Course Outline

Term 2 2020

MTRN4230

Robotics

1. Staff details

Contact details and consultation times for course convenor

Name: Dr Javad Taghia
Tel: (02) 9385 4230
Email: j.taghia@unsw.edu.au
Moodle: https://moodle.telt.unsw.edu.au/course/view.php?id=41761
MSTeams:
https://teams.microsoft.com/l/team/19%3afb0d7a48ad6e4b438cd0f7e2acea21e9%40thread.tacv2/conversations?groupId=57c07ece-3d24-439b-83ee-7e73eb82184c&tenantId=3ff6cfa4-e715-48db-b8e1-0867b9f9fba3

Microsoft Teams Video Chat Hours

	Tutor	Live Event Weeks:1-5, 7-10
Tutorial G		

	Day	Time	Delivery Mode
	Friday	09:00 - 11:00	Microsoft Teams Chat Channel

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

Learning Outcome	EA Stage 1 Competencies
1.	

5.

Week	Lecture Topic	Assignments	Online tutorial	Group project
1	Introduction to robotics, definitions, classification, parallel robots, safety	Assignment 1: - Robot safety - UR5 online training - UR5 offline program	Introduction to Matlab toolbox Peter Corke	The group project is distributed
2	Computer vision for robotics applications	Assignment 1 submission deadline Assignment 2 - Computer vision and image processing	Introduction to the group project and simulation environment	
3	Kinematics: coordinate frames, homogeneous transforms	Assignment 2 submission deadline Assignment 1 marks available Assignment 3 - Robot Kinematics	-Introduction to ROS -Matlab ROS toolbox	
4	Kinematics: Denavit Hartenberg method	Assignment 2 marks available	-Software architect Python in ROS	
5	Kinematics: the Jacobian		QA	
6	**Flexibility Week**			
7	Kinematics: Robot trajectory design, path planning 1		*Object detection in Matlab*	Group project checkpoint 1
8	Path planning 2 and joint dynamics and control	Assignment 3 submission deadline Assignment 4 - Trajectory planning and dynamics	*Object detection in Matlab*	
9	Dynamics: Rigid-body equations of motion		State control in Matlab	Group project checkpoint 2
10	Dynamics: manipulator control		QA	
11		Assignment 4 submission deadline Assignment 3 marks available Assignment 4 marks available		Group project Individual report
11-13 Exams	-			

Assignments

There are 4 individual assignments. These assignments are based on the course content and the lecture material as well as introductory material presented in the lab.
There is also

(like plagiarism in an honours thesis) even suspension from the university. The Student Misconduct Procedures are available here:
www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

10. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

Attendance

Competencies

Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing