, the phenol-water system. Partition between immiscible solvents. chromatography.

Three-component systems. The miscibility of toluene, ethanol and water, triangular diagrams.


Reaction kinetics. Reaction rate, order and molecularity. Rate equations for zero, first, second and third order reactions. Reaction mechanisms, collision theory, transition states, drug stability.

Electrochemistry. Ionic conductance, Kohlrausch's law, conductometric titrations, ionic mobility, electrolysis. Electrochemical cells, half-cell reduction potentials, the Nernst equation, cell potential and free energy. Concentration cells, transference of ions, junction potentials. Potentiometric titrations. pH measurement, the glass electrode.

Thermodynamics. Heat and work, conservation of energy, internal energy, enthalpy, heat capacity. Thermochemistry, bond energies, resonance energy. Reversible and irreversible processes.

Coordination chemistry. Formation, stability and nomenclature of complex ions. Chelation and organometallic complexes in biological systems.

Drug analysis. Application of analytical techniques to pharmaceutical products. Analysis of biological fluids for drugs and metabolites.
Textbooks


References


Organic and Medicinal Chemistry

A course of 35 lectures.
 Structure and properties of organic molecules. Bonding, isomerism, stereochemistry and nomenclature of carbon compounds.
An introduction to the use of spectroscopic methods in structure determination and identification of organic compounds.
 Preparation and reactions of organic molecules. The chemistry of selected classes of organic compounds viz. aliphatic and aromatic hydrocarbons and their halogen derivatives, alcohols and phenols, aldehydes and ketones. carboxylic acids, esters, amines and other nitrogenous compounds, thiols and other sulphur-containing molecules.
Examples of polyfunctional molecules such as amino acids, amino alcohols, catecholamines will be discussed.
Elementary electronic theory and reaction mechanisms will be introduced where appropriate.
Throughout the course special reference will be made to compounds of biological, medicinal and pharmaceutical importance.
 Chemotherapeutic agents. Influence of such factors as shape, size, ionization state, solubility and substituent groups on the biological action of sulphonamides, aminoacridines and other chemotherapeutic agents. Role of enzyme inhibition and drug-receptor interaction in the activities of these drugs.

Textbooks


References


Supplementary Material

Molecular Model Set for Organic Chemistry, Allyn & Bacon, Boston, USA or Framework Molecular Models, Prentice-Hall Inc., NJ, USA
Practical

A course of 75 hours practical work in analytical, physical, medicinal and organic chemistry. Experiments are performed which illustrate the principles presented in the lecture course. Students are required to wear safety glasses and laboratory coats in the laboratory. The marks awarded for practical work form part of a student’s total assessment.

Textbook


References


NOTE: Each student will be issued with a set of apparatus, on payment of a deposit. The cost of replacing any damaged apparatus will be deducted from this deposit and the balance refunded to the student.
PHYSIOLOGY

A course of 80 lectures, 12 tutorials and 78 hours of practical work.

1. Basic cell physiology


Cellular structure. General structure and functioning of cells, cytoplasm, lysosomes, mitochondria, endoplasmic reticulum, Golgi complex, ribosomes, centrosomes, nucleus.


2. Cellular functions

Membranes. Osmotic behaviour of cells, diffusion, the Gibbs-Doonan equilibrium, active transport. The electrical properties of cell membranes, resting and action potentials, the Nernst equation, Propagation of action potentials in myelinated and non myelinated fibres, refractory period and after potentials. Effects of anodal and cathodal polarization and of inorganic ions on membranes. Physiological salt solutions.


3. General physiology


Endocrine function. Introduction to the hormonal system, functions of hormones and their release.


Feeding, digestion and absorption. The gastrointestinal tract, its development, function, hormonal and nervous control. Absorption.

Liver. Structure and functions; storage, synthesis, metabolism and excretion, the biliary system.


Temperature regulation. Poikilotherms, heterotherms and homiotherms. Control mechanisms, temperature receptors, sweat glands, vascular changes.

Special senses. Structure and function of organs concerned in sight, hearing and balance. Chemoreception.


Practical

Practical work and tutorials will be based on the material dealt with in lectures. Students must provide themselves with dissecting instruments.

Textbooks

Advice on selection of some of the following books will be given in the introductory lecture.


References


MATHEMATICS

A course of 50 lectures, 17 tutorials and 23 hours of practical work and tutorials. The course aims to provide students with the necessary mathematical techniques for the subjects of the pharmacy degree and prepare future graduates for the increasing use of computers in the profession.

1. Computer Studies
   - **Hardware.** Main components of a computer system and their function.
   - **BASIC language.** Elementary statements, flowcharting, timeshare commands, loops, one and two dimensional arrays, string variables and files.
   - **Application of Computers.** Information storage and retrieval, prescription control systems, stock ordering systems and data logging.

   Using the College's timeshare system, the student will be required to write and run programming assignments. The assignment problems will include items taken from the Calculus and Statistics sections of the course and will also highlight the use of computers to store and retrieve information.

2. Calculus
   - **Differentiation.** Limits, definitation, product, quotient, function of a function, implicit differentiation, stationary points, turning points, points of inflection, function sketching.
   - **Logarithmic plots.** Exponential and logarithmic functions, semi-logarithmic and logarithmic plots.
   - **Integration methods.** By parts, algebriac substitution and partial fractions.
   - **First order rate processes.** Definition, different physical processes obeying the law (e.g. radioactive decay, chemical reaction, micro-biological growth, elementary pharmacokinetics), half life and semi-logarithmic plots.
   - **Zero, Second and Third Order Reaction.** The rate equations, their solutions and half life.
   - **Triangular Charts.** Graphical representation of three component systems.
   - **Partial Differentation.** Functions of several variables, first and second partial derivatives, geometric interpretation.
   - **Integration.** Definite integrals, area under a curve, infinite limits, approximate integration methods (Trapezoidal Rule).

3. Statistics
   - **Presentation of Sample Data.** Frequency tables, histograms and cumulative frequency distributions.


   Probability Distributions. General properties, the binomial, Poisson and normal distribution. Normal probability graph paper. The log normal distribution and log probability graph paper. Normal approximation to the binomial distribution, distribution of proportions.

   Sampling. Random sampling, the Central Limit Theorem, calculation of sample size to attain a required accuracy.
Estimation. Point and interval estimates, Student's t-distribution. Confidence intervals for the mean and for the difference of two means (independent populations). The pairing of samples, confidence intervals for paired data. Confidence intervals for the difference of two proportions (independent populations). Confidence intervals for the variance, the chi-square distribution.

Hypothesis Testing. Testing using confidence intervals. The $H_0$ and $H_1$ hypothesis, type 1 and 2 errors, one sided and two sided testing, P values, operating characteristic curves.

Fitting a Line. Least squares fit using partial differential calculus to develop the normal equations.

Regression Theory. The mathematical model, residual variance, confidence intervals for slope, intercept and predicted $Y$ value.

Contingency Tables. Test for independence testing several proportions, the chi-square distribution.

Textbooks

Abbot, P, Calculus, Hodder and Stoughton (Teach Yourself Books).

References

Second Year

PHARMACEUTICS II

Pharmaceutics

A course of 50 lectures and 5 tutorials.


Tablets and powders. Particle size and distribution; particle size determination; flow properties. Mixing and mixers; granulation; tablets, manufacturing processes, special tablets, weight, content and physical uniformity, excipient interaction, in vitro testing, in vitro-in vivo correlations.

Liquid-in-Liquid systems. Theories of emulsification; emulsion type; HLB: emulsion stability; formulation and applications.

Topical delivery systems. Penetration, release from vehicle; absorption into and through skin; types of vehicles; choice of a vehicle for an active drug.

Disperse systems; Colloidal systems; kinetic, optical, electrical properties of solid-liquid dispersions; electrical and steric stabilization of solid-liquid dispersions; nucleation and ageing. Stability of foams, antifoaming agents. Liquefied and compressed aerosol propellants; two phase aerosols; three phase aerosols; aerosol formulation; aerosol stability; non-pressure pack aerosols.

Capsules. Hard and soft gelatin capsule walls; stability of macrocapsules; in vitro testing, in vitro-in vivo correlations. Manufacture of different types of microcapsules; incorporation into usable delivery systems; active ingredients used.

Drug stability. Shelf life, storage conditions, accelerated storage, expiry dates; pH profiles of hydrolysis; photochemical reactions; oxidation; stabilization and destabilization procedures; prodrugs.

Contamination control. Microbial contamination of the workplace (industrial, hospital and home environment). Death of micro-organisms (kinetics and mechanisms). Principles and practice of sterilization (filtration, heat, chemical, radiation), aseptic dispensing and sterility assurance. Control of particle and pyrogen levels.

Antisepsis. Nature of, and principles governing, the mechanism of action and use of antiseptics, disinfectants and preservatives.

Practical Pharmaceutics

A course of 75 hours of laboratory work designed to investigate the preparation of pharmaceutical dose forms. Emphasis will be placed on both the formulation and dispensing aspects of medicines.

Microbiology

A course of 41 lectures and 10 tutorials.

Comparison of subcellular structures of the procaryotic and eukaryotic cell. Summary
treatment of microbial nutrition and energy production, and catabolic and anabolic
processes. Synthesis of murein. Cell division and growth. Spore formation and
germination.

**Elementary microbial genetics.** Population dynamics. Variation and adaptation.
Expression and detection of mutation. Mutagenicity testing. Transfer of genetic
information; conjugation, transformation, transduction. Extrachromosommal elements;
lysogeny.

**Host-parasite relationships.** Nature of pathogens, parasites, commensals, symbionts.
Transmissible disease, virulence, pathogenicity, invasiveness, infectivity, toxins,
pyrogens. Barriers to infection; skin and mucosa, body secretions, resident microbial
flora. Innate immunity: role of inflammation, complement, reticuloendothelial system.
Passive immunity.

**Immunology.** Active immunity; relation to innate immunity. Structural components
of the immune system: bone marrow, thymus, lymph nodes, spleen, peripheral
Hypersensitivity reactions. Vaccines (killed and live); blood products.

**Epidemiology.** Portals of entry and exit. Reservoirs of infection: carrier state, latent
infections, alternate hosts, vectors. Epidemics and zoonoses. Methods of control.
Quarantine: travel regulations.

**Infectious diseases.** Principles of isolation and identification of infectious agents.
Infections of the respiratory, gastro-intestinal and genito-urinary tracts; of the skin and
eye; systemic infections. Summary treatment of properties of particular protozoa, fungi,
bacteria and viruses including their pathogenic mechanisms, clinical features, methods
of spread, and control (prevention and cure). Important pathogens of domestic animals
and plants. More detailed treatment of some problem pathogens.

**Introductory chemotherapy.** Selective toxicity and spectrum of antimicrobial activity.
Classification of antibiotics and allied drugs. Concept of rational chemotherapy _vis a vis_
identity of pathogen, acute/chronic/recurrent infections, site of infection, resistance,
adverse drug reactions, laboratory control. Role of best-guess therapy, antibiotic
prophylaxis and combinations, supportive treatment, immune system involvement.

