

**The University of Texas at Tyler**  
**College of Engineering and Computer Science**  
**Course Objectives, Syllabus, and Course Policy**  
**Spring 2020(January 13-May 2)**

**COURSE:**                   **ENGR 2302.001 - DYNAMICS**  
Lectures: Mondays & Wednesdays 12:30 -1:50 pm in RBN3038.

**TEXT:**                       R. C. Hibbeler: Engineering Mechanics – Dynamics, Fourteenth Edition, Pearson, 2013(ISBN 978- 0-13-391538-9) (OR) 12<sup>th</sup> or 13<sup>th</sup> edition if you can buy it cheaper.

**INSTRUCTOR:**       Dr. M. Sathyamoorthy, Office – Engineering RBN3006 – 903 565 5939 – [msathyamoorthy@uttyler.edu](mailto:msathyamoorthy@uttyler.edu)-- Office hours posted in Canvas. You can walk in anytime for help.

**ABOUT THE COURSE**

Dynamics is the second of the three-course sequence in Mechanics, (Statics being the other), that is usually required of most engineering majors. Statics and Dynamics are introductory courses on basic engineering principles and engineering applications. These courses are taught at the beginning of engineering programs/curricula to provide an opportunity to find out if the student has the necessary aptitude to succeed in engineering. In-depth understanding of Statics and Dynamics is an absolute necessity for the study of other mechanics courses such as Strength of Materials, Thermodynamics, Fluid Mechanics etc. This course will be taught with a strong emphasis on understanding the fundamental theoretical concepts complemented by solutions to a number of example problems to reinforce the understanding of the theory discussed in class. It is important to note that the most effective way of mastering the course material is to solve as many classroom, practice and homework problems as possible.

**PRE-REQUISITES**

ENGR2301 or CENG2301-Statics is a prerequisite for this course with a minimum “C” grade.

**COURSE SYLLABUS & TOPICS COVERED**

The following topics will be covered in class. A flexible lecture schedule will be used to adjust the material covered to suit the background, interest and response of the students in order to maximize the overall benefits.

Chapter 12:   Kinematics of a Particle, Sections: 12.1, 12.2, 12.4-12.10

Chapter 13:   Kinetics of a Particle: Force and Acceleration, Sections: 13.1-13.6

Review Session 1 will be done in class before Exam 1.

Exam 1 on February 12<sup>th</sup> in class

Chapter 14:   Kinetics of a Particle: Work and Energy, Sections: 14.1-14.6

Chapter 15:   Kinetics of a Particle: Impulse and Momentum, Sections: 15.1-15.7

Review Session 2 will be done in class before Exam 2.

Exam 2 on March 25<sup>th</sup> in class

System of Particles:   See posted notes

Chapter 16:   Planar Kinematics of a Rigid Body, Sections: 16.1-16.7

Chapter 17: Planar Kinetics of a Rigid Body: Force and Acceleration, Sections: 17.1-17.5

Review Session 3 will be done in class before Exam 3.

Exam 3 on April 15<sup>th</sup> in class

2-HOUR FINAL COMPREHENSIVE EXAMINATION: Will be during the final exam week (the week of April 27<sup>th</sup>) as per the final exam schedule.

### **ATTENDANCE:**

Dynamics is one of the challenging courses in engineering. Therefore, **regular attendance is required**. Attendance will be taken in class for my records. In case you have to miss a class, it is your responsibility to keep up with the class work and be informed of all announcements made in the class on home works, exams etc.

### **ASSESSMENT: HOMEWORK:**

Homework is a very important part in understanding the course material. Completing your homework as much as possible independently is an absolute necessity to do well in this course. Therefore, I strongly urge each of you to complete the homework assignments independently for your own benefit. Homework assignments and solutions are posted in Canvas. Homework will **NOT** be collected or graded. You are also encouraged to work in groups to solve homework problems and learn from each other. Also, use the Pass Tutoring Center to get help. PTC has scheduled regular tutorial sessions every week and the schedule is posted in Canvas.

### **EXAMS:**

Closed-book, closed-notes exams will be given after completing a reasonable amount of material from the text as shown earlier. A final 2-hour **COMPREHENSIVE** examination will be given during the final exam week. You may use a one-page, self-written notes (cheat sheet with no problem solutions of any kind) for reference in each of the exams and the final examination. The cheat sheet will be collected with exam papers. A formula sheet will be posted in Canvas before each exam and it will also be included with the exam. If you miss any exam without getting **prior approval from me at least one week before the test date**, your exam score will be counted as zero in the calculation of your final course grade.

### **FINAL GRADES:**

#### **Final grades are based on:**

3 Exams @ 20 points each	60 points
Group project	10 points
Final Comprehensive Exam	<u>30 points</u>
Total	100 points

## **NOTE**

Course syllabus, course material such as handouts and statement of problems solved in class, homework assignments, homework solutions, review material, exam solutions are all posted in Canvas. Please review all the material posted in Canvas on a regular basis. We will use Canvas to post announcements and contacting students by e-mail.

