The Victorian College of Pharmacy Ltd, Parkville, from a painting by Nornie Gude
VICTORIAN COLLEGE OF PHARMACY LTD
Established 1881

Handbook 1982

381 Royal Parade, Parkville, Victoria 3052
Telephone 387 7222

Recognised by the Pharmacy Board of Victoria in accordance with the provisions of the Pharmacists Act 1974
CONTENTS
Principal dates 1982 3
Council of Victorian College of Pharmacy Ltd 4
Past Presidents 5
Academic Staff of the College 6
Victorian College of Pharmacy Ltd 8
Pharmacy Courses 9
  Entrance, curriculum, practical training 9
  B Pharm, M Pharm, PhD, Grad Dip Hosp Pharm 11
Council's policy concerning courses of study 12
  Fees, allowances, RACI membership 14
Details of subjects 15
  First year 15
  Second year 26
  Third year 36
Graduate School 42
  Research 43
  Graduate Diploma in Hospital Pharmacy 43
Sponsorships 47
Exhibitions 50
Special Awards 51
College rules 52
Students' Representative Council 53
Student counselling 53
Library 53
Pharmacy Board of Victoria 55
Examinations 56
  Pharmacy I, II, III, Examinations 56
  Final Examination 57
  Rules 58
Victorian College of Pharmacy Ltd. 60
  Bachelor degrees regulations 60
  Master degrees regulations 60
Pharmaceutical Society of Victoria 61
  D Pharm Regulations 61
PRINCIPAL DATES 1982

January  4  College re-opens after Christmas
February  1  Australia Day – College closed
              25  First term begins (first year students only)
March  1  First term begins (second and third year students)
              8  Labour Day – College open, lectures continue
              17  Opening Address and prize-giving
April  8  Last day for entry for Pharmacy III May Examination
              8  Last day for entry for May Final Examination
              9  Easter Friday: no lectures
              14  Lectures resume after Easter recess
May  4  Conferring of degrees
              7  First term ends
              13  Progress Examinations begin
              17  Pharmacy III Examination begins
              17  Final Examination begins
              31  Second term begins
June  14  Queens Birthday – College open, lectures continue
July  23  Last day for entry for Pharmacy I Examination
              26  Last day for entry for Pharmacy II Examination
              28  Last day for entry for Pharmacy III Examination
August  6  Second term ends
              30  Third term begins
September  23  Show Day – College open, lectures continue
October  1  Last day for entry for Final Examination
              15  Third term ends
              18  Final Examination begins
              25  Pharmacy I, II and III Examinations begin
              31  Applications for admission to Bachelor of Pharmacy course in 1983 close with VUAC
November  2  Cup Day – College open, examinations continue
              24  Last day for return of locker keys and removal of apparatus
December  24  Closing date for applications for admission to Graduate Diploma in Hospital Pharmacy course
THE COUNCIL 1981-82

T J Lynden-Bell, PhC, MPS, President

R L Weller, PhC, MPS, Vice-President

D W F Bourne, PhC, MPS Honorary Treasurer

C Bonich, BPharm

G J Duffus, PhC, MPS

F V Gilbert, PhC, MPS

N W Naismith, PhC, MPS, FSHP

L Roller, BPharm, MSc, DipEd, PhC, FPS, AMPsS

B D Taylor, BSc

G N Vaughan, MSc, PhD, FRACI, FPS

R W Webster, MBBS, FRACP, FRACGP

R Burnet, BA, MBA, MAITEA, 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
1878-80 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 McGibbon
1933-34 Albert Gorman
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
ACADEMIC STAFF

*Dean of the College, Kansas Professor of Pharmacy*
G N Vaughan, MSc, PhD, FRACI, FPS

*Deputy Dean of the College*
I H Pitman, BSc, PhD, DSc, PhC, MPS, FRACI

School of Pharmaceutical Chemistry

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

*Lectorial Staff*
G L Blackman, BSc(Hons), PhD, ARACI
H Dowd, MSc, PhC, ARACI
J V Hurley, MSc, DipEd, ARACI
S J Jennings, BSc(Hons), ARACI
M Needleman, BSc(Hons), PhD

*Demonstrator Staff*
D Iakovidis, MSc, ARACI
Gillian K McInnes, BSc(Hons)
G D Mitchell, BSc(Hons)
J K Nichols, BSc(Hons)
D A Winkler, BSc(Hons), BAppSc, PhD

School of Pharmaceutics

*Dean (Pharmaceutics) and Head of the School, Kansas Professor of Pharmaceutics*
I H Pitman, BSc, PhD, DSc, PhC, MPS, FRACI

*Sigma Industrial Professor, Associate Dean of the School*
J A Hersey, BPharm, PhD, DSc, CEng, FPS, FIChemE, FRACI, FBIM

*M A Nicholas Industrial Professor*
B L Reed, BPharm, PhD, PhC, FPS, MIBiol, MIPharmM, MSHP

*Lectorial Staff*
P C Bury, 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, ARACI
L Roller, BPharm, MSc, DipEd, PhC, FPS, AMPS
W J Thiel, BSc(Hons), PhD

*Demonstrator Staff*
May R Admans, MPharm, PhC, MPS
J R Anderson, MPharm, PhC, MPS
Olga Dudinski, MPharm, PhC, MPS
Elizabeth M Gipps, BPharm, DipHP, PhC, MPS
C J London, BSc(Hons)
Dawn W Sayers, PhC, FPS
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
A B Traill, BSc

