

BCMB30001 Protein Structure and Function

| Credit Points: | 12.50 | | | | | | | | | | | | |
|--|---|----------------|----------------------------|----------------|--|------------|-------|---------|----------------------------|----------------|--|------------|----|
| Level: | 3 (Undergraduate) | | | | | | | | | | | | |
| Dates & Locations: | 2010, Parkville This subject commences in the following study period/s: 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 120 hours (including non-contact time). | | | | | | | | | | | | |
| Prerequisites: | <p>BSc students Before 2009: Biochemistry & Molecular Biology Part A (521-211) Biochemistry & Molecular Biology Part B (521-212) 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>Semester 1</td> <td>12.50</td> </tr> </tbody> </table> <p>Note that the pre-2009 subject "Biochemistry & Molecular Biology Part A" and the 2009 subject "Biochemistry & Molecular Biology" are not identical despite having the same subject code. Only the subject "Biochemistry & Molecular Biology" offered in 2009 and subsequently acts as a stand-alone prerequisite.</p> <p>BBiomedicine students</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>Semester 1</td> <td>25</td> </tr> </tbody> </table> <p>BBiomedSc Students (521-213) Integrated Biomedical Science I AND (536-250) Integrated Biomedical Science II Other combinations that provide similar background will be considered by the coordinator.</p> | Subject | Study Period Commencement: | Credit Points: | BCMB20002 Biochemistry and Molecular Biology | Semester 1 | 12.50 | Subject | Study Period Commencement: | Credit Points: | BIOM20001 Molecular and Cellular Biomedicine | Semester 1 | 25 |
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| BCMB20002 Biochemistry and Molecular Biology | Semester 1 | 12.50 | | | | | | | | | | | |
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| BIOM20001 Molecular and Cellular Biomedicine | Semester 1 | 25 | | | | | | | | | | | |
| Corequisites: | None | | | | | | | | | | | | |
| Recommended Background Knowledge: | None | | | | | | | | | | | | |
| Non Allowed Subjects: | Students cannot enrol in and gain credit for this subject if previously obtained credit for pre-2009 subject (521-301) Protein Structure, Design and Engineering. | | | | | | | | | | | | |
| Core Participation Requirements: | For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/ | | | | | | | | | | | | |
| Coordinator: | Assoc Prof Paul Gooley | | | | | | | | | | | | |
| Contact: | prg@unimelb.edu.au (mailto:prg@unimelb.edu.au) | | | | | | | | | | | | |
| Subject Overview: | This subject will describe the wide range of structures, functions and interactions of proteins and their importance in biological processes, biomedicine and biotechnology. Emphasis will be on the three-dimensional structure of proteins and their interactions with peptides, proteins, lipids, nucleic acids and other physiologically important molecules. We will describe experimental and computational techniques and how they help in determining and predicting protein structure | | | | | | | | | | | | |

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| | and function, aid the design of new proteins and are used to develop new drugs. The subject matter addresses the general properties of protein structure; the major classes and topologies of proteins; evolution of sequence, structure and function; protein synthesis, folding, misfolding, targeting and trafficking; protein engineering for biotechnology; bioinformatics analysis of protein sequence and structure; binding of small molecules to proteins and drug design; protein-protein interactions; effects of mutations on tertiary structure, protein stability and biological functions; enzyme reaction kinetics and mechanisms. This subject is required for completion of a major in Biochemistry and Molecular Biology. |
| Objectives: | By the end of the subject the student should develop a critical appreciation of the current literature on protein structure and function. The student should understand and appreciate: <ul style="list-style-type: none"> # the impact of protein research on biomedicine and biotechnology. # the structural properties of proteins and the techniques used to study them. # the computational analysis of protein sequence and structure using bioinformatic and molecular graphic programs. # how protein engineering is used for investigating structure-function relationships. # how proteins interact with other molecules. |
| Assessment: | 3 hour written exam held in examination period (70%); Two 1 hour written examinations held during semester (7.5% x 2 = 15%); Assignment assessment of a maximum of 1,000 words and to include computer exercises of contemporary computational biology protocols (15%). |
| Prescribed Texts: | Proteins Structure and Function, David Whitford, 2007 (John Wiley and Sons Ltd ISBN-13: 978-0671-49893-0) |
| Breadth Options: | This subject is not available as a breadth subject. |
| Fees Information: | Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees |
| Generic Skills: | On completion of this subject, students should have developed the following generic skills: <ul style="list-style-type: none"> # the ability to interpret scientific literature and interpret data from electronic databases. # the capacity to integrate knowledge across disciplines. # the ability to comprehend a question, evaluate the relevant information and communicate an answer. |
| Notes: | Students enrolled in the BSc (pre-2008 BSc), BASc or a combined BSc course will receive science credit for the completion of this subject. Students undertaking this subject will be expected to regularly access an internet-enabled computer. |
| Related Course(s): | Bachelor of Science Graduate Diploma in Biotechnology |
| Related Majors/Minors/Specialisations: | Biochemistry and Molecular Biology Biochemistry and Molecular Biology Biochemistry and Molecular Biology Biomedical Biotechnology Biotechnology Biotechnology Genetics Genetics |