COLLEGE OF ENGINEERING

UNT

Department of Engineering Technology

ENGR 2301 – Statics

Section 001 – Summer 2018 Syllabus – *Subject to Change*

Meeting Times: Mon./Wed.: 12:30 pm – 2:20 pm
Meeting Room: NTDP F185

INSTRUCTOR	**Aloysius (Al) Attah, P.E.**	**EVALUATION**	
OFFICE	NTDP F115G	Exercises	20%
PHONE	(940) 565-2022	Assignments	20%
OFFICE HOURS		Midterm Exam 1	15%
Monday and Wednesday: by appointment		Midterm Exam 2	15%
		Final Exam	30%
E-MAIL: aloysius.attah@unt.edu		**TOTAL**	100%

COURSE OBJECTIVES:

At the conclusion of this course, you should be able to:

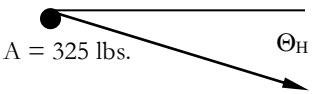
- *identify*, *formulate*, and *solve* problems dealing with resultant forces and force balancing.
- *perform* analysis of simple static structures (frames, trusses and machines).
- *apply* concepts of moments of inertia and friction to solve statics-related problems.

COURSE POLICY/GRADING:

Assignments:

- Each assignment will be due on the date specified in the outline below, unless otherwise stated by the instructor.
- Only one late assignment will be accepted during the course. It may be submitted any time before the beginning of the last class session, and will be graded with a 50% penalty. No other late assignments will be accepted without consent of the instructor.
- Please observe the following items in completing your assignment:
  - Place no more than one problem on each page (you may use more than one page for a problem, if necessary).
  - You must have a proper "given" and "required" statement.
    Example: Given: Enter all known information. Be brief and concise. Do not restate the problem. e.g. P = 1500 lbs., L = 10 ft., A = 43 in^2.
    Required: State clearly and concisely what is to be done. e.g. Calculate reactions.
  - Set up all work in a neat, orderly and logical manner. All steps must appear from the top of the sheet down in the sequence in which each was performed.
  - Every force has an identifying symbol. If it does not, assign it one, then use that symbol in all calculations to identify that force and its components. e.g. The symbol A_x identifies the horizontal component of force A. B_y is the vertical component of force B.
  - Draw all sketches at the proper slopes and proportions. Use the grids on your paper for working sketches. Use proper scales for graphical solutions. Include all dimensions and related information.
  - Show sign convention on each solution for algebraic summations.
  - Express every force or component completely. There must be magnitude, sense, direction, and point of application.

e.g.



- State the equations used in their original form. Show the source of the equation. e.g. (Eq 3-11)
- Include dimensions of all values as you enter them in your computation.
- Check your work for dimensional accuracy. e.g. Pounds÷inches squared should result in an answer expressed in pounds per square inch.
- Check the accuracy of your answers by alternate methods or by approximation of quantities.
- Show a proper scale for all graphical solutions. e.g. 1 inch = 200 lbs.
- Use method of similar triangles to solve for components or distances whenever possible. Only use trigonometry when you do not have adequate information for setting up proportions.
- Present all work in a neat manner.
- Do not crowd your work.
- State the answer clearly and enclose it with a box.
- Place your name, the course number, and the assignment number at the top of each page.
- Number all pages in the upper right-hand corner as 1 of 2 or 1/2.

Exams:

- All exams are open-book and open notes.
- The two midterm exams.
- The first midterm exam will be given in Week 5 (see outline below for date).
  - It will include all material up through Week 4, including Assignment #3.
- The second midterm exam will be given at the end of Week 8 (see outline below for date).
  - It will include all material through Week 7, including Assignment #6.
- The final exam will be given at the end of the last class session. It will be cumulative, covering all topics including:
  - All presentations and any topics discussed in class
  - Any chapters of the text noted in the outline
  - Any work carried out to complete assignments and exercises

In-class exercises:

- There will be 20 exercises.
- Read materials to be covered in class ahead of the scheduled presentations. Some of the in-class exercises may cover materials to be covered that day.
- These are short sets of problems/questions intended to allow reinforcement of topics scheduled for that day.
- These will be carried out in small groups, with all group members receiving the same grade.
  - If a student misses any exercise for any reason, she/he will receive a grade of zero for that exercise.