Demonstrator Staff
Choo Lay Khoon, BSc(Hons), MPharm
P L McLennan, BSc(Hons), PhD
M J Quinn, BSc(Hons)
P Tawa, BSc(Hons)
D A Taylor, BSc(Hons), PhD

Graduate Diploma in Hospital Pharmacy
K Raymond, MPharm, PhD, MPS

Special Subject Lecturers
D P Crankshaw, MBBS, PhD, FFARACS (Pharmacology)
K S Fizelle, LLB (Forensic)
L G Howes, MBBS (Clinical Pharmacology)
P J Lumley, BPharm, PhC, FPS (Forensic)
N Martin, ACA (Management)
D B Newgreen, BPharm, PhC, MPS (Forensic)
D A Wishart, LLB BCom (Commercial Law)

LIBRARY STAFF
Librarian
Helen M Murphy, BA
Associate Librarian
M E Williams, BA, ALAA

Christine P Hyne, BA(Hons), ALAA

ADMINISTRATIVE STAFF
Registrar
R Burnet, BA, MBA, MAITEA

Business Manager
J E Cott, BCom, AASA

Property Manager
R McLaren
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 been 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 1972 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 has been 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 to 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.
Pharmacy Courses

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.

Entrance requirements

1. Candidates undertaking Victorian Institute of Secondary Education (VISE) Year 12 courses of study:
   (a) full-time candidates under 21 years of age must obtain Grade D or above in the following four Group 1 subjects at the one attempt; English, Chemistry, Physics and a branch of Mathematics
   (b) candidates under 21 years of age who are in full-time employment and candidates over 21 years of age when they commence such studies must obtain Grade D or above in the following four Group 1 subjects, but not necessarily at the one attempt; English, Chemistry, Physics and a branch of Mathematics.

2. Applications for admission received from persons who have undertaken studies other than VISE Year 12 studies will be considered on their individual merit.

Application for admission

Application forms for admission to the Bachelor of Pharmacy course may be obtained from the Victorian Universities Admissions Committee at 11 Queens Road, Melbourne, 3004. Applications close on October 31 of the year preceding that in which enrolment is desired.

Overseas students

Overseas applicants who seek admission to the college must have passed the equivalent of three GCE Advanced Level subjects including chemistry, and two from the following three: physics, mathematics, biology. In addition the subject English must have been passed at Ordinary Level. Students without a strong background in mathematics are not eligible. Overseas students are also advised that they are required to pay tuition fees amounting to $1500 per annum.

Selection

If the number of applicants exceeds the number of vacancies within the college, admissions will be determined by a selection committee.

Exemptions

Students from other institutions may be admitted with advanced standing, which will be determined by Council in each individual case.
PHARMACY COURSES

Curriculum

The academic course occupies three years of full-time study.

Subjects are:

First Year
- Pharmaceutics I
- 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
- Pharmaceutical Administration and Organisation
- Forensic Pharmacy

Honours

There will be four grades of honours awarded in the subjects: Pharmaceutics I, Pharmaceutical Chemistry I, Mathematics, Physiology, Pharmaceutics II (including Microbiology), Pharmaceutical Chemistry II, Pharmacology I (including Biochemistry), Pharmaceutics III, Pharmaceutical Chemistry III, and Pharmacology II.

The grades of honours will be: first class (H1), upper second class (H2A), lower second class (H2B), and third class (H3).

Final Examination

In order to register as a pharmaceutical chemist in Victoria students must pass the Final Examination which is conducted by the Pharmacy Board of Victoria. The syllabus for this examination is set out on page 57.

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 60 weeks. Of this 60 weeks, at least 48 weeks must be served as a trainee under articles; and up to 12 weeks may be served during undergraduateship without being articulated. In all circumstances the practical training must be served in continuous periods of not less than 4 weeks.

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 normally such M Pharm students to sit for the Final Examination twelve months after completing the requirements for Bachelor of Pharmacy.

To avoid embarrassment and possible loss of legal recognition, 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 only be 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 $20.00 is charged for the registration of articles of traineeship.

Bachelor of Pharmacy Degree

The degree of Bachelor of Pharmacy (B Pharm) is awarded to students who pass the Pharmacy III Examination. Information relating to the award of bachelor degrees is printed on page 60 and details of subjects are shown on page 15.

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 B Pharm degree. Information relating to the award of master degrees is printed on page 60.

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 in 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 Postgraduate Award or a Research Scholarship offered through the College. Applicants for the former awards are restricted to Australian citizens or candidates with permanent resident status. The awards provide a stipend of approximately $4620 gross per annum.

**Doctor of Philosophy degree**

*Intersearch.* Intersearch is a graduate research programme conducted at the international level by the United States of America and Australia through the University of Kansas (USA), and the Pharmaceutical Society of Victoria (Australia). 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.

The Intersearch programme therefore offers a good quality American-type PhD degree. 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.

*University of Melbourne and Deakin University.* The University of Melbourne and Deakin University are willing to consider recommended graduates for entry into external PhD programmes. In such cases joint supervision is required by the College and the University.

**Graduate Diploma in Hospital Pharmacy**

Information on the Graduate Diploma in Hospital Pharmacy is provided on page 43.

**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 him 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 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.

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 than 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 of 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 58 of this handbook by the Pharmacy Board of Victoria and the Victorian College of Pharmacy Limited.

12 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 58 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.

Fees

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

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparatus deposit*</td>
<td>$40</td>
</tr>
<tr>
<td>Annual student membership of Pharmaceutical Society of Victoria</td>
<td>6</td>
</tr>
<tr>
<td>Annual subscription to the Victorian Pharmacy Students Association</td>
<td>20</td>
</tr>
<tr>
<td>Service fee</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td><strong>$90</strong></td>
</tr>
</tbody>
</table>

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

In addition to the above fees, approximately $250 per annum is required for text-books, dissecting instruments, stationery, etc.

Students enrolling for the MPharm or Grad Dip Hosp Pharm course on a part-time basis will be required to meet the following charges:

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual subscription to the Victorian Pharmacy Students Association</td>
<td>$10.00</td>
</tr>
<tr>
<td>Service fee</td>
<td>$12.00</td>
</tr>
<tr>
<td></td>
<td><strong>$22.00</strong></td>
</tr>
</tbody>
</table>

Overseas students are also required to pay tuition fees amounting to $1500 per annum.

Examination fees

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination</td>
<td>$20</td>
</tr>
</tbody>
</table>

Australian Government means-tested allowances

Information on the Government living, incidental, dependants, and travel allowances may be obtained from:

Regional Director  
Victorian State Office  
Department of Education  
450 St Kilda Road  
Melbourne Vic 3004  
Telephone: 267 2988

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.
PHARMACEUTICS I

A course of 75 lectures, 75 hours of practical work and 10 tutorials.

1. Professional Pharmacy

A series of 13 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 attentuations, alligation.

*Errors and tolerances.* Introduction to the Weights and Measures Act. The prescription balance, reciprocal 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, the Poisons Act and Schedules to the Poisons Act.

*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 overdoses.

*Dose forms.* The oral, rectal, parenteral 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. Properties of Matter

A series of 12 lectures, and 15 hours practical work.

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


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

*Surface properties.* Surface energy and surface tension. Wetting and capillarity. Surfactants, miscellization, solubilization and detergency.


3. Pharmaceutics of Solutions

A series of 25 lectures and 33 hours 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 and salt form.

*Dissolution rate.* Particle size, diffusional processes, Noyes Whitney equation; factors affecting dissolution rate; in vitro/in vivo correlation; dose form uniformity tests.

*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 Temelcou.

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


Solution formulation. Aqueous systems, hydroalcoholic systems, non-aqueous systems, solubilization.

Excipients. Flavouring agents, colouring agents, antioxidants.

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


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

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

References
Australian Journal of Pharmacy
Burns, D M and MacDonald, S G G, Physics for Biology and Pre-Medical Students, 2nd ed. Addison-Wesley, 1975.
4. Human Behaviour

A series of 25 lectures. The course is designed to instil into the students an appreciation of human behaviour and human experience and to enable them to understand the social psychology of pharmacy practice.

A selection from the following:

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.

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 – human abilities, genetic and environmental determinants of intelligence, testing aptitude and achievements, effects 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.

Conflict and stress, frustration, anxiety, stress, defense mechanisms.

Behaviour modification, patients' symptoms, attitudes.

Assessment of this unit will include a 1500-2000 word essay. Suggested topics will be made available late in first term. The essay must be completed by the end of second term.

Textbook


or


References


Students will be referred to the appropriate references for the essay.
PHARMACEUTICAL CHEMISTRY I

A course of 75 lectures 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, UV-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, entropy, free energy.

Co-ordination chemistry. Formation, stability and nomenclature of complex ions. Chelation and organo-metallic 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.

Textbook

References

Supplementary Material
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 in the laboratory.
- The marks awarded for practical work form part of a student's total assessment.
Textbooks


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 75 lectures and 75 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.
   Respiration. Structure and function of the respiratory system. Gaseous exchange and transport. Respiratory pigments. Control of respiration. Effects
of change of environment.

**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.

**Excretion.** General patterns and organs involved. Structure and function of the vertebrate kidney.

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

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


**Basic biology.** Basic biology of fungi, viruses, unicellular organisms and invertebrates. Their relationship to health and disease. Protective mechanisms in the body.

**Practical**

Practical work and tutorials will be based on the material dealt with in lectures.

Students must provide themselves with dissecting instruments. A list of these will be posted in the department.

**Textbooks**

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


References

Preliminary Reading
The following texts may be of general interest to students who enter the course without having prior background knowledge in biology.
MATHEMATICS

A course of 50 lectures and 30 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.
   **Applications of Computers.** Information storage and retrieval, prescription control systems, stock ordering systems and data logging.

   Using the College’s minicomputer timeshare system, the student will be required to write and run programming assignments. The assignment problems will be 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, definition, 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, algebraic 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, Noyes-Whitney equation), 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 Differentiation.** Functions of several variables, first and second partial derivatives, geometric interpretation.
   **Integration.** Definite integrals, area under a curve, infinite limits, approximate integration methods (Trapezoidal and Simpson’s Rule).

3. Statistics

   **Presentation of Sample Data.** Frequency tables, histograms and cumulative frequency distributions.
   **Measures of Central Tendency and Dispersion.** Mode, median, arithmetic and geometric mean. Skew of a distribution. Standard deviation, variance and degrees of freedom.
   **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 H₀ and H₁ 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**

**References**
PHARMACEUTICS II

Pharmaceutics
A course of 50 lectures.

Biopharmaceutics. pH-partition hypothesis, properties of membranes and mechanisms of drug transfer across membranes. Factors affecting gastrointestinal absorption, percutaneous absorption and other routes of absorption.

Tablets. Mixing and mixers; granulation; tablets, manufacturing processes, special tablets, weight content and physical uniformity, excipient interaction, in vitro testing, in vitro – in vivo correlations.

Suppositories/Pessaries: Melting, dissolving and foaming bases. Small and large scale manufacture.

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 microorganisms (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
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.


**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.


**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 "biologicaLs". Use of microorganisms in industry (production of antibiotics, vitamins, amino acids, chemicals, dextrans, 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

Office consolidation. Melbourne. Pharmacy Board of Victoria, 1973

References

Journal of pharmaceutical sciences
PHARMACEUTICAL CHEMISTRY II

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

Physical and Analytical Chemistry

A course of 25 lectures.

Nuclear Medicine. Isotopes and their uses in therapeutic and diagnostic agents, counters, applications to radio-pharmaceuticals.

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, zone refining, freeze drying and extraction.

Coordination Chemistry. Crystal field theory. Chelation in the treatment of heavy metal poisoning and specific disease states such as cancer.

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

Textbook


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.

Reference

Medicinal Chemistry
A course of 25 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.

Analgesic Agents. Chemical properties and structure-activity relationships of analgesics.

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 75 hours of practical work.

Emphasis is placed on technique and general methods. Students are expected to show initiative in organising their work. Performance in laboratory classes is taken into account in assessing student’s 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: crystallization, 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 instru-
mental methods. Simulated organic analysis by computer techniques.

Quantitative. Analysis of pharmaceutical compounds by gravimetric, volumetric and complexometric analysis.

Physical. Investigation of adsorption, distribution, solubility product, equilibrium constant, kinetics, heat of reaction, liquid-vapour equilibrium and electrode potentials.

Instrumental. Quality control of pharmaceuticals by potentiometric and conductometric titrations, spectrophotometry, polarography, and atomic adsorption methods.

Textbooks


Reference


NOTE The balance of the refundable deposit from first year will be retained in second year to cover the cost of replacing damaged 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

A course of 65 lectures and 60 hours practical work.


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.


Cardiovascular physiology and pharmacology. The heart, origin and conduction of excitation, effects of vagal and sympathetic stimulation on SA node, AV node and conducting tissue. The normal electrocardiogram, bipolar and unipolar leads. Cardiac arrhythmias, sinus, atrial and ventricular arrhythmias, conduction block. Production and suppression of cardiac arrhythmias by drugs. The pumping action of the heart, events of the cardiac cycle, heart sounds, the venous pulse. Effects of vagal and sympathetic stimulation on cardiac contractility. Cardiac output, its measurement and regulation. Circulation. Haemodynamics, pressures and flow in arteries, capillaries and veins. The systemic circulation, nervous and humoral control, auto-regulation. Blood flow through special regions, the pulmonary, coronary, cerebral, splanchnic, muscle and skin circulations. Integrative analysis of the circulation.


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

The eye. Factors affecting pharmacological activity following instillation of drug solutions. Local anaesthetics, conjunctival decongestants, cycloplegics,

**Practical**

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

**Textbooks**


**References**


SECOND YEAR

Biochemistry

A course of 20 lectures and 21 hours of practical work.

Chemistry of Biological Compounds

Carbohydrates. Definition; functions; classification; monosaccharides, optical isomerism, aldoses and ketoses, 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; co-factors; 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


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

THIRD YEAR

PHARMACEUTICS III

A course of 75 lectures and 150 hours of practical work. In addition there will be a non-examinable course of 4 tutorials consisting of case studies in professional pharmacy.


Drug stability. Introduction, applied kinetics, shelf-life, storage, accelerated ageing, pH profiles of hydrolysis, solvents and catalysts, photochemical reactions and sunscreening, the stabilities of some representative drugs, oxidation, stabilization.

Incompatibility. Professional aspects, representative physical and chemical incompatibilities. In vivo drug interactions, basic principles, mechanisms, examples.


Pharmaceutical information. Sources and retrieval, pharmaceutical aspects of computerization.


Patient counselling. Communication skills, non-verbal communication, effective interviewing.

Practical Pharmaceutics III

The manufacture of tablets, tablet coating, tablet testing. Preparation of ointments, creams, suppositories, etc. General dispensing. Formulation.

Sterilization, sterility testing, preparation and testing of injections, large volume intravenous solutions, ophthalmic preparations.

Investigational projects in Biopharmaceutics. Practical tutorials in calculations, incompatabilities, drug interactions, and pharmacokinetics.

Textbooks


**References**


*Journal of pharmacy and pharmacology.*

*Journal of pharmaceutical sciences.*


**PHARMACEUTICAL CHEMISTRY III**

A course of 75 lectures and 150 hours of practical work.

*Relationship of chemical property and structure to biological activity.* Solubility, partition coefficient, surface activity, degree of dissociation, acidity constant, redox potential, resonance, hydrogen bonding, interatomic distance, chelation, isosterism.

*Pharmacodynamics, stereochemistry and structure-activity relationships.* Cholinergics, anticholinergics, adrenergics, adrenergic blocking agents, histamine and antihistaminics, prostaglandins.

*Compounds affecting the central nervous system.* Structure activity relationships and chemical properties of analgesics, sedatives, hypnotics, tranquillisers, antidepressants, CNS stimulants, hallucinogenic agents.

*Chemotherapy.* Dyes, arsenicals, sulphonamides, antituberculous compounds, specificity of structure, antimalarials.

