

290AA Postgraduate Diploma in Science

Year and Campus:	2010 - Parkville
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Graduate/Postgraduate
Duration & Credit Points:	
Coordinator:	Melbourne Graduate School of Science
Contact:	<p>Science Student Centre Faculty of Science Old Geology Building The University of Melbourne VIC 3010</p> <p>Tel: + 61 3 8344 6404 Fax: +61 3 8344 5803 Web: www.science.unimelb.edu.au (http://graduate.science.unimelb.edu.au/) u</p>
Course Overview:	<p>The Faculty of Science offers the Postgraduate Diploma in Science program through a number of departments.</p> <p>The Postgraduate Diploma in Science is a fourth-year equivalent program, and students who successfully complete this course with an H2A (75%) average are eligible to apply for Master of Philosophy or Doctor of Philosophy candidature.</p> <p>Areas of Study</p> <ul style="list-style-type: none"> # <u>Anatomy & Cell Biology</u> # <u>Botany</u> # <u>Chemistry</u> # <u>Computer Science</u> # <u>Oral Biology (Dental Science)</u> # <u>Earth Sciences</u> # <u>Genetics</u> # <u>History & Philosophy of Science</u> # <u>Mathematics and Statistics</u> # <u>Medicine (St Vincent's Hospital)</u> # <u>Microbiology & Immunology</u> # <u>Otolaryngology</u> # <u>Pathology</u> # <u>Pharmacology</u> # <u>Physics</u> # <u>Physiology</u> # <u>Vision Science</u> # <u>Zoology</u>
Objectives:	<p>Postgraduate Diploma programs are designed to:</p> <ul style="list-style-type: none"> # enable the acquisition of research skills (for example, laboratory techniques and data collection and analysis); # engage students in research, under supervision; # increase students' knowledge and understanding of the relevant discipline and awareness of current developments and issues relating to the discipline; # develop independent and critical thinking; and # improve oral and written communication skills.

Course Structure & Available Subjects:	<p>The Postgraduate Diploma in Science course requires the completion of 100 points (100 points = one year of full-time study). The 100 points comprises two components:</p> <ul style="list-style-type: none"> # a coursework component (sometimes requiring the completion of up to 25 points of later-year, normally third-year, undergraduate subjects); and # a minor thesis research project component (normally 10 000 - 12 000 words). <p>The weight of each component varies between departments.</p> <p>To be eligible for the award of the Postgraduate Diploma in Science, students must successfully complete both the research and the coursework components of the course.</p>
Subject Options:	<p>Anatomy and Cell Biology</p> <p>Coordinator Assoc. Prof. Colin Anderson</p> <p>Objectives The program in Anatomy and Cell Biology is designed to: Provide an introduction to advanced biomedical research in molecular, cell and systems biology; Enable the acquisition of current research skills in specific areas; Encourage the development of the abilities to think both independently and critically, through the continual analysis and evaluation of experimental data; Improve oral and written communication skills.</p> <p>Course Structure Anatomy Research Project (75 points) Content: An original, supervised research project. Assessment: A written report (thesis) at the end of the year.</p> <p>Anatomy Advanced Coursework (25 points) Content: Lectures and seminars covering a wide range of biomedical research. Lectures and workshops in topics such as animal welfare, library resources, experimental design and statistical analysis, writing skills and seminar preparation.</p> <p>Assessment: Attendance at lectures, workshops and seminars. A literature review (no more than 3000 words) which forms the basis of the introduction to the thesis. A journal review. An exam in statistics. An oral defence of the thesis.</p> <p>Botany</p> <p>Coordinator Assoc. Prof. Rick Wetherbee</p> <p>Objectives The program in Botany aims to provide students with skills in original research in plant science and help students develop a capacity for critical thinking and evaluation of information. The course also strives to instil in students a knowledge of a wide area of plant sciences, and to enhance their communication skills.</p> <p>Areas of Specialisation The coursework and research components of this Postgraduate Diploma enable students to further their knowledge in areas of cellular and molecular biology, systematics and evolution, plant ecology and physiology, and plant pathology.</p> <p>Course Structure The research component is worth 75 points and is assessed from a written report (10 000 words maximum) which forms the basis of 60 per cent allocated of the year's assessment, with a further 10 per cent allocated on the basis of a 30 minute seminar presentation and another five per cent allocated on performance in an oral examination concerning the research project.</p>

The remaining 25 per cent of assessment is on the basis of coursework as follows: a literature review (3500 words), and two written or oral assignments focussing on topics presented in the series of advanced lectures (2500 words each), awarded a total of 25 points.

Coursework Component = 25 points

Students will be enrolled in two x 12.5 coursework subjects from the list below in consultation with the Honours Coordinator:

- # 600-651 Microscopy for Biological Sciences
- # 600-654 Global Environmental Change
- # 606-607 Flora of Victoria
- # 600-601 Collecting and Analysing biological data
- # 600-651 Advanced Molecular Techniques
- # 600-650 Metabolomics and Proteomics
- # One third year Botany subject, for which credit has not already been given, or an alternative postgraduate coursework elective may be chosen if core knowledge is required.

Chemistry**Coordinator**

Professor Richard O'Hair

Administrator

Ms Vicki Burley

Overview

The Postgraduate Diploma in Chemistry program is designed to;

- # increase the student's knowledge and understanding of chemical science;
- # develop the process and practice of chemical research;
- # encourage the development of individual investigative skills, critical thought and the ability to evaluate information and analyse experimental data;
- # promote the acquisition of experimental or theoretical skills in areas currently relevant to one of the research groups in the School of Chemistry;
- # improve oral and written communication skills; and
- # ensure that students receive essential training skills in laboratory safety procedures.

Generic skills

The Postgraduate Diploma in Chemistry program will provide students with the opportunity to establish/develop the following generic skills:

- # an ability to evaluate scientific and professional literature;
- # the ability to use conceptual models to rationalise experimental data;
- # a capacity to articulate their knowledge and understanding in written and oral presentations;
- # a capacity to manage competing demands on time, including self-directed experimental work;
- # a capacity to enhance teamwork skills as required; and
- # a respect for integrity in the conduct and reporting of scientific investigations.

Admission requirements

In addition to satisfying the Faculty of Science entry requirements, students interested in entering the Postgraduate Diploma in Chemistry program should typically have completed a Bachelor of Science degree which includes some third year chemistry subjects. However, all applications will be considered on a case-by-case basis by the coordinator.

Course Structure

The following information is applicable to students commencing in 2009. Students who commenced in 2008 should refer to the 2008 Handbook.

This particular course can only be undertaken on a full-time basis and a mid-year intake is offered. Enrolment in the program is possible between either February and November or July and June.

Assessment

Hurdle assessment requirements

In addition to the Postgraduate Diploma in Chemistry requirements, students enrolled in this program must:

- # attend all Safety and Induction program lectures and successfully complete the Safety Examination. Students who fail the Safety Examination will have to complete an additional study program and be reassessed. A pass in the Safety Examination is required before students can begin their laboratory work.
- # submit a 1500-word literature survey and research plan during the first semester of enrolment.

Components of assessment

The course comprises a research project component and an advanced coursework component. Their relative weightings are as follows:

- # Chemistry Research Project component = 62.5 percent
- # Chemistry Advanced Coursework component = 37.5 percent

Advanced Coursework

Student will enrol in the following three subjects (each worth 12.5 points):

- # 610-681 Advanced Spectroscopy
- # 610-682 Chemistry 4A
- # 610-683 Chemistry 4B

[Each of these subjects will be examined by formal written examination, subjects 610-681 and 610-682 at the end of semester 1 and subject 610-683 during semester 2].

Research Project

Students will enrol in the following research subjects:

- # 610-412 Chemistry Research Project 25 points in semester 1
- # 610-413 Chemistry Research Project 37.5 points in semester 2

The research project involves the completion of:

- * A preliminary literature survey and research plan (1500 words, up to 5 pages), due towards the end of the first semester of study (pass/fail);
- * A major thesis, page limit of 30 pages (10,000 words) due at the end of the second semester of study (90% made up from thesis evaluation (35%), oral examination (viva) on thesis (35%); supervisor's assessment of research performance (20%) based on attendance, application, initiative, and demonstrated skills);
- * A project-related oral presentation (15 minutes presentation, 5 minutes discussion) to be scheduled during the second semester of enrolment (10%);and
- * Successful completion of a seminar series providing advanced theoretical and/or practical training (pass/fail).

Further information

If you require further information about this honours program please contact:

Ms Vicki Burley

Tel: +61 3 8344 6495

Combined Chemistry/Pharmacology and Chemistry/Biochemistry Postgraduate Diploma may be possible depending on research collaboration at the time and would be considered on a case-by-case basis. Please refer to the BSc Honours entry requirements for these combined

research areas. All enquiries should be directed to the Course Administrator for further information.

Computer Science

Coordinator

Dr. Adrian Pearce

The program in Computer Science allows students to study a selection of topics in some depth and to work independently on a medium-sized project. It provides an introduction to research methodology and greater experience in system development. It may be used as a preparation for postgraduate studies in computer science, and opens additional career opportunities in systems design and implementation and in research support.

The Postgraduate Diploma in Science is designed to:

- # allow students to study a selection of Computer Science topics in depth and to work on an investigative project;
- # provide an introduction to research methodology;
- # provide experience in system development;
- # improve career opportunities in research-oriented jobs, or in systems design and implementation;
- # encourage critical thought and novel ideas in computer science;
- # improve abilities to evaluate information and analyse experimental data;
- # improve oral and written communication skills.

It can be taken full time over 2 semesters or part-time over 4 semesters.

The course consists of 75% coursework and 25% research.

The coursework is shared with BCS (Hons) and BSc (Hons) in Computer Science.

Coursework Component

Students (full-time or part-time) must pass 6 subjects. Students can take one 600-level subject as part of their coursework. They can also take up to three 300-level subjects. A student can also ask the Honours Coordinator's permission to take a relevant 400-level subject outside the Department. Assessment consists of written assignments, oral presentations and written examinations.

Thesis Component

As well as advancing the student's knowledge of computer science, the Postgraduate Diploma is intended to introduce students to the world of research. Part way through their first semester, students will select a supervisor and project from a list of topics that academic staff have indicated they are willing to supervise. These projects involve a search of the relevant literature, some investigation or application by the student, and preparation of a final written report summarising the results of the investigation and its relation to other work in the area. Students are required to present a written summary of their project proposals towards the end of their first semester, and to give a final oral presentation of their research shortly after the deadline for theses. The thesis should not exceed 12,000 words. The thesis contributes 25% towards the final mark. The thesis will be examined by the supervisor and two other members of academic staff. Guidelines for marking will be made available to students.

Seminars

The Department of Computer Science and Software Engineering holds regular seminars; attendance at these is required for Postgraduate Diploma students. Other talks may also be recommended by the teaching staff; these, too, are considered to be part of the course.

Entry Requirements

To be eligible for the course, a student must have a three-year degree with substantial computing content as well as an average final-year mark at the level of at least the equivalent of 65. Industrial experience may also be taken into account. As a minimum, computing background should include solid experience with Unix and C programming, as well as good knowledge in the areas of data structures and algorithms for sorting, searching and graph manipulation, software development principles and tools, and software design, including object-oriented design. A student's computing background should also include good knowledge of several more specialised areas, such as artificial intelligence, computability and logic, operating systems, databases, human-computer interaction, computer networks, compilers, computer graphics, and

software engineering. Finally, a student must have passed the equivalent of at least 25 points of 100-level Mathematics or Statistics.

School of Dental Science

Oral biology postgraduate diploma program

Overview

We offer research within a multidisciplinary environment. Hence we welcome students from a variety of backgrounds including chemistry, biochemistry, biophysics, molecular biology, microbiology, immunology, genetics and anatomy. The research component offers students the opportunity to use state-of-the-art techniques in protein chemistry, molecular biology, microbiology, immunobiology, mass spectrometry, NMR spectroscopy, molecular modelling, skeletal biology, histomorphometry, aging of the skeleton and image analysis.

Web site: http://www.dent.unimelb.edu.au/dsweb/postgrad_programs/honours.html.

Admission requirements

Students must satisfy the Faculty of Science entry requirements. Information about the departmental entry requirements can be obtained from the department.

Coordinators

Dr Laila Huq (academic)

Ms Kim Hanson (administrative)

Duration and commencement of course

This program can be undertaken on a full-time basis only. The program commences in February and finishes in November.

Assessment

Components of assessment

The program comprises a research project subject and an advanced coursework subject. These subjects with their relative weightings are as follows:

- # Dental Science: Oral Biology Research Project subject = 75 percent
- # Dental Science: Oral Biology Advanced Coursework subject = 25 percent

Research project

Students conduct an original research project supervised by a member of staff in one of the four research units within the School of Dental Science.

Current areas of major research activity with the school include the molecular biology of oral diseases and microbial pathogens, the cell biology and development of oral tissues, dental epidemiology, and the evaluation and development of novel dental restorative materials.

Students prepare a report (thesis) at the end of the period not exceeding 10,000 words

Advanced coursework

Students undertake:

- # lectures and seminars on selected topics of oral biology including oral molecular biology, oral microbiology, growth and development, oral biochemistry, biomaterials and biostatistics;
- # lectures or workshops on the critical analysis of a scientific paper, library resources, research design, and writing and communication skills;
- # participation in the school and research unit's research seminars;
- # an oral presentation of the aims and methods of the research project during the period, and a seminar to the school on the research project at the end of the period;
- # an essay of not more than 2000 words on a selected topic of dental science;
- # a written assignment (scientific critique of a journal article) of not more than 2000 words; and
- # written assignments based on the lecture series.

