MCEN90032 Sensor Systems

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2014.
Time Commitment:	Contact Hours: 48 hours of lectures, tutorials and workshops. Total Time Commitment: 200 hours
Prerequisites:	Enrolment in a PhD or Masters by Research OR for coursework students -

Subject	Study Period Commencement:	Credit Points:
ELEN90055 Control Systems	Semester 1	12.50

And also one of the following -

Subject	Study Period Commencement:	Credit Points:
MCEN90024 Mechatronics Design	Semester 2	12.50
MCEN30014 Mechanical Design	Semester 2	12.50
ELEN90053 Electronic System Design	Semester 2	12.50

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	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. 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: http://services.unimelb.edu.au/disability
Contact:	**manziec@unimelb.edu.au (mailto:manziec@unimelb.edu.au)**
Subject Overview:	This subject deals with principles of sensing, sensor networking and multiple sensor data fusion. It provides an appreciation of challenges in designing and implementing wired and wireless sensor based solutions in a range of applications. Topics covered include – • Sensors (construction and characteristics) • Filtering of sensor outputs (up to Kalman filtering options) • Sensor networks (communication between sensors, how to arrange/coordinate large #s of sensors) • Multisensor data fusion (SLAM, KF or equivalent) • Case studies

Learning Outcomes:	On completion of this subject students should be able to understand the principles and operation, networking and data processing of a range of sensor systems used in mechatronic systems.
Assessment:	• Continuous assessment throughout the semester of group and individual projects (10%)• Assignments and laboratory reports (20 pages excluding computations, tables, graphs, and diagrams)- one due in week 6 (10%) and one due in week 12 (20%).• One 3 hour written examination at the end of semester (60%)
Prescribed Texts:	None
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 the following skills - • Critical thinking and critical judgement of assumptions adopted • Abstract mathematical reasoning • Interpretation and analysis of data • Application of theory to practice • Ability to utilise a systems approach to design and operational performance • Ability to apply knowledge of basic science and engineering fundamentals • Ability to undertake problem identification, formulation and solution, and • Be able to clearly communicate the process and outcomes of a technical investigation
Related Course(s):	Master of Philosophy - Engineering Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	Master of Engineering (Mechanical) Master of Engineering (Mechatronics)