



Philadelphia University

Faculty of Engineering - Department of Mechanical Engineering
First Semester 2019/2020

Course Information

Title:	Theory of machines (620333)
Prerequisite:	Dynamics
Credit Hours:	3 credit hours (16 weeks per semester, approximately 44 contact hours)
Textbook:	R. L. Norton, Design of Machinery “An Introduction to the Synthesis and Analysis of Mechanisms and Machines”, McGraw Hill Higher Education; 3rd edition
References:	1. FUNDAMENTALS of KINEMATICS and DYNAMICS of MACHINES and MECHANISMS, by Oleg Vinogradov, 2000 2. theory of machines and mechanics, by J.E. Shigley and J. J. Uicker
Catalog Description:	Kinematic analysis of mechanisms, Velocity and acceleration polygons, Static and inertia force analysis of machinery, Dynamic analysis of cams, Gears, Gear trains, Balancing of machines, Governors.
Websites:	http://www.philadelphia.edu.jo/academics/laithb/
Instructors:	Eng. Laith Batarseh Email: lbatarseh@philadelphia.edu.jo Office: Engineering building, room E61208, ext: 2135 Office hours: Sunday and Tuesday 10:00 – 11:00 Monday and Wednesday 11:30 – 12:30

Course Topics

Week	Topic
1+2	Introduction +Linkages
3+4	Position analysis
5	Velocity analysis
6	Acceleration analysis
7+8	Static and dynamic analysis
9+10	Cam mechanism
11+12	Normal Gearing and gear trains.
13	Planetary gear trains
14	Balancing
15	Governors
16	Review, and final exam

Course Learning Outcomes and Relation to ABET Student Outcomes:

Upon successful completion of this course, a student should:

1.	Differ between the different types of mechanisms	1
2.	Be able to calculate the mechanism mobility.	1
3.	Be able to perform position, velocity and acceleration analysis	1
4.	Be able to design a cam	1
5.	Be able to design gear train	1
6.	Be familiar with planetary gear trains and how to design its	1
7	Be able to perform a rotary balancing	1
8	Be familiar to the governors (i.e. speed limiters): its design and applications	1
9	Conduct a project consists of analyzing any mechanism from his/her choice	1,3,5,7

Assessment Instruments:

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

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).

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:

First Exam	20%
Second Exam	20%
Quizzes	15%
Homework and project	5%
Final Exam	40%
<hr/>	
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.