

**Instructor:** Xiaohua Li  
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**Lecture Time:** Tu & Th 1:00 p.m.-2:20 p.m. room D215 (section .001)  
Tu & Th 11:30 a.m.-12:50 p.m. room B158 (section .003)  
**Instructor Office Hours:** Open Office Policy; MWF 1:00pm-2:00pm or by appointment  
**TA Office Hours:** will be posted in blackboard later

**Required Textbook:** Engineering Mechanics: Dynamics, 14<sup>th</sup> Edition,  
Pearson, 2015 R.C. Hibbeler  
ISBN-13: 978-0133915389

### Course Description:

3 hours. Basic theory of engineering mechanics, using calculus, involving the motion of particles, rigid bodies, and systems of particles; Newton's Laws; work and energy relationships; principles of impulse and momentum; application of kinetics and kinematics to the solution of engineering problems.

Prerequisite(s): MATH 1720 and ENGR 2301 (or MEEN 2301).

### Course Learning Outcomes (CLO):

Upon successful completion of this course, students will:

1. Express dynamic quantities as vectors in terms of Cartesian components, polar coordinates, and Normal-tangential coordinates.
2. Compute mass moments of inertia for systems of particles and rigid bodies.
3. Solve kinematic problems involving rectilinear and curvilinear motion of particles.
4. Solve kinetic problems involving a system of particles using Newton's Second Law.
5. Apply the principles of work and energy and conservation of energy to the solution of engineering problems involving particles and systems of particles.
6. Apply the principles of impulse and momentum and conservation of momentum to the solution of engineering problems involving particles and systems of particles.
7. Solve kinematic problems involving the translation and rotation of a rigid body.
8. Solve kinematic problems involving general planar of rigid bodies.

### ABET Student Learning Outcomes (SO)

- a Ability to apply mathematics, science and engineering principles.
- b Ability to design and conduct experiments, analyze and interpret data.
- c Ability to design a system, component, or process to meet desired needs.
- d Ability to function on multidisciplinary teams.
- e Ability to identify, formulate and solve engineering problems.
- f Understanding of professional and ethical responsibility.
- g Ability to communicate effectively.
- h The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i Recognition of the need for and an ability to engage in life-long learning.
- j Knowledge of contemporary issues.
- k Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

CLO	ABET Student Outcomes (SO)										
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	X		X		X						
2	X		X		X						
3	X		X		X						
4	X		X		X						
5	X		X		X						
6	X		X		X						
7	X		X		X						
8	X		X		X						

<b>Grades:</b> Homework (10)	10%	≥ 90%	A
Quizzes (highest 3/5)	10%	80-89.9%	B
Exam 1 (Ch 12 &13)	25%	70-79.9%	C
Exam 2 (Ch 14 &15)	25%	60-69.9%	D
Final/Exam 3 (Ch 16)	25%	< 60%	F
<u>Attendance (5/6)</u>	5%		
<b>Total</b>	<b>100%</b>		

### Homework Policy:

1. “Homework Day”: **Thursday**. the day new homework will be assigned (HW assignment will be posted in Blackboard) and previous homework will be collected;
2. Homework should be turned in on the due day before the lecture starts. **NO late homework will be collected. Exceptions:** medical emergence (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.
3. Definition of “**late**”: when class is over and instructor steps outside the classroom, homework turned in thereafter will be considered as “**late**” and will not be collected
4. Solutions to Homework will be posted in Blackboard after 2:30 pm Thursday
5. Having no textbook is not a valid excuse for not doing homework. It is the student’s responsibility to acquire textbook for his/her study
6. Homework can be turned in earlier than the due day
7. Homework dropped in the instructor’s departmental mailbox will NOT be collected
8. Homework slid through the door into the instructor’s office will NOT be collected
9. Homework dropped in the “homework dropbox” in front of the department door will NOT be collected
10. Homework turned in other than the due day or outside classroom must be turned in to instructor either IN PERSON or through EMAIL.
11. If homework is turned in through email, it should be scanned (or pictured by a smart phone) and emailed to instructor before the class ends (**12:50p.m. for section .003 and 2:20pm for section 001**)
12. Homework should be stapled, instructor or TA will not be responsible for lost loose homework

### Exam and Quiz:

- (1) Quizzes are open book and open notes
- (2) Exams are closed book and closed notes with formula sheets.
- (3) Formula sheets could be maximum 5 pages on top of instructor's handouts, A4 or letter size, both sides
- (4) **Student is responsible for preparing his/her own formula sheets**
- (5) Formula sheets could include anything **BUT: solutions of any kind/format** (numerical or symbolic) to homework problems or lecture/textbook examples. Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to MEE department and University.
- (6) Formula sheets must be turned in with the exam papers (in the case of formula sheets were not checked by the instructor during the exam). Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to MEE department and university
- (7) **There will be NO make-up quiz. Exceptions:** medical emergency (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.
- (8) **There will be NO make-up exam. Exceptions:** medical emergency (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.

**Disability Accommodations:** If you need academic accommodations for disability you must have document which verifies the disability and makes you eligible for accommodations, then you can schedule an appointment with the instructor to make appropriate arrangements.

### Academic Dishonesty:

There is a zero tolerance policy. Cheating of whatsoever will result in an automatic 'F' in this course and the matter will be turned over to the appropriate student disciplinary committee.

### **IMPORTANT EXAM DATES**

**Exam #1** (tentative; depends on when chapter 13 is finished; Covers Ch 12 & 13):  
**Oct. 6<sup>th</sup>, 2016, Thursday**

**Exam #2** (tentative; depends on when chapter 15 is finished; Covers Ch 14 & 15):  
**Nov. 3<sup>rd</sup>, 2016, Tuesday**

**Exam #3** (UNT official final exam schedule, Covers Ch 16 only):

**For section .001 (1:00 p.m.-2:20 p.m. class):**

**Thursday, December 15, 10:30 a.m. - 12:30 p.m.**

**For section .003 (11:30 a.m.-12:50 p.m. class):**

**Tuesday, December 13, 10:30 a.m. - 12:30 p.m.**

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### **UNT Official Academic Calendar: Fall 2016**

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<b>Date</b>	<b>Event</b>
August 29, 2016	First Class Day (Monday)
September 5, 2016	Labor Day (no classes; university closed)
November 24-27, 2016	Thanksgiving Break (no classes; university closed)
December 7-8, 2016	Pre-finals Days
December 8, 2016	Last Class Day
December 9, 2016	Reading Day (no classes)
December 10-15, 2016	Finals
December 24, 2016 - January 1, 2017	Winter Break (no classes; university closed)

## MEEN 2302.001/.003 Mechanics II (Dynamics)

### Schedule Overview

(Please note the schedule may change based on the needs during the semester)

Week	Date	Lecture Topics
#1	Aug.29 <sup>th</sup> - Sept.2 <sup>nd</sup>	Overview of syllabus Ch.12.1-12.2: Rectilinear Motion
#2	Sept.5 <sup>th</sup> – Sept.9 <sup>th</sup>	Ch.12.4-12.5: General Curvilinear Motion Ch.12.7: Curvilinear Motion: Normal and Tangential components
#3	Sept.12 <sup>th</sup> – Sept.16 <sup>th</sup>	Ch.12.8: Curvilinear Motion: cylindrical/polar components Ch.12 Homework/Example/Review session
#4	Sept.19 <sup>th</sup> – Sept.23 <sup>rd</sup>	Ch.13.1-13.4 Equation of Motion: Rectangular Coordinates Ch.13.5 Equation of Motion: Normal and Tangential Coordinates
#5	Sept.26 <sup>th</sup> – Sept.30 <sup>th</sup>	Ch.13.6 Equation of Motion: Cylindrical/polar Coordinates Sept. 29 <sup>th</sup> , Thursday, Engineering Career Fair 10am-3pm. No Class. Dress up and bring your resume
#6	Oct.3 <sup>rd</sup> – Oct.7 <sup>th</sup>	Ch. 13 Homework/Example/Review session Oct. 6 <sup>th</sup> , Thursday, Exam #1: covers Ch 12 and 13
#7	Oct. 10 <sup>h</sup> – Oct.14 <sup>th</sup>	Ch.14.1-14.3 Work, Energy and Principle of Work and Energy Ch.14.4-14.6 Power, Efficiency and Conservation of Energy
#8	Oct. 17 <sup>th</sup> – Oct.21 <sup>st</sup>	Ch.15.1-Ch.15.2 Impulse and Momentum Ch.15.3 Conservation of linear Momentum for a System of Particles
#9	Oct. 24 <sup>th</sup> – Oct.28 <sup>th</sup>	Ch.15.3 Conservation of linear Momentum: continue Ch.15 Homework/Example/Review session
#10	Oct.31 <sup>st</sup> – Nov.4 <sup>th</sup>	Nov. 3 <sup>rd</sup> , Thursday, Exam #2: covers Ch 14 and 15 Ch.16.1-16.2 Planar Motion of a Rigid Body; Translation;
#11	Nov.7 <sup>th</sup> – Nov.11 <sup>th</sup>	Ch.16.4: Absolute Motion analysis Ch.16.5: Relative motion Analysis: Velocity; Base point method
#12	Nov 14 <sup>th</sup> – Nov.18 <sup>th</sup>	Ch.16.5: Relative motion Analysis: Velocity; Instantaneous center Ch.16.5: Relative motion Analysis: Velocity; Instantaneous center
#13	Nov.16 <sup>th</sup> – Nov.25 <sup>th</sup>	Ch.16.5: Relative motion Analysis: Acceleration Thanksgiving Holidays. University Closed. NO class/lecture
#14	Nov.28 <sup>th</sup> – Dec. 2 <sup>nd</sup>	Ch.16.5: Relative motion Analysis: Acceleration; Ch.16.5: Relative motion Analysis: Comprehensive
#15	Dec. 5 <sup>th</sup> – Dec. 9 <sup>th</sup>	Ch. 16 Homework and Discussion session Homework/Example/Review session
#16	Dec. 10 <sup>th</sup> – Dec. 15 <sup>th</sup> Finals	Exam #3 (Final): Ch 16 only For section .001 (1:00 p.m.-2:20 p.m. class): Thursday, December 15, 10:30 a.m. - 12:30 p.m. For section .003 (11:30 a.m.-12:50 p.m. class): Tuesday, December 13, 10:30 a.m. - 12:30 p.m.

