

# BCMB30010 Advanced Techniques in Molecular Science

<b>Credit Points:</b>	12.50																								
<b>Level:</b>	3 (Undergraduate)																								
<b>Dates &amp; Locations:</b>	This subject is not offered in 2013. An enrolment quota of 90 students (30 students per practical class) per semester applies to this subject. For detailed information on the quota subject application process, refer to the Quota Subject link (under Advice and Support) on the MDHS Student Centre website: <a href="http://sc.mdhs.unimelb.edu.au/">http://sc.mdhs.unimelb.edu.au/</a>																								
<b>Time Commitment:</b>	Contact Hours: one x 1 hour lecture, one x 1 hour tutorial and one x 5 hour practical class per week. Total Time Commitment: 84 contact hours with an estimated total time commitment of 156 hours.																								
<b>Prerequisites:</b>	<p><b>BSc students</b>            Before 2009:  <b>Biochemistry &amp; Molecular Biology Part A (521-211)</b>  <b>Biochemistry &amp; Molecular Biology Part B (521-212)</b>  <b>Techniques in Molecular Science (521-220)</b>            OR  <b>Techniques in Protein and Gene Technology (521-220)</b></p> <p>2009 and subsequently:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BCMB20002 Biochemistry and Molecular Biology</td> <td>Not offered 2013</td> <td>12.50</td> </tr> <tr> <td>BCMB20005 Techniques in Molecular Science</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>Note that the pre-2009 subject "Biochemistry &amp; Molecular Biology Part A" and the 2009 subject "BCMB20002 Biochemistry &amp; Molecular Biology" are not identical despite sharing a similar subject title.</p> <p>Only the subject</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BCMB20002 Biochemistry and Molecular Biology</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p>offered in 2009 and beyond acts as a prerequisite (replacing both the pre-2009 Biochemistry and Molecular Biology Part A and Biochemistry and Molecular Biology Part B).</p> <p><b>BBiomedicine students</b></p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BIOM20001 Molecular and Cellular Biomedicine</td> <td>Not offered 2013</td> <td>25</td> </tr> <tr> <td>BCMB20005 Techniques in Molecular Science</td> <td>Not offered 2013</td> <td>12.50</td> </tr> </tbody> </table> <p><b>BBiomedSc students</b>  <b>521-213 Integrated Biomedical Science I</b>  <b>536-250 Integrated Biomedical Science II</b></p> <p>Other combinations of subjects that provide a similar background may be considered by the coordinator.</p>	Subject	Study Period Commencement:	Credit Points:	BCMB20002 Biochemistry and Molecular Biology	Not offered 2013	12.50	BCMB20005 Techniques in Molecular Science	Not offered 2013	12.50	Subject	Study Period Commencement:	Credit Points:	BCMB20002 Biochemistry and Molecular Biology	Not offered 2013	12.50	Subject	Study Period Commencement:	Credit Points:	BIOM20001 Molecular and Cellular Biomedicine	Not offered 2013	25	BCMB20005 Techniques in Molecular Science	Not offered 2013	12.50
Subject	Study Period Commencement:	Credit Points:																							
BCMB20002 Biochemistry and Molecular Biology	Not offered 2013	12.50																							
BCMB20005 Techniques in Molecular Science	Not offered 2013	12.50																							
Subject	Study Period Commencement:	Credit Points:																							
BCMB20002 Biochemistry and Molecular Biology	Not offered 2013	12.50																							
Subject	Study Period Commencement:	Credit Points:																							
BIOM20001 Molecular and Cellular Biomedicine	Not offered 2013	25																							
BCMB20005 Techniques in Molecular Science	Not offered 2013	12.50																							
<b>Corequisites:</b>	None																								

