

ELEN90066 Embedded System Design

| Credit Points: | 12.5 | | | | | | | | | |
|---|---|----------------|----------------------------|----------------|---------------------------------|------------|-------|---|------------|------|
| Level: | 9 (Graduate/Postgraduate) | | | | | | | | | |
| Dates & Locations: | 2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. | | | | | | | | | |
| Time Commitment: | Contact Hours: 24 hours of lectures and 36 hours of workshops Total Time Commitment: 200 hours | | | | | | | | | |
| Prerequisites: | Prerequisites for this subject are one of: (ELEN30014 from 2016) <table border="1" data-bbox="387 613 1485 819"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>ELEN30010 Digital System Design</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>ELEN30014 Analog and Digital Electronics Concepts</td> <td>Semester 1</td> <td>12.5</td> </tr> </tbody> </table> | Subject | Study Period Commencement: | Credit Points: | ELEN30010 Digital System Design | Semester 1 | 12.50 | ELEN30014 Analog and Digital Electronics Concepts | Semester 1 | 12.5 |
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| ELEN30010 Digital System Design | Semester 1 | 12.50 | | | | | | | | |
| ELEN30014 Analog and Digital Electronics Concepts | Semester 1 | 12.5 | | | | | | | | |
| 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 Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/ | | | | | | | | | |
| Coordinator: | Dr Iman Shames | | | | | | | | | |
| Contact: | iman.shames@unimelb.edu.au (mailto:iman.shames@unimelb.edu.au) | | | | | | | | | |
| Subject Overview: | <p>AIMS</p> <p>This subject provides a practical introduction to the design of microprocessor-based electronic systems. The lectures and project work will expose students to the various stages in an engineering project (design, implementation, testing and documentation) and a range of embedded system concepts.</p> <p>INDICATIVE CONTENT</p> <p>Topics covered may include: digital computer architecture, example microprocessor architectures, pipelining and caching, system-level programming in assembly language and C for a specific microprocessor ; bus standards and protocols, bus interfacing, interrupt servicing; operating systems concepts, multi-tasking, resource management and real-time issues; interfacing to the analog world via analog-to-digital and digital-to-analog converters; standard software tools, including compilers and debuggers, schematic and PCB layout with an emphasis on design for high speed switching circuits.</p> <p>This material will be complemented by exposure to standard software tools, including compilers and debuggers, schematic and board layout software. The subject will include a level of industry engagement, to provide broader examples of engineering projects, through guest lectures</p> | | | | | | | | | |

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| | This subject has been integrated with the Skills Towards Employment Program (STEP) and contains activities that can assist in the completion of the Engineering Practice Hurdle (EPH). |
| Learning Outcomes: | <p>INTENDED LEARNING OUTCOMES (ILO's)</p> <ol style="list-style-type: none"> 1 Design, build and test the hardware components (microprocessor, bus and peripheral interfacing) of an embedded system 2 Develop and test the low-level software components of an embedded system 3 Conduct a small embedded system design project |
| Assessment: | One written examination, not exceeding three hours at the end of semester, worth 60%. ILO's 1 and 2 are assessed in the written exam. Continuous assessment of submitted project work, not exceeding 40 pages over the semester (approximately 55-60hours of work per student), worth 40%. ILO's 1-3 are assessed in the submitted project work. Hurdle requirement: Students must pass the written exam to pass the subject. |
| Prescribed Texts: | TBA |
| 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: | <p>Upon completion of this subject, students will have developed the following skills:</p> <ul style="list-style-type: none"> # Ability to apply knowledge of basic science and engineering fundamentals # In-depth technical competence in at least one engineering discipline # Ability to undertake problem identification, formulation and solution # Ability to utilise a systems approach to design and operational performance # Capacity for independent critical thought, rational inquiry and self-directed learning # Ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member # Ability to communicate effectively, with the engineering team and with the community at large |
| Notes: | <p>To complete the assessment, students are required to purchase a kit of electronic parts from the university book room. The cost of this kit is approximately \$85-\$100.</p> <p>LEARNING AND TEACHING METHODS</p> <p>The subject is delivered through lectures and a semester long design, build and code project, workshop classes to assist with the project.</p> <p>INDICATIVE KEY LEARNING RESOURCES</p> <p>Students are provided with lecture slides, worked problem sets, project specifications, and reference text lists.</p> <p>CAREERS / INDUSTRY LINKS</p> <p>The subject includes a level of industry engagement, to provide broader examples of engineering projects, through guest lectures.</p> |
| Related Majors/Minors/Specialisations: | <p>B-ENG Electrical Engineering stream</p> <p>Master of Engineering (Electrical with Business)</p> <p>Master of Engineering (Electrical)</p> <p>Master of Engineering (Mechatronics)</p> |