Assessment:

- # attendance at no less than 75 percent of lectures, workshops and seminars;
- # give an oral presentation of aims and methods of research project;
- # give an oral presentation to the School on the research project towards the end of second semester;

- # an essay of not more than 2000 words on a selected topic in dental science;
- # a written assignment (specific critique of a journal article) of not more than 2000 words; and
- # a written assignment or a two hour examination based on the lecture series.

Further information

If you require further information about this program please contact:

Dr Laila Huq

Tel: +61 3 9341 0821

Email: l.huq@dent.unimelb.edu.au

Ms Kim Hanson

Tel: +61 3 9341 1507

Email: khanson@unimelb.edu.au

Earth Sciences

Coordinator

Dr. Kevin Walsh

The Postgraduate Diploma is designed to allow Earth Scientists to upgrade their skills and/or retrain by undertaking a year (or longer part time) of coursework and thesis studies. In addition, the Diploma is open to Science graduates with a background or work experience in Earth Sciences who wish to undertake further studies in Earth Science for business or pleasure. The Diploma studies are modular and available part-time to encourage participation from industry Earth Scientists.

Objectives

- increase their knowledge and understanding of Earth Sciences and awareness of current developments and issues relating to studies of our planet
- develop independent and critical thinking skills
- improve oral and written communication skills

Course Structure

The School of Earth Sciences offers a wide variety of one week theory/practical or field studies from which to choose; typically there are 30 such short courses available each year, of which candidates must complete 12. This allows the Postgraduate Diploma candidate to specialise in a particular aspect of Earth Science or attain a more broadly based expertise.

Candidates who attain an average mark of over 70% are eligible to upgrade their studies to the Master of Earth Science Degree (MESc).

Two options are available regarding your research topic. 1) You may have your own research topic and dataset in mind, particularly if you are coming from industry. 2) You may wish to undertake a research project offered by one of the many academics within the School of Earth Sciences. In both cases you can contact the MESc Coordinator directly at mesc-coord@earthsci.unimelb.edu.au who will direct your enquiry to the appropriate specialist in the School of Earth Sciences, or you can investigate the Earth Sciences staff members on this website and contact them directly.

Duration

The Postgraduate Diploma (PGrad Dip) can be completed full-time in one year (100 points) or part-time over several years, allowing industry Earth Scientists to attend courses in 2-6 week blocks to complete subjects and carry out thesis and literature review studies remotely, if necessary. International students must take the degree full-time.

The degree involves completion of 12 one week short courses, a literature review and a minor thesis.

Entry Requirements

Admission is open to candidates with a Bachelor of Science degree specialising in Earth Sciences, or with a Bachelor of Science degree with a background or work experience in Earth Sciences. Candidates will usually commence studies at the beginning of February, but mid-year starts are also possible.

Contacts

For more information see www.earthsci.unimelb.edu.au

Or contact the postgraduate course coordinator - mesc-coord@earthsci.unimelb.edu.au

Genetics

Coordinator

Prof. Jim Camakaris

Objectives

On completion of this course students should have achieved:

- # A broad knowledge in the field of genetics;
- # A capacity to use experimentation in genetics to understand aspects of biology; and
- # A capacity to integrate various theoretical and experimental approaches to problems in genetics.

Areas of specialisation

The coursework and research components of this Postgraduate Diploma in Science enable students to further their knowledge in the following areas: classical genetics; the history of genetics; population and evolutionary genetics; ecological genetics; molecular genetics; and developmental genetics. Typical research projects study aspects of heavy metal detoxification mechanisms in plants and animals; copper metabolism in mammals and the role of copper in neurodegenerative diseases; gene regulation in fungi;; the ecological, evolutionary and molecular genetics of insecticide resistance; evolutionary genetics; and developmental genetics.

Course structure

Genetics Research Project (62.5 Points)

Content: An original, supervised research project.

Assessment: A research report of 40 pages (excluding figures, tables and appendices).

An oral exam.

An assessment of research performance.

Genetics Advanced Coursework (37.5 Points)

Content: Lectures and discussions on advanced topics in genetics.

Up to 25 points of appropriate Bachelor of Science subjects as required by the Head of Department.

Assessment: An essay on the background area of the research project (3000 word maximum). A written exam and a journal club presentation on the lecture topics.

For information about the weighting of the components of assessment within the research project subject and within the advanced coursework subject, please contact the Department of Genetics at the start of the program.

History and Philosophy of Science**Coordinator**

Dr. Kristian Camilleri

Areas of Specialisation

Research projects can be accommodated in a variety of areas and prospective students should contact the coordinator for assistance with selection of a topic. The Department specialises in the following areas:

- # History of the physical sciences
- # Relations of science, philosophy and political thought in the early modern Europe and in the twentieth century
- # History of medicine and the biomedical sciences
- # Metaphysics of scientific realism
- # Epistemic naturalism
- # The nature of risk in relation to contemporary technological innovation
- # The idea of 'Nature' in the context of contemporary environmental and human sciences
- # How science might generatively engage other knowledge traditions
- # Social context of computer-based technologies

Course structure

The course consists of a 12 000 word supervised research project (37.5%) and a coursework component of five of the Department's honours and postgraduate level seminars (each weighted 12.5%, and requiring the equivalent of 5000 words each). The seminars, of which students are required to complete four, may be chosen from the following:

- # 136-442 Directed Study (semester 1 and semester 2)
- # 136-509 Science and Ideology in the 20th Century (semester 1)
- # 136-544 Beyond the Spin: Techno-scientific Failure (semester 2)
- # 136-528 Medicine and Culture (semester 2)
- # 136-542 Practicum (semester 1 and semester 2)
- # 136-545 Science and its Publics (semester 1)
- # 136-527 Ecology and Environmentalism (semester 1)
- # 136-536 Scientific Realism and Anti-Realism (semester 2)
- # 161-484 The Western Tradition & its Discontents (semester 2)

Students may choose a maximum of two honours subjects in philosophy as electives from the following:

- # PHIL40005 Metaphysics and Epistemology (semester 2)
- # PHIL40013 Topics in Advanced Logic (semester 2)

Mathematics and Statistics

Postgraduate Diploma in Science (Mathematics and Statistics)

Objectives

The objectives of this diploma are to:

- # Further the understanding of mathematics and statistics across a range of theoretical and practical topics;
- # Encourage the development of the abilities to think critically and independently;
- # Provide an introduction to the process and practice of research in mathematics and statistics;
- # Improve oral and written communication skills; and
- # Provide a pathway for entry into graduate study in mathematics and statistics for students whose main undergraduate field of study was not mathematics and/or statistics.

Mathematics and Statistics

Coordinator

Dr. Sanming Zhou

Course Structure

The Mathematics and Statistics program consists of a research project and an advanced coursework subject.

The relative weightings of the two components are:

Research Project (25%)

Coursework (six units) (75%)

Research Project:

Postgraduate Diploma students are required to conduct research under the supervision of their supervisors. Intending students should approach individual staff members to discuss possible research projects. Information about the department's research groups and possible supervisors can be found at the following websites respectively:

<http://www.ms.unimelb.edu.au/research/> (<http://www.ms.unimelb.edu.au/research/>)

<http://www.ms.unimelb.edu.au/Students/supervisorList.php>

Any difficulties in reaching decisions about research topics should be discussed with the Honours Coordinator. Preliminary reading should commence in the first month of the program, with the bulk of the project being completed in the second half of the program.

Assessment of the research project will consider: clarity and exposition; mathematical accuracy; mathematical insight displayed; coverage of the field and references, and may be complemented by one or more of the following: description of the application and/or business context; mathematical modelling; presentation and analysis of numerical results.

Postgraduate Diploma students will be required to give two seminars before their results are finalized, including one presentation on their research projects towards the end of the program. Postgraduate Diploma students should consider themselves a part of the research strength of the department and view departmental seminars as a method of broadening their knowledge. It is therefore expected that students will attend all research seminars in the broad area of their chosen field.

Advanced Coursework:

Students should select 6 x 12.5 point subjects from the following list in consultation with the Honours Coordinator:

- # 620-500 Random Walks and Random Structures
- # 620-501 Scheduling and Optimisation
- # 620-502 Mathematics of Risk
- # 620-616 Optimisation for Industry
- # 620-617 Phase Transitions and Critical Phenomena
- # 620-618 Probability for Inference
- # 620-619 Representation Theory
- # 620-620 Statistical Inference
- # 620-624 Stochastic Processes
- # 620-634 Algebraic Topology
- # 620-635 Advanced Materials Modelling
- # 620-636 Commutative Algebra
- # 620-637 Computational Differential Equations
- # 620-638 Consulting and Applied Statistics
- # 620-645 Measure Theory
- # 620-646 Advanced Discrete Mathematics
- # 620-664 Topics in Dynamical Systems
- # 620-712 Experimental Mathematics
- # 620-324 Complex Analysis
- # 620-714 Geometric Group Theory

Each MSc (Coursework) subject is one semester in length and comprises 36 contact hours (usually one two-hour lecture plus one one-hour practical class per week). Full-time students are advised to undertake four coursework subjects in the first semester and two coursework subjects in the second semester. In determining the final grade, only the best six advanced coursework subjects will be considered.