**Industrial microbiology.** Manufacture and storage of "biologics". Use of micro-
organisms in industry (production of antibiotics, vitamins, amino acids, chemicals,
dextran, enzymes, hormones and immunomodulating agents; brewing, dairy, energy
and mining industries). Principles of production optimization.

**Practical Microbiology**

A course of 75 hours of practical work to include basic techniques in light microscopy,
staining, aseptic procedures and cultivation of bacteria and viruses; isolation of pure
cultures; nutrient and selective media; factors affecting bacterial growth, biochemical
activities and distribution of bacteria; fungal morphology; fungal and bacterial spores.
Production and assay of some antibiotics; bacterial sensitivity to antibiotics; evaluation
of antimicrobial agents; evaluation of procedures for the destruction or removal of
microorganisms; investigation of the immune response; applied topics such as
introductory serological procedures and processes to prepare, and control the
production of sterile pharmaceuticals.
Textbooks

*Pharmaceutics II Laboratory Manuals.* Melbourne, Victorian College of Pharmacy Ltd. 1987

*Australian Pharmaceutical Formulary.* 13th ed Canberra, Pharmaceutical Society of Australia, 1983


*Office consolidation.* Melbourne, Pharmacy Board of Victoria, 2nd ed, 1984


References


*British Pharmacopoeia (Veterinary).* 2nd ed London, HMSO, 1977

*The United States Pharmacopoeia.* 21st revision, Rockville, USP Covention Inc. 1984

*Journal of Pharmaceutical Sciences*


Burnet, F M and White, D O. *Natural History of Infectious Disease.* 4th ed Cambridge, CUP, 1972


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Maurer, I M. *Hospital Hygiene.* 3rd ed London, Edward Arnold, 1984


Unanue, E R, and Benacerraf, B. *Textbook of Immunology.* 2nd ed Baltimore, Williams and Wilkins, 1984
PHARMACEUTICAL CHEMISTRY II

A course of 75 lectures, 20 tutorials and 110 hours of practical work.

Physical and Analytical Chemistry

A course of 25 lectures.

Nuclear medicine. Isotopes and their use as therapeutic or diagnostic agents, counters, applications to radiopharmaceuticals.

Thermodynamics. The use of thermodynamic constants to predict spontaneity and equilibrium position. The activity concept.

Electrochemistry. The development of electrochemical theories of activity, pH and ionic strength. Discussion of membrane transport, ion-selective electrodes and applications of polarography.

Phase equilibria. The formation of organic complexes between drug molecules and biological species, differential thermal analysis. Purification of pharmaceutical raw materials by fractional distillation and zone refining; freeze drying.

Coordination chemistry. Crystal field theory. Chelation in the treatment of heavy metal poisoning and specific disease states.

Drug analysis. Instrumental methods of chemical analysis including GLC, HPLC, auto-analyser, enzyme and radio-immunoassays. Analysis of biological samples with applications to forensic chemistry, analytical toxicology, pharmacokinetics, drug metabolism and protein binding.

Partition and solubility. The distribution coefficient, the effect of association, dissociation and equilibrium. Extraction efficiency and partition chromatography. Effect of drug transport in body.

Textbook

As prescribed for Pharmaceutical Chemistry I and

References

Organic Chemistry

A course of 25 lectures.

Nomenclature. Nomenclature of bridged ring systems and polycyclic compounds with specific emphasis on structures commonly encountered in compounds of biological importance.

Spectroscopic analysis. Advanced spectroscopy applied to molecular structure determination. Techniques covered include uv-vis spectroscopy, infrared spectroscopy, mass spectroscopy and nuclear magnetic resonance spectroscopy of $^1$H and $^{13}$C.

Advanced stereochemistry. A study of the stereochemistry of nucleophilic substitution, elimination reactions, electrophilic addition and molecular re-arrangements. Anchimeric assistance.

Carbanions and related ions. The formation, structure and reactivity of carbanions. Their use in the synthesis of drugs and their importance in drug forms.


Heterocyclic Chemistry. Heterocyclic compounds and other nitrogenous compounds. Special reference will be made to biologically active molecules.

Carbohydrates. Fundamental structures, properties and reactions of carbohydrates.

Textbook


Medicinal Chemistry

A course of 24 lectures


Metabolism. Metabolic transformation of salicylates, barbiturates, morphine and phenothiazines. Conjugation with glucuronic acid, isolation and analysis of these conjugates.

Alkaloids. Structures and properties of selected alkaloids.

Prostaglandins. Structures, properties, nomenclature, biosynthesis of compounds within this class.

Carcinogens. Classification of compounds which cause cancer and the mechanisms of cancer induction at a molecular level.

Vitamins. Structures and synthesis of water and fat-soluble vitamins.

Antibiotics. The structure, function and mode of action of the penicillins and cephalosporins, the tetracyclines, erythromycin, streptomycin, griseofulvin, the actinomycins and chloramphenicol.

Biosynthesis. The elucidation of biosynthetic pathways to important biological molecules.
Chemical Pathology. The chemical basis of diagnostic reagents. Involvement and detection of chemical substances in disease states.

Practical
A course of 110 hours of practical work.
Emphasis is placed on technique and general methods. Students are expected to show initiative organising their work. Performance in laboratory classes is taken into account in assessing students’ results in this subject.
Students are required to wear safety glasses and laboratory coats when attending practical classes in the chemistry laboratories.

Organic. Unit operations: crystallation, filtration, distillation, sublimation, extraction, steam distillation, thin-layer, gas and column chromatography.
Preparative. Experiments using common reagents and reactions.
Qualitative. Systematic qualitative organic analysis by chemical and instrumental methods. Simulated organic analysis by computer techniques.
Quantitative. Analysis of pharmaceutical compounds by volumetric and complexometric analysis.
Physical. Investigation of adsorption, distribution, solubility product, equilibrium constant, gas chromatography and electrode potentials.
Instrumental. Quality control of pharmaceuticals by conductometric titrations, optical rotation spectrophotometry, and atomic absorption methods.

Textbook

Reference

NOTE The balance of the refundable deposit from first year will be retained in second year to cover the costs of replacing damaged apparatus or cleaning dirty apparatus. Any student who has had excessive breakages in first year, which have been deducted from the deposit, may be required to lodge a further deposit.
PHARMACOLOGY I


Autocoids. Synthesis, storage, release, metabolism and pharmacological actions of substances such as histamine, 5-hydroxytryptamine, kinins, prostaglandins and various peptides. Substances released during anaphylaxis. Antigen-antibody reactions as they affect allergic and inflammatory states. Drugs used in the treatment of allergies, acute inflammatory conditions and collagen diseases.


Parasitic disease and its treatment. The life histories of various parasites and the methods used for their eradication, with particular reference to chemotherapy.

Practical

*In vivo* and *in vitro* experiments to illustrate principles discussed in the lecture course.

Textbooks


Pharmacology I Laboratory Manual. Melbourne, Victorian College of Pharmacy, 1984

References

Biochemistry

A course of 25 lectures, 3 tutorials and 18 hours of practical work.

Chemistry of Biological Compounds

**Carbohydrates.** Definition; functions; classification; monosaccharides, optical isomerism, aldoses and ketooses, ring structures, phosphate esters, acid and amine sugars, chemical properties; structures of disaccharides and polysaccharides.

**Lipids.** Definition, classification; functions; neutral fats, saturated and unsaturated fatty acids; waxes; phospholipids; sphingomyelins; cerebrosides; steroids; fat-soluble vitamins; serum lipoproteins.

**Proteins.** Definition; structures and classification of amino acids; zwitterions; chemical reactions; peptide bonds; primary structure of proteins; properties due to side chains, electrophoresis; chain conformation; quaternary structure; denaturation; classification.

**Nucleic acids.** Definition; purine and pyrimidine bases, nucleosides, nucleotides, structure of DNA and RNA; nucleoproteins.

Metabolism

**Enzymes.** Definition; physical factors influencing reaction rates; specificity; mechanism of action; Michaelis-Menten kinetics; inhibition; classification; cofactors; allosteric enzymes.

**Bioenergetics.** Concept of free energy change; energy rich compounds; coupled reactions; oxidative phosphorylation; inhibitors.

**Digestion.** Action of enzymes secreted into mouth, stomach, small intestine; action of bile salts; absorption of monosaccharides, amino acids and lipids.

**Carbohydrate metabolism.** Embden-Meyerhof pathway; anaerobic glycolysis; tricarboxylic acid cycle; net ATP production; glycogenesis; glycogenolysis; pentose phosphate pathway; gluconeogenesis; hormonal regulation.

**Lipid metabolism.** Beta-oxidation of fatty acids; ketogenesis; ATP production; fatty acid synthesis; cholesterol synthesis; relationship of serum lipids to atherosclerosis; drugs controlling serum lipids; hormonal influences.

**Amino acid and protein metabolism.** Essential amino acids; transamination; deamination; urea formation; fate of carbon skeleton; inborn errors of metabolism; precursor functions and amino acids.

**Molecular biology.** DNA as genetic material; DNA synthesis; mutagenesis; DNA repair; recombinant DNA; genetic code; RNA and protein synthesis. **Regulatory mechanisms in control of cell metabolism.** Cell compartmentation; regulation of enzyme protein synthesis and degradation; activation and deactivation of pre-existing enzymes.

Practical Biochemistry

**Enzymes.** Enzyme kinetics. Determination of the Michaelis' constant of serum cholinesterase and the mode of inhibition by ecolthiopate.

**Bioenergetics.** Comparison of acid lability of phosphoryl derivatives, enzyme hydrolysis of ATP.

**Carbohydrate metabolism.** Effects of glucose, insulin, adrenaline, tolbutamide and glucagon on blood sugar levels.

Lipids. Thin layer chromatography of plasma lipids.

Nucleic Acids. Determination of liver DNA and RNA content.

Textbooks


References


PHARMACEUTICS III

A course of 75 lectures and 75 hours of practical work.

Pharmacokinetics. Diffusion laws, modelling, analog models, rate constants, rate constants from experimental data, precision of data, urinary excretion data, biological half-life, clearance concepts, renal clearance.

Bioavailability. Comparing curve shapes, techniques for measuring bioavailability, interpretation of results, bioequivalence of dose forms, formulation factors, in vitr in vivo correlations, (Disintegration and dissolution testing).

Prolongation of Drug Effects. Multiple dosing, loading doses, dosage regimens, intravenous infusions, doseform factors, sustained release, technology of sustained release.

Advanced Biopharmaceutics. Ocular bioavailability, percutaneous bioavailability, paediatric and geriatric pharmacokinetics, physiological modelling, protein binding, non-linear pharmacokinetics, bioavailability of IM injections, effects of food on absorption, statistical design of bioavailability studies, biopharmaceutics of drug interaction.

Antibiotics. (including antifungal and antitubercular agents) Structure, mechanism of action, clinical pharmacology, antibiotic resistance.