*Antibiotics.* Penicillins and cephalosporins, streptomycin, chloramphenicol, aminoglycosids, tetracyclines, erythromycin and griseofulvin.

*Steroids.* Sterols, sterol properties and reactions, conformation analysis, biosynthesis, bile salts, steroid hormones, cardioactive glycosides, steroidal alkaloids.

*Terpenes and fat soluble vitamins.* Monoterpenes, diterpenes, sesquiterpenes, carotenoids, vitamins A, D, E and K.

*Water soluble vitamins.* Vitamin B series and vitamin C.

*Alkaloids.* The structure and properties of selected alkaloids of pharmaceutical interest.

*Data systems.* Applications of computers in chemistry, chemical and drug information systems, Wiswesser Notation.

*Radiochemistry.* Radioactivity, production and use of tracers, transuranic elements, separation and use of non-radioactive isotypes, biological aspects of radiation, radiopharmaceuticals.

*Biosynthesis and metabolism.* The biosynthesis and metabolism of biolog-
cally important molecules.

Analytical pharmaceutical chemistry. Analytical techniques used in pharmaceutical science. Analysis of drugs and chemicals. Analysis of drugs in biological systems. Quality control procedures. Diagnostic methods and clinical chemistry.

Topical research. A chemical review of major current research papers in the pharmaceutical sciences. The literature of medicinal chemistry.

General topics. Reference will be made to the following groups of compounds which are not easily placed in distinct chemical classes because of the diversity of structure of compounds showing a given biological activity. Some compounds may have also been considered elsewhere in the syllabus. Thyroid hormones and antithyroid drugs, anti-inflammatory agents, diuretics, antihypertensive agents, cardiac drugs, coagulants and anticoagulants, hypoglycaemic agents.

Drug design. Molecular design, miscellaneous factors, examples of drug design.

References


Practical

Organic. Preparation of organic compounds, including compounds of pharmaceutical interest. Separation of mixtures, identification and characterisation of unknown organic compounds, including the use of spectroscopic methods. Metabolism. Application of computers in drug information systems. Applications of instrumental techniques in pharmaceutical science.

Physical and analytical. Analysis of drugs. A research project will be undertaken in an area of analytical chemistry. The project will be selected by the student and will have a pharmaceutical or clinical theme. A detailed research report must be submitted.

General. 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

As prescribed for Pharmaceutical Chemistry II (Practical) and

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 75 lectures and 100 hours practical work.


Clinical pharmacology. A therapeutic approach to disease states involving the following systems: eye, uterus, connective tissue, skin, respiratory and gastrointestinal tracts.


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

Development of new drugs. Preclinical and clinical evaluation of drugs, governmental regulatory bodies.

Drug toxicity. Toxicity testing, iatrogenic disease, drug interactions, environmental pharmacology, treatment of toxicity.

Practical

In vivo and in vitro experiments to illustrate the principles discussed in the lecture course.
Textbooks and references
As under Pharmacology I. In addition the following books are recommended as references.


FORENSIC PHARMACY
A course of 25 lectures.
Introductory lectures on:
(a) The history of our governmental system including the legislative, administrative and judicial bodies
(b) Our laws and their origin
(c) Statutory interpretation.
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. A knowledge of the following in so far as they relate to pharmacy:

- Pharmacists Act and Regulations.
- Poisons Act and the Regulations.
- The Health Act and Regulations including Food and Drug Standards Regulations and Cleanliness (Food, Drugs and Substances) Regulations
- National Health Act and Regulations
- Therapeutic Goods Act
- Weights and Measures Act
- Stock Medicines Act
- Commonwealth Spirits Act and Regulations
- Labour and Industry Act
- Postal Regulations
- Code of Good Manufacturing Practice

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

Textbooks
Poisons Act 1962
- Pharmacists Act 1974
- Poisons, Drugs of Addiction and Restricted Substances Regulations and Pharmacists Regulations
- The Schedules to the Poisons Act. Office Consolidation
- Pharmaceutical Society of Victoria Bulletin.
PHARMACEUTICAL ADMINISTRATION AND ORGANIZATION

A course of 50 lectures.

Accounting

Basic accounting terminology. The fundamental accounting equation. A modified system of accounting typically used by a professional enterprise.

A consideration of the nature of financial analysis; approaches to the analysis of financial statements; methods of financial analysis; funds statements and their interpretation, and the computation and interpretation of strategic ratios from financial statements.

A study of managerial control of a pharmacy through accounting systems including fixed and variable cost analysis, break-even analysis, application of fixed and variable costs to budgets, cash budgeting, profit forecasting and planning.

An introduction to the subject of partnerships.

Commercial Law

Contract. Formation and contents of contract; misrepresentations; rights and liabilities; termination of contracts.

Sale of goods. Definitions; requirements for enforceability; implied warranties and conditions; carriage of goods; rights and obligations of parties in relation to delivery; acceptance etc.

Cheques. Use, type and crossing of cheques; negotiability, essential elements of form; liability of parties; effect of forgery and unauthorised endorsement.

Insurance. Types of insurance; concept of good faith; indemnity contracts; insurable interest; cover-notes; subrogation.


Negligence and workers compensation. Duty of care; breach of duty; damage; seller's negligence; 'negligent statements; employee protection generally; workers compensation; definition of 'worker'; scope of entitlement; benefits available.

Management

Human behaviour. The individual; groups; motivation; the client, customer relations, communications.

