4638 Bachelor of Science and Bachelor of Engineering (Honours) 2015

Mechatronics Engineering

Stage One **(48 credit points)**

Sem 1	ENG1001 engineering design: lighter, faster, stronger	PHS1011 Physics (or PHS1080 Foundation physics)	MTH1020 Analysis of change or MTH1030 Techniques for modelling *(see Notes)*	Stage 1 Science sequence as outlined below
Sem 2	ENG1002 Engineering design: cleaner, safer, smarter	PHS1022 Physics	MTH1030 Techniques for modelling or MTH2010 Multivariable calculus	Stage 1 Science sequence as outlined below

Stage Two **(48 credit points)**

Sem 1	TRC2201 Mechanics **Prerequisites** Must have passed 42 credit points	ENG1060 computing for engineers **Co-requisites** MTH1030 or MTH1035	Science unit	Science unit
Sem 2	ECE2072 Digital systems	ENG2092 Advanced engineering maths B **Prerequisites** MTH1030 or MTH1035	Science unit	Science unit

Stage Three **(48 credit points)**

Sem 1	ECE2061 Analogue electronics	MEC2402 Engineering design I **Co-requisites** MEC2403 or MAE2401 or TRC2201	ECE2071 Computer organisation and programming (**OR** if FIT1029/FIT1040 is taken, select a Mechatronics elective from list below)	Science unit
Sem 2	TRC2000 Mechatronics project I	Science unit	Science unit	Science unit

Stage Four **(48 credit points)**

Sem 1	ECE3073 Computer systems **Prerequisites** ECE2072 and one of: + ECE2071 + FIT1008 + FIT1029 and FIT1040	TRC3500 Sensors and artificial perception **Prerequisites** TRC2500, ECE2061 **Co-requisites** TRC3300 or ECE3073	TRC3200 Dynamical systems **Prerequisites** TRC2201 and ENG2092	Science unit
Sem 2	TRC2200 Thermo-fluids and power systems	TRC3000 Mechatronics project II **Prerequisites** (TRC2000 or MEC2406) and (TRC3300 or ECE3073)	TRC3600 Modelling and control **Prerequisites** TRC3200	Science unit

Stage Five **(48 credit points)**

Sem 1	TRC4800 Robotics **Prerequisites** TRC3600	TRC4000 Mechatronics final year project I **Prerequisites** 132 credit points completed including TRC3000.	One mechatronics elective from list below	Science unit
Sem 2	ECE3051 Electrical energy systems **Prerequisites**	TRC4002 Professional practice **Prerequisites**	TRC3801 Mechatronics and manufacturing **Prerequisites**	Science unit

	ECE2061 or TRC2500	TRC3000	TRC2100, MEC2402	

Stage 1 science units:	
Select one pair: - ASP1010 Earth to cosmos – introductory astronomy and ASP1022 Life and the universe - BIO1011 Biology and BIO1022 Biology II - CHM1011 Chemistry I or CHM1051 Chemistry I advanced and CHM1022 chemistry II or CHM1052 Chemistry II advanced	- ESC1011 Planet earth: Our place in the universe and ESC1022 Planet earth, Surface processes - FIT1029 Algorithmic problem solving and FIT1040 Programming fundamentals - STA1010 Statistical methods for science and MAT1830 Discrete mathematics for computer science

Mechatronics elective units:	
ECE2041 Telecommunications	MEC4425 Micro-nano solid and fluid mechanics
ECE4053 Electrical energy – generation and supply	MEC4426 computer-aided design
ECE4063 Large scale digital design	MEC4428 Advanced dynamics
ECE4074 Advanced computer architecture	MEC4444 Industrial noise control
ECE4075 Real time embedded systems	MEC4446 Composite and structures
ECE4078 Intelligent robotics	MTE2544 functional materials
MEC4418 Control systems	TRC4001 Mechatronics final year project II
(Not all ECE elective units will be offered each year – check handbook)	

*Any sequence in science may be taken, provided the appropriate sequence requirements and prerequisites are completed. In some cases, students may elect to seek approval for an overloaded course of up to 12 points at stage two or three to enable these requirements to be completed in addition to the required science units at stage two.

**Students considering entry to honours in computer science need to complete at least 24 points of level three computer science units, which may require an overloaded course to be approved if an extended major in computer science is not completed at stage four.

Notes:

Structure	The engineering component requires not less than 132 points that must be obtained in units prescribed by this course list, and the science component requires at least 108 points. major and minor sequences in different areas of study towards the science component of this double degree. Students may pursue a science major in: astrophysics, computer science, mathematics, or physics. There are two streams in the mechatronics engineering component of the degree which allows students to undertake either a generic stream or a computer science stream. Students wishing to take the computer science stream will need to undertake computer science as a science major.
Choosing the right level one maths unit	The choice of either MTH1020 and MTH1030 or MTH1030 and MTH2010 at stage one is determined by the level of preparation from VCE studies.
MTH2032	Students who complete a major or extended major in mathematics do not need to overload at stage two but rather complete the unit at stage three
Credit points	Unless specified, all units are worth 6 credit points **Bachelor of Engineering** 22 units x 6cp = **Total of 132 credit points** **Bachelor of Commerce** 18 units x 6cp = **Total of 108 credit points**
Unit requisites	All pre-requisite and co-requisite requirements must be undertaken in order to be able to enrol into a specific unit
Duration of degree	5 years full-time, 10 years part-time
Time limit	Time limit = 10 years. Students have ten years in which to complete this award from the time they commence first year. Periods of intermission are counted as part of the ten years.
Course advice	www.eng.monash.edu.au/current-students/course-advice.html http://monash.edu/science/current/undergraduate/help/
Monash handbook	Students should follow the course requirements for the year the course was commenced www.monash.edu.au/pubs/handbooks/undergrad/eng-courses.html

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