**Philadelphia University**

Faculty of Engineering - Department of Mechanical Engineering

First Semester 2017/2018



**Course Information**

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| **Title:** | Statics (620211) | |
| **Prerequisite:** | Calculus-1 ( 0250101 ) | |
| **Credit Hours:** | 3 credit hours (16 weeks per semester, approximately 44 contact hours) | |
| **Textbook:** | Engineering Mechanics-Statics-12th edition by R. C. Hibbeler |
| **References:** | Statics-7th edition by J. Meriam and L. Kraig |
| **Description:** | The course is a requirement for Mechanical and Civil engineering students. It introduces Force vectors, moment of a force, equilibrium of rigid body. And extend the knowledge to cover internal forces of rigid bodies. |
| **Instructor:** | **Dr. Nabil Musa**  **Office**: Mechanical Engineering building, room E61206 , ext. : 2543  **Office hours**: Sun, Wed, Thurs: 10:00-11:00 |

**Course Topics:**

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| **Week** | **Topic** |
| **1** | - Introduction and Basic Concepts of Statics |
| **2** | - Force vectors and its operations |
| **3** | - Equilibrium of a particles |
| **4** | - Moment of a force and its operations(Scalar Formulation) |
| **5** | - Moment of a force and its operations(Vector Formulation) |
| **6** | - Moment of a force about an axis, couple moment. |
| **7,8** | - Friction, Friction forces and its applications. |
| **9** | - Equilibrium of a rigid body(2-D Equilibrium) |
| **10** | - Equilibrium of a rigid body(3-D Equilibrium) |
| **11, 12, 13** | - Internal normal Forces, Truss Analysis |
| **14, 15** | - Internal Forces, Shear force and Bending Moment Diagram. |
| **16** | Review, and final exam |

**Course Learning Outcomes and Relation to ABET Student Outcomes:**

Upon successful completion of this course, a student should be able to:

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| 1. | Draw the free-body diagram for a particle or for a rigid. | [a, e, k] |
| 2. | Understand the basic concepts of force, vectors, moment. | [a, e, k] |
| 3. | Apply the above mentioned three basic concepts and to understand their respective advantages. | [a , e, k] |
| 4. | Explain the geometry of the equilibrium of particles and rigid bodies. | [a , e, k] |
| 5. | Effectively communicate in writing an assignment. | [g] |

**Assessment Instruments:**

Evaluation of students’ performance (final grade) will be based on the following categories:

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| **Exams:** | Two written exams will be given. Each will cover about 3-weeks of lectures |
| **Quizzes**: | 10-minute quizzes will be given to the students during the semester. These quizzes will cover material discussed during the previous lecture(s). |
| **Homework**: | Problem sets will be given to students. Homework should be solved individually and submitted before the due date.  Copying homework is forbidden, any student caught copying the homework or any part of the homework will receive zero mark for that homework |
| **Participation:** | Questions will be asked during lecture and the student is assessed based on his/her response |
| **Final Exam:** | The final exam will cover all the class material. |

**Grading policy:**

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| First Exam | 20% |
| Second Exam | 20% |
| Home works, Quizzes and participation | 20% |
| Final Exam | 40% |
| Total: | 100% |

**Attendance policy:**

Absence from classes and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse, acceptable to and approved by the Dean of the relevant college/faculty, shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

September , 2017