Partnerships. Practical and legal aspects of partnerships.

Marketing. Consumer needs; principles of marketing; principles applied to pharmacy.

Pricing. Pricing of prescriptions.

Pharmacy manpower planning.
Graduate School

The Graduate School 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 12).

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 School also controls and directs all aspects of the Master of Pharmacy programme. The graduate faculty consists of those members of staff who hold the degree of Doctor of Philosophy, 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 School 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 School
Colin Raper

Executive Committee, Graduate School
Colin Raper (Chairman)
Peter R Andrews
Ian H Pitman
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
John A Hersey, Victorian College of Pharmacy Ltd
Lester A Mitscher, University of Kansas
Howard E Mossberg (Secretary, USA) University of Kansas
Ian H Pitman, Victorian College of Pharmacy Ltd
Colin Raper, 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.
Research

Research facilities are available within the Graduate School for students to undertake graduate work in experimental and theoretical areas of the pharmaceutical sciences. Students may enter for the M Pharm, PhD (Intersearch), D Pharm (Pharmaceutical Society of Victoria) degrees by arrangement with the Graduate School. The following fields of research are available for graduate studies:

**Pharmaceutics**
- Pharmaceutical Sciences
- Pharmaceutical Formulation
- Biopharmaceutics
- Pharmaceutical Technology
- Physical Pharmacy
- Pharmacokinetics
- Microbiology

**Pharmaceutical Chemistry**

Analytical chemistry of dosage forms and biological systems, applications of instrumentation in pharmaceutical science, drug design and synthesis, natural product chemistry. Clinical chemistry to support drug research in hospital practice, plus chemical support for industrial and community practice.

**Pharmacology**

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

**Regulations**

The rules and regulations for the award of the above degrees are detailed on page 61 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 is eligible to apply for admission to the course. Applications close on 24 December 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 course is planned around three major areas: clinical pharmacology, clinical pharmaceutics and applied or hospital pharmacy practice. Wherever possible the lectures on clinical pharmacology are designed to interface with clinical pharmaceutics to show the relevance of pharmaceutical aspects such as doseform design, dosage regimen and medicine selection. The section on hospital pharmacy practice will introduce the student to pertinent subjects such as drug distribution, unit dose packing, IV additives, radiopharmaceuticals, drug monitoring and quality control. It will also extend to other fields including patient counselling, microbial contamination and clinical trials.
Generally, lectures 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:

- Clinical Pharmacology: 108 hours
- Clinical Pharmaceutics: 37 hours
- Applied Hospital Pharmacy Practice: 20 hours

In addition, formal course work on data processing, application of computers, information retrieval and relevant biostatistics will be presented. This will account for another 15 hours of formal lecture time.

Afternoons are generally reserved for assignment topics. These will be tutorials, discussion groups, clinical sit-ins, student-presented seminars, ward rounds, hospital/work visits, visits to biochemistry, haematology and pathology laboratories, laboratory exercises and demonstrations. These will account for another 250 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 students' performances at these seminars and tutorials will be closely monitored; marks will then be allocated on degree of participation in discussions, on rapport established with colleagues, on information contributed and on communicative ability.

In addition to the timetabled activities, it is expected that the student will spend another 4-6 hours per week on personal private study. This will involve library and literature assignments, preparation of patient's 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.

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 lectures.

*Advanced pharmacology.* This will consist of revision and an updating 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.

*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, tissue and organ growth, wounds, neoplastic and immunologically-based diseases and poisoning are also covered.

*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 (possibly 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 lectures.
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 lectures.

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.

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 medicated records, patient compliance, drug distribution systems, unit packs and relevant packaging technology, ward and ward stock control, drug information services, intravenous additives, parenteral alimentation, and radiopharmaceuticals will be offered, possibly as electives.

All enquiries related to the Graduate Diploma should be addressed to the Course Director.
Sponsorships

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:

**Sigma Industrial Professorship**
Sigma Co Ltd has supported an Industrial Professorship in Pharmaceutics since 1971. The foundation and present encumbent of this chair is Professor John A Hersey.

**Nicholas Industrial Professorship**
Nicholas International Ltd has supported the M A Nicholas Industrial Professor in Biopharmaceutics since 1978. Professor Barry L Reed is the foundation professor of biopharmaceutics.

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

*Recipient:*
- 1980 Carlo Maccarrone
- 1981 Carlo Maccarrone

**Nicholas Research Fellowship**
Nicholas International Ltd is currently supporting graduate research students undertaking the Master of Pharmacy or Doctor of Pharmacy Degree.

*Recipients:*
- 1980 Christopher J Farquhar
  - Luigi Pierri
- 1981 Christopher J Farquhar
  - Luigi Pierri
  - Judith A Young-Harvey
  - John R Anderson

**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.

*Recipients:*
- 1980 Barry C Finnin
- 1981 Barry C Finnin

**Pharmaceutical Society Research Fellows**
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.
Recipients:

1980  Koay Bee Bee
      Lee Man Kok
      Edward Leung
      Nigel Paulet
      Michael S Ching

1981  William N Charman
      Edward Leung
      Michael S Ching

Cyril Tonkin Scholarship

The Pharmaceutical Society of Victoria has awarded Cyril Tonkin Scholarships to graduate research students, one of whom is undertaking an Intersearch Doctor of Philosophy degree. The remaining students are undertaking the Master of Pharmacy degree.