Clinical Immunology. Laboratory techniques, immunological aspects of cancer, tissue and organ grafting, autoimmune disease, allergy and adverse reactions; immunosuppressants, antiviral drugs, manipulation of the immune system.

Dispensing Hazardous Materials. Handling of radiopharmaceuticals, handling of cytotoxics, handling of contact and volatile poisons, dispensing caustic materials, design of dispensaries for hazardous materials.

Advanced Dose Forms. Large volume parenteral solutions, zero order drug delivery systems, drug delivery devices, targetted drug delivery, veterinary dose forms.

Industrial Pharmacy. Relationship with regulatory authorities, good manufacturing practices, statistical control of product quality, industrial plant and equipment, industrial organisation.

Practical Pharmaceutics III

Sterile dispensing, case studies in Pharmaceutics, formulation exercises, investigation of incompatabilities, dispensing with micro-computers and tutorials in Pharmacokinetics.

Textbooks

Students should retain textbooks utilised in earlier years of the course. Additional references will be provided during lectures.
PHARMACEUTICAL CHEMISTRY III

A course of 52 lectures and 77 hours of practical work.

*Drug Design.* Theories and mechanisms of drug action, drug-receptor interactions, optimisation of drug response, application to recently developed drugs.

*Drugs affecting the central nervous system.* The role of molecular conformation in the action of CNS transmitter substances, analgesic agents, sedatives, hypnotics, antipsychotics, antidepressants, CNS stimulants and hallucinogenic agents.

*Drugs affecting the autonomic nervous system.* The relationship between chemical structure and function of agonists and antagonists of the adrenergic, cholinergic and histaminic systems.


*Applied pharmaceutical chemistry.* Applications of pharmaceutical chemistry in the pharmaceutical industry and in hospital pharmacy. The chemical basis of diagnostic agents and the detection of chemical substances in disease states.

**References**


**Practical**

The synthesis, identification and characterisation of compounds of medicinal interest. The use of analytical and spectroscopic instrumentation in the analysis of drugs and their metabolites. The use of computers in structure-activity relationships and drug design.

Emphasis is placed on technique and general methods. Students are expected to show initiative in organizing their work. Performance in laboratory classes is taken into account in assessing students' results in this subject. Students are required to wear safety glasses and laboratory coats when attending practical classes in the chemistry laboratories.

**Textbooks**

Pharmaceutical Chemistry III Laboratory Manual, Melbourne, Victorian College of Pharmacy, 1987

**Reference**


NOTE: the balance of the refundable deposit from first and second years will be retained in third year to cover the cost of replacing damaged or cleaning dirty apparatus. Any student who has had excessive breakages in previous years, which have been deducted from the deposit, may be required to lodge a further deposit.
PHARMACOLOGY II

A course of 79 lectures and 75 hours practical work.

*Endocrinology.* Hypothalamic and feedback controls on the release of anterior and posterior pituitary hormones. The physiology of growth hormone; prolactin; thyroxine and triiodothyronine; corticosteroids; oestrogens, progestagens and androgens; vasopressin and oxytocin; insulin and glucagon; parathyroid hormone, calcitonin and vitamin D. Endocrine disorders, their pathophysiology and treatment. The use of natural and synthetic hormones and drugs which alter endocrine function; antithyroid, antidiabetic and antifertility agents.

*Clinical pharmacology.* A therapeutic approach to the physiology, pathophysiology, pharmacology and treatment of disease states associated with various organs or systems. Cardiovascular diseases; arrhythmias, peripheral, vascular disease, ischaemic heart disease, shock and congestive heat failure. The skin and associated structures. Dermatological preparations; sunscreens and antiperspirants, deodorants; pigment disorders; viral, bacterial and fungal infections; dermatitis; psoriasis, pityriasis, acne. Gastroenterology; antiulcer drugs, laxatives, antidiarrhoeal agents. The respiratory tract; asthma bronchitis, bronchodilators, expectorants, mucolytics. Inflammatory disorders, rheumatoid arthritis, gout; non-narcotic analgesics, anti-inflammatory agents, uricosuric agents. Uterine relaxants and stimulants.

*Central nervous system physiology, pharmacology and therapeutics.* The reticular formation, wakefulness and the limbic system. The EEG; sleep and epilepsy; antiepileptic drugs; hypnotics, sedatives and anaesthetics. Disorders of locomotion. Aetiology and therapy of Huntington's chorea. Parkinson's disease and spasticity. The role of the limbic system, medulla and hypothalamus in the regulation of temperature, food and water intake, coughing, vomiting, respiration, emotion and behaviour. Antipyretics, anorectics, antitussives, emetics and antiemetics, respiratory stimulants, analeptics. Psychiatric disorders and their treatment, tranquillizers, antidepressants, psychomotor stimulants. Narcotics and narcotic analgesics. Headache.

*Drug abuse and misuse.* Dependence, addiction, tolerance, desensitization, Dependence characteristics and treatment of abuse to hallucinogens; cocaine and other stimulants; alcohol and cannabis; barbiturates and other depressants; narcotics; tobacco and volatile agents.


*Developmental pharmacology.* Selection of target molecules; pre-clinical evaluation; phase 1, II and III clinical trials; governmental requirements; post-marketing surveillance; iatrogenic disease, drug interactions. Toxicity testing of drugs and other chemicals, epidemiology; environmental toxicology and industrial diseases.

**Practical**

*In vivo* and *in vitro* experiments, seminars and discussion groups to illustrate and extend principles discussed in the lecture course.
Textbooks and references

As under Pharmacology I. In addition the following books are recommended as references.


The subject of Pharmacy Practice will comprise 70 lecture hours, 48 hours of integrated teaching and self study, and a 100 hour project. The subject will have five major streams:

(i) Forensic Pharmacy (20 hours lectures)
(ii) Clinical Pharmacy and Therapeutics (12 hours teaching, 12 hours self study)
(iii) Pharmacy Administration and Practice (28 hours lectures, 15 hours teaching, 9 hours tutorials or self study)
(iv) Clinical Pharmacy and Pharmacy Practice (22 hours case study seminars)
(v) Project (100 hours)

### Forensic Pharmacy

The aim of the course is to develop a sense of legal and professional responsibility. The subject deals with the legislation that is applicable to drugs, medicines (drugs in compound form), poisons, and pharmacy generally. The following will be discussed in relation to pharmacy practice:

- Pharmacists Act and Regulations
- Drugs, Poisons and Controlled Substances Act and Regulations
- The Health Act and Regulations including Drug Standards Regulations and Cleanliness (Food, Drugs and Substances) Regulations
- National Health Act and Regulations
- Weights and Measures Act
- Stock Medicines Act
- Commonwealth Spirits Act and Regulations
- Labour and Industry Act

The course will also consider standards of professional conduct, organisation of health services in Victoria and pharmacy organisations in Victoria.

### Textbooks

- Pharmacists Act 1974
- Drugs, Poisons and Controlled Substances Act 1981
- Office Consolidation 2nd edition, 1984
- Pharmaceutical Society of Australia (Victorian Branch) Bulletin.

### Clinical Pharmacy and Therapeutics

Four courses, each involving 3 hours of student preparation and 3 hours of multidisciplinary staff teaching. The following topics are typical of those considered in this part of the course:

(a) Oncology
(b) Asthma and Respiratory Diseases
(c) Epilepsy
(d) Drugs, Pregnancy and Early Childhood

The students will be divided for preparation and self study time; the whole class will assemble for integrated teaching sessions.

Four courses will be presented which will have 3 hours of student preparation and reading, followed by 3 hours of student talks. Students will be divided into 3 groups to rotate through topics such as:
Pharmacy Administration and Practice

A core of 28 lectures in the following areas:

Financial Management (12 lectures): Financial statements; managerial analysis of costs; budgeting; accounting for assets and liabilities; ratio analysis; partnership accounting.

Counselling (5 lectures): Patient compliance; patient communication and information; professional responsibility; drug counselling; counselling skills.

Nutrition (6 lectures): Myths and controversies; the good diet; hazards of food products; nutrition and obesity; breast feeding and milk products.

Poisons and Antidotes (3 lectures): Poisons information centres; accidental poisoning, intentional poisoning; principles of first-aid; specific poisons and antidotes.

Information Retrieval (2 lectures): Chemical and drug information systems; National Drug Information Service; drug data bases; information retrieval.

Four elective courses from a range of options, each of which will comprise six hours of lectures, tutorials, self-study. The following options are indicative of the types of courses offered, but the College reserves the right to add or delete elective courses prior to the commencement of the academic year:

Alternative Medicine: Review of naturopathy, homeopathy, herbal medicine and iridology. Pharmaceutical preparations and practice. The physiological, physiological and pharmacological basis and relationship to orthodox medicine. The literature related to herbal medicine and alternative therapy.

Chemistry in the Home: Garden products — insecticides, herbacides, pesticides; swimming pools — chlorination, pH, monitoring; food additives — sweeteners, preservatives; first aid — stings, bites, vaporisers; dyestuffs — colours, fixing; plastics — containers, adhesives, disposal.

Cosmetic Science: The cosmetic industry; basic ingredients in the manufacture of cosmentics; cosmetic formulation.

*Customer Relations: The pharmacist and client; interaction with clients, colleagues and other health professionals. Training films will be utilised in this course.

IV Therapy and Parenteral Nutrition: Therapy and nutrition; the role of the pharmacist; formulation, manufacture and delivery; quality control.

*Personnel Planning: Selection of staff through interviews; staff appraisal; staff counselling; intelligence tests. Training films will be utilised in this course.

Social Pharmacy and Illness Behaviour: Social perception — social psychology — the study of social interactions; pharmacist/physician/patient interaction; the sociology of drugs; phsyhcolocial aspects of drug taking; illness behaviour.
Veterinary Pharmacy: Veterinary diseases; the veterinary pharmacopoeia and related literature; therapy; the structure of the veterinary industry.

*These electives may be subject to a quota of twenty-five students.

Clinical Pharmacy and Pharmacy Practice

The aim of the course is to introduce students to the art and science of patient history taking, and to examine a number of disease states through case histories. The course will also introduce a number of areas of modern day pharmacy practice, including questioning skills and medical referral techniques.

Pharmacy Project

A 100 hour project will be undertaken by all students who will generally work in pairs. The project will be laboratory, library or community based; the choice of project will be left to the students. Members or staff may suggest project topics.
Graduate Faculty

INTRODUCTION

The Graduate Faculty of the Victorian College of Pharmacy was founded in 1970 to develop and direct all graduate studies within the College. Through the Intersearch Executive it controls all local aspects of the Intersearch Programme which is a joint venture in graduate studies operated by the Victorian College of Pharmacy and the University of Kansas, USA (see page 53).

Students of high academic merit are enrolled in the Intersearch programme to proceed to the degree of Doctor of Philosophy; the degree is jointly awarded by the two institutions. Candidates must complete studies on both campuses in order to participate in the programme which involves formal course work and research. The programme was founded through an initial grant from Mr Lumsford Richardson and has since been financed through the Drug Research Appeal of the Victorian College of Pharmacy and the Endowment Association of the University of Kansas.

