

**School of Mechanical, Materials, Mechatronic and Biomedical Engineering**

26<sup>st</sup> October 2022

**INFORMATION FOR BACHELOR OF TECHNOLOGY – INDUSTRY 4.0 STUDY PROGRAM IN 2023**

Dear Bachelor of Technology – Industry 4.0 Students,

I hope 2022 was a successful and rewarding year for you, especially now that we have seen a lot more classes returning to campus, and that you are or will be enjoying the break away from university, whether you are spending time with family, on vacation or working. If you struggled or did not perform as well as you had hoped or below what you know you are capable of, let me encourage you to review what you would do differently to improve in 2023. You are most welcome to arrange a meeting with me if you need advice on any matters regarding your study. Also do not forget that the university has a wide range of support services available for you, if you feel that you need to speak with someone with specific expertise about your specific situation.

The primary purpose of this letter is to let you know of some of the study program arrangements and changes for 2023 – please keep this letter for future reference.

**Mechanical Engineering Practice (MECH203)**

This 0 credit point subject allows your development of practical mechanical engineering skills sufficient for successful entry to MECH215: Mechanical Engineering Design 1. MECH203 is a **prerequisite for MECH215** and is **only on offer in Autumn Session**. Skills developed, including documentation of your practical engineering experience will assist with attaining work experience placements. **You must complete MECH203 in the Autumn session prior to taking MECH215 in the Spring session.** Those with prior experience or who have done workshop activities in a previous subject may have a varied program assigned. Further information will be issued to those who are enrolled.

Enquiries: Emre Sariyildiz, [emre@uow.edu.au](mailto:emre@uow.edu.au)

**Applied Topics in Mechatronics (MECH470)**

We have replaced the third year core subject Sensors and Actuators (BMEG302) with the Applied Topics in Mechatronics (MECH470) in 2023. You will attain different technical knowledge and hands-on skills for actual industrial applications in MECH470. More specifically, the first part of this subject will introduce the programmable logic controller (PLC), a widely used industrial controller and Ladder Logic, the main programming language in use for PLCs. The second part will look at industrial input and output systems and the interfaces used. This will include robotic systems, motor drives, directional control valves (DCVs), vision and distance measurement. The last part will implement control systems in the PLC to perform typical manufacturing tasks.

Enquiries: Emre Sariyildiz, [emre@uow.edu.au](mailto:emre@uow.edu.au)

**Engineering Design and Management 3 (ECTE351)**

Year 3 students will need to enrol to the annual core subject Engineering Design and Management 3 (ECTE351). This subject has 12 credits. The aim of this subject is to provide students (in teams) with the opportunity to undertake a significant product development exercise, from target specification through to product launch. The emphasis is on the technical achievements of the team project. Student teams will undertake the entire project using staff as 'costed' advisors. A number

of projects will also be industry supported projects that have industry customers. The team activity will be supplemented by lectures covering such areas as an introduction to key implementation activities including: management concepts and tools to enable engineers to effectively manage the critical implementation aspects of projects; social and ethical considerations; psychology/ergonomics; and engineering test methodology.

Enquiries: Emre Sariyildiz, [emre@uow.edu.au](mailto:emre@uow.edu.au)

### Core and Elective Subjects

The list of the core and elective subjects is given on page 4 in this letter. While you have only 48 credit points core subjects in Year 1, you will need to enroll to 12 credit points elective subjects in Year 2 and Year 3 in addition to 36 credit points core subjects. We continue to offer a range of elective subjects which reflect the broad range of career opportunities in Industry 4.0 and which also reflect the strengths of the different disciplines such as engineering, computer science, business and marketing at the University of Wollongong. You can find the elective courses in the online course handbook at <https://courses.uow.edu.au/courses/current/3119>. I encourage Year 2 and 3 students to check elective subjects and plan 2023 study program before the Autumn session starts.

**Note 1:** Regardless of which year you commenced your degree, you can choose electives based on what is available when you need to enroll in an elective subject.

**Note 2:** Not all electives run every year, so check the online course handbook carefully.

Enquiries: Emre Sariyildiz, [emre@uow.edu.au](mailto:emre@uow.edu.au)

### Timetabling

Details of the timetable and room allocations can be found on the web. These are set centrally at University level and **are subject to change – it is important that you check this information as the semester approaches**. Please note that in 2023 there will be even more expectation for student to return to campus and as such, there will be less options available for online classes.