Recipients:

1980  Chow Weng Lok
      Lai Kei Yin
      Janet Ramsay
      Desmond J Williams

1981  Chow Weng Lok
      Janet Ramsay
      Desmond J Williams
      Helen Efthimiou
      Marion J Lampard
      Leonie McKeough

Perkin-Elmer Research Fellowship

Perkin-Elmer Pty Ltd is currently supporting the following graduate research students undertaking the Master of Pharmacy degree.

Recipients:

1980  C Geoffrey Beamiss
      Toh Tiong Cjeng

1981  Toh Tiong Cjeng

David Bull Laboratories Research Fellowship

David Bull Laboratories is currently supporting a research student undertaking a Master of Pharmacy degree.

Recipients:

1980  Wong Siong Chiik

1981  Wong Siong Chiik

Institute of Drug Technology Fellowship

The Institute of Drug Technology Ltd has offered a scholarship in commemoration of the Centenary of the Victorian College of Pharmacy Ltd.

Recipient:

1981  Don K L Leung
Squibb Centenary Scholarship

E R Squibb and Sons Pty Ltd have offered the following scholarship in commemoration of the Centenary of the Victorian College of Pharmacy Ltd.

Recipient:

1981 Karen T Kennedy

Victorian College of Pharmacy Ltd Centenary Scholarship

The Victorian College of Pharmacy Ltd is supporting the following student from funds granted by the College Centenary Appeal.

Recipient:

1981 Dominic A Uccellini

Harry Braithwaite Scholarship

The Pharmacy Board of Victoria has offered a scholarship to perpetuate the memory of Harry Braithwaite for his long service to pharmacy and the Pharmacy Board of Victoria.

Recipient:

1981 Nigel Paulet

The following research scholarships will be made available in 1982; they were established through contributions to the Centenary Appeal of the Victorian College of Pharmacy Ltd.

- Glaxo (Australia) Research Scholarship
- May and Baker (Australia) Research Scholarship
- Travenol Laboratories Research Scholarship
- H W Woods Research Scholarship
### Exhibitions

<table>
<thead>
<tr>
<th>Subject</th>
<th>Value</th>
<th>Qualification</th>
<th>Donor or Style</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutics I</td>
<td>$100</td>
<td>best student</td>
<td>Sigma Co Ltd</td>
</tr>
<tr>
<td>Pharmaceutical Chemistry I</td>
<td>$100</td>
<td>best student</td>
<td>Sigma Co Ltd</td>
</tr>
<tr>
<td>Mathematics</td>
<td>$100</td>
<td>best student</td>
<td>Salaried Pharmaceutical Chemists' Association</td>
</tr>
<tr>
<td>Physiology</td>
<td>$50</td>
<td>best student</td>
<td>Ramsay Surgical Ltd</td>
</tr>
<tr>
<td><strong>Second Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutics II</td>
<td>$100</td>
<td>best student</td>
<td>Bequest late H T Tompsitt</td>
</tr>
<tr>
<td>Pharmaceutical Chemistry II</td>
<td>$100</td>
<td>best student</td>
<td>Bequest late H T Tompsitt</td>
</tr>
<tr>
<td>Pharmacology I</td>
<td>$100</td>
<td>best student</td>
<td>Sigma Co Ltd</td>
</tr>
<tr>
<td><strong>Third Year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceutics III</td>
<td>$100</td>
<td>best student</td>
<td>Bequest late H T Tompsitt</td>
</tr>
<tr>
<td>Practical Pharmaceutics</td>
<td>$250</td>
<td>best student</td>
<td>Society of Hospital Pharmacists of Australia (Victorian State Branch)</td>
</tr>
<tr>
<td>Pharmaceutical Chemistry III</td>
<td>$100</td>
<td>best student</td>
<td>Bequest late H T Tompsitt</td>
</tr>
<tr>
<td>Pharmacology II</td>
<td>$100</td>
<td>best student</td>
<td>Sigma Co Ltd</td>
</tr>
<tr>
<td>Forensic Pharmacy</td>
<td>$50</td>
<td>best student</td>
<td>Kodak (A/asia) Pty Ltd</td>
</tr>
<tr>
<td>Pharmaceutical Administration and Organisation</td>
<td>$50</td>
<td>best student</td>
<td>Kodak (A/asia) Pty Ltd</td>
</tr>
<tr>
<td>Style</td>
<td>Value</td>
<td>Qualification</td>
<td>Donor</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------</td>
<td>---------------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Pharmacy Gold Medal</td>
<td>-</td>
<td>best student at Pharmacy III Examination</td>
<td>Pharmaceutical Society of Victoria</td>
</tr>
<tr>
<td>Francis Hardey Faulding Exhibition</td>
<td>$50</td>
<td>best male student at Pharmacy III Examination</td>
<td>F H Faulding &amp; Co Ltd</td>
</tr>
<tr>
<td>Freda Smalley Exhibition</td>
<td>$50</td>
<td>best female student at Pharmacy III Examination</td>
<td>Women Pharmaceutical Chemists' Association of Victoria</td>
</tr>
<tr>
<td>Byron Stanton Exhibition</td>
<td>$50</td>
<td>best student in the biological sciences</td>
<td>Victorian Pharmacy Students Association</td>
</tr>
<tr>
<td>Guild Exhibition</td>
<td>$100</td>
<td>best student in the physical sciences</td>
<td>The Guild Insurance Co Ltd</td>
</tr>
<tr>
<td>Chapter Prize</td>
<td>$200</td>
<td>best trainee project</td>
<td>Chapter of Pharmacy Practice Tutors</td>
</tr>
<tr>
<td>Scott-McGibbony Prize</td>
<td>$200</td>
<td>best student/trainee in management</td>
<td>Pharmacy Guild of Australia (Victorian Branch)</td>
</tr>
<tr>
<td>P D L Exhibitions</td>
<td>3 x $200</td>
<td>best three students at Final Qualifying Examination in Practical Pharmaceutics</td>
<td>Pharmaceutical Defence Ltd</td>
</tr>
</tbody>
</table>
College rules
(Issued by the Council)

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, or the assembly hall, where facilities are not provided. (When smoking in the library please use the ash-trays provided).
6 No chemicals, 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 completely 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.