The Graduate Faculty also controls and directs all aspects of the Master of Pharmacy programme, and consists of those members of staff who hold the degree of Doctor of Philosophy or have equivalent qualifications and experience, are of lectorial status and above, and who wish to be involved in the research activities of the College. There are also external members of the Graduate Faculty who act as advisors and who have been interested in various graduate developments within the College. External members are from other academic institutions, research foundations, and the pharmaceutical industry from within Australia, the United Kingdom and the United States of America.

Dean, Graduate Faculty
Colin Raper

Executive Committee, Graduate Faculty
Colin Raper (Chairman)
Peter R Andrews
Geoffrey N Vaughan
President-in-Office, Victorian College of Pharmacy Ltd
Robert Burnet (Secretary)

Executive Committee, Intersearch
Takeru Higuchi (President), University of Kansas
Peter R Andrews, Victorian College of Pharmacy Ltd
Ronald T Borchardt, University of Kansas
Lester A Mitscher, University of Kansas
Howard E Mossberg (Secretary, USA) University of Kansas
Colin Raper, Victorian College of Pharmacy Ltd
Barry L Reed, Victorian College of Pharmacy Ltd
Charles O Rutledge, University of Kansas
Valentino Stella, University of Kansas
Geoffrey N Vaughan (Secretary, Australia), Victorian College of Pharmacy Ltd.
Nigel Manning CBE was appointed an Emeritus Professor within the Intersearch programme in 1979.

RESEARCH

Research facilities are available within the Graduate Faculty for students to undertake graduate work in experimental and theoretical areas of the pharmaceutical sciences. Students may apply for entry to graduate study courses by arrangement with the Graduate Faculty. The following fields of research are available for graduate studies.

Pharmaceutics


Pharmaceutical Chemistry

Design and structure-activity relationships of CNS active drugs. NMR and computer graphic studies of drug receptor interactions. Analytical and clinical chemistry of drugs and biological systems. Design, synthesis and testing of enzyme inhibitors.

Pharmacology

Pharmacological investigations on anti-depressants, opioids, cannabis, prostaglandins and antidiarrhoeal drugs. Autonomic mechanisms, pre- and post-junctional agonists and antagonists. Dopamine and dopaminergic mechanisms. Carcinogens and cellular functions.

Pharmacy Practice

Clinical pharmacokinetics, pharmacokinetics of intravenous infusions, computer controlled infusion devices, influences of posture and sleep on pharmacokinetics, clinical pharmacy practice.

Regulations

The rules and regulations for the award of the above degrees are detailed on page 66 of the handbook. 

GRADUATE DIPLOMA IN HOSPITAL PHARMACY

The Victorian College of Pharmacy Ltd commenced teaching a graduate diploma in hospital pharmacy in 1978. Any pharmacist with hospital experience and employed in a hospital or hospital-related practice is eligible to apply for admission to the course. Applications close on 30 November of the year preceding that in which enrolment is desired. The course is conducted on a part-time basis over two academic years. It is the student’s responsibility to arrange the necessary day release from the hospital pharmacy department (a total of 27 days each year are required).

The Graduate Diploma in Hospital Pharmacy course is designed to:

(i) train hospital pharmacists in up-to-date skills and knowledge.
(ii) give the hospital pharmacist confidence in communicating with others.

(iii) develop research skills

The course is centred around disease states and encompasses the three areas of clinical pharmacology, clinical pharmaceutics and applied hospital pharmacy practice. Most of the major disease systems of the body are covered during the course. Wherever possible the seminars on clinical pharmacology are designed to interface with clinical pharmaceutics to show the relevance of such pharmaceutical aspects as doseform design, dosage regimen and selection. Material on patient counselling and advice for patients is introduced for each disease.

Seminars on communication techniques and counselling are taught under the general heading of hospital pharmacy practice. This relatively small section of the course also introduces the student to pertinent subjects such as the role and structure of the health and hospital services, drug distribution, IV additives, drug monitoring and hospital reaccreditation procedures.

Generally, seminars will be held in the mornings at the Pharmacy College. Didactic formal contact over the two academic years is about 165 hours, approximately broken down as follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Pharmacology</td>
<td>108</td>
</tr>
<tr>
<td>Clinical Pharmaceutics</td>
<td>37</td>
</tr>
<tr>
<td>Applied Hospital Pharmacy Practice</td>
<td>20</td>
</tr>
</tbody>
</table>

In addition, formal course work on data processing, application of computers, information retrieval and relevant biostatistics will be presented. This will account for another 13 hours of formal lecture time.

Afternoons are generally reserved for tutorials, discussion groups, clinical sit-ins, student-presented case histories, ward rounds, hospital/work visits, visits to biochemistry, haematology and pathology laboratories, laboratory exercises and demonstrations. These will account for another 200 hours formal contact time over the two years.

Great importance is placed on the active participation of each of the students in seminar presentations and discussion groups. The student’s performances at these seminars and tutorials will be closely monitored; marks will then be allocated on degree of participation in discussion, on rapport established with colleagues, on information contribution and on communicative ability.

In addition to the timetabled activities, it is expected that the student will spend another 8-12 hours per week on personal private study. This will involve library and literature assignments, preparation of patients’ case histories from the base hospital, and relearning basic material for on-coming lectures.

Projects organised in conjunction with the course director and hospital chief pharmacists will be undertaken at the students’ hospitals. Such projects, where possible, will be selected to meet the student’s individual interests and will take advantage of the particular skills and expertise of the hospital and chief pharmacist concerned. A project supervisor will be appointed to assist the student.

Students will be called upon to deliver formally the results of their projects at appropriate intervals. Marks will be accredited for such presentations.
Clinical Pharmacology

A course of 108 hours.

Pathophysiology of disease and therapeutics. This section embraces diseases of the following organs and systems: cardiovascular system, blood, respiratory system, gastrointestinal tract, liver, gall bladder and pancreas, kidneys and urinary tract, endocrine glands, connective tissue, bone, reproductive tract, skin, ear, nose, throat, eye; in addition, diseases due to pathogenic organisms, inborn errors of metabolism. Disorders of water, electrolyte and acid-base balance, psychiatry and neurology, tissue and organ growth, wounds, neoplastic and immunologically-based diseases, poisoning and pain control are also covered.

Advanced pharmacology. This will consist of revision and an update of knowledge acquired during practice, and from the BPharm course. Advanced studies will include mechanisms of drug action, interactions, selective toxicity, pharmacology in relation to age and in relation to genetic-based disorders.

General health science in relation to drugs and therapy. Environmental hazards in relation to toxicity, epidemiological approach to disease, ageing, preventive medicine and drug dependence are included in this section.

During the course, aspects under the headings above which have a common theme will be considered concurrently (centred around a particular disease state) in order to maintain an integrated approach.

Textbooks

Advice on selection of some of the following books will be given in the introductory lectures.


Clinical Pharmaceutics

A course of 37 hours.

Relevant topics in the syllabus of the BPharm course will be extended and practical applications will be emphasised. This section will comprise three main areas.

Applied biopharmaceutics. Drug absorption, distribution, factors in drug action, drug response in pathological states, protein and tissue binding, biopharmaceutics of drug interactions, bioavailability, correlation of in vitro tests with clinical response, generic and therapeutic equivalence, pharmacokinetic modelling, multidose pharmacokinetics and prediction of blood levels from dosage regimens, clinical pharmacokinetics in renal, hepatic, cardiac failure and malabsorption states, blood levels and pharmacodynamic effects, non-linear systems, sustained release formulations and novel, programmed release dosage forms.
**Applied microbiology.** Preparation and testing of injections, large volume intravenous solutions and ophthalmics, intravenous additives, renal and peritoneal dialysis, laminar flow technology, microbial contamination and microbial limit tests.

**Applied pharmaceutics.** Pertinent aspects of formulation, stability, quality control, GMP, physical and chemical incompatibility associated with intravenous additives.

**Textbooks**


**Applied Hospital Pharmacy**

A course of 20 hours.

**Applied statistics.** Biostatistics pertinent to clinical orientation, eg, design of clinical trials, statistics of regression and correlation, analysis of variance, sampling, probability and quality control, questionnaire design and analysis of such data.

**Computers and hospital practice.** Applicability of the computerization of pharmacy services in the following areas: maintaining patient profiles, medication records, transcription and medication errors, budget and stock control, economic utilisation of drug resources, drug information services; data file and data base handling techniques, introduction to relevant languages.

(Note: it is the aim of this section to orientate the participant more towards system analysis and implementation, rather than to actual detailed programming).

**Pharmacy practice.** Subjects such as consultative interview techniques and patients’ drug histories, patient orientated medication records, patient compliance, drug distribution systems, unit packs and relevant packaging technology, ward stock control, drug information services, intravenous additives, parenteral alimentation, and radiopharmaceuticals will be offered, possibly as electives.

**Textbooks**


**GRADUATE DIPLOMA IN COMMUNITY PHARMACY**

The Graduate Diploma in Community Pharmacy has been designed to:

(i) Encourage the community pharmacist to become a more active member of the health care group and to increase the professional skills of pharmacists.
(ii) Allow the community pharmacist to assimilate and update the knowledge and training necessary to become clinically orientated.

(iii) Develop pertinent communication skills.

(iv) Educate the community pharmacist in up-to-date aspects of business and personnel management.

(v) Enable community pharmacists to become more expert in their professional role.

The course is conducted as a part-time programme over two years and requires attendance at the College for one day per week during each academic term. Candidates are expected to have current employment in community pharmacy or in some other relevant area of practice. Applications for entry to the course close on 30 November each year.

The topics listed below will be presented through formal lectures, seminars and discussion groups. Where appropriate, laboratory exercises and demonstrations will be presented to illustrate particular points of interest related to lecture topics. Visits to hospitals, selected community pharmacies, the pharmaceutical industry, medical practices, government departments and relevant organisations (eg. poisons centre, a family planning clinic, the Victorian Ambulance Service, medical insurance organisations, the Pharmacy Guild, etc.) are included in the formal teaching programme. A major project is also included within the course.

The course has three major streams; Applied Pharmacy, Clinical and Community Pharmacy and Pharmacy Management. Approximately equal teaching time is allocated to each of these streams.

**Applied Pharmacy:** Human behaviour, communications, statistical methods, information science, applied pharmaceutics, biopharmaceutics, microbiology, biochemistry, first-aid and emergencies, electives.

**Clinical and Community Pharmacy:** Pathophysiology of the disease state, clinical pharmacology, treatment of minor ailments, general health science.

**Pharmacy Management:** Managerial economics, health service systems, purchase of a small business, partnerships, managing a small business, marketing, merchandising, records management, personnel management, pharmacy and the law.

**Textbooks**

Advice on selection of some of the following books will be given in the introductory lectures.


Students are also expected to subscribe to, or have access to, the following journals:
Australian Journal of Pharmacy
Current Therapeutics, Adis Press.
Australian Pharmacist

MASTER OF PHARMACY DEGREE

The degree of Master of Pharmacy (M Pharm) is awarded to students who successfully complete two years of full time study after having been admitted to the Bachelor of Pharmacy degree. Information relating to the award of master degrees is printed on page 66.