**CALCULATOR POLICY:** You are allowed to use the scientific calculator **TI-30X IIS** at each exam. You are not be allowed to use any other calculator or store any class material in the calculator during the exams. You cannot have i-phones, i-pads, i-watches or other electronic devices with you. If you bring i-phone or other electronic devices to the room, please leave them in your bag. I strongly recommend that you buy the TI-30X IIS calculator (for about \$12) and get familiar with its use before the first examination.

**THERE WILL BE NO MAKE-UP EXAMS.** The percentage of any exam missed by a student will be added to his/her final comprehensive exam only if prior approval is granted. The student is responsible to contact me at least a week before the scheduled exam date to get the approval. If you have to miss an exam due to emergencies (such as medical and other emergencies) please inform me as soon as possible before or **immediately** after the exam. Class average for each exam will be posted on Canvas after each exam. Final grades will be determined on the basis of the class average. If your grade is consistently at the class average you will get a “C” grade. If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify me at least one week prior to the date of the planned absence. If you miss any exam without getting **prior approval from me at least one week before the exam date**, the exam grade will be counted as zero in the calculation of your final course grade.

## **GRADE REPLACEMENT INCENTIVE**

Please note that the final exam is a comprehensive exam. In computing your final course grade, your lowest exam grade (from exam 1, 2 or 3) will be replaced by the final exam grade if you did really well in the final exam. In other words, if your final exam grade is better than any of your earlier exam grades, it will be used to replace the lowest grade and will also be used as your final exam grade. Make sure that you attend the mandatory tutorial sessions. If you do not attend these mandatory tutorial sessions noted below, you are not eligible for grade replacement incentive.

## **MANDATORY TUTORIAL SESSIONS**

Whenever your exam score falls below the class average (class average will be announced in class after each exam and also posted in Canvas), you are required to attend at least 5 one-hour tutorial sessions offered by the PASS Tutoring Center prior to the next exam date. You can do this at one session of 5 hours or 5 sessions of 1 hour each depending upon your convenience. This requirement will be strictly enforced. Days and times for tutorial sessions are posted in Canvas. If you do not attend these mandatory tutorial sessions, you are not eligible for grade replacement incentive noted above.

## **ELECTRONIC DEVICES**

Cell phones and all other forms of electronic communication devices, if carried into the classroom, must be turned off. The use of computers and other electronic devices during class is restricted to classroom activities and course applications. Do not record lecture materials without obtaining prior written consent of the instructor.

## **ACADEMIC DISHONESTY**

Academic or scholastic dishonesty includes cheating, plagiarism, collusion and/or falsifying academic records. University policy prohibits these acts and students suspected of academic

dishonesty are subject to disciplinary proceedings. Therefore, no cheating of any kind will be tolerated. If you try to cheat, your course grade will be “F” and the incident will be reported to the University.

### **UT TYLER A TOBACCO-FREE UNIVERSITY**

Beginning August 15, 2016, all forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit [www.uttyler.edu/tobacco-free](http://www.uttyler.edu/tobacco-free).

### **CONCEALED HANDGUN POLICY**

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>.

Academic policies regarding withdrawal from the course, state-mandated course drop rule, grade forgiveness, student rights, absence for religious observance, grade replacement, social security and privacy, learning disability, academic dishonesty and others can be found at <http://www.uttyler.edu/academicaffairs/syllabuspolicies.pdf>. A copy is posted in Canvas for your convenience and some of the policies are reproduced below for your information.

#### **Grade Replacement/Forgiveness**

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to do so will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates will receive grade forgiveness (grade replacement) for only three course repeats; graduates, for two course repeats during his/her career at UT Tyler.

#### **State-Mandated Course Drop Policy**

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the 12th day of class (See Schedule of Classes for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office if you have any questions.

#### **Disability Services**

If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Services counselor. In order to assure approved services the first week of class, diagnostic, prognostic, and prescriptive information should be received 30 days prior to the beginning of the semester services are requested. For more information, call or visit Disability Services located in the University Center, Room 3150. The telephone number is (903) 566-7079. Additional information may also be obtained at the following UT Tyler Web address: <http://www.uttyler.edu/disabilityservices>.

### **Student Absence for University-Sponsored Events and Activities**

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

### **Social Security and FERPA Statement:**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

**COURSE OBJECTIVES:** By the end of this course students will be able to:

1. Set up and solve particle kinematics problems using rectilinear and curvilinear, planar and three-dimensional, coordinate systems.
2. Set up and solve kinetics of particles problems, planar and three-dimensional, using Newton's second law, work and energy, and impulse and momentum methods.
3. Set up and solve kinematics of rigid bodies problems in planar coordinate systems.
4. Set up and solve kinetics of rigid bodies problems using Newton's second law, work and energy, and impulse and momentum methods.