Master of Applied Science (Research) (SC80)

Year offered: 2010
Admissions: Yes
CRICOS code: 007897G
Course duration (full-time): 3 semesters (1.5 years)
Course duration (part-time): 6 semesters (3 years)
Domestic fees (indicative): Aust citizens or PRs will be awarded an RTS/RTA place or a QUT sponsorship for tuition fees. If you exceed the max time, you will be charged - 2010: $11,750 per semester (indicative)
International Fees (indicative): 2010: $11,750 (indicative)
Domestic Entry: At any time
International Entry: At any time
Total credit points: 144
Standard credit points per full-time semester: 48
Standard credit points per part-time semester: 24
Course coordinator: Associate Professor Terry Walsh
Discipline coordinator: Dr Geoffrey Will (Chemistry); Associate Professor Terry Walsh (Life Sciences); Professor Vo Anh (Mathematics); Associate Professor Peter Mather (Natural Resource Sciences); Dr Andrew Fielding (Physics)
Campus: Gardens Point

Entry Requirement
Applicants must possess a bachelor of applied science or equivalent qualification or other evidence of qualifications that satisfy the Faculty Academic Board that the applicant possesses the capacity to pursue the course of study.

Course Design
This degree consists of coursework that can comprise up to one-third of the course and research, which must be at least two-thirds of the course. The assessed coursework may be in the form of advanced lectures, seminars, reading courses, or independent study designed to focus on information retrieval skills. The research component is a program of supervised research and investigation at a level of scientific competence significantly higher than that expected from an undergraduate degree and, typically, a masters thesis does not need to be as substantial as a Doctor of Philosophy thesis.

Students undertake a program of research and investigation on a topic approved by the Academic Board. All projects should be sponsored either by outside agencies such as industry, government authorities, or professional organisations, or by the University itself.

Students entering the course with an honours degree or its equivalent to candidates with substantial relevant work experience normally gain exemptions to a maximum of 96 credit points at the discretion of the Academic Board on the recommendation of the Head of School.

Students entering the course with a graduate diploma may gain exemption to a maximum of 96 credit points at the discretion of the Academic Board on the recommendation of the Head of School.

A full-time candidate who does not hold an honours degree appropriate to the course of study will normally be required to complete both course and research work, including submission of the thesis for examination during a period of registration of 24 months. The corresponding period in the case of a part-time candidate shall be 48 months. In special cases the Academic Board may approve a shorter period.

A holder of an honours degree or its equivalent appropriate to the course of study may submit the thesis for examination after not less than 12 months of registration if a full-time student, or 24 months if a part-time student. In special cases the Academic Board may approve a shorter period.

Overview
The objectives of this course are to:

- provide postgraduate educational opportunities in specialised fields of applied science by means of a program that involves either an original contribution to knowledge or an original application of existing knowledge
- provide education in research methods
- enable graduates employed in industry to undertake further education by a combination of coursework, research and thesis
- expand the involvement of students employed in industrial organisations and external agencies in undertaking relatively short-duration applied research or investigation.

Students can undertake an approved project in any area of interest supported by a research area or school within the Faculty of Science. Please note that these areas of research specialisation are only a guide. Staff are happy to discuss study choices directly with students.

Further Information
For further information about this course, please contact:
Terry Walsh  
Phone: +61 7 3138 2782  
Email: enquiry.scitech@qut.edu.au

Course structure - Chemistry Strand

PCN701  Topics in Advanced Chemistry 1
PCN705-1  Research Methodology
PCN705-2  Research Methodology  
Select one of the following Elective Units:
PCN710  Chemical Instrumentation
PCN720  Chemometrics
PCN730  Advanced Physical Methods in Chemistry
PCN740  Laboratory Techniques for Preparative Chemistry
PCN801  Topics in Advanced Chemistry 2

Course structure - Ecology, Environmental Science & Geoscience Strands

Essential units:
NRN100  Readings in Natural Resource Sciences 1
NRN102  Confirmation of Candidature Seminar
NRN103  Final Seminar  
Select up to one of the following units if required:
NRN101  Readings in Natural Resource Sciences 2
NRN104  Advanced Topics in Natural Resource Sciences 1
NRN105  Advanced Topics in Natural Resource Sciences 2

Course structure - Life Science Strand

LSN011  Research Seminars in Life Science 1
LSN013  Readings in Life Science 3
LSN023  Research Seminars in Life Science 3

Course structure - Mathematics Strand

Selections from other School programs, such as MA75 Graduate Diploma in Mathematical Science and MA85 Master of Mathematical Science, to a maximum of 60 credit points

Course structure - Physics Strand

PCN715  Advanced Topics in Physics 1
PCN716  Advanced Topics in Physics 2  
and/or alternative unit(s) approved by the Physics coordinator

Research Work

The Research Work component of the degree must constitute at least 128 credit points. The units below have been devised to represent the EFTSU (Effective Full-time Student Unit) and attendance type of graduate research students.

