Overview

**Important:** prior to 2016 this program was known as 3992 Bachelor of Medicinal Chemistry. Students must follow the Handbook of the year they commenced their program, so continuing students should refer to the past edition Handbook here.

The Bachelor of Medicinal Chemistry (Honours) is a professionally oriented, truly interdisciplinary program taught as a joint initiative between the Schools of Chemistry and Biotechnology & Biomolecular Sciences (Faculty of Science), and the Pharmacology section of the School of Medical Sciences (Faculty of Medicine).

Medicinal Chemistry is an exciting, rapidly-expanding area within the broad discipline of Chemistry that has seen enormous growth recently both within Australia and globally. It is, quite simply, the development of new pharmaceutical agents, from Concept to Clinic. Many different stages are involved; from the design and synthesis of novel drug candidates, to their biochemical effects, testing regimes and regulatory and ethical considerations. The Medicinal Chemistry (Honours) program had been designed to ensure that graduates will have a strong background in contemporary biology, biochemistry and pharmacology, based upon a solid foundation of essential chemistry.

Graduates from the Medicinal Chemistry (Honours) program will be equipped with a unique and wide harmony of skills, ranging from fundamental chemistry enabling the synthesis and analysis of drug candidates, through to relevant pharmacology and molecular biology skills. This combination will see graduates in high demand both locally and globally in pharmaceutical companies involved in modern drug design. In addition, the multidisciplinary nature of the program will mean that graduates will also be highly marketable within other science-based industries and related fields. The research focus in the Honours year, which provides projects that emphasise the interdisciplinary and collaborative nature of the area, will also enable students to progress seamlessly into a higher degree if they wish.
Graduates will obtain a broad education across a range of relevant scientific areas, as well as a strong grounding in advanced biological and chemical techniques. There will be particular emphasis on the medical sciences. The first year of the program will provide solid foundation knowledge in some fundamental areas of science, chemistry, mathematics, and biology- as well as specific graduate attributes courses. Year two and three will focus on chemistry, pharmacology, and biochemistry, with a number of recommended electives to broaden a student's knowledge in relevant fields (physiology, anatomy, genetics). The fourth (Honours) year provides a substantial research experience.
<table>
<thead>
<tr>
<th><strong>Faculty</strong></th>
<th>Faculty of Science</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Campus</strong></td>
<td>Kensington</td>
</tr>
<tr>
<td><strong>Study Level</strong></td>
<td>Undergraduate</td>
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<td><strong>Typical duration</strong></td>
<td>4 Years</td>
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<td><strong>Delivery Mode</strong></td>
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<td><strong>Intake Period</strong></td>
<td>Term 1</td>
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<td><strong>Academic Calendar</strong></td>
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<td><strong>Minimum Units of Credit</strong></td>
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<td><strong>Award(s)</strong></td>
<td>Bachelor of Medicinal Chemistry (Honours) - BMedChem(Hons)</td>
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<tr>
<td><strong>UAC Code</strong></td>
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<td><strong>CRICOS Code</strong></td>
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Learning Outcomes

1. demonstrate a capacity for critical thinking, initiative and judgement in the development and realization of the research project
   
   Leaders  Scholars  Professionals

2. demonstrate a coherent and advanced knowledge of the essential principles of the core discipline area or areas;
   
   Global Citizens  Scholars

3. Understand discipline-specific techniques and a capacity to apply the techniques to the solution of problems;
   
   Scholars  Global Citizens

4. demonstrate project management skills, including an ability to approach problem-solving independently and from different perspectives;
   
   Professionals  Scholars

5. demonstrate competence in information literacy;
   
   Scholars

6. collect, review, analyse and adapt knowledge and skills in diverse contexts, with an overall aim of producing solutions to identified problems;
   
   Global Citizens  Scholars  Leaders  Professionals

7. demonstrate effective spoken and written communication skills to present a clear and coherent account of knowledge and ideas to a variety of audiences;
   
   Scholars

8. Apply the discipline in a socially responsible and ethical manner;
   
   Professionals  Global Citizens

9. Understand the discipline in an international context
   
   Global Citizens

10. identify a problem and construct and execute a research project in a way that demonstrates knowledge and understanding of both concepts and techniques in research and design;
    
    Scholars  Global Citizens

Graduate Capabilities:

For more information on Graduate Capabilities, please click on this link.
Program Structure

Students must complete 192 UOC as a standalone program.

Students in the Medicinal Chemistry (Honours) program are expected to complete **192 UOC** of courses.

**168 UOC Medicinal Chemistry courses**
- 108 UOC of core courses in Stages 1, 2 and 3
- 12 UOC of electives from the List of Approved Electives defined below
- 48 UOC Honours year

**12 UOC Free Electives.** These courses can be taken from any Faculty of the University at any stage of your program.

**12 UOC General Education courses.** Please see the rules regarding General Education below. These courses can be taken at any stage in your program.