Enquiries: Emre Sariyildiz, [emre@uow.edu.au](mailto:emre@uow.edu.au)

### Weighted Average Mark (WAM)

WAM is the weighted average mark from every subject you have attempted over the whole of your degree. (Remember that each 6 credit point subject requires in the order of twelve (12) hours per week of study, including time in class, for a successful outcome). You can calculate your WAM using the following formula:

$$WAM = \frac{\sum MLC}{\sum LC}; \text{ where } C = \text{credit point value of subject; } L = \text{Level (i.e. } L=2 \text{ for MECH226);}$$

$M$  = Mark (%). The summation terms must include **all** subject attempts (including any failures). The grades of honour are then awarded as follows:

First Class honours:  $77.5 < WAM < 100$

Second Class, Division 1 honours:  $72.5 < WAM < 77.5$

Second Class, Division 2 honours:  $67.5 < WAM < 72.5$

*The Third Class honours grade will no longer be awarded (previously for  $62.5 < WAM < 67.5$ )*

Pass Degree:  $WAM < 67.5$

### MMMB Student Societies

I would like to take this opportunity to draw your attention to several engineering groups/teams.

- **The Mechanical Engineering Society** (<https://clubs.uow.edu.au/mechanical-engineering-society/>)
- **The Materials Engineering Society** (<https://clubs.uow.edu.au/materials-engineering-society/>)
- **The Mechatronics Engineering Society** (<https://clubs.uow.edu.au/uow-mechatronics->

[engineering-society-mes/](#))

- **The Biomedical Engineering Society** (<https://clubs.uow.edu.au/b-med/>)

The MMMB engineering societies have a wide range of activities over the course of the year. It is a place where you may interact with other students from different years. I encourage you all to join the society and support its activities throughout 2023.

### **UOW Motorsport**

UOW Motorsport is a student led program which has been competing in the Australasian FSAE competition since 2001. UOW Motorsport has been very successful over the years, winning the world championships in 2002 and the Australasian competition in 2016 alongside several other podium finishes. Winning is a great additional outcome to the tremendous learning experience offered by this activity. UOW Motorsport is about designing and building an open-wheel race car to a very high quality, developing and executing a business plan, working in a multidisciplinary team environment with very high ethical standards and much more.

Enquiries: Dr Philip Commins – Faculty Advisor, [pcommins@uow.edu.au](mailto:pcommins@uow.edu.au)

### **Engineering Software**

With the advances in the computational techniques and available free for engineering students version of the software, computational tools have become more and more important skills that modern engineers will need to know. In the program you will be exposed to these various tools. I encourage you to start exploring these tools on your own as early as possible – perhaps over the summer break.

ANSYS CFD and Mechanical – contact [buyung@uow.edu.au](mailto:buyung@uow.edu.au)

MATLAB (install at home) – contact [dhastie@uow.edu.au](mailto:dhastie@uow.edu.au)

AUTOCAD INVENTOR – contact [buyung@uow.edu.au](mailto:buyung@uow.edu.au)

In closing, I would like to join with all academic and support staff in wishing you the very best for 2022 - we look forward to seeing you again.

### **Emre Sariyildiz**

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## BACHELOR OF TECHNOLOGY – INDUSTRY 4.0 - FULL TIME PROGRAMME

Autumn Session	Spring Session
<b>First Year</b> CSIT111 Programming Fundamentals FEIS101 Introduction to Industry 4.0 MATH140 Preparation for Engineering Mathematics PHYS115 Introduction to Concepts of Physics	CSIT121 Object Oriented Design and Programming CSIT127 Networks and Communication ENGG104 Electrical Systems MATH141 Foundations of Engineering Mathematics
<b>Second Year</b> CSCI251 Advanced Programming ECTE233 Digital Hardware ENGG102 Fundamentals of Engineering Mechanics ENGG103 Materials in Design MECH203 Mechanical Engineering Practice	ECTE203 Signals and Systems MECH215 Mechanical Engineering Design 1 XXXXX Elective XXXXX Elective
<b>Third Year</b> ECTE351 Engineering Design and Management 3 ECTE474 Internet of Things MECH382 Manufacturing Engineering Principles XXXXX Elective	ECTE351 Engineering Design and Management 3 ECTE331 Real-time Embedded Systems MECH470 Advanced Topics in Mechatronics XXXXX Elective

- Required total number of credit points = 144 (24 Subjects)
- Students **must complete MECH203** (Mechanical Engineering Practice) prior to commencing MECH215. MECH203 is a zero credit point, zero HECs charge subject. Recognition of prior learning for **some** components of this subject may be approved by the subject coordinator following enrolment and written application.
- Please see (<https://courses.uow.edu.au/courses/current/3119>) for the full list of elective subjects.