1. Basic Information

Program Title	All Academic programs
Department offering the Program	
Department Responsible for the Course	Engineering Mathematics and Physics
Course Code	BAS 012
Year/ Level	Preparatory year - First semester
Specialization	Faculty requirement
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2	2	0

2. Course aims:

No.	Aim
1	Apply knowledge of mathematics to solve fundamental mechanical engineering problems.

3. Learning Outcomes (LOs):

A1.1	Recognize the types of forces, moments and the Equilibrium of Rigid Body.
A1.2	Identify support reactions and subjects of centroids.
A8.1	Evaluate the characteristics of complete free-body diagrams.
A8.2	Communicate effectively in writing
A9.1	Select appropriate solutions to simplify systems of forces and moments to equivalent systems
A9.2	Apply knowledge of mathematics to write appropriate equilibrium equations from the free-body diagram, including the support reactions on a structure.
A9.3	Use computational facilities to analyze simple structures frames, and machines.

4. Course Contents:

No.	Topics
1	Force Vectors – 3 Dimensions
2	Equilibrium of particles in 3 Dimensions
3	Force System resultants
4	Equilibrium of Rigid Body in three dimensions
5	Centroids and Centers of gravity
6	Analysis of simple structures, Frames, and Machines.

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)

| 2 | Discussion Sessions |
| 3 | Flipped classroom |

6. Teaching and Learning Methods for Disable Students:

No.	Teaching Method	Reason
1	Additional Tutorials	
2	Online lectures and assignments	

7. Student Assessment:
7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination	A1.1, A1.2, A9.1
2	Semester work (quizzes, presentation, portfolio)	A1.1, A1.2, A8.1, A8.2, A9.1, A9.2
3	Final Term Examination	A1.1, A1.2, A8.1, A9.1, A9.2, A9.3

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (quizzes, presentation, portfolio)	weekly
3	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	15%
2	Semester work (quizzes, presentation, portfolio)	15%
3	Final Term Examination	70%
Total		100%

8. List of References

No.	Reference List
1	R. C. Hibbeler, "Engineering Mechanics: Statics and Dynamics, 14th Edition", Prentice-Hall, New Jersey, 2016.
2	J. L. Meriam, and L. G. Kraige, "Engineering Mechanics: Statics, 8th Edition", John Wiley, New York, 2016.

9. Facilities Required for Teaching and Learning:

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

4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aim	Lo's
1	Force Vectors – 3 Dimensions	1	A1.1, A1.2
2	Equilibrium of particles in 3 Dimensions	1	A1.1, A8.1
3	Force System resultants	1	A1.1, A1.2, A8.1, A9.1
4	Equilibrium of Rigid Body in three dimensions	1	A1.2, A8.2, A9.1, A9.2
5	Centroids and Centers of gravity	1	A1.2, A8.1, A8.2, A9.2, A9.3

Course: Mechanics 1	
Program Los	**Course Los**
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	A1.1 Recognize the types of forces, moments and the Equilibrium of Rigid Body. A1.2 Identify support reactions and subjects of centroids.
A8. Communicate effectively–graphically, verbally and in writing–with a range of audiences using contemporary tools.	A8.1 Evaluate the characteristics of complete free-body diagrams. A8.2 Communicate effectively in writing
A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	A9.1 Select appropriate solutions to simplify systems of forces and moments to equivalent systems. A9.2 Apply knowledge of mathematics to write appropriate equilibrium equations from the free-body diagram, including the support reactions on a structure. A9.3 Use computational facilities to analyze simple structures, frames, and machines.

Course Coordinator: Dr. Neveen Abd El-Fattah Ali El-Shamy.

Head of Department: Prof. Dr.**Mohamed Mohamed El Metwally El Gamal**

Date of Approval: