Course Specification
(Bachelor)

Course Title:	**Statics**
Course Code:	**261MATH-3**
Program:	**B. Sc. In Mathematics**
Department:	**Mathematics**
College:	**Science**
Institution:	**Jazan University**
Version:	**2024**
Last Revision Date:	9/2024

Table of Contents

A. General information about the course:

1.Course Identification

1. Credit hours:	3

2. Course type

A.	University ☐	College ☐	Department ☒	Track☐	Others☐
B.	Required ☒		Elective☐		

3. Level/year at which this course is offered:

Level 3/Year 2

4. Course general Description

- Introduction in Vector algebra: Graphical and algebraic introduction, types of vector product (scalar product, cross product).
- Analysis of Structures to Centroids and Centers.
- Force and Moment Vectors: Moments of inertia for area, equivalent systems of forces, trilateral and conditions of equilibrium of rigid bodies.
- Centers of Gravity of Objects of Simple and Complex shapes.
- Laws of Friction, Coefficient of friction between the body and Plane, study of coup and sliding friction and stability of equilibrium. Virtual work.

5. Pre-requirements for this course (if any): Math 261

6. Co- requirements for this course (if any): none

7. Course Main Objective(s)

After finishing the course, the student is expected to be familiar with the following:

- Importance of statics in branches of science and engineering.
- Statics rules and its application in various branches of science and life.
- Application of statics in solving problems.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	45	100%
2.	E-learning		
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	42
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	3
5.	Others (specify)	
	Total	45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Distinguish mathematical concepts relevant to vectors, forces, moments of forces, moments of the couples, equilibrium of a particle and center of gravity knowledge.	K1	Lectures, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer)
1.2	Identify background science, features and structure of mathematical problem in vectors, forces, moments of forces, moments of the couples, equilibrium of a particle and center of gravity knowledge.	K2	Lectures, Web based work, Classroom discussions .	Written exam (Problem solve, MCQ, true/false, Proof, Short answer)
1.3	Explain notations and concepts required for the solution of Mathematical problem in vectors, forces, moments of forces, moments of the couples, equilibrium of a particle and center of gravity knowledge.	K3	Lectures, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer)
2.0	Skills			
2.1	Apply theoretical, computational or practical aspect relevant to vectors, forces, moments of forces, moments of the couples, equilibrium of a particle and center of gravity knowledge.	S1	Lectures, Web based work,	Written exam (Problem solve, MCQ,

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			Classroom discussions	true/false, Proof, Short answer)
2.2	Compute numerical quantities for various parameters to approximate the solution in vectors, forces, moments of forces, moments of the couples, equilibrium of a particle and center of gravity knowledge.	S2	Lectures, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer)
2.3	Apply various mathematical rules, techniques and theorems in Application on vectors, forces, moments of forces, moments of the couples, equilibrium of a particle and center of gravity knowledge.	S3	Lectures, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer)
2.4	Solve mathematical problem using critical thinking in vectors, forces, moments of forces, moments of the couples, equilibrium of a particle and center of gravity knowledge	S4	Lectures, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer)
3.0	Values, autonomy, and responsibility			
3.1	Cultivate a mathematical attitude and nurture the interest.	V1	Group work, problem solving, web based work	Assignments
3.2	Realize the importance of responsibilities through different modes of practice, competition and related activities.	V2	Group work, problem solving, web based work	Assignments
3.3	Inculcating values and ethics in thought, expression and deed.	V3	Group work, problem solving, web based work	Assignments

C. Course Content

No	List of Topics	Contact Hours
1.	Vectors	9
2.	Moments	10
3.	Equilibrium of partical.	13
4.	Center of gravity	13
	Total	45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework and Quiz	3	5
2.	First exam	6	20
3.	Homework and Quiz	10	5
4.	Second exam	12	20
5.	Final exam	15	50

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Vector Mechanics for Engineers :Statics, Beer and Johnston, 8th ed., McGraw-Hill, 2009
Supportive References	- Statics, A. Ramsay, London, 1972. - A Text Book on Statics, M. Ray, New Delhi (India), 1984. - Fundamental of Statics, Adel Younis, Alrashed Library, Riyadh, 2005.
Electronic Materials	Web sites dedicated to Statics on the internet
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom, Computer lab
Technology equipment (projector, smart board, software)	Data show; Smart Board, Mathematics software

Items	Resources
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Peer and program leader	Indirect(Course Evaluation Survey)-Indirect peer evaluation
Effectiveness of students assessment	Students, Program assessment committee	Direct/ Indirect
Quality of learning resources	Instructor	Direct/Indirect
The extent to which CLOs have been achieved	Students, Faculty members	Indirect
Other	Students, Program assessment committee	Direct/ Indirect

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	**Board Of Mathematics Department**
REFERENCE NO.	**2417**
DATE	**29/03/1446 A. H.; 2/10/2024 A. D.**