<b>Recommended Background Knowledge:</b>	<p>BSc students BCMB20003 Biochemical Regulation of Cell Function is recommended. BBiomedicine Students BCMB20003 Biochemical Regulation of Cell Function is strongly recommended.</p> <table border="1" data-bbox="387 315 1485 461"> <thead> <tr> <th data-bbox="387 315 1074 398">Subject</th> <th data-bbox="1074 315 1347 398">Study Period Commencement:</th> <th data-bbox="1347 315 1485 398">Credit Points:</th> </tr> </thead> <tbody> <tr> <td data-bbox="387 398 1074 461">BCMB20003 Biochemical Regulation of Cell Function</td> <td data-bbox="1074 398 1347 461">Not offered 2013</td> <td data-bbox="1347 398 1485 461">12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	BCMB20003 Biochemical Regulation of Cell Function	Not offered 2013	12.50
Subject	Study Period Commencement:	Credit Points:					
BCMB20003 Biochemical Regulation of Cell Function	Not offered 2013	12.50					
<b>Non Allowed Subjects:</b>	<p>Students cannot enrol in and gain credit for this subject if credit was obtained for pre-2009 subjects <b>Gene Technology &amp; Protein Expression (521-321)</b> or <b>Protein Biochemistry &amp; Proteomics (521-322)</b>.</p>						
<b>Core Participation Requirements:</b>	<p>It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. This subject requires all students to actively and safely participate in laboratory activities. Students who feel their disability may impact upon their participation are encouraged to discuss this with the subject coordinator and the Disability Liaison Unit: <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a></p>						
<b>Contact:</b>	<p>Academic Coordinators Dr Leon Helfenbaum <a href="mailto:leonh@unimelb.edu.au">leonh@unimelb.edu.au</a> (<a href="mailto:leonh@unimelb.edu.au">mailto:leonh@unimelb.edu.au</a>) Administrative Coordinator Ms Irene Koumanelis <a href="mailto:i.koumanelis@unimelb.edu.au">i.koumanelis@unimelb.edu.au</a> (<a href="mailto:i.koumanelis@unimelb.edu.au">mailto:i.koumanelis@unimelb.edu.au</a>)</p>						
<b>Subject Overview:</b>	<p>To participate in the rapidly expanding fields of genome research and protein structure-function analysis it is necessary to have an understanding of the techniques used in these areas.</p> <p>This course provides practical training in the technologies of molecular biology and protein expression and in the analysis of data derived from these techniques.</p> <p>Areas covered include the use of recombinant DNA for the investigation of gene function and the use of bacterial expression systems for the production and analysis of recombinant proteins.</p> <p>Specific experiments will deal with DNA cloning and sequencing, bioinformatics, enzyme expression and the analysis and identification of proteins using mass spectrometry.</p> <p>Students will learn how to maintain a laboratory notebook to record their experiments and how to compose a scientific report.</p> <p>In addition, students will develop an appreciation for the current scientific literature and collaborate in student presentations.</p> <p>The experimental work is supported by a lecture series providing an overview of technologies used in class and in research.</p>						
<b>Objectives:</b>	<ul style="list-style-type: none"> <li># to provide practical experience in a variety of techniques used in biochemistry and molecular biology.</li> <li># to give instruction in the correct methods for keeping scientific records and writing scientific reports.</li> <li># to provide experience in simple experimental design and problem solving.</li> <li># to extend students' knowledge of the use of bioinformatics in the analysis of DNA and protein sequence data and in data derived by mass spectrometry.</li> <li># to assist students in the evaluation of scientific literature and to develop skills in the presentation of scientific data in oral and written formats.</li> </ul>						
<b>Assessment:</b>	<p>Ongoing assessment of laboratory skills throughout the semester (55%) divided between: practical management of the experimental program, maintenance of a laboratory notebook including short summaries and reports of practical results and a written research report</p>						

	submitted mid-semester Group presentation of a scientific paper (15%) 2 Database Tutorials (5%) 2-hour written examination in the examination period at the end of semester (25%) Attendance is compulsory. Students who miss more than 20% of the practical classes will not be eligible for final assessment.
<b>Prescribed Texts:</b>	None
<b>Recommended Texts:</b>	Keith Wilson and John Walker, Principles and Techniques of Biochemistry and Molecular Biology (2005, 6th Ed) Cambridge University Press
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>On completion of this subject, students should have developed the following generic skills:</p> <ul style="list-style-type: none"> <li># Hands-on experience in a variety of techniques, generating results for analysis.</li> <li># Design and execution of simple experiments.</li> <li># Analysis of experimental data using spreadsheets and bioinformatics resources.</li> <li># The ability to keep complete and accurate records of experimental results and to use these records to prepare a scientific report.</li> <li># Evaluation and presentation of scientific literature to an audience.</li> <li># The ability to interpret scientific literature and interpret data from electronic databases.</li> <li># The capacity to integrate knowledge across disciplines.</li> <li># The ability to comprehend a question, evaluate the relevant information and communicate an answer.</li> </ul>
<b>Notes:</b>	<p>This subject is available for science credit to students enrolled in the BSc and in BBiomed. Students must enrol for one of the available laboratory days via the student portal before the start of the semester.</p> <p>Be aware that each day may have limited places and in general allocations to practical classes will be made on a first come-first served basis.</p> <p>Students undertaking this subject will be expected to have regular access to an internet-enabled computer.</p>
<b>Related Majors/Minors/ Specialisations:</b>	<p>Biochemistry and Molecular Biology          Biomedical Biotechnology (specialisation of Biotechnology major)          Biotechnology (pre-2008 Bachelor of Science)          Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses          Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.</p>