جامعة الإسراء
ISRA UNIVERSITY

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Statics

Course Number: 04032131

General Course Information:

Course title	**Statics**
Course number	**04032131**
Credit hours	**3 CrH**
Education type	**Face-to-Face**
Prerequisites/corequisites	**1102181 – Calculus I, 1102101 - Physics I**
Academic Program	**Bachelor's in civil engineering**
Program code	**03**
Faculty	**Engineering**
Department	**Civil Engineering**
Level of course	**Second year**
Academic year /semester	**2022-2023(First Semester)**
Awarded qualification	**Bachelor**
Other department(s) involved in teaching the course	**None**
Language of instruction	**English**
Date of production/revision	**3/10/2022**

Course Coordinator:

Coordinator's name	**Walid Hasan**
Office No	**4351**
Office Phone extension number	**2601**
Office Hours	**As Attached**
Email	**Walid.hasan@iu.edu.jo**

Other Instructors:

Instructor name	
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	Introduction, Two and three-dimensional force systems, components, resultants, moments and couples, equilibrium, structures (trusses, frames, machines), distributed load (center of gravity, center of mass, centroid), shear force and bending moment in beams, moments of inertia.
Arabic	مقدمة، أنظمة القوى، المحصلات، المركبات، العزم والازدواج، اتزان الجسيمات والأجسام الصلبة، الإنشاءات (الجمالونات والهياكل)، مركز المساحة، محصلة القوى الموزعة، عزم القصور الذاتي، مخططات القص وعزم الانحناء في الجيزان.

Textbook: ***Author(s), Title, Publisher, Edition, Year, Book website.***

R. C. Hibbeler, *Engineering Mechanics: Statics*, 13th edition, Pearson, 2013

References: ***Author(s), Title, Publisher, Edition, Year, Book website.***

J. L. Meriam, L. G. Kraige, *Engineering Mechanics-Statics*, 7th edition, John Wiley & Sons, 2012.

Course Educational Objectives (CEOs):

1.	To introduce students to the concept of forces and their effect on structures and mechanical systems.
2.	To introduce students to the concept of equilibrium of structures and mechanical systems under applied forces.
3.	To develop in students the ability to analyze structures and mechanical systems applying a few mechanical principles.
4.	To introduce students to the concept of geometry of mass.

Intended Learning Outcomes (ILO's):

1.	**Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:**	**Relationship to CEOs**	**Contribution to PLOs**	**Bloom Taxonomy Levels***	**Descriptors****
2. A	**Knowledge and Understanding:**				
3. A1					
4. B	**Intellectual skills:**				
5. B1	To be able to use vector algebra of forces in two and three dimensions and trigonometric laws to determine force resultants, components and moments.	**1**	**1**	**3**	**K**
6. C	**Subject specific skills:**				
7. C1	To be able to apply equilibrium equations to determine support reactions for particles and rigid bodies.	**2**	**1**	**4**	**K**
8. C2	To be able to analyze structures such as plane trusses and frames using principles of equilibrium of particles and rigid bodies.	**3**	**1**	**4**	**K**
9. C3	To be able to determine centroid and moments of area for plane areas and determine resultant of distributed forces.	**4**	**1**	**4**	**K**
C4	Draw shear and bending moment diagrams for simple beams	**3**	**1**	**4**	**K**

10. D	**Transferable skills:**				
11. D1					

***Bloom Taxonomy Levels**

Level #	1	2	3	4	5	6
Level Name	**Knowledge**	**Comprehension**	**Application**	**Analysis**	**Evaluation**	**Synthesis**

**** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (Civil Engineering) program will demonstrate:		**Descriptors****		
		K	**S**	**C**
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, analyse 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	✓		✓

**** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

Weekly Schedule *(please choose the type of teaching)*

✓ **Face to Face**

□ **Hybrid** *(**2 Lectures** Face – To - Face **+1 Lecture** Asynchronous)*

□ **Hybrid (***1 Lectures* *Face – To - Face **+1 Lecture** Asynchronous)*

□ **Online** *(**2 Lectures** Synchronous **+1 lecture Asynchronous**)*

Week	First Lecture (……..)	Second Lecture (……..)	Third Lecture (……..)	Ach. ILOs	Ach. PLOs	Descriptors**
1	Introduction	Resultant of two concurrent forces	Rectangular components	A1	1	K

2	Resultant of more than two concurrent forces	Moment and couple	Moment and couple	A1	1	K
3	Resultant of non-concurrent forces	Three dimensional forces	Resultant of three-dimensional forces	A1	1	K
4	Equilibrium of particles	Equilibrium of particles	Equilibrium of rigid bodies	C1	1	K
5	Supports and support reactions	Simply supported beam	Simply supported beam	C1	1	K
6	Cantilever beam	One rigid body frame	Plane trusses	C1, C2	1	K
7	Method of joints	Method of joints	Method of sections	C2	1	K
8	Zero-force members	Centroid of line	Centroid of simple areas	C2, C3	1	K
9	Centroid of simple areas	Centroid of composite areas	Centroid of composite areas	C3	1	K
10	Distributed forces	Frames	Frames	C2	1	K
11	Moment of inertia of simple areas	Moment of inertia of simple areas	Transfer of axes	C3	1	K
12	Moment of inertia of composite areas	Moment of inertia of composite areas	Moment of inertia of composite areas	C3	1	K
13	Transformation of moments of inertia	Shear and bending moment diagram	Shear and bending moment diagram	C4	1	K
14	Shear and bending moment diagram	Shear and bending moment diagram	Shear and bending moment diagram	C4	1	K
15	Exams					

* **K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- **Interactive videos**
- **Practice Labs**
- **Discussion Forums**
- **Quizzes** ✓
- **Other Interactive online activities**
- **Reports** ✓

Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.

- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) ___**%**
- Midterm **30%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: https://elearn.iu.edu.jo/**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

Assessment Tools implemented in the course:

- Final Exam ✓
- Midterm Exam ✓
- Quizzes ✓
- Homework ✓
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:…….

Responsible Persons and their Signatures:

Course Coordinator	**Dr Walid Hasan**	**Completed Date**	**3 / 10 / 2022**
		Signature	

Received by (Department Head)		**Received Date**	/ /
		Signature	