

## 521-301 Protein Structure and Function

<b>Credit Points:</b>	12.50
<b>Level:</b>	3 (Undergraduate)
<b>Dates &amp; Locations:</b>	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus.
<b>Time Commitment:</b>	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)
<b>Prerequisites:</b>	<b>BSc students</b> 521-211 Biochemistry & molecular Biology Part A 521-212 Biochemistry & molecular Biology Part B <b>BBiomedSc students</b> 521-213 Integrated Biomedical Science I 536-250 Integrated Biomedical Science II
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	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
<b>Core Participation Requirements:</b>	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. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
<b>Coordinator:</b>	Assoc Prof Paul Gooley
<b>Subject Overview:</b>	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 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.
<b>Objectives:</b>	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"> <li># the impact of protein research on biomedicine and biotechnology</li> <li># the structural properties of proteins and the techniques used to study them</li> <li># the computational analysis of protein sequence and structure using bioinformatic and molecular graphic programs</li> <li># how protein engineering is used for investigating structure-function relationships</li> <li># how proteins interact with other molecules</li> </ul>

<b>Assessment:</b>	3 hour written exam held in examination period (70%), two 1 hour written examinations held during semester (7.5% x2 = 15%), Assignment assessment of a maximum of 1,000 words and to include computer exercises of contemporary computational biology protocols (15%)
<b>Prescribed Texts:</b>	Proteins Structure and Function, David Whitford, 2007 (John Wiley and Sons Ltd ISBN-13: 978-0671-49893-0)
<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>	On completion of this subject, students should have developed the following generic skills: <ul style="list-style-type: none"> <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>	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
<b>Related Course(s):</b>	Bachelor of Biomedical Science Graduate Diploma in Biotechnology
<b>Related Majors/Minors/ Specialisations:</b>	Biochemistry and Molecular Biology Biotechnology