Please click the Sample Programs link below to view a typical enrolment pattern for this program.

**Level 1 Core Courses**

Students must take 42 UOC of the following courses.

**BABS1201 | 6 UOC**
Molecules, Cells and Genes

**BABS1202 | 6 UOC**
Applied Biomolecular Sciences

**CHEM1051 | 6 UOC**
Higher Chemistry 1A (Medicinal): Atoms, Molecules and Energy

**CHEM1061 | 6 UOC**
Higher Chemistry 1B (Medicinal): Elements, Compounds and Life

**CHEM1151 | 6 UOC**
Introductory Medicinal Chemistry
MATH1031 | 6 UOC  
Mathematics for Life Sciences

MATH1041 | 6 UOC  
Statistics for Life and Social Sciences

**Level 2 Core Courses**

Students must take 36 UOC of the following courses.

BIOC2101 | 6 UOC  
Principles of Biochemistry (Advanced)

BIOC2201 | 6 UOC  
Principles of Molecular Biology (Advanced)

CHEM2011 | 6 UOC  
Physical Chemistry: Molecules, Energy and Change

CHEM2021 | 6 UOC  
Organic Chemistry: Mechanisms and Biomolecules

CHEM2041 | 6 UOC  
Analytical Chemistry: Essential Methods

PHAR2011 | 6 UOC  
Introductory Pharmacology and Toxicology

**Level 3 Core Courses**

Students must take 30 UOC of the following courses.

CHEM3021 | 6 UOC  
Organic Chemistry: Modern Synthetic Strategies

CHEM3051 | 6 UOC  
Medicinal Organic Chemistry
CHEM6041 | 6 UOC
Advanced Instrumental Analysis

PHAR3101 | 6 UOC
Drug Discovery, Design and Development

PHAR3102 | 6 UOC
Molecular Pharmacology

**Level 4 Honours Coursework**

Students must take 12 UOC of the following courses.

CHEM4501 | 6 UOC
Chemistry Project Proposal and Research Skills

CHEM4503 | 6 UOC
Medicinal Chemistry Honours Coursework

**Level 4 Honours Project**

Students must take 36 UOC of the following courses.

CHEM4506 | 6 UOC
Chemistry Honours Project

CHEM4512 | 12 UOC
Chemistry Honours Project

CHEM4518 | 18 UOC
Chemistry Honours Project 18 UOC

**Free Electives**

Students must take at least 12 UOC of the following courses.

any course
General Education

Students must take 12 UOC of the following courses.

Any course defined as a Science course cannot be taken as General Education (GE). All other courses can be used to fulfil the GE requirement of this program, including GEN# coded courses. Any exceptions to these rules must be approved by the Associate Dean (Academic Programs) or nominee.

any General Education course

Course Information Rule

GEN# courses cannot count towards the free elective component, or towards science core courses or science electives in the program. Any exceptions to these rules must be approved by the Associate Dean (Academic Programs) or nominee.

Excluded General Education Courses

Students may not undertake any of the following excluded courses.

any Computer Science course

any Food Technology course

any course offered by School of Medical Sciences

any course offered by Faculty of Science

any General Education - Faculty of Science course

Medicinal Chemistry Electives

Students must take at least 12 UOC of the following courses.

