

## SCIE90002 Metabolomics and Proteomics

<b>Credit Points:</b>	12.50
<b>Level:</b>	9 (Graduate/Postgraduate)
<b>Dates &amp; Locations:</b>	This subject is not offered in 2014.
<b>Time Commitment:</b>	Contact Hours: 16 lectures over eight weeks, two x 1-hour lectures per week, one x 1-hour tutorial per week, two x 2-hour practicals. Total Time Commitment: 120 hours
<b>Prerequisites:</b>	Second year level biochemistry or organic chemistry.
<b>Corequisites:</b>	None
<b>Recommended Background Knowledge:</b>	None
<b>Non Allowed Subjects:</b>	None
<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>Contact:</b>	Email: <a href="mailto:mdigby@unimelb.edu.au">mdigby@unimelb.edu.au</a> (mailto:mdigby@unimelb.edu.au)
<b>Subject Overview:</b>	Proteomics and metabolomics analyse the final cellular state resulting from the interaction of the environment and cellular gene expression. Proteomic techniques describe the protein composition of a cell or tissue resulting from gene expression, post-transcriptional and post-translational modifications. Metabolomics is the study of the unique chemical profile that specific environmental and cellular processes create. These techniques are increasingly applied to areas as diverse as reproductive biology, environmental toxicology and plant and animal diseases. The aim of this subject is to develop knowledge and skills in the application of these technologies. This subject will be taught by scientists who will discuss their own research involving the application of state-of-the-art technologies designed to understand the proteome and metabolome of different organisms, protein modification, the structure and function of proteins, and the complexities of protein-protein interactions and metabolic outcomes. There will be a strong emphasis on how these technologies are applied to a range of areas in biology, medicine and industry.
<b>Learning Outcomes:</b>	<p>Upon completion of this subject, students should have:</p> <ul style="list-style-type: none"> <li># an understanding of the state-of-the-art techniques used in metabolomics and proteomics;</li> <li># an understanding of the metabolomic and proteomic-based research being conducted at the university;</li> <li># an appreciation of the application of metabolomics and proteomics to biology, medicine and industry; and</li> <li># skills to analyse and interpret data.</li> </ul>
<b>Assessment:</b>	One two-hour end of semester exam (40%); one mid-semester assignment (20%); and two practical reports due during semester (2 x 20% = 40%).
<b>Prescribed Texts:</b>	As this is primarily a research-led teaching subject, there are currently no appropriate textbooks. Students will be referred to current scientific literature. In addition, a handbook of useful resources will be made available at the start of semester.
<b>Recommended Texts:</b>	None

<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>At the completion of this subject, students should:</p> <ul style="list-style-type: none"> <li># develop skills in written and oral communication;</li> <li># develop a capacity for independent critical thought, rational inquiry and self-directed learning;</li> <li># develop a respect for truth, intellectual integrity and scholarship;</li> <li># develop cognitive, analytical and problem-solving skills;</li> <li># develop the ability to construct and express logical arguments;</li> <li># develop the ability to work in a team;</li> <li># develop extensive knowledge of a particular discipline; and</li> <li># develop the ability to plan work and to use time effectively.</li> </ul>
<b>Notes:</b>	<p>This subject will be offered over eight weeks commencing week one of semester two.</p> <p>Students undertaking this subject will be expected to have basic computer knowledge and the ability to navigate websites.</p>
<b>Related Course(s):</b>	Master of Biotechnology
<b>Related Majors/Minors/ Specialisations:</b>	<p>Botany</p> <p>Honours Program - Botany</p>