

Dynamics
The University of Texas at Dallas
Spring 2017

Course Details

Course Number: **MECH – 2330.003**
Course Discipline: **Mechanical Engineering**
Lecture Time: **TR 8:30 am – 9:45 am**
Lecture Room: **JSOM 12.206**

Instructor

Name: Dr. P.L.Stephan Thamban
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Phone: 972-883-4687
Office: ECSN 2.518
Office hours: W 10:30 am -12:30 pm (or by appointment or during Statics office hour session.)

Teaching Assistant

Name: Sahand Hadizadeh Kafash
Email: sxh162930@utdallas.edu
Office: ECSN 2.124 during office hours (ECSN 2.232 – other timings)
Office hours: MR 1:30 pm – 3:00 pm

Course materials requirement

You are required to have a copy of the textbook and be registered in the online course (for HW assignments) at www.MasteringEngineering.com

Textbook options:

Engineering Mechanics: Statics & Dynamics plus MasteringEngineering with Pearson etext Access Card package, 14th edition, R.C. Hibbeler, Prentice Hall, ISBN-13 978-0134117003 (or)

Engineering Mechanics: Statics & Dynamics, 14th edition, R.C. Hibbeler, Prentice Hall, ISBN-13 978-0133915426 (or)

Engineering Mechanics: Statics & Dynamics, 14th edition (loose leaf), R.C. Hibbeler, Prentice Hall, ISBN-13 978-0134228242 (or)

Engineering Mechanics: Statics & Dynamics, 14th edition, R.C. Hibbeler, etext with MasteringEngineering access, ISBN-13 978-0133941296

Online registration information: (@ www.MasteringEngineering.com)

Course title: SPR_2017_MECH_2330_SEC_003

Course ID: METHAMBAN81407

ISBN-13 9780133952018

Prerequisites / Co-requisites

Prerequisites: MECH 2310. Pre/Co-requisites: ENGR 2300 or MATH 2420

Course Description

We will have discussions on kinematics and kinetics of particles, planar rigid bodies, three-dimensional rigid bodies and equations of motion. We will study methods/analysis utilizing force and acceleration, work and energy and impulse and momentum to understand dynamics of rigid bodies. Single degree of freedom vibration systems and computational engineering tool will be introduced.

Course Objectives/ Outcomes

- (1) Apply and interpret the principles of work & energy to systems of particles and rigid body dynamic systems.
- (2) Apply and interpret the principles of impulse and momentum to systems of particles and rigid body dynamic systems.
- (3) Apply Newton's law to derive equation of motion and solve dynamic system problems.
- (4) Demonstrate the ability to apply all of the above to realistic dynamic systems and engineering mechanisms and simulate the dynamical systems using modern engineering tools.

Tentative Schedule

COURSE CONTENT, COURSE SCHEDULE	Introduction particle kinematics	Week 1,2
	Particle kinetics	Week 3
	Work & Energy – particle	Week 4
	Impulse & momentum – particle	Week 5
	<u>Midterm I, Tentative Date: 2/14 (Tue)</u>	
	Rigid body kinematics – planar	Week 6,7
	Rigid body kinetics – planar	Week 8
	Mass Moment of Inertia	Week 8
	Work & Energy – planar	Week 9,10
	<u>Midterm II, Tentative Date: 3/28 (Tue)</u>	
	Impulse & momentum – planar	Week 11
	Rigid body kinematics – 3D	Week 12
	Rigid body kinetics – 3D	Week 13
	Vibrations	Week 14
	Review or special topics	Week 15
	<u>Final Exam, per UTD Schedule, (TBA on Orion)</u>	

Note:

Lecture sequence will be synchronous with the flow adopted in the textbook

Grading Policy

Two midterm tests and a final exam : 75%
Homework : 20%
Rewritten class notes : 5%

Notes:

- There will be two Midterm tests during the semester and a final exam. Unless announced in class, they will carry equal weightage
- Specific details regarding tests/exam will be given as we get closer to the test/exam date
- Instructor reserves the right to flex the grade range slightly to accommodate “borderline” students who have demonstrated effort towards success in the course to the next higher grade
- After final exam no remedial measures can be given to improve the grade. Students are expected to monitor their progress to assess where they stand in the course
- Make-up test/exam will be given only in extreme cases (upon verifying documentation)

Important Dates

Test 1	: Feb 14, 2017
Test 2	: Mar 28, 2017
Last day of class	: Apr 30, 2017
Final exam	: Per UTD schedule (May 2-8)

Course Mechanics

- Homework / Rewritten class notes:
 - Homework is due by midnight on due date (most of the weeks on Thursday)
 - All HW except Matlab® exercises will be assigned through masteringengineering.com and solutions must be submitted through masteringengineering.com
 - Matlab® related assignments have to be turned-in on due date in class (preferably before lecture starts)
 - Solutions for homework problems will be available with the TA
 - Rewritten class notes need to be turned-in once a week on Tuesdays (preferably before lecture starts)
 - It will be graded on a “Completed”/ “Not Completed” basis
- Websites:
 - Relevant information about the course (syllabus, specific announcements, handouts, etc.) will be made available on eLearning.utdallas.edu.
 - HW grades will be available on www.masteringengineering.com

Course Policies

- Attendance:
 - While roll will not be taken during class, it will be extremely beneficial for students to be present for all lectures. Tests/exam may include material exclusively (not in the textbook) covered during lectures. During lecture, instructor will assume that

the audience had been present for previous lectures when it pertains to continuity of discussions. Students are expected to be present for lecture on time (8:30 am). Cellular/smart phones can be kept in silent/vibrate mode. All other electronic devices that cause distraction during class **must be turned off**

- Late/missed work:
 - If due to an unavoidable circumstance (health, family emergencies) a student turns-in work after it is due, upon verifying supporting documents that attest such emergency instructor may waive penalty for late work. It will be dealt with on a case by case basis by the instructor
 - Missed tests due to health reasons or family emergencies have to be supported by acceptable documentation to be considered for make-up arrangements. It will be dealt with on a case by case basis by the instructor
 - Homework will not be accepted a week after the due date
- Academic Honesty
 - While the instructor encourages discussions with peers while working on homework problems, he deems copying solution of a peer as being dishonest
 - Scholastic dishonesty during tests/exams may result in failing the course

Suggestions for Success

Outside class work is critical for success in this course. Develop a habit of keeping up with the reading of the text and reviewing of the notes. This is a fast paced course so there is no room for getting “left behind” and “catching up”. If you have difficulties, identify them early and bring it to the attention of the instructor immediately so remedial measures can be suggested. It requires lot of practice to have a higher percentage success rate in problem-solving in the time frame you will operate in tests/exams. So it is highly recommended that students work on problems beside the ones assigned for homework.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.