

**Birzeit University**  
Department of Mechanical and Mechatronic Engineering  
ENMC3111 – COMPUTER AIDED ENGINEERING LAB

## Course Overview

This Laboratory provides the state-of-the-art software in Computer Aided Design & Manufacturing, Computer Aided Engineering simulation software, 3D animation and programming languages - MatLab used in research and projects.

## Instructors:

Instructor:	Dr. <b>Ihab Abu Ajamieh</b>	E-mail:	iabuajamieh@birzeit.edu
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## Lecture schedule

Lecture:	Wednesday - Section 02	11:25 – 14:05	Aggad 344
	Thursday - Section 01	14:15 – 16:55	Aggad 344

## Course Text

- An Introduction to Matlab - Version 2.3, David F. Griffiths, Department of Mathematics, The University of Dundee.
- MatLab help and documentation.
- SolidWorks help and documentation.
- Slides and Notes.

## Course Objectives:

This course aims teaching the use of several software tools such as SolidWorks and Matlab. Upon successful completion of this course, students should be able to:

- Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, health and safety, manufacturability, and sustainability.
- Use the techniques, skills, and modern engineering tools necessary for systems engineering practice.
- Use MatLab in performing various math functions and plot them, in addition to solving equations.
- Use MatLab to study the dynamical systems responses.

## Plagiarism and Conduct

All students are expected to behave as professional engineers, and follow the rules of conduct. All work will be carefully checked for plagiarism. Tests will be carefully monitored. Cheating is a serious academic offense, and will be dealt with according to the university policy. For the class & home works, you are required to complete them **on your own** and submit on time.

### Marking Scheme:

Class works		15%
Home works	SolidWorks	10%
Project		15%
Assignment	MatLab	5%
Midterm exam	SolidWorks and MatLab	20 %
Final exam		35 %
<b>Total</b>		<b>100 %</b>

### Tentative Lecture Topics and Schedule:

Lecture # (Date) Section 2	Lecture # (Date) Section 1	Topic
Lecture 1 (15-Sep)	Lecture 1 (16-Sep)	MatLab Lecture 1:
Lecture 2 (22-Sep)	Lecture 2 (23-Sep)	MatLab Lecture 2:
Lecture 3 (29-Sep)	Lecture 3 (30-Sep)	MatLab Lecture 3:
Lecture 4 (06-Oct)	Lecture 4 (07-Oct)	MatLab Lecture 4:
Lecture 5 (13-Oct)	Lecture 5 (14-Oct)	SolidWorks Lecture 1: 2D-Sketch, 3D-Sketch and Boundary Surface
Lecture 6 (20-Oct)	Lecture 6 (21-Oct)	SolidWorks Lecture 2: Features 1 (Extruded Boss/Cut, Revolved Boss/Cut, Fillets, and Thread)
Lecture 7 (27-Oct)	Lecture 7 (28-Oct)	SolidWorks Lecture 3: Features 2 (Lofted Boss/Cut, Patterns, Shell, Reference Geometry)
Lecture 8 (03-Nov)	Lecture 8 (04-Nov)	SolidWorks Lecture 4: Features 3 (Swept Boss/Cut, RIB, Curves, Springs)
Lecture 9 (10-Nov)		Section 2 - Midterm Exam (MatLab and SolidWorks materials)
	Lecture 9 (11-Nov)	Section 1 - Midterm Exam (MatLab and SolidWorks materials)
Lecture 10 (17-Nov)	Lecture 10 (17-Nov)	MatLab Lecture 5:
Lecture 11 (24-Nov)	Lecture 11 (24-Nov)	MatLab Lecture 6:
Lecture 12 (01-Dec)	Lecture 12 (01-Dec)	SolidWorks Lecture 5: Standard mates, Motion Study and Animation.
Lecture 13 (08-Dec)	Lecture 13 (08-Dec)	SolidWorks Lecture 6: Advanced and Mechanical Mates.
Lecture 14 (15-Dec)	Lecture 14 (15-Dec)	SolidWorks Lecture 7: Simulation (Static, Frequency and Linear Dynamics Analysis)
Lecture 15 (22-Dec)	Lecture 15 (22-Dec)	
Lecture 16 (05-Jan)		Section 2 - Final Exam (MatLab and SolidWorks materials)
	Lecture 16 (10-Jan)	Section 1 - Final Exam (MatLab and SolidWorks materials)