

New Jersey Institute of Technology
Digital Commons @ NJIT

School of Applied Engineering and Technology
Syllabi

NJIT Syllabi

Spring 1-1-2020

MET 236-102: Dynamics for Technology

Mina Botros

Follow this and additional works at: <https://digitalcommons.njit.edu/saet-syllabi>

Recommended Citation

Botros, Mina, "MET 236-102: Dynamics for Technology" (2020). *School of Applied Engineering and Technology Syllabi*. 106.

<https://digitalcommons.njit.edu/saet-syllabi/106>

This Syllabus is brought to you for free and open access by the NJIT Syllabi at Digital Commons @ NJIT. It has been accepted for inclusion in School of Applied Engineering and Technology Syllabi by an authorized administrator of Digital Commons @ NJIT. For more information, please contact digitalcommons@njit.edu.

New Jersey Institute of Technology
Department of Engineering Technology
MET 236 Dynamics for Technology

COURSE NUMBER	MET 236
COURSE NAME	Dynamics for Technology
COURSE STRUCTURE	2-0-2 (lecture hr/wk - lab hr/wk – course credits)
COURSE COORDINATOR/ INSTRUCTOR	Dr. A. Sengupta/ Mina Botros
COURSE DESCRIPTION	Provides an understanding of the mathematics of the motion of particles and rigid bodies, and of the relation of forces and motion of particles. Upon successful completion of this course, the students should be able to describe the motion of particles and rigid bodies as functions of time and position, develop their equations of motions due to applied forces, and determine post impact behavior.
PREREQUISITE(S)	MET 235 or Mech 235
COREQUISITE(S)	None
REQUIRED, ELECTIVE OR SELECTED ELECTIVE	Required
REQUIRED MATERIALS	Vector Mechanics for Engineers: Dynamics, 12th Ed. by F.P. Beer, E.R. Johnston, Jr. and P. J. Cornwell, McGraw-Hall, ISBN: 9781259977305
COMPUTER USAGE	None required.
<u>C</u>OURSE <u>L</u>EARNING <u>O</u>UTCOMES (CLO)	By the end of the course students should be able to: <ol style="list-style-type: none">1. Describe the motion of particles and rigid bodies as functions of time and position2. Develop their equations of motions due to applied forces3. Determine post impact behavior
CLASS TOPICS	Kinematics of Particles: Rectilinear Motion, Curvilinear Motion, Kinetics of Particles: Newton's 2nd Law, Energy Methods, Momentum Methods, Systems of Particles, Kinematics of Rigid Bodies, Relative Motions, Plane Motion of Rigid Bodies Forces & Accelerations, Plane Motion of Rigid Bodies Systems & Constraints, Plane Motion of Rigid Bodies Energy Methods, Plane Motion of Rigid Bodies Momentum Methods, Vibrations

STUDENT OUTCOMES The Course Learning Outcomes support the achievement of the following MET Student Outcomes and TAC of ABET Criterion 9 requirements:

Student Outcome b - an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;

Related CLO – 1 thru 7

Student outcome 1 - technical expertise in dynamics, fluid mechanics, and thermodynamics

Related CLO – 1 thru 7

GENERAL GRADING POLICY	Homework, Classwork (Quizzes) & Attendance	20 %
	2 Tests (2 @ 25 % ea.)	50 %
	Final Exam “All Chapters”	30 %

ACADEMIC INTEGRITY NJIT has a **zero-tolerance** policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code, go to <http://www.njit.edu/academics/honorcode.php>

STUDENT BEHAVIOR

- No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.
- Cellular phones must be turned off during the class hours – if you are expecting an emergency call, leave it on vibrate.
- No headphones can be worn in class.
- Unless the professor allows the use during lecture, laptops should be closed during lecture.

**MODIFICATION TO
COURSE** The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course outline.

PREPARED BY Mina Botros

**COURSE COORDINATED
BY** Dr. A. Sengupta

CLASS HOURS

Thursday 5:45 PM – 7:40 PM FMH 319

OFFICE HOURS:

By Appointment: mns34@njit.edu

NOTES

- **NO** Late Homework will be accepted
- Homework will be submitted one week before each test (3 homework submissions in total)
- **Regular attendance is required.**

GRADING LEGEND

GRADE	NUMERIC RANGE
A	90 to 100
B+	85 to 89
B	80 to 84
C+	75 to 79
C	70 to 74
D	60 to 69
F	0 to 59

MET 236 - COURSE OUTLINE

Week	Date	Topics	Reading-Assignment	Homework\Class work Assignment
			11 th Edition	
1	Jan. 23	Introduction to Kinematics and Kinetics	11.1 thru 11.2	11.20,22,23,34,36
2	Jan. 30	Kinematics of Particles	11.3 thru 11.5	12.1,3,5,6,8
3	Feb. 6	Kinetics of Particles	12.1 thru 12.2	12.10,12,25,17,18
4	Feb. 13	Kinetics of Particles (Cont.)	12.3 Homework 1 due	---
5	Feb. 20	Test 1		---
6	Feb. 27	Kinetics of Particles: Energy Methods	13.1 – 13.3	13.2, 6,10,11,12,14,16
7	Mar. 5	Impact	13.4	13.18,20,21,22,24
8	Mar. 12	Kinematics of Rigid Bodies	15.1 thru 15.5	15.1,2,4,6,7, 10,11,13,14,16
SPRING BREAK 3/15-3/22				
9	Mar. 26	Kinematics of Rigid Bodies – Cont'd.	15.5 thru 15.7 Homework 2 due	---
10	Apr. 2	Test 2		---
11	Apr. 9	Planar Kinetics of a Rigid Body: Force and Acceleration	16.1 - 16.2	16.9 -13 20,21,23,34,35
12	Apr. 16	Vibrations	19.1 thru 19.2	19.1,3,5,7,10
13	Apr. 23	Vibrations (Cont.)	19.3 thru 19.4	19.12,13,15,17,19
14	Apr. 30	Review	Homework 3 due	---
15	TBD	FINAL EXAM	All Chapters	---