

## Faculty of Engineering & Technology

### Mechanics 1

**Information :**

**Course Code :** MEC 121                      **Level :** Undergraduate                      **Course Hours :** 2.00- Hours

**Department :** Faculty of Engineering & Technology

**Instructor Information :**

Title	Name	Office hours
Lecturer	Mohamed Mahmoud Mohamed Attia Karim	16
Assistant Lecturer	Youssef Ahmed Elsayed Kamaleldin Ahmed Awad	34
Assistant Lecturer	Youssef Ahmed Elsayed Kamaleldin Ahmed Awad	34
Teaching Assistant	Mohamed Mousa Ali Abdullah Khedr	
Teaching Assistant	Ahmed Muhammed Elmasbahy Abdel Samed	
Teaching Assistant	Ahmed Muhammed Elmasbahy Abdel Samed	
Teaching Assistant	Ahmed Amr Kadry Ahmed Shaheen	

**Area Of Study :**

Overall aims of the course are to enrich students' knowledge about:

- Vector Algebra.
- The type of forces in trusses & frames.

**Description :**

Applications on space vectors, Resultant of forces, Moment of a force, Equivalent couples, Equivalent systems, Equations of equilibrium of a rigid body, Types of supports, Equilibrium of plane systems (Trusses and frames), Equilibrium of space systems acting on rigid bodies, The mass center of a system of particles and laminas of different shapes, The mass moment of inertia of system of particles and laminas.

**Course outcomes :**

**a.Knowledge and Understanding: :**

1 -	Recognize vector and scalar quantities in statics.
2 -	Explain vector analysis operations.
3 -	Describe equilibrium engineering conditions for particles and rigid bodies.
4 -	Identify proper reactions of supports of rigid bodies in static equilibrium.
5 -	Define the difference between trusses and frames.

**b.Intellectual Skills: :**

1 -	Solve static equilibrium problems.
2 -	Determine the centroid of laminas.

3 - Evaluate the moment of inertia of particles and laminas.

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Applications on space vectors	4	2	2
Resultant of forces	4	2	2
Moment of a force, Equivalent couples	4	2	2
Equivalent couples,	4	2	2
Equivalent system	4	2	2
Equations of equilibrium of a rigid body	4	2	2
Types of supports	4	2	2
Equilibrium of plane systems(Trusses and frames)	4	2	2
Equilibrium of space systems acting on rigid bodies	4	2	2
Frames	4	2	2
Trusses	4	2	2
The mass center of a system of particles	4	2	2
The mass center of laminas of different shapes	4	2	2
The mass moment of inertia of system of particles	4	2	2
The mass moment of inertia of system of laminas	4	2	2

**Teaching And Learning Methodologies :**

Interactive Lecturing

Discussion

Problem solving

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
• Participation	10.00		
Assignment +quizzes	10.00		
Final Exam	40.00		- Oral discussion to asses the ability of following the lecture.
First Mid Term Exam	15.00		- Oral discussion to asses the ability of following the lecture.
Second Mid Term Exam	25.00		- Oral discussion to asses the ability of following the lecture.

**Books :**

Book	Author	Publisher
Engineering Mechanics STATICS	J L Meriam	Wiley

---

**Course Notes :**

Course and instructor notes.

**Recommended books :**

- Beer, F.P., Johnson, E.R. and Eisenberg, E. R., "VECTOR MECHANICS FOR ENGINEERS: STATICS", Mc Graw-Hill, 10th ed. in SI units, 2012
- Hibbeler, R.C., "ENGINEERING MECHANICS: PRINCIPLES OF STATICS AND DYNAMICS" Pearson Prentice Hall, 2006

**Periodicals :**

[www.mhhe.com/beer\\_johnston7](http://www.mhhe.com/beer_johnston7)  
[www.prenhall.com/onekey](http://www.prenhall.com/onekey)

**Web Sites :**

[www.mhhe.com/beer\\_johnston7](http://www.mhhe.com/beer_johnston7)  
[www.prenhall.com/onekey](http://www.prenhall.com/onekey)