The advanced coursework subjects are clustered in ten streams: algebra, number theory and representations, analysis and set theory, complex systems, continuum modeling, discrete mathematics and algebraic combinatorics, geometry and topology, mathematical physics and statistical mechanics, operations research, statistics, stochastic processes. Students usually take at least two subjects from two different streams, one of which will normally be in the stream related to the topic of their research project. Under special circumstances, approval may be given for a student to do one subject of a comparable standard from outside the Department's offering.

Students without the listed prerequisites for a chosen subject will need to discuss possible enrolment in the subject with the lecturer in charge before taking the subject.

Medicine (St. Vincent's Hospital)

Coordinator

Dr Sue Rogers

Objectives

- # To develop further knowledge and skills in the area of biomedical science, including experimental design, laboratory techniques, data analysis and interpretation and oral and written presentation.
- # To complete a research project, which involves carrying out individual project work under the supervision of a nominated supervisor.
- # To attend departmental seminars and complete appropriate coursework and assignment.

Course Structure

Research Project (75 points)

Advanced Coursework (25 points)

Content: An original, supervised research project in the field of biomedical science.

Assessment:

Completion of a Literature Review (5000 words)

Undertake Oral Presentations

Attendance at Biomedical Statistics program and submit written assignment

Completion of set coursework/assignment

Submission of thesis (10 000 words)

Supervisor/lab competence assessment

Microbiology and Immunology**Coordinator**

Dr. Mike Dyall-Smith

Dr. Odilia Wijburg

Dr. Stephen Turner

Objectives

The Postgraduate Diploma in Science program in Microbiology and Immunology is designed to

- # Train students to plan and carry out original experiments and to rigorously interpret results;
- # Facilitate students' ability to analyse and communicate scientific results and ideas, both those generated by their own work and those reported by others;
- # Engender an enthusiasm for scientific inquiry;

And

- # Encourage each individual to develop skills requiring both analytical and creative thought.

Areas of Specialisation

The coursework and research components of this Postgraduate Diploma in Science enable students to further their knowledge in some of the following areas: Microbiology (including Virology, Bacteriology and Parasitology), Biotechnology, Immunology, and Environmental Microbiology.

Course Structure

Research Points (75 points)

This comprises an original, supervised research project and report and an oral presentation.

Assessment:

A written report (thesis) and oral presentation will be assessed at the end of the year.

Coursework (25 points)

This comprises lectures and seminars on selected topics within microbiology and immunology, discussion of research data and its interpretation, detailed study of original literature, and one or more oral presentations and literature surveys on selected topics.

Assessment:

Written examinations, literature survey and/or seminar presentations.

To successfully complete the Postgraduate Diploma in Science program in Microbiology and Immunology students must obtain passes of 50 per cent or better in both the Research Project and Coursework. In order to apply for higher degrees, students must obtain 75 per cent or better in both the Research Project and Advanced Coursework.

Otolaryngology**Coordinator**

Assoc. Prof. Gary Rance

Course Structure

Otolaryngology Research Project (75 Points)

Content:

An original, supervised research project.

Assessment:

Submission of a literature review, of no more than 1500 words on the research project early in the year. A written report (thesis) at the end of the year, not exceeding 15,000 words. Two Departmental Seminars, one early in the year and one towards the end of the year, on the research work.

Otolaryngology Advanced Coursework (25 points)

Content:

Lectures and seminars in the areas of Research Methods in Communication Science, and Introduction to Hearing Science.

Assessment:

A written exam and a written assignment in the middle of the year.

Pathology**Coordinators**

Dr Joe Ciccotosto 8344-2558 (jiccco@unimelb.edu.au)

Dr Vicki Lawson 8344-1944 (v.lawson@unimelb.edu.au)

A/ Prof Melissa Southey 8344 4383 (msouthey@unimelb.edu.au)

Ms Katrina Chung (admin) 8344-4383 (chungk@unimelb.edu.au)

Objectives

The objectives of the course include the development of the individual student's skills in the areas of acquisition, interpretation and critical analysis of laboratory data, planning and design of experiments and reporting of experimental data in a concise and scientific manner consistent with that published in scientific journals.

Areas of Specialisation

A wide range of research projects are offered in the areas of regulation of inflammatory processes, immunology, transplantation, neurosciences, genetic epidemiology, and cellular and genetic strategies for control and detection of neoplasia.

