



Source Outline  
Term 2 2020

**MTRN3020**

**MODELLING AND CONTROL OF  
MECHATRONIC SYSTEMS**

## Contents

|  |   |
|--|---|
| 1. Staff contact details .....                                   | 2 |
| Contact details and consultation times for course convenor ..... |   |

# 1. Staff contact details

## Contact details and consultation times for course convenor

Name: Associate Professor Jay Katupitiya

Office location: Ainsworth 510E

Tel: +61 (2) 9385 4096

Email: [J.Katupitiya@unsw.edu.au](mailto:J.Katupitiya@unsw.edu.au)

Moodle: <https://moodle.telt.unsw.edu.au/login/index.php>

Microsoft Teams Video Chat Hours: Tuesdays and Thursdays 2 – 3 pm

## Contact hours

|                           | <b>Day</b> | <b>Time</b>  | <b>Delivery Mode</b>      |
|---------------------------|------------|--------------|---------------------------|
| <b>Lectures</b>           | Tuesdays   | 12 pm - 2 pm | Microsoft Teams Classroom |
| (Web stream)              | Any        | Any          | Moodle                    |
|                           |            |              |                           |
| <b>Tutorials</b>          |            |              |                           |
| (Weeks 1 - 10)            | Thursday   | 1 pm - 2 pm  | Microsoft Teams Classroom |
|                           |            |              |                           |
| <b>Labs/Quizzes</b>       |            |              |                           |
| (Weeks 4, 8, 10, 11 only) | Mondays    | 12 pm - 2 pm | Moodle/Microsoft Teams    |

## Student learning outcomes

This course is designed to address the learning outcomes below and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A.

After successfully completing this course, you should be able to:

| Learning Outcome |  | EA Stage 1 Competencies |
|------------------|--|-------------------------|
| 1.               | Develop an understanding of the purpose of control systems and their use.  | PE1.1                   |
| 2.               | Be able to understand that a plant is given and a control system is to be designed to satisfy performance specifications.                                  | PE1.1                   |
| 3.               | Be thoroughly conversant with the available design methodologies and have the ability to choose the appropriate design methods to design a control system. | PE2.2                   |
| 4.               | Have a thorough understanding of the control system application environment and be able to implement the designed control systems.                         | PE2.3                   |

## 4. Teaching strategies

Teaching of this course is through Microsoft Team Classrooms. The majority of the lecture content is available as pre-recorded videos. The students are expected to watch these pre-recorded videos and complete minor quizzes before the lecture time. The minor quizzes will award marks. During the lecture time a brief explanation of the weekly content is given and then students get an opportunity work out sample problems. Tutorial classes will also take place in Microsoft Teams classrooms. Laboratory exercises will be explained and data sets

## 5.

| <b>Week</b> | <b>Topic</b>                              | <b>Location</b> | <b>Suggested Readings</b> |
|-------------|---|-----------------|---------------------------|
| 1           | Introduction and How Control Systems Work | Microsoft Team  |                           |



## Assignments







# Competencies

## Stage 1 Competencies for Professional Engineers

|   | <b>Program Intended Learning Outcomes</b>   |
|---|---|
| <b>PE1: Knowledge and Skill Base</b>        | PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals                          |
|   | PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing                 |
|   | PE1.3 In-depth understanding of specialist bodies of knowledge  |
|   | PE1.4 Discernment of knowledge development and research directions                                    |
|   | PE1.5 Knowledge of engineering design practice  |
|   | PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice |
| <b>PE2: Engineering Application Ability</b> | PE2.1 Application of established engineering methods to complex problem solving                       |
|   | PE2.2 Fluent application of engineering techniques, tools and resources                               |
|   | PE2.3 Application of systematic engineering synthesis and design processes                            |
|   | PE2.4 Application of systematic approaches to the conduct and management of engineering projects      |

PE3.1 Ethical conduct and professional accountability

**PE3: Professional and Personal Attributes**