

1. Course Title:

Technical Dynamics

MET 327 & MET 327L – 4 Credits Lecture & 1 Credit Lab

MET Core Program Requirement

Prerequisite: IET 311 or permission of instructor, corequisite, MET 327LAB

This is a Technical content course under ABET Criterion 5

2. Faculty Member Information:

Instructor: Roger Beardsley
Office: Hogue 302
Phone: 509- 963-1596
E-mail: beardslr@cwu.edu

3. Course Description:

Lecture Description: rectilinear and curvilinear motion, rotational kinematics, work, energy and power, linear impulse and momentum, angular impulse and momentum, rigid body motion, relative motion and vibrations

Lab Description: Practical application of dynamical systems including usage of state-of-the-art instrumentation and data recording systems.

4. Textbook and other required materials for the course:

Engineering Mechanics: Dynamics Hibbler 11th ed Prentice Hall 2005

5. Specific Learner and Expressive Outcomes and Assessment Strategies:

ABET Outcome Criteria #	Learner Outcomes The student will	Assessment The student will be assessed through
3a,b,f 9b,f,g	1. demonstrate the ability to model dynamic physical systems	Assignments, exams, and lab reports.
3a,b,f 9b,f,g	2. analyze systems to predict motion of a point or a rigid body	The student will complete a written test and perform assignments.
3c,d,e,f 9e,n	3. demonstrate the ability to select proper instrumentation to support experiments and have the ability to calibrate various sensors and connect sensors to data acquisition systems.	laboratory experiments and reports.
3a,b,c,g,f 9e,f,g	4. Students will perform computerized data analysis and be able to present and explain experimental results with clarity.	This shall be assessed through laboratory experiments, written and oral reports.
3g	5. Students will demonstrate the ability to write various types of test reports common in the engineering field.	This shall be assessed through laboratory written reports.

6. Course Topics and Schedule:

Introduction & Overview	Chapter 12
Lab Intro: Measurements	
Kinematics of a Particle	Chapter 12
Force and Acceleration	Chapter 13
Lab 1 Laser-timed Velocity Sled	
Work & Energy	Chapter 14
Impulse & Momentum	Chapter 15
Lab 2 Cam Motion Lab	
Review Planar Kinematics & Kinetics of Particles	
Exam #1; Chapter 12, 13, 14 & 15	
Lab 3: Centripetal Acceleration	
Kinematics of a Rigid Body	Chapter 16
Force & Acceleration	Chapter 17
Lab 4 Bounce Lab (restitution)	
Work & Energy	Chapter 18
Impulse & Momentum	Chapter 19
Lab 5: Impulse of Model Rocket Engine	
Review Planar Kinetics & Kinematics of Rigid Bodies	
Exam #2; Chapter 16, 17, 18 & 19	
Vibrations & Resonance	Chapter 22
Lab 6: Vibrating Beam Analysis Lab	
Final Exam - Comprehensive	

7. Grading:	HW / Quizzes	(11+)	30%	
	Exams & Final	(3)	40%	
	Lab Reports.	(8)	20%	
	Participation/involvement	(30)	10%	(weightings are approx)

A(92-100), A-(90-92), B+(88-90), B(82-88), B-(80-82), C+(78-80), C(72-78), C-(70-72), D+(68-70), D(62-68), D-(60-62),

8. ADA Statement:

Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact me or Robert Harden, ADA Compliance Officer, Director, ADA Affairs and Students Assistance on campus at 963-2171 for additional disability related educational accommodations.

Prepared by Roger Beardsley June 24, 2009