

## MCEN90039 Artificial Intelligence for Mechatronics

<b>Credit Points:</b>	12.5						
<b>Level:</b>	9 (Graduate/Postgraduate)						
<b>Dates &amp; Locations:</b>	This subject is not offered in 2016.						
<b>Time Commitment:</b>	Contact Hours: 36 hours, comprising 24 x 1 hr lectures and 12 x 1 hr workshops. Total Time Commitment: Estimated 200 hours						
<b>Prerequisites:</b>	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ELEN90055 Control Systems</td> <td>Semester 1, Semester 2</td> <td>12.5</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	ELEN90055 Control Systems	Semester 1, Semester 2	12.5
Subject	Study Period Commencement:	Credit Points:					
ELEN90055 Control Systems	Semester 1, Semester 2	12.5					
<b>Corequisites:</b>	None						
<b>Recommended Background Knowledge:</b>	A good knowledge of programming and mathematics is recommended.						
<b>Non Allowed Subjects:</b>	None						
<b>Core Participation Requirements:</b>	<p>&lt;p&gt;For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.&lt;/p&gt;         &lt;p&gt;It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: &lt;a href="http://services.unimelb.edu.au/disability"&gt;http://services.unimelb.edu.au/disability&lt;/a&gt;&lt;/p&gt;</p>						
<b>Contact:</b>	Prof Saman Halgamuge Email: saman@unimelb.edu.au						
<b>Subject Overview:</b>	<p>Upon completion, students should have gained an overview of soft computing methodologies, their applicability to mechatronic systems, and an overview of the basic concepts of discrete event systems and big data analytics with relevance to mechatronic systems.</p> <p>A variety of topics in computational intelligence will be covered, with selections to be made from neural networks including deep learning, support vector machines, semi-supervised learning, fuzzy systems, pattern recognition and evolutionary algorithms. Further modelling with Petri Nets, adhoc sensor networks and an introduction to stochastic dynamic programming will be covered. Different mechatronic applications and case studies of particular systems will be presented and analysed.</p>						
<b>Learning Outcomes:</b>	<p>Intended Learning Outcomes (ILOs)</p> <p>At the conclusion of this subject students should be able to:</p> <ol style="list-style-type: none"> <li>1. Choose the best artificial intelligence approaches for different classes of problems</li> <li>2. Implement and analyse the capability and limitations of artificial intelligence in engineering applications.</li> </ol>						
<b>Assessment:</b>	One written 3 hour closed book end of semester examination (60%). ILOs 1 and 2 are addressed by this exam. One written project assignment due week 11, approximately 30 pages and 50 hours of work (40%). ILOs 1 and 2 are addressed by this assignment.						
<b>Prescribed 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>						

**Related Majors/Minors/  
Specialisations:**

Master of Engineering (Mechatronics)