BABS2204 6 UOC
Genetics

BABS3021 6 UOC
Microbial Genetics
<table>
<thead>
<tr>
<th>Code</th>
<th>UOC</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BABS3041</td>
<td>6</td>
<td>Immunology</td>
</tr>
<tr>
<td>BABS3071</td>
<td>6</td>
<td>Commercial Biotechnology</td>
</tr>
<tr>
<td>BABS3081</td>
<td>6</td>
<td>Bacteria and Disease</td>
</tr>
<tr>
<td>BABS3121</td>
<td>6</td>
<td>Molecular Biology of Nucleic Acids</td>
</tr>
<tr>
<td>BABS3281</td>
<td>6</td>
<td>Molecular Frontiers</td>
</tr>
<tr>
<td>BINF2010</td>
<td>6</td>
<td>Introduction to Bioinformatics</td>
</tr>
<tr>
<td>BIOC3111</td>
<td>6</td>
<td>Molecular Biology of Proteins</td>
</tr>
<tr>
<td>BIOC3261</td>
<td>6</td>
<td>Human Biochemistry</td>
</tr>
<tr>
<td>BIOC3271</td>
<td>6</td>
<td>Molecular Cell Biology 2</td>
</tr>
<tr>
<td>CHEM2031</td>
<td>6</td>
<td>Inorganic Chemistry: The Elements</td>
</tr>
<tr>
<td>CHEM3031</td>
<td>6</td>
<td>Inorganic Chemistry: Transition Metals and Complexes</td>
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<tr>
<td>CHEM3998</td>
<td>6</td>
<td>Advanced Special Project in Chemistry</td>
</tr>
<tr>
<td>Course Code</td>
<td>UOC</td>
<td>Course Name</td>
</tr>
<tr>
<td>-------------</td>
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</tr>
<tr>
<td>CHEM6701</td>
<td>6</td>
<td>Topics in Contemporary Chemistry A</td>
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<tr>
<td>CHEM6702</td>
<td>6</td>
<td>Topics in Contemporary Chemistry B</td>
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<td>MICR2011</td>
<td>6</td>
<td>Microbiology 1</td>
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<tr>
<td>PHAR3202</td>
<td>6</td>
<td>Neuropharmacology</td>
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<tr>
<td>PHAR3251</td>
<td>6</td>
<td>Clinical and Experimental Pharmacology</td>
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<tr>
<td>PHSL2101</td>
<td>6</td>
<td>Physiology 1A</td>
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<tr>
<td>PHSL2201</td>
<td>6</td>
<td>Physiology 1B</td>
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<tr>
<td>PHYS1111</td>
<td>6</td>
<td>Fundamentals of Physics</td>
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<tr>
<td>PHYS1121</td>
<td>6</td>
<td>Physics 1A</td>
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<tr>
<td>PHYS1131</td>
<td>6</td>
<td>Higher Physics 1A</td>
</tr>
<tr>
<td>SCIF2199</td>
<td>6</td>
<td>Science Work Placement</td>
</tr>
</tbody>
</table>

**Maximum Level 1 UOC**
Students may only undertake a maximum of 60 UOC of the following courses.

Any level 1 course

**Level 2 Maturity Requirements**

Students must have completed 30 UOC before taking any of the following courses.

Any level 2 course

**Level 3 Maturity Requirements**

Students must have completed 72 UOC before taking any of the following courses.

Any level 3 course

**Level 4 Maturity Requirement**

Students must have completed 144 UOC before taking any of the following courses.

- **CHEM4501 | 6 UOC**
  Chemistry Project Proposal and Research Skills

- **CHEM4503 | 6 UOC**
  Medicinal Chemistry Honours Coursework

- **CHEM4512 | 12 UOC**
  Chemistry Honours Project

- **CHEM4524 | 24 UOC**
  Chemistry Honours Project 24 UOC

**Enrolment Disclaimer**

Unless advised otherwise by your program authority, you should follow the rules for the handbook for the year you commenced your program. You are also responsible for ensuring you enrol in courses according to your program requirements. myUNSW enrolment checks that you have met enrolment requirements such as pre-requisites for individual courses but not that a course will count towards your program requirements.
Related Programs

Related Double Degree Programs

Bachelor of Medicinal Chemistry (Honours) - BMedChem(Hons)
Bachelor of Laws - LLB

4755 Medicinal Chemistry (Honours) / Law

Faculty: Faculty of Law, Faculty of Science
Campus: Kensington
Units of Credit: 312
Typical Duration: 6.7 Years

Read More

Related Programs

Bachelor of Science - BSc

3970 Science

Faculty: Faculty of Science
Campus: Kensington
Units of Credit: 144
Typical Duration: 3 Years

Read More
Program Requirements

Recognition of Prior Learning

UNSW Students may be granted Recognition for Prior Learning (RPL) which may or may not reduce the amount of learning required to achieve a degree at UNSW. Generally, RPL is only granted based on the completion of tertiary-level studies, but in exceptional circumstances may also include non-formal or informal learning such as professional experience. RPL will not be granted based on partly completed tertiary courses. All applications for RPL at UNSW are subject to UNSW Recognition of Prior Learning (Coursework Programs) Policy and Procedures. Students seeking credit for courses completed at another university are required to submit documentary evidence (course outlines, academic transcripts) to support their application, and to nominate the course(s) for which they seek credit. In addition, the following conditions apply for all UNSW Science programs (including the Science component of dual award programs): Specified course credit, i.e. credit granted for an exact or near exact equivalence to a course at UNSW, will not be granted when more than 7 years has elapsed from the successful completion of the course (or other learning) and the student’s commencement in the Science program. Where this time period is shorter it will be stipulated in the individual rules for the relevant program. Unspecified course credit (e.g. General Education or free electives) will not be granted when more than 10 years has elapsed from the successful completion of the course (or other learning) and the student’s commencement in the Science program. Students may only receive credit of up to a maximum of 50% of the coursework component of their Science program, excluding Honours. For most undergraduate programs this will be 72 UOC. For dual award programs that include a Science component, it will be a maximum of 50% of the Science component of the dual degree, excluding Honours. Credit for the other program will be assessed by the Faculty that administers that program. Applications for RPL will only be assessed for students who have accepted a place to study in a UNSW Science program. Students must formally apply for RPL unless they become a UNSW student as part of a formal Articulation Agreement. Applications for RPL should be made as early as possible in the student’s program. Students who are readmitted into a Science program after a period of unapproved absence or deferment, or after exclusion, will not necessarily retain credit for all units completed at UNSW prior to the absence if the date of completion of the units of study is greater than the 7 and 10-year rules outlined in points 1 and 2 above. In these cases, the credit retained will be decided by the Associate Dean (Academic Programs) in consultation (when necessary) with the Program and/or Course Authority.
Progression Requirements

Progression to Stages 3 & 4 is subject to academic performance. Students will be required to maintain a Weighted Average Mark (WAM) of at least 65% for progression to Stage 3, and to Stage 4. Students who do not meet the requirement to enter Stage 4 will be transferred to program 3970 (Bachelor of Science) and will, on successful completion of the first three stages of program 3999, graduate with the degree of Bachelor of Science (program 3970). Students who transfer to program 3970 before successfully completing all requirements of stage 1 to 3 of program 3999 will be required to complete an approved major in 3970 as specified in the Handbook.

Students must complete a 48 UOC Honours sequence at Stage 4. Progression to stage 4 is subject to academic performance, and requires completion of a total of 144UOC and all the requirements of the first three years of the program, including level I, core and elective courses, and General Education requirements. Students are expected to have attained an overall WAM of 65 or higher to be eligible to continue to Honours. Students who are ineligible to progress to Honours will be required to transfer to the Bachelor of Science program (3970) and graduate with the Bachelor of Science award at pass level. Students enrolled in the Bachelor of Medicinal Chemistry (Honours) program who wish to take out the Bachelor of Science award at pass level without proceeding to Honours, are required to transfer to the 3970 Bachelor of Science. Applications to transfer should be lodged with the Science Student Centre no later than the census date for the term in which the student expects to satisfy requirements. Students applying after that date may not be able to graduate in the next round of ceremonies.

For more information on university policy on progression requirements please visit Academic Progression.
Professional Outcomes

Accreditations

Professional institutes that offer accreditation on completion of this program:

- Royal Australian Chemical Institute

Career Opportunities

Working with pharmaceutical and biotechnology companies involved in modern drug design, research-intensive institutes, government departments and private business and, with further training, areas such as education and patent law.
Recognition of Achievement

University Medal

The University Medal is awarded to recognise outstanding academic performance by a bachelor degree student in line with the University Medal Policy and University Medal Procedure.

Honours Classes

Honours Grades are awarded as follows:-

- Honours Class 1: mark or weighted average of 85 or greater;
- Honours Class 2 Division 1: mark or weighted average from 75 to 84;
- Honours Class 2 Division 2: mark or weighted average from 65 to 74;
- Honours Class 3: mark or weighted average below 65;

A student's Honours Grading is calculated only on their performance in the final year of the program. The final honours grading is calculated as follows:-

- CHEM4503 Coursework - 12.5%;
- CHEM4501 Research proposal & Introductory seminar- 12.5%;
- Research project - 70%

The research project is assessed by a thesis (60%), oral examination (25%), and final seminar (15%).
Additional Information

University Medal

Nominees for the University Medal will be determined by Schools within the Faculty of Science in accordance with UNSW University Medal policies and procedures. The top student in any year may be eligible for nomination for a University medal however additional criteria will also need to be met, such as Honours result > 95%, and WAM in Stages 1 to 3 of over 80%.

Definition of 'Science' courses

Table 1

Science Handbook Rules and Editions

Students must follow the program rules and requirements in the UNSW Handbook published in the year they commence their studies with the Faculty of Science.

Students who transfer from another UNSW Faculty into Science (for example, from a Bachelor of Arts into a Bachelor of Science) must follow the program rules and requirements in the UNSW Handbook published in the year of their transfer.

Students, who are readmitted to UNSW after a period of unapproved absence or deferment, or after exclusion, must satisfy the program rules in the Handbook published in the year of their readmission. In addition, these students may be subject to restrictions on which courses taken at UNSW may be counted on their return. In some cases, students returning from an unapproved absence may be required to repeat courses. See the Recognition of Prior Learning (RPL) and Advanced Standing section below for more details. Students who take approved leave or deferment will follow the Handbook for the year of their original commencement unless otherwise approved by the Associate Dean (Academic Programs).
Program Fees

At UNSW fees are generally charged at course level and therefore dependent upon individual enrolment and other factors such as student's residency status. For generic information on fees and additional expenses of UNSW programs, click on one of the following:

- Domestic Students
- Commonwealth Supported Students
- International Students

**Additional Expenses**

No change to current program
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)
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Authorised by Deputy Vice-Chancellor (Academic)
CRICOS Provider Code 00098G
ABN: 57 195 873 179