



**MUTAH UNIVERSITY**  
**Faculty of Engineering**  
**Civil and Environment Engineering**



**Course Syllabus**  
**Study Plan 2021: Communication, and Power and Control Track**

Course Code	Course Name	Credits	Contact Hours
0402226	Static & Dynamics	3hr	3

INSTRUCTOR/COORDINATOR	
Name	Dr.Ali A-Hayajneh
Email	hayajneh@mutah.edu.jo
Website	

TEXTBOOK	
Title	Vector Mechanics for Engineers, STATICS
Author/Year	Beer, Johnston, et al
Other Supplemental Materials	
Title	Engineering Mechanics
Author/Year	Meriam
Electronic Materials	

SPECIFIC COURSE INFORMATION
<b>A. Brief Description of the Content of the Course (Catalog Description)</b>
This course familiarizes students with the principles of static equilibrium by applying Newton's laws of motion to solve engineering problems. Emphasis is placed on drawing free body diagrams and self-checking strategies. Topics include introduction to forces; 2D equilibrium of particles and rigid bodies; center of gravity and centroids; distributed loading and hydrostatics; friction; analysis of truss structures; and shear force and bending moment diagrams.
<b>B. Pre-requisites (P) or Co-requisites (C)</b>
General Physics (2) (0302102) (P) Engineering Drawing (0403198) (P)

**C. Course Type (Required or Elective)****Required****SPECIFIC GOALS****A. Specific Outcomes of Instruction**

By the end of this course, the student should be able to:

The student will be able to solve vector operations

1. Student will be able to analyses force systems (2D and 3D) [1]
2. Student will be able to analyses equilibrium problems of particles and rigid bodies (2D and 3D) [1]
3. Student will be able to analyses structures (trusses, frames and machines) [1]
4. The student will be able to solve and analyses problems incorporating distributed forces [1]
5. Student will be able to analyses beams and draw shearing force and bending moment diagrams [1]
6. Student will be able to calculate moment of inertia, centroids and center of mass of rigid bodies [1]

**B. Student Outcomes Addressed by the Course**

1	2	3	4	5	6	7				
✓										

**BRIEF LIST OF TOPICS TO BE COVERED**

List of Topics	No. of Weeks	Contact Hours
Introduction Statics of Particles, Trig Method (sketch force polygon)	1	3
Rectangular Components and Equilibrium of a Particle	1	3
Force in Space Forces and Equilibrium in Space	1	3
Rigid Bodies: Equivalent System of Forces Scalar (Dot) Products	1	3
Couples and Force-Couple Systems Equivalent Systems	1	3
Equilibrium of Rigid Bodies Equilibrium of a 2-Force Body	1	3
Centroids and Center of Gravity	1	3
Distributed Loads	1	3
Truss Analysis: Method of Joints	1	3

Truss Analysis: Method of Sections	1	3
Frame Analysis	1	3
Moments of Inertia	1	3
Parallel Axis Theorem	2	6
<b>Total</b>	<b>14</b>	<b>42</b>

EVALUATION		
Assessment Tool	Due Date	Weight (%)
Mid Exam	According to the university calendar	30
Course Work (Homeworks, Quizzes, Projects, ...etc.)	One week after being assigned	20
Final Exam	According to the university calendar	50

ABET's Students Learning Outcomes (Criterion # 3)		
Relationship to program outcomes		
ABET 1-7	Engineering Student Outcomes	
1	√	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2		an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3		an ability to communicate effectively with a range of audiences.
4		an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5		an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6		an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7		an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.