Document History: Dr. Xiaohua Li, Prepared on 8/18/2014; last updated on 8/25/2016

## Fall 2016 Final Exams - Discovery Park

Pre-finals days are Wednesday, December 7 - Thursday, December 8. Reading Day is December 9 and no classes will meet.

\* **Evening Classes:** have their final exams on the earliest usual class time this week.

<b>Saturday, December 10</b>	
<i>This class...</i>	<i>Has a final exam at this time...</i>
All Saturday classes & All INET Classes with On Campus Finals	Contact Department
MWF 10:30 a.m.	8:00 a.m. - 10:00 a.m.
MWF 1:30 p.m.	10:30 a.m. - 12:30 p.m.
MWF 4:30 p.m.	1:30 p.m. - 3:30 p.m.
F 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
<b>Monday, December 12</b>	
<i>This class...</i>	<i>Has a final exam at this time...</i>
MWF 8:30 a.m.	8:00 a.m. - 10:00 a.m.
MWF 11:30 a.m.	10:30 a.m. - 12:30 p.m.
MWF 2:30 p.m.	1:30 p.m. - 3:30 p.m.
MW 2:30 p.m. - 3:50 p.m.	1:30 p.m. - 3:30 p.m.
M 2:30 - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
<b>Tuesday, December 13</b>	
<i>This class...</i>	<i>Has a final exam at this time...</i>
TR 8:30 a.m.	8:00 a.m. - 10:00 a.m.
<b>TR 11:30 a.m.</b>	<b>10:30 a.m. - 12:30 p.m.</b>
TR 2:30 p.m.	1:30 p.m. - 3:30 p.m.
T 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
<b>Wednesday, December 14</b>	
<i>This class...</i>	<i>Has a final exam at this time...</i>
MWF 9:30 a.m.	8:00 a.m. - 10:00 a.m.
MWF 12:30 p.m.	10:30 a.m. - 12:30 p.m.
W 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
MWF 3:30 p.m.	1:30 p.m. - 3:30 p.m.
MW 4:00 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
<b>Thursday, December 15</b>	
<i>This class...</i>	<i>Has a final exam at this time...</i>
TR 10:00 a.m.	8:00 a.m. - 10:00 a.m.
<b>TR 1:00 p.m.</b>	<b>10:30 a.m. - 12:30 p.m.</b>
R 2:30 p.m. - 5:20 p.m.	1:30 p.m. - 3:30 p.m.
TR 4:00 p.m.	1:30 p.m. - 3:30 p.m.