Full-Time Students

The minimum number of credit points per semester for full-time status is 36. The standard number is 48. At the end of each semester a grade of T - Assessment Continues will be awarded in any IFNXXX units provided satisfactory progress is being maintained. A final grade (S - Satisfactory or U - Unsatisfactory) will be awarded once the thesis has been examined according to the degree rules.

Full-Time Course Structure

Full-time students undertaking research but no coursework units enrol in:
IFN100  Full-Time Masters Research
IFN300  Masters Research
IFN301  Masters Research
IFN302  Masters Research
IFN303  Masters Research
IFN304  Masters Research

Part-Time Students

The maximum number of credit points per semester for part-time status is 36. The standard number is 24. At the end of each semester a grade of T - Assessment Continues will be awarded in any IFNXXX units provided satisfactory progress is being maintained. A final grade (S - Satisfactory or U - Unsatisfactory) will be awarded once the thesis has been examined according to degree rules.

Part-time Course Structure

Part-time students undertaking research but no coursework units enrol in:
UNIT SYNOPSISES

**IFN100 FULL-TIME MASTERS RESEARCH**
This unit provides full-time postgraduate research students with study in a relevant area leading to the development of a thesis. The thesis shall be not fewer than 50,000 words and shall constitute a substantial contribution to knowledge and understanding in the area of the research.

*Credit points: 48  Campus: Gardens Point and Kelvin Grove

**IFN200 PART-TIME MASTERS RESEARCH**
This unit provides part-time postgraduate research students with study in a relevant area leading to the development of a thesis. The thesis shall be not fewer than 50,000 words and shall constitute a substantial contribution to knowledge and understanding in the area of research.

*Credit points: 24  Campus: Gardens Point and Kelvin Grove

**IFN300 MASTERS RESEARCH**
*Credit points: 36

**IFN301 MASTERS RESEARCH**
*Credit points: 24

**IFN302 MASTERS RESEARCH**
*Credit points: 12

**IFN303 MASTERS RESEARCH**
*Credit points: 8

**IFN304 MASTERS RESEARCH**
*Credit points: 6

**LSN011 RESEARCH SEMINARS IN LIFE SCIENCE 1**
This unit includes a formal seminar to include an oral presentation (25 minutes) and question period (5-10 minutes). The presentation provides a comprehensive and informative critique of a specific topic and outlines the planned research program, where applicable. Prescriptive guidelines and submission deadlines must be followed in this regard. The chosen topic will be in an area selected by the student in consultation with their supervisor(s) and the postgraduate coursework coordinator. This unit complements LSN013 Readings in Life Science 3.

*Credit points: 12  Campus: Gardens Point  Teaching period: 2010 SEM-1 and 2010 SEM-2

**LSN013 READINGS IN LIFE SCIENCE 3**
This unit includes a comprehensive and critical review of the background and current literature directly related to a potential research topic. The review should identify major and minor deficiencies in the research literature and identify possible directions for future research. The review should be between 5,000 - 10,000 words and at least one draft should be presented to the supervisor prior to final submission.

*Corequisites: LSN023  Credit points: 24  Campus: Gardens Point  Teaching period: 2010 SEM-1 and 2010 SEM-2

**LSN023 RESEARCH SEMINARS IN LIFE SCIENCE 3**
This unit includes a formal seminar to include an oral presentation (45-50minutes) and question period (5-10minutes) presenting a critical and in-depth analysis of the results of the postgraduate research program as well as possible future research directions in the area. Prescriptive guidelines and submission deadlines must be followed in this regard.

*Credit points: 12  Campus: Gardens Point  Teaching period: 2010 SEM-1 and 2010 SEM-2

**NRN100 READINGS IN NATURAL RESOURCE SCIENCES 1**
This unit includes a review of literature in an area of direct relevance to the research project. The review should be designed in conjunction with the supervisor and demonstrate a broad appreciation of the literature, a critical appraisal of research to date, and the relevance of the
research project within the framework of current understanding. Reviews should normally be approximately 5000 words.

**Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**NRN101 READINGS IN NATURAL RESOURCE SCIENCES 2**
This is a companion unit to NRN100 that allows students to (a) prepare a review of a second area relevant to the research project or (b) consider a wider subject area in greater depth. If option (b) is chosen, a single review can qualify as total assessment for both NRN100 and NRN101. In this case, the review should be approximately 10,000 words and be a critical analysis of a substantial research area.

**Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**NRN102 CONFIRMATION OF CANDIDATURE SEMINAR**
This unit includes a public seminar plus an extensive discussion period designed to provide positive feedback from staff and students on the proposed research project. The presentation should be designed in conjunction with the supervisor and include background to the project area, specific objectives of the proposed project, methodology to be followed and possible outcomes. The seminar should normally be presented after the project outline has been developed and before any significant amount of research has been undertaken.

**Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**NRN103 FINAL SEMINAR**
This unit includes a public seminar plus an extensive discussion period designed to provide positive feedback from staff and students on the progress of the research project. The presentation should be designed in conjunction with the supervisor and include project objectives, progress to date, preliminary data and problems for discussion. The seminar should normally be presented within 12 months (full-time) or 24 months (part-time) of commencement of the postgraduate program.

**Prerequisites:** NRN102  **Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**NRN104 ADVANCED TOPICS IN NATURAL RESOURCE SCIENCES 1**
Students develop an advanced understanding of a topic in the natural resource sciences that is highly relevant to the general area of their proposed research project. The structure and content is variable and can be tailored to the specific requirement of each project and the background of the student. A formal outline of the unit including objectives, content and assessment relevant to the individual course of study will be developed by the supervisor and approved by the Head of School. Content may include active participation in tutorials, workshops, laboratory/field techniques and components of advanced level undergraduate units. If components of advanced level undergraduate units are included, they should not exceed 70% of the total assessment.

**Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**PCN701 TOPICS IN ADVANCED CHEMISTRY 1**
This unit includes a series of lectures and/or a reading program and/or selected laboratory exercises designed to provide the student with the appropriate theoretical and practical background, at an advanced level, necessary for the completion of a research program.

**Prerequisites:** NRN100  **Credit points:** 12  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**PCN705 RESEARCH METHODOLOGY**
This unit includes a guided program of literature surveys to provide the background information for the research project. This unit enables students to develop verbal and oral communication skills required for the successful conduct of a research project. Students develop an advanced understanding of a topic in the natural resource sciences that is highly relevant to the general area of their proposed research project. The structure and content is variable and can be tailored to the specific requirement of each project and the background of the student. A formal outline of the unit including objectives, content and assessment relevant to the individual course of study will be developed by the supervisor and approved by the Head of School. Content may include active participation in tutorials, workshops, laboratory/field techniques and components of advanced level undergraduate units. If components of advanced level undergraduate units are included, they should not exceed 70% of the total assessment.

**Credit points:** 6  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2

**PCN705 RESEARCH METHODOLOGY**
This unit is a guided program of literature surveys to provide the background information for the research project. This unit enables students to develop verbal and oral communication skills required for the successful conduct of a research project. Students develop an advanced understanding of a topic in the natural resource sciences that is highly relevant to the general area of their proposed research project. The structure and content is variable and can be tailored to the specific requirement of each project and the background of the student. A formal outline of the unit including objectives, content and assessment relevant to the individual course of study will be developed by the supervisor and approved by the Head of School. Content may include active participation in tutorials, workshops, laboratory/field techniques and components of advanced level undergraduate units. If components of advanced level undergraduate units are included, they should not exceed 70% of the total assessment.

**Credit points:** 6  **Campus:** Gardens Point  **Teaching period:** 2010 SEM-1 and 2010 SEM-2
a chemical research project. During the course students will be required to attend and participate in seminars. Students must present two seminars on their own research. (12 credit points achieved at completion of PCN705-1 and PCN705-2.)

**Credit points: 6**  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

PCN710 CHEMICAL INSTRUMENTATION  
This unit presents chemical instrumentation and electronics required for advanced level operation of scientific instrumentation.

**Credit points: 12**  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

PCN715 ADVANCED TOPICS IN PHYSICS 1  
This unit provides a focused theoretical foundation for each students research program or other advanced topics in physics and develops a high level of theoretical understanding of the physical principles involved.

**Credit points: 12**  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

PCN716 ADVANCED TOPICS IN PHYSICS 2  
This unit provides a focused theoretical foundation for each students research program or other advanced topics in physics and develops a high level of theoretical understanding of the physical principles involved.

**Credit points: 12**  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

PCN720 CHEMOMETRICS  
This unit includes the following: the concepts of chemical data acquisition and interpretation; computational methods and existing software packages for statistical analysis in chemistry; statistical methods in quality and process control; sampling procedures; multivariate analysis and optimisation techniques.

**Credit points: 12**  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1

PCN730 ADVANCED PHYSICAL METHODS IN CHEMISTRY  
This unit includes the theoretical and practical principles of selected physical methods in chemistry.

**Credit points: 12**  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

PCN740 LABORATORY TECHNIQUES FOR PREPARATIVE CHEMISTRY  
This unit includes the experimental techniques for the preparation and isolation of pure substances.

**Credit points: 12**  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2