Course Structure

Advanced Coursework subject (25 points)

Content:

An advanced lecture series and tutorials designed to help students develop critical analysis skills used in their research project and advanced coursework assessment. These critical analysis skills will also be invaluable to students as they pursue their research careers.

Assessment:

Two data examinations are designed to assess the capacity of students to interpret and critically appraise previously unseen research data.

Research Project subject (75 points)

Content:

A novel Research Project under the supervision of academic or research staff.

Assessment:

An 'introductory' seminar outlining the project hypothesis, aims and methods presented early in the year (5%). Critical review of literature relevant to the Research Project submitted mid-year (10%). A 'defence of thesis' seminar (10%) delivered to the Department after submission of the thesis (50%).

Pharmacology**Coordinator**

Professor Peter McIntyre,
Professor Alastair Stewart

Objectives

This Postgraduate Diploma program in Pharmacology is designed to offer suitably qualified students that do not have a BSc degree an understanding of advanced pharmacological theory and to provide an introduction to pharmacological research. Emphasis is placed on developing skills in experimental design, technical expertise, thinking, analysis and presentation skills that will enable students to consider a career in medical research.

Areas of Specialisation

The coursework covers topics in analytical pharmacology, molecular pharmacology, and the basis of drug design and action. Strong emphasis is placed on research training.

Course Structure

Coursework (37.5 points)

The Coursework subject comprises lectures and tutorials in pharmacology.

Assessment: Written assessment of lecture and tutorial material (20%), a manuscript evaluation (10%) and a review writing exercise (7.5%)

Research Project (62.5 points)

An original, supervised research project

Assessment:

A written thesis of maximum 6000 words excluding figures, tables and references (50%) and two oral presentations (12.5%).

Physics**Coordinators**

Dr Nicole Bell

Objectives

The program in Physics is designed to:

- # increase students' knowledge of physics on a broad front and to a professional level;
- # introduce students to the current research literature in specialized areas; and
- # engage students in their own research by participation in the activities of a research group in the School of Physics.

Course Structure

Physics Research Project (50 points)

Content:

An original, supervised research project (experimental and/or theoretical) in one of the School's current fields: pure and applied nuclear physics (photonuclear reactions, proton microbe and microanalysis), gravitation, astrophysics, optics (light, x-rays, neutrons, atoms), particle physics, atomic physics, and solid state physics (high resolution electron microscopy and physics of materials).

Assessment:

A written report on the research done during the year. Preparation and delivery of a 15 minute talk to the School on the research work.

Physics Advanced Coursework (50 points)

Content:

All subjects are 12.5 points each. Students must take:

- # 640-610 Quantum Mechanics

Students should select three subjects from the following list in consultation with the Honours Coordinator:

- # 640-611 Quantum Field Theory
- # 640-614 General Relativity
- # 640-604 Statistical Mechanics
- # 600-656 Experimental Methods
- # 640-615 Condensed Matter Physics
- # 640-613 Particle Physics
- # 640-612 Physical Cosmology
- # 640-603 Quantum and Advanced Optics

Assessment:

Written examinations at the end of each demi-semester. Assignments

Physiology

Coordinator

Dr. Glenn McConell

Prof. Mark Hargreaves

Objectives

The program in physiology is designed to:

- # enhance students' knowledge and understanding of the principles of the control of body function and the current development in a specific area of interest;
- # engage students in research in a structured and supervised environment;
- # introduce students to the professional skills required of a successful physiologist (grant writing, critical appreciation of scientific writing, peer communication); and
- # develop the processes of independent, lifelong learning using the scientific literature.

Areas of Specialisation

Research within the department is grouped into three areas of specialization /clusters. 1) **CARDIOVASCULAR HEALTH:** Cardiac Phenomics, Central Cardiovascular Regulation, Fetal, Postnatal & Adult Physiology and Disease, Behaviour & Blood Pressure. 2) **MUSCLE AND EXERCISE:** Exercise Physiology and metabolism, Basic and Clinical Myology, Confocal & Fluorescence Imaging; 3) **NEUROPHYSIOLOGY:** Enteric Neuroscience, Molecular Neurophysiology.

Course Structure

536-496 Physiology Research Project (75 points):

This involves undertaking an original, supervised research project. A written report (thesis), not exceeding 10 000 words, is to be submitted at the end of the program. In addition, assessment includes two oral presentations and supervisor's assessment of student's research performance.

536-497 Physiology Advanced Coursework (25 points):

The advanced coursework subject comprises the following a literature review, a statistics assignment and an ethics assignment. Attendance and participation in departmental seminars, ethics seminars and statistics lectures is also required.

