

521-211 Biochemistry and Molecular Biology

Credit Points:	12.50
Level:	2 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - 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
Prerequisites:	Chemistry 1 Chemistry 2 OR Chemistry for Biomedicine Other combinations of subjects that provide a similar background may be considered by the coordinator.
Corequisites:	None
Recommended Background Knowledge:	Level 1 Biology is strongly recommended Enrolment in a level 2 biological practical subject such as <i>Techniques in Molecular Science</i> or equivalent is strongly recommended
Non Allowed Subjects:	Disallowed subject combinations: Students cannot enrol in and gain credit for 521-211 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 521-212 Biochemistry and Molecular Biology Part B may enrol in 521-211 Biochemistry and Molecular Biology. Bachelor of Biomedicine students taking 526-222 Molecular and cellular Biomedicine are excluded from this subject.
Core Participation Requirements:	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.
Coordinator:	Dr Irene Stanley
Subject Overview:	In this subject, the molecular basis of life systems is investigated by considering the chemistry of biological macromolecules and the metabolic pathways involved in basic life processes. This information is essential for the understanding of any biological system. Subject content includes an introduction to the molecular architecture of cells, cell signalling, the structure of biological building blocks (nucleic acids, amino acids, carbohydrates, lipids) and their various roles in the life of a cell. The ability of nucleic acids to replicate information, including an introduction to genomics, and to serve as a template for the synthesis of RNAs and proteins will be scrutinized. The structure and function of proteins is described and particular attention is given to the properties of enzymes, their regulation and kinetic behaviour. The structure of lipids and carbohydrates is explored and their major biological roles as components of cell membranes and in energy storage is emphasized. As carbohydrates are an essential source of immediate energy, the complete breakdown of glucose and the fate of its metabolites will be investigated as an example of cellular metabolism.
Objectives:	By the end of the subject the student should understand:

	<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:	3 hour written exam held in examination period (70%), one 1 hour multi-choice examination (10%), continuing computer based assessment (20%)
Prescribed Texts:	Nelson and Cox, Lehninger Principles of Biochemistry, 5th edn., 2008
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/2009/D09) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2009/F04) # Bachelor of Environments (https://handbook.unimelb.edu.au/view/2009/A04) # Bachelor of Music (https://handbook.unimelb.edu.au/view/2009/M05) <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 program; 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 degrees), BAsC or a combined BSc course.</p> <p>Not available to students enrolled in the BBiomedSc.</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 Course(s):	<p>Bachelor of Agricultural Science Bachelor of Agricultural Science Bachelor of Animal Science and Management Bachelor of Biomedical Science Graduate Diploma in Biotechnology</p>