To be eligible to enter the M Pharm programme students normally are expected to have obtained at least upper second-class honours at the B Pharm examination, or hold an equivalent qualification recognised by the College.

Students are not precluded from nominating the area which they wish to pursue their studies. However this is often conditional upon the availability of materials, equipment, and supervisors. Often a student is well advised to place the final choice of area in the hands of the Graduate School.

Students proposing this course are requested to apply in writing to the Dean of the Graduate Faculty in the year prior to their proposed commencement of studies. Programmes for the M Pharm degree normally commence in March of each year.

Each full-time student is eligible to apply for a Commonwealth Post-graduate Award or a research Scholarship offered through the College. The former awards are restricted to Australian citizens or candidates with permanent resident status. The awards provide a stipend of approximately $8126 gross per annum.

DOCTOR OF PHILOSOPHY

Intersearch. Intersearch is a graduate research programme conducted at the international level by the United State of America and Australia through the University of Kansas (USA), and the Pharmaceutical Society of Australia (Victorian Branch). It is for graduate students of excellent quality. Intersearch is designed to train doctors of philosophy by teaching the methods of research and at the same time offering a broadening international experience.

A joint degree will be awarded under the names of both institutions. Graduates from this programme will be trained in a manner suitable to the needs of the pharmaceutical industry and institutions of higher learning in both countries.

This joint programme will admit students from either institution to either campus. A further requirement is that each student entering the programme must engage in studies for at least twelve months on each campus. Return economy class fares are provided for students admitted to the programme. Students will obtain financial support during their studies.

Further information, including details of financial support, may be obtained from the Dean of the Victorian College of Pharmacy Ltd who acts as Australian Secretary for the Executive Committee of Intersearch.
Victorian Universities

The College has a formal agreement with the University of Melbourne whereby, for the purposes of graduate studies (e.g. PhD), the College is the Department of Pharmaceutical Sciences within the Faculty of Science. Under this agreement students may undertake studies towards the Doctor of Philosophy of the University of Melbourne at the College under the supervision of academic staff members of the College.

Deakin University, La Trobe University and Monash University are also willing to consider graduates for entry to PhD programmes, but under the joint supervision of the staff of the College and the relevant university.

Fees

Students enrolling for the Graduate Diploma, Master of Pharmacy, and Doctor of Philosophy courses on a full-time basis will be required to meet the following charges:

- Government Administration Charge $250
- Annual subscription to Victorian Pharmacy Students Association $20
- Service Fee $36

Total: $306

Students enrolling for the above courses on a part-time basis will be required to meet the following charges:

- Government Administrative Charge $250
- Annual subscription to Victorian Pharmacy Students Association $10
- Service Fee $18

Total: $278

Rules and Regulations

The regulations relating to the Graduate Diploma and Master of Pharmacy courses will be found on page 66, while general rules relating to student conduct will be found on page 60.
Students association, counselling, library

Victorian Pharmacy Students Association

Student activities at the College centre around a Student Representative Council. The SRC performs a leading part in student government and is the point of contact between the corporate body of students and the College administration.

It is responsible for the organisation and development of student activities on the campus which cover sporting, cultural and social activities.

Several student organisations are affiliated with the Student Council. Students may obtain further information about these organisations at the SRC office.

Students are encouraged to make full use of these facilities.

A Student Council is essential to a college of advanced education which is seeking the development of its students so that they can, in the future, take leading parts in community affairs as well as in their respective professions.

Student Counselling

A counselling service is available to all students who may wish advice or discuss any problems that may arise during the pharmacy course.

Appointments for interviews may be arranged by personal approach to either of the two counsellors:

Robert Burnet (Registrar)
Louis Roller (School of Pharmaceutics)

C L Butchers Memorial Library

The C L Butchers Memorial Library comprises about 12,000 volumes, including several historic runs of pharmacy journals, and a number of valuable old books. The library has been planned as a special collection for the pharmaceutical sciences and drug technology, and not as a general library. Of its type it is the most important collection in Australia. It has been maintained since 1857 and was originally designed primarily for the use of members of the Pharmaceutical Society of Victoria.

Council has directed that the administration of the library be attached to the Dean’s Office. A student representative sits on the library committee.

The library is available for study and reference purposes, from 9.00 am to 5.00 pm from Monday to Friday.

Library Rules

1. The Library is available for study and reference purposes.
2. Silence is requested in the Library at all times.
3. Bags, food and drinks are not permitted in the library.
4. Some overnight loans are permitted, but these must be returned by 9.00 am on the following morning.
5. Periodicals may not be borrowed by students.
6. 'Library Use' slips are to be made our for counter reserve material, which must be returned to the counter after use.
7. Borrowers are responsible for the 'making good' or replacement of library material damaged or lost while in their charge.

8. Smoking is not permitted in the library.

9. Users failing to observe the current rules may be suspended from using the library.
In addition to the sponsors of subject exhibitions and special awards, which are duly acknowledged in this handbook, the Council of the College would like to record its gratitude in respect of the following major areas of support:

**M A Nicholas Industrial Professorship**
Nicholas Kiwi Pacific Pty Ltd has supported the M A Nicholas Industrial Professor in Biopharmaceutics since 1978. Professor Barry L Reed is the Foundation professor of biopharmaceutics.

**Sigma School of Pharmacy Practice**
The Sigma School of Pharmacy Practice was established in 1982 through the generous support of Sigma Co. Ltd. Funds have been made available to supplement academic and administrative salaries within the School which is responsible for the presentation of the Graduate Diploma courses in Hospital Pharmacy and Community Pharmacy.

**Sigma Research Fellowship**
Sigma Co. Ltd is currently supporting a research assistant in the School of Pharmacology.

*Recipient:*
1986 Lam Li Fong

**David Newnham Memorial Leukaemia Research Fellowship**
Friends and relatives of the late Mr. David Newnham have established a memorial fund to foster research which impinges on possible contributions to an understanding of the disease leukaemia.

*Recipient:*
1986 Barrie C Finnin

**Pharmaceutical Society Research Fellows - Centenary Scholarships**
The College conducts an ongoing Drug Research Appeal which has been generously supported by many private and organizational donors, both within and outside the profession. The following fellowships are being provided from the Drug Research Appeal Fund and commemorate the centenary of the Victorian College of Pharmacy.

*Recipients:*
1986 Michael Campbell
Margaret Iles

**Cyril Tonkin Scholarship**
The Pharmaceutical Society of Australia (Victorian Branch) has awarded Cyril Tonkin Scholarships to graduate research students.

*Recipients:*
1986 Sharoin Abd Rashid
Michael Ha
Charles Lam
Maurice Sheen
Kay Sorimachi

David Bull Laboratories Research Fellowship
David Bull Laboratories is currently supporting a research student undertaking a Master of Pharmacy degree.
Recipient:
1986 Lilianna Lear

Institute of Drug Technology — John A Hersey Memorial Scholarship
The Institute of Drug Technology Ltd has offered a scholarship in memory of its foundation Chairman, Professor John A Hersey.
Recipient:
1986 Hester Kan

Harry Braithwaite Scholarship
The Pharmacy Board of Victoria has offered a scholarship to perpetuate the memory of Harry Braithwaite in recognition of his long service to pharmacy and the Pharmacy Board of Victoria.
Recipient:
1986 Irene Cheah Chui Lin

May and Baker Research Fellowship
Recipients:
1986 Ian Nicholls
Elga Palant
Tracie Ramsdale
Phillip Thompson

Tomsitt-Faulding Research Scholarship
Recipient:
1986 Anthony Hughes

Biota Research Fellowship
Recipient:
1986 Johanna Barry
Exhibitions & Awards

FIRST YEAR EXHIBITIONS
Pharmaceutics 1  Sigma Company Limited  $200
Pharmaceutical Chemistry 1 CIG Medishield  $200
Physiology I  Salaried Pharmacists' Association  $200
Mathematics and Computer Science  A J Cobcroft fund  $200

SECOND YEAR EXHIBITIONS
Pharmaceutics II  Sigma Company Limited  $200
Pharmaceutical Chemistry II Kodak (Australasia) Pty. Ltd.  $200
Pharmacology I  F H Faulding & Co.  $200

THIRD YEAR EXHIBITIONS
Pharmaceutics III  The Pharmacy Guild of Australia  $200
Pharmaceutical Chemistry III Kodak (Australasia) Pty. Ltd.  $200
Pharmacology II  Sigma Company Limited  $200
Pharmacy Practice  Society of Hospital Pharmacists of Australia (Victoria Branch)  $200
Forensic  The Guild Insurance Co Ltd  $200
Management/Administration  $200

GRADUATE DIPLOMA IN HOSPITAL PHARMACY
Centenary Awards  Sigma Company Limited  $200
Wellcome Australia Ltd  $200
Ned Kelly Homestead  $200

GRADUATE DIPLOMA IN COMMUNITY PHARMACY
Centenary Awards  Sigma Company Limited  $200
Pharmacy Management  The Pharmacy Guild of Australia  $200

MASTER OF PHARMACY
Computer Science  A J Cobcroft Trust Fund  $200
Statistics  A J Cobcroft Trust Fund  $200

SPECIAL AWARDS
Chapter Prize  Chapter of Pharmacy Practice Tutors  $200
Pharmacy Exhibition  Pharmaceutical Defence Ltd  $500
Pharmacy Gold Medal  Pharmaceutical Society of Australia (Victorian Branch) Ltd
Classes
1. Students are required to familiarise themselves with the time-tables and to observe the hours of attendance at lectures, tutorials, practical work, and all examinations.
2. Every student is required to attend at least three-fourths of the lectures and three-fourths of the practical work, in each subject, in order to complete satisfactorily any year of the course.
3. During classes students must confine themselves to their allotted places. Talking and noise during the delivery of lectures are prohibited.
4. Only such experiments and operations as are sanctioned by the lecturer are to be undertaken.
5. Smoking is not permitted in lecture theatres, laboratories, the library, or the assembly hall, where facilities are not provided.
6. No chemical, drugs, or biological materials may be taken into or out of the laboratory without the permission of the lecturer-in-charge.

Finance
7. All apparatus lent or hired to students must be returned clean and in good order, or paid for.
8. Credit for term attendances at lectures cannot be given until all fees due have been paid.
9. No student shall be allowed to enter on a new term at the College while fees for the previous term are unpaid, unless a satisfactory reason is given to the Registrar.
10. Any damage done to the furniture, fittings, books, specimens or apparatus in the College by any student shall be a charge against such student, who shall be held liable for the cost of any repairs or replacements necessary.
11. Students must enter for examinations before the closing date of entry. A fee is chargeable for late entries.