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.

**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 to seek 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 Rollier (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 out 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 permitted in the western end of the library if ash trays are used.
9. Users failing to observe the current rules may be suspended from using the library.
Pharmacy Board of Victoria (Constituted 1876)

M G Blachford, PhC, MPS President
P Moore, PhC, MPS Treasurer
R W Ashton, PhC, MPS
P Gysslink, BPharm, PhC, MPS
J R Coppock, PhC, MPS
M Gandolfo, PhC, MPS
W A Mercer, PhC, MPS, LHA
N W Naismith, PhC, MPS, FSHP
I H Pitman, BSc, PhD, DSc, PhC, MPS, FRACI
J C Urquhart, PhC, FPS
S N Leyshon, BEc, AUA(Pharm), DipEd, MPS, AASA, AAIM Acting Registrar

Functions of Board and Society

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

The Board, in effect, 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, and supervises the practical training of students, including the registration of articles of traineeship, approval of preceptors and the issuing of student's 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 Victoria.

The Pharmaceutical Society of Victoria 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 of Victoria owned and operated a College which taught students of pharmacy in a school recognised by the Pharmacy Board.

In 1976 the Council of the Pharmaceutical Society of Victoria determined to establish a new and separate Council to administer the affairs of the College. The new council assumed its responsibilities from January 1, 1977.
The Board's examinations are conducted in the College. A great amount of co-operation exists between the Board and the Society. The Pharmacists Act 1974 provides that the Pharmacy Board of Victoria shall have power to control and direct examinations concerned with the pharmacy course.

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. The Final Examination is conducted at the conclusion of the period of practical training.

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
- Pharmaceutical Administration and Organization
- Forensic Pharmacy

The final Examination shall consist of examinations in the following:

- Practical Pharmaceutics
- Forensic Pharmacy and Pharmacy Practice

SYLLABUS

Pharmacy I, II and III Examinations

The syllabus for the Pharmacy I, II and III examinations will be the syllabus set for the three years of the course respectively.
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 also 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 or members of the Pharmacy Board. The candidate will be required to establish quickly a formal and co-operative relationship with his 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 his 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) Poisons Act 1962
(d) Drugs of Addiction and Restricted Substances Regulations
(e) Poisons Regulations 1963
(f) Part XIV of the Health Act and the relevant sections of the Regulations
(g) Stock Medicines Act, Stock Foods Act, Pesticides Act and Regulations
(h) National Health Act and Regulations

Closing date of entry

This will be advertised in the Australian Journal of Pharmacy, the Pharmaceutical Society's News Bulletin, the College calendar of dates and a personal communication will be sent to each trainee at his last known address.
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 12.

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 the 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 'examination' 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 AND MASTER OF PHARMACY DEGREES

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. The degrees were conferred by virtue of the Victoria Institute of Colleges Act (1965) and in accordance with the Regulations of the Institute. The 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 degrees are awarded in accordance with the policies of the Victorian Post-Secondary Education Commission.

New Regulations for the degrees have not been prepared following the transfer of the coordination of post-secondary education from the Victoria Institute of Colleges to the Victorian Post-Secondary Education Commission. The Victorian College of Pharmacy Ltd uses the previous Regulations of the Victoria Institute of Colleges as guidelines for candidates proceeding to the degrees of Bachelor of Pharmacy and Master of Pharmacy. Copies of these regulations are available from the Registrar's office and are held by the College library.
REGULATIONS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHARMACY

The Pharmaceutical Society of Victoria 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 professional Pharm D degree, which is awarded widely throughout the United States.

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 Victoria 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 Victoria;
   (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 School 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 School, shall appoint not less than three examiners, one of whom may be the supervisor and at least two of whom will be external examiners.

5 The executive of the Graduate School 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 D Pharm graduates be kept and that such roll be published in the annual report of the Society.

¹A candidate may not present as his thesis any work for which any other degree has been conferred on him, but he will not be precluded from incorporating such work or any part thereof in his thesis provided

(i) he has stated his intention to do so in his application for candidature and
(ii) he indicates in his 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 School, shall appoint not less than three examiners, one of whom may be the supervisor and at least two of whom shall be external examiners.

2 The dean of the appropriate school shall act as chairman of the panel but need not be one of the three examiners. If the head of the appropriate school is not an examiner he shall not have a vote.

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.

4 Before making their formal return the examiners shall consult together or otherwise communicate with each other with regard to the thesis submitted.

5 The result of the examination shall be in accordance with the decision of a majority of the 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 his thesis the candidate should indicate the sources from which his information is derived, the extent to which he has availed himself of the work of others and, in general terms, the portions of his work which he claims as original. When a candidate submits work carried out in collaboration with another person, he should indicate his own share in the work.
Recommended Price $3.00