

BCMB20002 Biochemistry and Molecular Biology

Credit Points:	12.5															
Level:	2 (Undergraduate)															
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus. Semester 2, Parkville - Taught on campus.															
Time Commitment:	Contact Hours: three x 1 hour lecture, and one x 1 hour tutorial per week Total Time Commitment: 48 contact hours with an estimated total time commitment of 170 hours															
Prerequisites:	<p>One of:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM10003 Chemistry 1</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> <tr> <td>CHEM10007 Fundamentals of Chemistry</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>OR 610-121 Chemistry A OR 610-141 Chemistry A</p> <p>AND One of:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>CHEM10004 Chemistry 2</td> <td>Summer Term, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>OR 610-122 Chemistry B OR 610-142 Chemistry B</p> <p>Candidates who have taken chemistry subjects at other universities may be accepted for BCMB20002 if their studies are equivalent to a full first year of chemistry with basic organic chemistry well covered. Contact the coordinator to ask for a waiver of the prerequisites (include previous chemistry subject details, the institution, the year(s) of study and the grades achieved).</p>	Subject	Study Period Commencement:	Credit Points:	CHEM10003 Chemistry 1	Semester 1, Semester 2	12.50	CHEM10007 Fundamentals of Chemistry	Semester 1	12.50	Subject	Study Period Commencement:	Credit Points:	CHEM10004 Chemistry 2	Summer Term, Semester 2	12.50
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Corequisites:	None															
Recommended Background Knowledge:	<p>Level 1 Biology is strongly recommended. A biomedical or biological practical subject such as</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BCMB20005 Techniques in Molecular Science</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>or equivalent is strongly recommended.</p>	Subject	Study Period Commencement:	Credit Points:	BCMB20005 Techniques in Molecular Science	Semester 1, Semester 2	12.50									
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BCMB20005 Techniques in Molecular Science	Semester 1, Semester 2	12.50														
Non Allowed Subjects:	<p>Disallowed subject combinations: Students cannot enrol in and gain credit for BCMB20002 Biochemistry and Molecular Biology if previously obtained credit for both pre-2009 subjects 521-211 Biochemistry and Molecular Biology Part A and 521-212 Biochemistry and Molecular Biology Part B. Students who completed the pre-2009 subject 521-211 Biochemistry and Molecular Biology Part A without</p>															

	<p>521-212 Biochemistry and Molecular Biology Part B may enrol in BCMB20002 Biochemistry and Molecular Biology.</p> <p>Bachelor of Biomedicine students taking</p> <table border="1" data-bbox="387 282 1485 427"> <thead> <tr> <th data-bbox="387 282 1074 367">Subject</th> <th data-bbox="1074 282 1347 367">Study Period Commencement:</th> <th data-bbox="1347 282 1485 367">Credit Points:</th> </tr> </thead> <tbody> <tr> <td data-bbox="387 367 1074 427">BIOM20001 Molecular and Cellular Biomedicine</td> <td data-bbox="1074 367 1347 427">Semester 1</td> <td data-bbox="1347 367 1485 427">25</td> </tr> </tbody> </table> <p>are excluded from this subject.</p>	Subject	Study Period Commencement:	Credit Points:	BIOM20001 Molecular and Cellular Biomedicine	Semester 1	25
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<p>Core Participation Requirements:</p>	<p><p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.</p> <p>It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability</p></p>						
<p>Coordinator:</p>	<p>Dr Terry Mulhern</p>						
<p>Contact:</p>	<p>Subject Coordinator Dr Terry Mulhern tmulhern@unimelb.edu.au (mailto:tmulhern@unimelb.edu.au) Administrative Coordinator Mrs Irene Koumanelis i.koumanelis@unimelb.edu.au (mailto:i.koumanelis@unimelb.edu.au)</p>						
<p>Subject Overview:</p>	<p>This subject is an introduction to the core of biochemistry, building on chemical principles and relating structure to function. The subject is an approved biochemistry prerequisite for entry to graduate medicine (and kindred vocational study) at the University of Melbourne. The molecular basis of life as discussed in this subject is essential for the understanding of any biological system and is at the core of all degrees in life science that use molecular techniques. The content includes an introduction to the molecular architecture of cells and the structure of biological building blocks (amino acids, nucleic acids, carbohydrates, lipids). The coverage includes the structure and function of proteins, including the properties of enzymes, their regulation and kinetic behavior. How nucleic acids replicate information and serve as a template for the synthesis of RNAs and proteins (i.e. molecular biology). The structure of lipids is examined to show their major biological roles, particularly as components of cell membranes. Metabolic pathways (glycolysis, gluconeogenesis, glycogen metabolism, TCA cycle and oxidative phosphorylation) will complete this core coverage of essential biochemistry. The subject is designed to complement the laboratory experiences in the subject BCMB20005.</p>						
<p>Learning Outcomes:</p>	<p>By the end of the subject the student should understand:</p> <ul style="list-style-type: none"> # the structure and composition of a cell as the basic unit of life, including the concept of cell signalling as a means of transmitting information within a cell; # the molecular basis for information storage and transmission from DNA to protein, including a basic understanding of genomics; # the chemical nature of amino acids and their role in determining the folding and functions of proteins; # the chemistry and structure of lipids and carbohydrates as components of cell membranes; # the complete breakdown of glucose (glycolysis, TCA cycle and oxidative phosphorylation) as an example of the complexity of cellular metabolism which provides the macromolecules and the energy needed for cells to carry out their functions. 						

Assessment:	Computer-based continuous assessment exercises during semester - 10% 2 x intra-semester tests during semester (10% each) - 20% 3 hour examination during the exam period - 70%
Prescribed Texts:	Nelson and Cox, Lehninger Principles of Biochemistry, 6th edn., 2013.
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2015/B-ARTS) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2015/B-COM) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2015/B-ENVS) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2015/B-MUS) <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On completion of this subject, students should have developed the following generic skills:</p> <ul style="list-style-type: none"> # think critically and organise and expand knowledge from consideration of the lecture material; # learn to adopt new ideas from participation in the lecture and tutorial programs; and # plan effective work schedules and grow more confident in the synthesis of knowledge.
Notes:	<p>This subject is available for science credit to students enrolled in the BSc (both pre-2008 and New Generation degrees).</p> <p>This subject is not available to students enrolled in the Bachelor of Biomedicine.</p> <p>Students undertaking this subject will be expected to regularly access an internet-enabled computer.</p>
Related Majors/Minors/Specialisations:	<p>Animal Health and Disease Botany Botany Science-credited subjects - new generation B-SCI and B-ENG. Zoology Zoology</p>