Conduct
12. Before leaving the laboratories students must clean and arrange their benches for the benefit of subsequent classes. Apparatus must be put away in its proper place.
13. Suitable footwear must be worn by students on the College premises.
14. When using the library the rules in force at the time must be strictly observed.
15. Food refuse must be either returned to the dining room or placed in a rubbish-bin.
16. All used food utensils and food containers must be returned to the dining room immediately after use.
17. One of the functions of the Dean and the other administrative officers is to protect life and property. Students interfering with such things as lighting, fire hoses, safety apparatus, or door locks can create a hazard to life. Fireworks are banned on College premises.
18. As the College campus, like its budget for cleaning and repairs, is small, any forms of campus 'rags' or games are not permitted.

19. The College is allowing an increasing amount of expensive research and other equipment to be used by students for teaching purposes. Any careless damage to such equipment will be regarded as a serious breach of College rules.

20. Where a student has been guilty of any misconduct or breach of these rules, he may be reprimanded by the Deans Board, or reported by it to the Council, to be dealt with as the Council shall think fit.

**WARNING** Students are requested to exercise the utmost care with drugs and chemicals, many of which are either inflammable or poisonous.

A particularly strong warning is given to students concerning the handling of live microorganisms, and exposure to radiations of any kind. Take no liberties. Where the slightest doubt exists, refer to a member of staff.

An outline of the safety procedures adopted by the College is given in the booklet "Safety precautions and emergency procedures" which is issued to students at the start of the course.
Examinations

The Pharmacists Act 1974 provides that the Pharmacy Board of Victoria shall have the power to control and direct examinations concerned with the pharmacy course. The Board's examinations are conducted in the College.

The College teaching staff act as examiners for the Pharmacy Board in the Pharmacy I, II and III examinations.

The Pharmacy I, Pharmacy II and Pharmacy III examinations are conducted respectively at the end of successive years of the course.

Form of Examinations

The Examinations shall consist of theoretical, practical, or oral examinations as may be required by the examiners concerned.

The Pharmacy I Examination shall consist of examinations in the following:

- Pharmaceutics I (including Human Behaviour)
- Pharmaceutical Chemistry I
- Mathematics
- Physiology

The Pharmacy II Examination shall consist of examinations in the following:

- Pharmaceutics II (including Microbiology)
- Pharmaceutical Chemistry II
- Pharmacology I (including Biochemistry)

The Pharmacy III Examination shall consist of examinations in the following:

- Pharmaceutics III
- Pharmaceutical Chemistry III
- Pharmacology II
- Pharmacy Practice

Syllabus

Pharmacy I, II and III Examinations

The syllabus for the Pharmacy I, II and III examination will be the syllabus set for the three years of the course respectively.
Examination rules
(Issued by the Victorian College of Pharmacy)

The following examination rules are issued by the Pharmacy Board of Victoria and the Victorian College of Pharmacy Limited. These rules should be read in conjunction with Council’s policy concerning courses of study published on page 15.

1. An entry for an examination will only be accepted from students who have attended at least three-fourths of the lectures and at least three-fourths of the practical work of each subject for which the student is required to enter.

2. Candidates will be permitted to enter the examination room fifteen minutes prior to the commencement of the examination.

3. Candidates may read the examination paper during 15 minutes prior to the commencement of the examination but may not make use of calculators or begin writing until advised to do so by the supervisor.

4. Candidates may not leave the examination until it has been in progress for half an hour.

5. Candidates arriving more than half an hour after the examination has commenced will not be admitted.

6. In the case of written examinations, candidates will not be allowed to bring in any text books, lecture notes or other written material except where specific instructions have been given by the examiner in charge of the subject. In any case the use of text books borrowed from the library of the Victorian College of Pharmacy will not be permitted.

7. Tables of logarithms will be available if required and candidates may bring a slide rule with them if they so desire. Unprogrammed electronic calculators may be used in examinations. However, no claim for special consideration on the grounds of calculator breakdowns will be accepted and candidates should therefore be able to use logarithm tables efficiently.

8. Candidates must not communicate with one another whilst in the examination room.

9. No examination books, tables of logarithms or other material which is the property of the Pharmacy Board of Victoria or the Victorian College of Pharmacy are to be removed from the examination room.

10. At the end of an examination all candidates must remain seated until all examination books have been collected.

11. Candidates must not communicate with examiners prior to the publication of results.

12. Where sickness or other circumstances warranting compassion arise, candidates for examinations must furnish written information to the Registrar immediately. In the case of sickness a medical certificate is required and must be forwarded to the Registrar of the College within forty-eight hours of the time of consultation.

13. Supplementary examinations will be held when necessary at the discretion of the Board of Examiners. Individual examiners may prescribe additional examinations, either written, oral, or practical when and as required. Candidates are therefore advised to be available after the completion of the annual examinations and pending publication of the examination results.
14. The Council of the College and the Pharmacy Board of Victoria will publish results of examinations, but the Council of the College may, in the case of a candidate's failing to observe these examination rules, omit the results of the said candidate and/or exclude the said candidate from further courses of study at the College.

15. Failure to comply with any rule or instruction by the supervisor will be regarded as a breach of discipline and may be reported to the Registrar of the College.

16. Any communication regarding examinations must be addressed in the initial instance to the Registrar of the Victorian College of Pharmacy.

17. In these rules 'examinations' includes supplementary examinations and any additional examinations, either written, oral or practical, prescribed by an individual examiner.
REGULATIONS FOR THE AWARD OF BACHELOR OF PHARMACY, MASTER OF PHARMACY, AND GRADUATE DIPLOMA COURSES

During the period 1968 to 1980 graduates from the College were awarded the degrees of Bachelor of Pharmacy or Master of Pharmacy, as the case may be, of the Victoria Institute of Colleges Act (1965) and in accordance with the Regulations of the Institute. These Regulations were last published in the College Handbook in 1981; the Victoria Institute of Colleges was dissolved in 1980.

Since 1981 the Victorian College of Pharmacy Ltd has awarded the degrees of Bachelor of Pharmacy and Master of Pharmacy to students who have fulfilled the requirements for the degrees. The degrees are conferred by the College Council by virtue of the Post-Secondary Education Act (1978) and the Post-Secondary Education (Amendment) Act (1980).

The regulations for the degrees of Bachelor of Pharmacy and Master of Pharmacy appear below, as do the regulations for the Graduate Diploma in Hospital Pharmacy (introduced in 1978) and the Graduate Diploma in Community Pharmacy (introduced in 1983).

Bachelor of Pharmacy

1. The Council of the Victorian College of Pharmacy Ltd and the Pharmacy Board of Victoria
   (a) determine the educational requirements for entry to the Bachelor of Pharmacy degree course, the course of study and the subjects which shall be studied for the prescribed examinations:
   (b) appoint the Board of Examiners: and
   (c) control and direct examinations at the Victorian College of Pharmacy Ltd.

2. The College determines the number of students to be admitted to the course and controls and supervises students admitted to the course. Matters relating to the course of study will be decided at the absolute discretion of Council.

3. A candidate for the degree of Bachelor of Pharmacy shall, after fulfilling the College entrance requirements and being admitted to the course, pursue a course of study for at least three years and pass examinations in accordance with the conditions prescribed, unless given credit for subjects pursuant to clause 4 of these regulations.

4. A candidate who, having previously completed subjects considered by the Council of the College to be equivalent to subjects of the Bachelor of Pharmacy course may be given credit for such subjects. The total amount of credit shall not normally exceed one half of the Bachelor of Pharmacy course.

5. The subjects of the course for the degree and the conditions on which such subjects may be taken shall be as prescribed from time to time by the Council of the College and approved by the Pharmacy Board of Victoria and published with the details of subjects in the College Handbook.

6. Subject to these regulations a student must pass the examinations in all the subjects prescribed for study during the first year of the course before the College will grant admission to the course of study in the subjects prescribed for the next year of the course and likewise for each succeeding year.
7. A candidate who fails to attain the standard set by the examiners at the annual examinations in any year may be admitted to repeat the course of study in the following year or may be excluded from the course.

8. The privilege of repeating a year will only be granted with the approval of the Council.

9. A candidate who fails to attain the standard set by the examiners at the annual examinations on more than one occasion or who fails to attain the standard set by the examiners at the examinations after having been granted advanced standing in the pharmacy course of having failed in another tertiary institution may be excluded from the course.

10. Candidates who present themselves initially for the whole of the Pharmacy III Examination may, at the discretion of the Board of Examiners, be granted credit for single subjects in which they have attained the standard set by the examiners.

11. The single subject credits referred to in clause 10 may not be held beyond the Pharmacy III Examination held in November of the following year. After which time re-entry for the whole examination shall be required.

12. After two years have elapsed following the candidate’s initial entry to the Pharmacy III Examination, the College will not accept a further enrolment from the candidate.

13. Where sickness or other circumstances warranting compassion arise candidates for examinations must furnish written information to the Registrar immediately. In the case of sickness a medical certificate is required and must be forwarded to the Registrar within forty-eight hours of the time of consultation.

14. A candidate must observe College rules and the examination rules published in the College Handbook by the Victorian College of Pharmacy Ltd.

15. The Council of the College and the Pharmacy Board of Victoria will publish the results of examinations but the Council of the College may, in the case of a candidate’s failing to observe the examination rules published in the College Handbook, omit the results of the said candidate and/or exclude the said candidate from further courses of study at the College.

16. A candidate who has fulfilled the conditions prescribed may be granted the Degree of Bachelor of Pharmacy.

**Master of Pharmacy**

**Definitions**

**THE COLLEGE** - the Victorian College of Pharmacy Ltd

**THE COUNCIL** - the Council of the Victorian College of Pharmacy Ltd.

**THE DEGREE** - Master of Pharmacy

**THE EXECUTIVE** - the Executive Committee of the Graduate Faculty

**THE GRADUATE FACULTY** - the Graduate Faculty of the Victorian College of Pharmacy Ltd.

**By thesis**

1. **General**

1.1 The Degree is awarded to candidates who successfully complete a course of supervised study and research within the College.

1.2 Examination is by thesis.
1.3 The Degree shall be awarded in one grade only. Honours or distinctions are not awarded.

1.4 Admission to candidature, Degree programmes, and general policies relating to the Degree are controlled by the Graduate Faculty. The Graduate Faculty consists of all members of the lectorial staff of the College who

(a) hold a PhD or have equivalent qualifications or experience,
(b) are actively involved in research
and
(c) may act as sole supervisors of Degree research programmes.

1.5 The Executive is responsible for the general running of the Degree programme in accordance with the policies determined by the Graduate Faculty, the Victorian Post-Secondary Education Commission, and the State Accreditation Board.

The Executive consists of the Dean of the College, the Head of Schools, the President of the Council of the College and the Registrar. The Registrar shall act as the Secretary to the Executive and the Dean of the Graduate Faculty shall act as Chairman of Executive.

The Executive, through the Dean of the Graduate Faculty, has the sole responsibility for the conduct of the Degree examination process.

The Executive reports to the Council of the College.

2. Admission to the Degree programme

2.1 Admission to candidature for the Degree is granted by the Graduate Faculty and endorsed by the Council. In assessing applications for admission to candidature, the Graduate Faculty will take into account the applicant’s previous academic record and work experience, Applicants will hold a Bachelor degree awarded by the College or a qualification deemed by the Graduate Faculty to be equivalent. Successful applicants are likely to have obtained high grades in their undergraduate course.

