

PHY 201

STATICS

3 cr. (3-0)

COURSE DESCRIPTION:

A rigorous course in statics for engineering, mathematics, physics, and other majors requiring a calculus-based mechanics course. Vector algebra is used to study particles, rigid bodies, and systems in equilibrium. A programmable calculator is strongly recommended for the course. This course is currently offered in the fall semester.

PREREQUISITES:

MAT 131 and PHY 155 or 205

COURSE OBJECTIVES:

1. Work with vector systems in three dimensions and find moments, vector components, and equivalent force systems.
2. Solve problems involving either particles or rigid bodies in equilibrium under system of forces.
3. Find resultants and moment resultants for systems of forces and distributed force systems.
4. Analyze trusses, frames, and machines under static loading conditions.
5. Solve problems involving mass moments of inertia and moments of inertia of areas.

COURSE OUTLINE:

The following chapters or portions of the following chapters will be covered:

Chapter No.	Topic
1	General Principles
2	Force Vectors
3	Equilibrium of a Particle
4	Force System Resultants
5	Equilibrium of a Rigid Body
6	Structural Analysis
7	Internal Forces
8	Friction
9	Center of Gravity and Centroid
10	Moments of Inertia
11	Virtual Work

Optional sections (*) in the above chapters may be omitted to adjust the length of the course.

COURSE REQUIREMENTS:

1. Regular attendance required. *“Students are expected to attend all scheduled class periods for the courses in which they are enrolled unless they are participating in a scheduled, supervised College trip or function or unless they have been called for military duty, jury duty or subpoenaed as a witness during regular school days.”* (Rights and Responsibilities: *A Student Code of Conduct, John A. Logan College.*) Students will be allowed to make up work missed for these reasons if *I am notified* by the student *prior* to the absence. Roll will be taken at the beginning of each class period either orally or using an attendance sheet to be passed around. It is the student’s responsibility to sign the attendance sheet. Even if you are here, you will be considered absent if your name is not on this sheet.

Tardiness (not present at the time roll is being taken), being disrespectful to both the instructor and the class, is strongly discouraged. A student will be considered absent if not present when his/her name is called during roll. In addition, students leaving before the end of a class period (without prior permission) will have ½ of an absence counted against them. **Arrive on time! Stay until dismissed.**

Good attendance counts toward course grade. Points will be added to your semester total for students absent from class - for any reason - 3 or fewer class periods during the semester.

Poor attendance counts against course grade. More than 5 absences will be considered an excessive number of absences. Consequently, your course grade will be decreased for five (5) or more unexcused absences. For an absence to be excused you must contact me (voicemail, email or personal contact) no later than the end of the day of the absence with a legitimate reason for your absence.

2. Reading and thoroughly understanding the assigned chapters of the text. The text material must be read before the lecture over the same. **COME TO CLASS PREPARED!**
3. Working the assigned chapter homework sets. These will be collected at the *beginning* of the class period on the due date. Late homework will not be accepted. All work must be done in pencil. In addition:
 - a. No credit will be given if your answer is not boxed with the proper unit.
 - b. No credit will be given if your answer is correct but:
 - (1) no work is shown.

- (2) your work (and associated sketches/diagrams) is not complete, logically organized, neat, clear and understandable.
- (3) your work includes merely a final equation (e.g., borrowed from a text problem solution) with the correct numbers in it along with your final answer. All the work leading to this equation, or intermediate equations, must be shown.
- c. If you are unable to work the problem, place the problem number with a blank beside it on your work pages.
- d. If requested, the author's (or the instructor's) solutions to the assigned homework may be viewed in my office after all the homework is picked up.
- e. *It is NOT possible to do well in this course without doing ALL the assigned homework and doing it well!* Consequently, the homework grade will be based on both quantity of problems completed and correctness of work. Typically, one third to one half of the assigned problems, randomly selected, will be graded.
- f. Collaborative work on HW is encouraged – copying someone else's homework is dishonest and will receive a zero grade (this includes copying solutions obtained off the Internet).
4. Chapter Tests: Based on (sometimes taken directly from) your text reading, homework, lecture and text examples. These tests *will be* both conceptual *and* quantitative. (Partial credit will be given on these tests if your work is clear and "in the right direction"). Some tests will cover two or more chapters. *A student may not take a test unless the homework for that chapter has been turned in.*
- Note: A 1 page (ONLY) formula sheet may be used for each test. This must be *handwritten ONLY* and contain *ONLY formulae*. This means no text, no worked out problems, and no outlines of typical problems! I will occasionally check this during the quizzes and tests to see if it satisfies these requirements.
5. Classroom participation: Students will be expected to answer during classroom discussions questions related to the text reading and to their homework. Questions and problems will be discussed in class and, on occasion, worked out in small groups during class. **COME TO CLASS PREPARED!**
6. A comprehensive final exam.

7. Student Conduct

- a. Students are expected to follow the policies set forth in the Rights and Responsibilities: A student Code of Conduct published by the College.
- b. Cell phones must be turned off BEFORE entering class and may not be used in class (unless given prior permission by instructor or in an emergency).
NO TEXTING.
- c. Use of iPods, MP3 players, radios, earphones, and similar devices are prohibited in the classroom.
- d. Computers may be used in class to take notes only—no emailing, instant messaging, surfing the web, gaming, etc. In addition, so as not to distract other students, students using computers must sit in the back row with the audio muted.
- e. Food or drink is prohibited in the classroom (this is a college wide policy and is posted in each classroom). If you have food or drink with you, place it in your bag or on the floor-not on your desk.
- f. No studying other course materials or reading novels, newspapers, magazines, etc in class.
- g. No chatting in class.
- h. Students will be warned once of any violation of student conduct and will then be asked to leave the classroom if the disruptive behavior continues. Repeated offenses will result in the student not being allowed to attend the class and finally being asked to drop the class.

Student Success Center. Tutors may be obtained through the Student Success Center. Contact the staff in C219 if this service is desired. John A. Logan College will make reasonable accommodations for students with documented disabilities under Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990. Any student with a disability that may have some impact on work in this class, who feels she/he needs an accommodation, should make an appointment with the Coordinator of Services for Students with Disabilities on campus, Jennifer Frost, Room C219B, Ext. 8516. Before services can be provided, this advisor must determine eligibility and arrange appropriate academic adjustments. ***It is the student's responsibility to register in advance of a school term with this office and to turn in a schedule each term to ensure that there is every opportunity for success in this class.***

English Writing Center/Tutoring: For assistance with writing assignments in any college courses, students are encouraged to visit "The Write Place" in E109. English instructors are available for one-on-one tutoring each semester during hours posted at the center.

Financial Aid. Students who receive financial assistance and completely withdraw from classes prior to 60% of the semester being completed (approximately 2-3 weeks after midterm) could be responsible to return a portion of their Federal Pell Grant award. Prior to withdrawing from courses, students should contact the Financial Aid Office.

Course Withdrawal Information. It is expected that you will attend this class regularly. If you stop attending for any reason, you should contact your advisor and withdraw officially to avoid the posting of a failing grade (an E) to your transcript. It is also advisable to discuss the situation with your instructor before dropping.

METHOD OF EVALUATION:

1. *Missed Tests:*
 - a. In the case of an *anticipated* school sponsored activity or **unavoidable** conflict, arrangements may be made **in advance** to take the test **before** the regular test date.
 - b. In the case of a **sudden** illness or **valid** emergency on the day of the test, the test may be made up **before the next class period if and only if** I am called *before* the hour of the test and notified of the sickness or emergency.
 - c. *All* other missed tests will receive a grade of zero.
2. *Lowest Grade Dropped:*
 - a. The lowest test grade of the semester will be dropped.
 - b. The *first* missed test - **missed for any reason, other than 1a or 1b above** – will count as the dropped grade.

3. The *final course grade* will be determined as follows:

Homework	20%
Chapter Tests	65%
Final Examination	<u>15%</u>
<i>Attendance</i>	+1%

4. *Letter grades* will be assigned as follows:

A	100-88%
B	87-77%
C	76-66%
D	65-55%
E	54-0%

Note 1: Due to generous grading scale, individual or course grades will **not** be curved.

Note 2: If a student's cumulative, end-of-semester percentage grade is near a line between letter grades, the final course letter grade will depend on the class participation and attendance of student.

METHOD OF PRESENTATION:

Lecture-discussion with occasional demonstrations 3 hours per week

TEXT:

Engineering Mechanics: Statics, 12th Ed., by R. C. Hibbeler or
Engineering Mechanics: Statics and Dynamics, 12th Ed., by R. C. Hibbeler (combined
 2-semester edition) (Bring to every class period!) ISBN: 1-381-4929-1

Supplementary Text and Resources:

Workbook and Study Guide

Web Site (www.prenhall.com/hibbeler) (contains sample multiple-choice and true-false tests for each chapter, with answers).

(These are excellent resources and are described on pg. xi of the *Preface* of the text.)

Required Materials:

Ruler, protractor, and scientific (graphing) calculator

INSTRUCTOR: Dr. Jim Gundlach
 Office: G104B
 Phone: (618) 985-2828, Ext. 8533
 E-mail: jamesgundlach@jalc.edu
 Fax: 618-985-4654

DATE: Fall, 2009

John A. Logan College Telephone Numbers

Cartersville and Williamson County.....	985-3741 (operator) 985-2828 (direct extension access)
Carbondale and Jackson County	549-7335 (operator) 457-7676 (direct extension access)
Du Quoin	542-8612
West Frankfort.....	937-3438
Crab Orchard, Gorham, & Trico areas	1-800-851-4720
TTY (hearing-impaired access)	985-2752

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