



Course Specifications: Mechanics 1 MTH002

1. Basic Information

Program Title	Biomedical Engineering
Department offering the Program	Biomedical Engineering
Department Responsible for the Course	Engineering Mathematics and Physics
Course Code	MTH002
Year/ Level	Level 000
Specialization	Minor
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	3	2	0

2. Course aims:

No.	aim
1	Apply knowledge of engineering concepts to Understand fundamental mechanical engineering problems.
5	Use modern techniques to design and analyze mechanical-based biomedical systems.

3. Intended Learning Outcomes (ILOs):

a. Knowledge and Understanding:

No.	Knowledge and Understanding
A ₁	Identify the types of forces, moments, support reactions, structures, and friction and subjects centroid.
A ₅	State the methodologies of solving the equilibrium of rigid body and friction problems.

b. Intellectual Skills

No.	Intellectual Skills
B ₁	Select appropriate methods for simplifying systems of forces and moments to equivalent systems.
B ₃	Solve engineering problems and draw complete free body diagrams in a creative and innovative manner.

c. Professional Skills

No.	Professional Skills
C ₁	Apply integrally knowledge of mathematics and mechanics tools to solve biomedical engineering problems.

d. General Skills

No.	General Skills
D ₃	Communicate effectively

4. Course Contents:

No.	Topics	Weeks
1	Force Vectors – 2 & 3 Dimensions	1-2
2	Equilibrium of a particle	3-4
3	Systems of forces and moments	5-6
4	Equilibrium of Rigid Body	7,9
5	Analysis of simple structures, trusses, beams and frames and machines	10-11
6	Centroides and Centers of gravity	12-13
7	Friction	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion Sessions

6. Teaching and Learning Methods for Disable Students:

No.	Teaching Method	Reason
1	Extra tutorials	To answer their questions



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7. Student Evaluation:

7.1 Student Evaluation Methods:

No.	Evaluation Method	ILOs
1	Mid Term Examination	A ₁ , A ₅ , B ₁
2	Semester work	A ₁ , A ₅ , B ₁ , B ₃ , C ₁ , D ₃
3	Final Term Examination	A ₁ , A ₅ , B ₁ , B ₃

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Mid Term Examination	8
2	Semester work	Every week
3	Final Term Examination	15

7.3 Weighting of Evaluations:

No.	Evaluation Method	Weights
1	Mid Term Examination	20%
2	Semester work	30%
3	Final Term Examination	50%
Total		100%

8. List of References

No.	Reference List
1	Hibbeler, R. C. Engineering mechanics. Upper Saddle River, N.J: Pearson, 2013.
2	Meriam, J. L., and L. G. Kraige. Engineering mechanics. Hoboken, NJ: Wiley, 2012.
3	Meriam, J. L., and L. G. Kraige. Statics. Hoboken, NJ: Wiley, 2015.
4	Meriam, J. L., and L. G. Kraige. "Engineering Mechanics: Statics, 7/e." (2011).
5	Costanzo, Francesco, Michael E. Plesha, and Gary L. Gray. Engineering mechanics : statics & dynamics. New York, NY: McGraw-Hill, 2013.
6	David J. Mc Gill and Witson W. King, "Engineering Mechanics", 2003

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aim	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
1	Force Vectors – 2 & 3 Dimensions	1	A ₁			D ₃
2	Equilibrium of a particle	1	A ₁	B ₃		D ₃
3	Force System resultants	1	A ₁	B ₃		D ₃
4	Equilibrium of Rigid Body	1	A ₅	B ₃		D ₃
5	Analysis of simple structures, trusses, beams and frames and machines	5	A ₁	B ₁ , B ₃	C ₁	D ₃
6	Centroides and Centers of gravity	5	A ₁	B ₁ , B ₃		D ₃
7	Friction	5	A ₁	B ₃		

Course Coordinator: Prof. Dr.

Head of Department: Assoc. Prof. Hossam Eldeen Moustafa

Date of Approval:



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