2.2 The Graduate Faculty may admit applicants as internal or, subject to satisfactory supervisory arrangements and adequate facilities being available, as external candidates.

3 The Degree programme

3.1 All candidates for the Degree follow a two year programme on a full-time basis or an equivalent programme on a part-time basis.

3.2 The programme contains statutory course work requirements in the areas of statistics, computer science, advanced pharmaceutical science and information science. A candidate must satisfy all course work requirements before submission of his/her thesis for examination. Exemption from parts or the whole of the course work requirements may be gained by candidates of advanced standing following written submission to the Executive.

3.3 Full-time candidates must complete the course work requirements within the first year of their studies, and part-time candidates within two years.
3.4 Full-time candidates must present their theses for examination within two years and three months of the commencement of their studies. A further three months extension may be granted following written submissions from the candidate to the Executive. Candidature may be withdrawn by the Executive after this period.

4. **Supervision**

4.1 Each internal candidate will be supervised by a member of the Graduate Faculty who will have overall responsibility for the administrative conduct of the programme. Co-supervisors may be appointed in order to broaden the base of the supervision.

4.2 External candidates will have two supervisors, a member of the Graduate Faculty who will have administrative responsibility for the programme and a suitably qualified external supervisor who has close contact with the candidate at the place in which the research work will be conducted.

4.3 All supervisors must be approved by the Executive.

5. **Progress**

5.1 The candidate must make satisfactory progress during candidature.

5.2 Supervisors' reports outlining the progress of candidates must be submitted at twelve monthly intervals to the Executive.

5.3 A satisfactory supervisor's report and completion of course work requirements are necessary for continued candidature.

5.4 Failure on the part of the candidate to demonstrate satisfactory progress at any stage may result in the candidature being terminated on the recommendation of the Executive after endorsement by the Council.

6. **Thesis**

6.1 Three copies of the thesis conforming to the specification outlines by the Executive must be submitted to the Registrar for examination.

6.2 A certificate signed by the candidate and his supervisor to the effect that the work is that of the candidate alone and has not been submitted previously, in whole or in part in respect of any other academic award, must be forwarded to the Registrar together with the thesis.

6.2 After a thesis has been examined and graded as passed, one copy is to be lodged in the College Library.

7. **Examinations**

7.1 Following discussion between the supervisors and the Head of School in which the research has been performed, the names and positions of three potential examiners shall be forwarded to the Executive.

7.2 The Executive will nominate two examiners for the thesis. The examiners will be external to the College.

7.3 The names of the examiners will not be divulged to the candidates until the examination process is completed.
The Dean of the Graduate Faculty will have sole responsibility for contacting examiners, attending to any queries that arise and collecting examiner's reports.

On the basis of the examiners reports, the Executive will make recommendations on the award of the Degree., the failure of the candidate, or in the event of a major disagreement between examiners, the re-examination of the thesis by a third external examiner.

Examiners are required to recommend:
(a) that the thesis should be classified as PASSED without further examination
(b) that the thesis should be classified as PASSED subject to minor corrections being made to the satisfaction of the Executive of the Graduate Faculty.
(c) that the thesis should be DEFERRED and the candidate should be permitted to re-submit his/her thesis in a revised form.
(d) that the thesis should be classified as FAILED

In awarding a PASS, or a PASS SUBJECT TO MINOR CORRECTIONS, the thesis presented by the candidate should be of a standard which demonstrates, at levels appropriate to a Masters degree.

(i) a well-based understanding of the relevant field of study.
(ii) competent work relevant to the field of study
(iii) a discernible contribution to the field of study

By Publication

General

The degree is awarded to candidates who successfully present a thesis consisting of publication(s) which embody research work performed by the candidate.

The degree shall be awarded in one grade only. Honours and distinctions are not awarded.

The Executive is responsible for the general running of the degree programme in accordance with policies determined by the Graduate Faculty and the Victorian Post-Secondary Education Commission.

The Executive, through the Dean of the Graduate Faculty, has the sole responsibility for the conduct of the examination process for the degree.

The Executive reports to the Council of the College.

Candidate

A Candidate for a degree of Master of Pharmacy by Publication shall:
(a) have held for a minimum period of five years -
   (i) a first degree of the College or of an Australian university, or of any other institution approved by the College for this purpose; or
   (ii) such other qualification or experience as might be accepted as equivalent to (i) above;
(b) submit to the College through the Registrar a publication or publications for examination for the degree
10. **Publication**

For the purpose of Section 9.1(b) above.

10.1 A publication may be a major published paper, a collection of papers or a monograph.

10.2 A publication must be based on original research, investigation or developmental work carried out by the candidate in an industrial, commercial, governmental, educational or research organisation, or carried out as a member of the staff of a college of advanced education provided that the subject and nature of the research work are accepted by the College as appropriate for examination for the award of the degree of Master of Pharmacy.

10.3 The publication(s) submitted should represent work which is considered to be the equivalent to a minimum of two years full-time study.

10.4 A candidate may not submit for examination work previously submitted for any previous academic qualification.

10.5 The College requests that any publication submitted for examination:

- (a) has been the subject of critical independent examination;
- (b) is available to the general public; and
- (c) where it consists of several papers, relates to one aspect of the same subject.

10.6 Research work contained in reports issued by an organisation shall not, without the express consent of the organisation and the approval of the College, be accepted as a publication for the purpose of these regulations.

10.7 In the event of joint publication, the applicant shall provide the College with a written statement indicating the extent and nature of the applicant’s personal contribution to the project. The applicant’s statement should be validated by a written statement from joint author(s) or co-worker(s) (as appropriate).

11. **Examination**

11.1 In the first instance, an unbound copy of the publication(s) shall be forwarded to the Executive through the Dean of the Graduate Faculty.

11.2 The Executive shall form an ad hoc internal examination committee consisting of the Dean of the Graduate Faculty (Chairman) and two other members of the academic staff of the College with expertise in the research area pertinent to the publication(s). This committee will assess whether the candidate and the publication(s) presented conform to the regulations outlined in Sections 9 and 10 and whether or not there is a prima facie evidence that the publication is worthy of examination for the degree of Master of Pharmacy.

11.3 If the publication is considered to be worthy of examination the candidate shall be informed of the result and asked to forward three bound copies of the thesis to the Registrar and pay an appropriate fee to defray the costs of the external examination.

11.4 Two external examiners shall be appointed by the Executive of the Graduate Faculty to examine the thesis.
11.5 The external examiners are required to recommend that the thesis be:
(a) Passed; or
(b) Failed.

11.6 Following the receipt of the examiners reports, at least one of which must be in the Passed category, the candidate will undergo an oral examination conducted by the ad hoc internal examination committee (refer Section 11.2) who may question the candidate on points raised by the external examiners. The examination committee will recommend to the Executive whether or not the thesis be classified as passed or failed.

11.7 If the thesis is classified as passed, one copy is to be lodged in the College Library.

11.8 Publications which have been deemed to have failed may not be re-submitted for examination for the degree.

11.9 In cases where examiner(s) have recommended that a publication be failed, but have suggested that additional publication would strengthen the submission, the Executive may consider as a new submission a publication that includes previously submitted work.

Variation to regulations

12.1 It is recognised that there may be situations or circumstances associated with some candidates which may be regarded as exceptional. In such cases Council, on the recommendation of the Graduate Faculty, may approve minor variations to the above regulations.

Further guidelines on matters relating to the Master of Pharmacy degree may be obtained from the Dean of the Graduate Faculty.

Graduate Diploma in Hospital Pharmacy

1. Subject to any enrolment quota imposed by the Council of the College, a person may be a candidate for the Graduate Diploma in Hospital Pharmacy if he/she—
   (a) is a pharmacist registered to practise in the State of Victoria; 
   (b) has satisfied the College that he/she has had appropriate hospital pharmacy experience; and
   (c) has an academic record considered by the Council of the College to be adequate to enter upon advanced studies.

2. A candidate shall pursue advanced studies for the equivalent of at least one year's full-time study, attend such lectures and classes, undertake such assignments, practical work and field visits as may be prescribed by the School of Pharmacy Practice and—
   (a) shall pass such examinations as may be prescribed by the School of Pharmacy Practice; and
   (b) shall engage in acquiring such experience in hospital pharmacy as may be required by the School of Pharmacy Practice.

3. The subjects of the course for the Graduate Diploma in Hospital Pharmacy and the conditions under which such subjects may be taken shall be as published in the details of subjects in the College Handbook.
4. A candidate who has fulfilled the conditions prescribed may be granted the Graduate Diploma in Hospital Pharmacy.

1This requirement may be waived by Council for candidates who are not permanent residents of Australia.

Graduate Diploma in Community Pharmacy

1. Subject to any enrolment quota imposed by the Council of the College, a person may be a candidate for the Graduate Diploma in Community Pharmacy if he/she—

(a) is a pharmacist registered to practise in the State of Victoria;
(b) has satisfied the College that he/she has had appropriate community experience; and
(c) has an academic record considered by the Council of the College to be adequate to enter upon advanced studies.

2. A candidate shall pursue advanced studies for the equivalent of at least one year’s full-time study, attend such lectures and classes, undertake such assignments, practical work and field visits as may be prescribed by the School of Pharmacy Practice and —

(a) shall pass such examinations as may be described by the School of Pharmacy Practice; and
(b) shall engage in acquiring such experience community pharmacy as may be required by the School of Pharmacy Practice.

3. The subjects of the course for the Graduate Diploma in Community Pharmacy and the conditions under which such subjects may be taken shall be as published in the details of subjects in the College Handbook.

4. A candidate who has fulfilled the conditions prescribed may be granted the Graduate Diploma in Community Pharmacy.

1This requirement may be waived by Council for candidates who are not permanent residents of Australia.
Pharmacy Board of Victoria (Constituted 1876)

N W Naismith, PhC, MPS, FSHPA, President
R W Ashton, PhC, MPS, Treasurer (resigned June 1986)
M G Blachford, PhC, MPS
R P Cohen, PhC, MPS, MIPharmM, FAIPM
P F Gysslink, BPharm, DipEd, MPS
M Gandolfo, PhC, MPS, Treasurer (since June 1986)
P E Nieman, BPharm, MPS
I.H. Pitman, BSc, PhD, DSc, MPS, FRACI, MAITEA (resigned October, 1986)
L Roller, BPharm, MSc, PhD, DipEd, PhC, FPS, AMPsS, ARACI, MCPP
J C Urquhart, PhC, FPS
A I K Lloyd. RFD, ED, PhC, FPS, FAIPM, JP, Registrar
S N Leyshon, BEc, AUA(Pharm), DipED, MPS, AASA, CPA Deputy Registrar

Functions of Board and Society

The Pharmacy Board of Victoria is a quasi-legal body constituted by Act of Parliament and answerable to the Victorian State Parliament through the Minister of Health. The Board meets and has its administrative offices at the Victorian College of Pharmacy.

The Board approves the prescribed subjects to be studied by students undertaking the pharmacy course, is responsible for the control and direction of all examinations in pharmacy, attends to the registration of pharmacists, supervises the practical training of students and trainees including the registration of articles of traineeship, approves tutors and premises for training and issues students' record books. The Board's function is to act primarily in the interests of the public. The Registrar of the Board is also the Executive Director of the Pharmaceutical Society of Australia (Victorian Branch) Ltd.

The Pharmaceutical Society on the other hand is a professional society incorporated under articles of association. The affairs of the Society are administered by a Council of twelve members. The pharmacists of Victoria comprise the membership of the Society. The Society's function is to act primarily in the interests of the pharmacists who are its members. For nearly a century the Pharmaceutical Society owned and operated the College which taught students of pharmacy in a school recognised by the Pharmacy Board.

In 1976 the Council of the Pharmaceutical Society of Australia (Victorian Branch) Ltd determined to establish a new and separate Council to administer the affairs of the College. The new Council assumed its responsibilities for 1 January 1977.
Practical training and Final Examination

Having completed the requirements for the Bachelor of Pharmacy degree, in order to register as a pharmacist, graduates must complete a period of practical training and pass the Final Examination conducted by the Pharmacy Board of Victoria.

A prerequisite to entering for the Final Examination is that practical training has been undertaken under conditions laid down by the Board, and in premises approved by the Board. Students should check with prospective employers that the premises have received Board approval. This avoids any possible embarrassment, in respect of recognition of practical training.

Practical training

The period of practical training prescribed by the Regulations is 2400 hours, which must be worked in weeks of not less than 35 hours and not more than 40 hours. Of these hours, at least 1920 must be served as a trainee under articles; and up to 480 hours may be served during undergraduateship without being articled. It is considered most desirable for students to complete the first 480 hours training prior to attempting the Pharmacy III examination. In all circumstances the practical training must be served in continuous periods of not less that 160 hours worked in weekly lots as described above.

The Board encourages undergraduates and graduates to obtain practical training in more than one area of pharmacy, preferably in community, hospital and industrial practice. This offers a broader and more valuable experience in practical training.

The Board will accept training, providing the establishment concerned has been approved by the Board, in a community pharmacy, a UFS dispensary, a hospital (whether public, private, repatriation, or attached to a branch of the armed services), a school of pharmacy, a university department of pharmacology, or the laboratory of a pharmaceutical manufacturer.

The Board will also approve the first year of the Master of Pharmacy programme at the Victorian College of Pharmacy Ltd as part of the practical training and will allow such M Pharm students to sit for the Final Examination twelve months after completing the requirements for Bachelor of Pharmacy, but requires that the student has completed not less that 480 hours practical training in a hospital or community pharmacy before the Examination.

To avoid embarrassment and possible loss of recognition of practical training, a check should be made to ensure that all premises where practical training is sought have been approved by the Board.

Articles

Articles of traineeship may by only entered into after passing the Pharmacy III Examination. The forms of agreement, which must be completed in triplicate, are available from the office of the Board, at $1.00 per set. A fee of $27.00 is charged for the registration of articles of traineeship.
Final Examination

The syllabus is as follows

1. Practical Pharmaceutics

This is a three hour test conducted in the School of Pharmaceutics by the Pharmacy Board in co-operation with the academic staff.

The candidate will be required to exhibit a well developed skill in the preparation and presentation of pharmaceutical products often extemporaneously prepared and in the dispensing of prescriptions. Appreciation and resolution of contemporary problems in modern medication is also expected. The candidate is required to write a concise but accurate and intelligible record of all relevant quantitative and qualitative information as to his bench operations. Facility in common pharmaceutical calculations, speed and accuracy in weighing, measuring and blending, unfaltering care and cleanliness as well as the use of good technical English in reporting are essential. Free use of the common compendia and pharmaceutical references during the examination is permitted.

2. Forensic Pharmacy and Pharmacy Practice

This takes the form of an interview with a member of the Pharmacy Board. The candidate will be required to establish quickly a formal and co-operative relationship with the interviewer and to discuss intelligibly the State and Federal laws relating to the practice of pharmacy in Victoria, to read prescriptions and discuss medication problems.

The interviewer will require evidence that the candidate has been able to learn technical and forensic details relating to the area of pharmaceutical practice he has been engaged in during the period of traineeship.

The candidate will be expected to exhibit knowledge of the responsibilities of pharmacists under the:

(a) Pharmacists Act 1974
(b) Pharmacists Regulations 1976
(c) Drugs, Poisons and Controlled Substances Act 1981
(d) Drugs, Poisons and Controlled Substances Regulations 1985.
(e) Part XIV of the Health Act and the relevant sections of the Regulations
(f) Stock Medicines Act, Stock Foods Act, Pesticides Act and Regulations
(g) National Health Act and Regulations

Closing date of entry

All trainees will be advised of the closing date of entry by a personal communication sent to their last known address.
Examination Rules-Final Examination

The following examination rules are issued by the Pharmacy Board of Victoria. These rules should be read in conjunction with the provisions of the Pharmacists Act 1974.

1. Candidates are required to pay the prescribed fee for the Final Examination subjects as set down under the Pharmacists Act 1974 prior to sitting for examination.

2. An entry for examination will normally only be accepted from graduates who have completed, at the closing date for entries for the examination, at least three-fourths of the prescribed training set down under the Pharmacists Regulations 1976.

3. Candidates must pass both subjects of the Final Examination set down in the Pharmacists Regulations 1976 (ie Practical Pharmaceutics and Forensic Pharmacy and Pharmacy Practice) to be judged successful. Exemption from either subject may be granted by the Pharmacy Board of Victoria if the candidate has passed that subject at a previous Final Examination.

4. In the case of the Practical Pharmaceutics Examination:
   (a) candidates will be permitted to enter the examination room 15 minutes prior to the commencement of the examination;
   (b) candidates may read the examination paper prior to commencement of the examination but may not begin the examination until advised to so by the supervisor.
   (c) candidates may not leave the examination room until the examination has been in progress for half an hour;
   (d) candidates arriving more than half an hour after the examination has commenced will not be admitted.
   (e) candidates must not communicate with one another in the examination room.

5. In the case of the Forensic Pharmacy and Pharmacy Practice Examination candidates who have not been examined must not communicate with candidates who have taken the examination.

6. Candidates must not communicate concerning the examination with examiners or members of the Pharmacy Board of Victoria from the end of the Final Examination until after the publication of results.

7. Where sickness or other circumstances warranting compassion arise, candidates must furnish written information to the Registrar immediately. In the case of sickness, a medical certificate is required and must be forwarded to the Registrar of the Pharmacy Board of Victoria within 48 hours of the time of consultation.

8. The Pharmacy Board of Victoria will publish results of examination, but it may, in the case of a candidate failing to observe these examination rules, omit the results of such a candidate.
9. Failure to comply with any rule or instruction by an examiner will be regarded as a breach of discipline and may be reported to the Registrar of the Pharmacy Board of Victoria.

10. Any communication regarding examinations must be addressed in the initial instance to the Registrar of the Pharmacy Board of Victoria.
Pharmaceutical Society of Australia (Victorian Branch)

REGULATIONS FOR THE AWARD OF THE DEGREEE OF DOCTOR OF PHARMACY

The Pharmaceutical Society of Australia (Victorian Branch) established in 1973 the degree of Doctor of Pharmacy (D Pharm) for its members. The D Pharm programme is funded wholly by the Society. The degree is of the “research” type and therefore is similar to the traditional Doctor of Philosophy degree.

The regulations concerning the award of the D Pharm degree together with the guidelines are recorded.

Nature of degree
1. The Doctor of Pharmacy degree (D Pharm) is a research degree awarded by the Pharmaceutical Society of Australia (Victorian Branch) for the presentation of a thesis.1

Admission to candidature
2. A candidate for the degree of Doctor of Pharmacy must:
   (a) be a member of the Pharmaceutical Society of Australia (Victorian Branch)
   (b) hold a Master degree recognised for the purpose of this regulation by the Council;
   (c) be accepted by the Council on the recommendation of the Executive of the Graduate Faculty of the Victorian College of Pharmacy Ltd.

Course of Study
3. After being accepted a candidate must pursue a course of advanced study and research for at least two years.

Examination
4. The Council, on the recommendation of the Executive of the Graduate Faculty, shall appoint not less than three external examiners.
5. The Executive of the Graduate Faculty may prescribe examinations as required additional to the examination of the thesis.

Thesis
6. Four copies of the thesis will be presented. One copy of the thesis of each candidate fulfilling the requirements for admission to the degree shall be deposited in the library of the Society.

Awarding body
7. In every instance Council will be the body which awards the degree on the recommendation of the examiners.
8. Council will direct that a roll of all Doctor of Pharmacy graduates be kept and that such roll be published in the annual report of the Society.

1A candidate may not present as his/her thesis any work for which any other degree has been conferred on him/her, but he/she will not be precluded from incorporating such work or any part thereof in his/her thesis provided:
(i) he/she has stated his/her intention to do so in his/her application for candidature and

(ii) he/she indicates in his/her thesis the part of the work which has been so incorporated

GUIDELINES

These guidelines should be read in conjunction with the regulation for the Degree of Doctor of Pharmacy.

Examination

1. The Council, on the recommendation of the Executive of the Graduate Faculty, shall appoint not less than three examiners.
2. The Dean of the appropriate School shall act as chairman of the examining panel.
3. Each examiner shall read the thesis and may require the candidate to answer viva voce or in writing any questions concerning the subject of the thesis, before submitting an examiner’s report.
4. Before making their formal return the examiners may consult together or otherwise communicate with each other with regard to the thesis submitted.
5. All correspondence concerning the examination shall be made through the Dean of the Graduate Faculty.
6. The result of the examination shall be in accordance with the decision of a majority of examiners.

Thesis

6. Four bound typewritten or printed copies of the candidate’s thesis shall be lodged with the Executive Director of the Society. The form of the typewritten or printed copies shall be in accordance with the following specifications:
   (i) Thesis should be double-spaced typed on metric size A4 paper. Only one side of the paper should be normally typed on.
   (ii) There should be a margin of 3 cm on the left-hand side of all pages.
   (iii) Pages should be numbered consecutively and clearly; interpolated sheets should be marked distinctly [eg 52(a)] or as the case may require.
   (iv) The title of the thesis, the degree for which it is submitted, the year of submission and the full name of the author should be shown on the title page.
   (v) A summary of approximately 200 words should be included.
   (vi) All references should be listed at the end of the thesis.
   (vii) The spine of each bound copy must carry the name of the author, the title of the work (abbreviated, if necessary), the year of submission and the inscription ‘D Pharm’.
   (viii) In the thesis the candidate should indicate the sources from which his/her information is derived, the extent to which he/she has availed himself/herself of the work of others and, in general terms, the portions of his/her work which he/she claims as original. When a candidate submits work carried out in collaboration with another person, he/she should indicate his/her own share in the work.
Recommended Price $3.00