Vision Science

Coordinator

Dr Larry Abel

Objectives

The course provides advanced training in vision science or optical science, and preliminary training in research methods.

Structure

The course comprises a research project subject and an advanced coursework subject. These subjects, and their relative weightings in the 100-point course, are as follows:

- # Vision Science Research Project subject = 75 percent
- # Vision Science Advanced Coursework subject = 25 percent

Research project

Under the supervision of an academic staff member, students conduct research and prepare a report in the form of a thesis not exceeding 15,000 words.

A list of the research interests of the Department is available in the document, Research Areas in Optometry and Vision Sciences, from the Department Office or on the Department's website (<http://www.optometry.unimelb.edu.au/research/labs.html>). Potential students should approach the Postgraduate Coordinator or specific academic staff in the areas of research interest to discuss possible research projects. Further guidelines for thesis formatting, etc., are provided in the Department's Honours/Postgraduate Diploma manual distributed at the commencement of the course.

The thesis is normally due for submission in the first week of November (for students who commenced at the beginning of the year), or in the first week of May (for students who commenced mid-year). The student's supervisor will provide a mark (10% of the research project mark) that reflects the student's performance in the laboratory. The examiners will normally include the Postgraduate Coordinator and one other member of the Department's academic staff, and they will provide a mark for the thesis (80% of the research project mark). The thesis examiners will also assess student's oral presentation made after the thesis has been submitted (10% of the research project mark).

A 20-minute oral presentation at each of two Honours/Postgraduate Diploma mini-symposia during the course is also a hurdle requirement: (i) a presentation during the first 2 months of commencement outlining the planned research project; (ii) a presentation following the submission of the written research project presenting the key outcomes.

Advanced coursework

In addition, students enrolled in the program are required to attend and participate in Departmental seminars, including the Vision Science Seminar Series and Journal Club.

Students are required to undertake the compulsory Advanced Research Methods subject plus one other elective module (each component contributes 50% to the total coursework mark):

- # (semester two, compulsory) Advanced Research Methods: a directed learning module which runs in conjunction with the Department's Journal Club. Students will be required to participate in web based blogs and discussion forums led and moderated by an academic staff member to discuss issues of research practice or methodology related to the Journal Club presentations. Assessment for this module is based on a series of written tasks completed throughout the semester (detailed on the Department's website www.optometry.unimelb.edu.au/current/honours.html (<http://www.optometry.unimelb.edu.au/current/honours.html>));

Plus an elective subject:

- # (semester one or two) An elective subject, normally chosen from the Department's coursework listings at 300-level or above. Assessment for each subject is specified in the Handbook. This is particularly suitable for students who have not previously studied vision science or optics.

If a student is unable to choose a subject from the Department, the student's supervisor will assist the student to choose a coursework subject at 300-level or above from other departments at the University of Melbourne.

However if a student is still unable to choose a subject from the departments, the following option may be taken.

(semester one) A literature-based assignment not exceeding 4,000 words. The assignment topic, which is to be decided upon in consultation with the student's supervisor and the Postgraduate coordinator, is to be drawn from a different but possibly related area to the research project. The student's supervisor and one other member of the Department's academic staff will assess the assignment.

Further information

Information about departmental research areas is available on the Department's website (<http://www.optometry.unimelb.edu.au/research/labs.html>).

Zoology

Coordinator

Dr Laura Parry

Dr Steve Swearer

Objectives

The program in Zoology is designed to provide a broad introduction to current processes and practices in zoological research, and to enable students to acquire current research skills in specific areas of biological sciences.

Areas of Specialisation

The coursework and research components of this Postgraduate Diploma in Science allow students to tailor a program to further their knowledge of any of the research strengths of the Department. The main areas of specialisation are animal behavior and evolution, animal physiology, conservation and Australian wildlife biology, marine ecology and physiology, and reproduction and development.

Course Structure

The course includes advanced coursework (25%) and a research project (75%). Coursework includes lectures and seminars in physiology, reproduction and development, ecology, behaviour, conservation, and evolutionary biology, as well as experimental design and analysis.

Assessment is based on written assignments and a research seminar. The research project is an original, supervised piece of zoological research, resulting in an assessed thesis, not exceeding 10 000 words.

Entry Requirements:	An undergraduate degree in a relevant discipline. Entry is also subject to the availability of an appropriate research topic and supervisor.
Core Participation Requirements:	.
Further Study:	Students who successfully complete this course with an H2A (75%) average are eligible to apply for M.Phil - Science and PhD-Science candidature.
Graduate Attributes:	.
Links to further information:	http://graduate.science.unimelb.edu.au