Other Policies:

- This course will adhere to UNT academic policies, including those for academic integrity (http://vpaa.unt.edu/academic-integrity.htm) and overall conduct (http://deanofstudents.unt.edu/conduct). It is your responsibility as a UNT student to be familiar with these policies, but feel free to ask the instructor any questions pertaining to these.
- Any accommodations for differing abilities will be made for this course as per the policies and determination of the Office of Disability Accommodation: http://disability.unt.edu/
- This syllabus is subject to change at the discretion of the instructor. Students will be notified of any change.

COURSE MATERIALS:

- *Engineering Mechanics: Statics (8th Edition)* by J.L. Meriam, L.G. Kraige, and J.N. Bolton (Wiley, 2015, ISBN 978-1118807330) – available at the bookstore, online, etc.
- Additional materials to be provided in class/on website, including excerpts from manuals, etc.

COURSE OUTLINE: ***Subject to Change***

WK–DATE	TOPIC	WORK DUE	MATERIALS
1 – June 4	Introduction to course. *Presentation #1:* Introduction to mechanics, units, etc. *Presentation #2:* Vectors in two dimensions.		Ch. 1 Ch. 2.1-2.2
1 – June 6	*Presentation #2:* (cont'd) *Presentation #3:* Equilibrium in two dimensions.	Ex. #1	Ch. 3.1-3.2
2 – June 11	*Presentation #3:* (cont'd) *Presentation #4:* Forces and equilibrium in three dimensions.	Ex. #2 Assign. #1	Ch. 2.7
2 – June 13	Review of Assignment #1 *Presentation #4:* (cont'd) *Presentation #5:* Vector combination of forces.	Ex. #3	N/A
3 – June 18	*Presentation #5:* (cont'd) *Presentation #6:* Point moments.	Assign. #2 Ex. #4	Ch. 2.4; 2.8
3 – June 20	Review of Assignment #2 *Presentation #6:* (cont'd) *Presentation #7:* Vector combinations, moment about an axis.	Ex. #5	Ch. 2.8
4 – June 25	*Presentation #7:* (cont'd)	Ex. #6	
4 – June 27	*Presentation #8:* Moment of a couple.	Assign #3	Ch. 2.5; 2.8
5 – July 2	Review of Assignment #3 / Review for Midterm Exam 1. **MIDTERM EXAM 1**		
5 – July 4	**NO CLASS**		
6 – July 9	Review of Midterm Exam 1. *Presentation #8:* (cont'd) *Presentation #9:* Force systems.	Ex. #7	Ch. 2.6; 2.9
6 – July 11	*Presentation #10:* Equilibrium in two dimensions.	Assign. #4 Ex. #8/9	Ch. 3.1-3.3
7 – July 16	Review of Assignment #4 *Presentation #11:* Equilibrium of two- and three-force bodies. *Presentation #12:* Equilibrium in three dimensions.	Ex. #10	Ch. 3.3 Ch. 3.4
7 – July 18	*Presentation #13:* Centroids and centers of mass/gravity.	Assign. #5 Ex. #11/12	Ch. 5.1-5.4
8 – July 23	Review of Assignment #5 *Presentation #14:* Centroid determination. *Presentation #15:* 3-D centroids and centers of mass/gravity.	Ex. #13 Ex. #14	Ch. 5.1-5.5 Ch. 5.1-5.4
8 – July 25	Review of Assignment #6 / Review for Midterm Exam 2. **MIDTERM EXAM 2**	Assign. #6	
9 – July 30	Review of Midterm Exam 2. *Presentation #16:* Analysis of structures – method of joints. *Presentation #17:* Analysis of structures – method of sections.	Ex. #15	Ch. 4.1-4.3 Ch. 4.4
9 – Aug. 1	*Presentation #18:* Analysis of structures – frames/machines. *Presentation #19:* Friction – basic friction, friction devices.	Assign. #7 Ex. #16/17	Ch. 4.6 Ch. 6.1-6.4
10 – Aug. 6	Review of Assignment #7. *Presentation #19:* (cont'd) *Presentation #20:* Friction – screw and belt friction.	Ex. #18	Ch. 6.5; 6.8
10 – Aug. 8	*Presentation #20:* (cont'd) *Presentation #21:* Moments of inertia.	Assign. #8 Ex. #19/20	N/A
10 – Aug. 10	Review of Assignment #8 / Review for Final Exam. **FINAL EXAM**		