



**Faculty of Engineering**  
**Department of Mechanical Engineering**  
**COURSE OUTLINE**

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**MECH 580 A01 – ROBOTICS**

Term – Summer 2024 (202405)

Instructor	Office Hours
Dr. Daniela Constantinescu	Days: W
E-mail: <a href="mailto:danielac@uvic.ca">danielac@uvic.ca</a>	Time: 11:30 am – 1:30 pm PT
	Location: EOW 537

**LECTURE DATE(S)**

Section: A01 / CRN 30650    Days: T, W, F    Time: 10:30 am – 11:20 am  
PT

The topics taught in MECH 430/580 are precursor to more advanced courses on robot manipu

- Simulink simulation diagram - LastnameFirstname\_Vnumber\_MECH430\_Assignment#.slx or  
LastnameFirstname\_Vnumber\_MECH430\_Assignment#.mdl or  
LastnameFirstname\_Vnumber\_MECH580\_Assignment#.slx or  
LastnameFirstname\_Vnumber\_MECH580\_Assignment#.mdl.

**Please note that you will need (1) technology to scan your hand-written assignment solutions and convert them to PDF files; and (2) PDF Preview to append the Matlab plots saved as PDF files to the assignment solutions.**

## LABORATORIES

1. The laboratory sessions will be carried out in ELW A243. The students will perform the pre-laboratory experiments indicated in the Omni Workbook available on Brightspace individually.

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## Approximate Course Schedule

Module	Topics	Date/Week
1	<u>Spatial descriptions and transformations.</u> Spatial descriptions: positions, orientations, frames. Coordinate transformations. Operators: translations, rotations, rigid body transformations.	05.05 – 05.21
2	<u>Kinematics.</u> Forward kinematics. Inverse kinematics. Velocity of a rigid body. Jacobians.	05.26 – 06.09
3	<u>Statics.</u> Transposed Jacobians. Static forces. Kineto-static duality.	06.15 – 06.16
4	<u>Dynamics.</u> Acceleration of a rigid body. Mass distribution. Lagrangian dynamics in joint and task spaces.	06.18 – 07.07
5	<u>Control.</u> Position and motion control in joint and task space. Interaction control.	07.13 – 07.28

## General Information



