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COURSE OUTLINE

coufc*£ tIU: APPLIED MECHANICS - DYNAMICS

COOB SO-'- MCH 111 SEMESTER: TWO

?*o Gfcfc*1 AVIATION TECHNOLOGY - FLIGHT

>kuta<*: G. DISANO

PREVIOUS OUTLINE DATED: JUNE 1987
W. JENKINS - MECH

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tf* ROV£0 *J.P. Chazotte* Olvtb
CHAIRPERSON

APPLIED MECHANICS - DYNAMICS
COURSE~NAME

MCH 111
CODE~*N07

TOTAL CREDIT HOURS 45

PREREQUISITE(S) : PHYSICS PHY 125
PHYSICS PHY 125

PHILOSOPHY/GOALS : This second course

with the aim of It

of the student The student

will be able to in

either semester one Statics (MCH 110) or semester one Physics (PHY 125)

I. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1) in his/her own words write definitions for the concepts introduced

2) solve problems requiring an understanding of the course theory.

3) solve problems requiring an understanding of the course theory.

II. TOPICS TO BE COVERED:

1) Kinematics of Particles ii

2) Rotational Motion

3) Kinematics of Rigid Bodies Motion

4) Work, Energy and Power

5) Impulse and Momentum

LEARNING ACTIVITIES
(Optional)

REQUIRED RESOURCES

APPLIED MECHANICS - DYNAMICS

MCH 111

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CODE NO

EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

See attached sheet: GRADE REQUIREMENTS

REQUIRED STUDENT RESOURCES

Levinson, Irving J., INTRODUCTION TO MECHANICS, Second Edition. Prentice-Hall, Inc., Englewood Cliffs, New Jersey. 1968.

Bueche, Frederick J., SchaunTs Outline Series - Theory and Problems of COLLEGE PHYSICS, Eighth edition. McGraw-Hill Publishing Company. Toronto. 1989.

ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY

BOOK SECTION: (title, publisher, edition, date, library call number if applicable - see attached example)

Periodical Section

Magazines

Articles

Audiovisual Section

Films

Films trips

Transparencies

[I. **SPECIAL NOTES**

COURSE OUTLINE
 APPLIED MECHANICS - DYNAMICS
 MCH 111

(Aviation Technology - Flight)

Reference Texts: A - Introduction to Mechanics, Second edition
 B - Schaum's Outline Series, COLLEGE PHYSICS, Eighth edition

| PERIODS | TOPIC DESCRIPTION | REFERENCE |
|---------|---|------------------------------------|
| | <u>Kinematics of Particles</u> | A -- Chapter 9 B -- Chapter 4 |
| | a) Distance and Displacement | |
| | b) Speed and Velocity | |
| | c) Acceleration | |
| | d) Uniformly Accelerated Motion | |
| | e) Falling bodies - the Acceleration due to Gravity | |
| | f) Projectiles | |
| | g) Normal Acceleration | |
| II | <u>Rotational Motion</u> | A -- Chapter 10 B -- Chapters 9 |
| | a) Angular Displacement (radians) | |
| | b) Angular Velocity | |
| | c) Angular Acceleration | |
| | d) Relationship between linear and angular motion | |
| | e) Torque | |
| | f) Moment of Inertia of bodies | |
| | g) Kinetic Energy of rotation | |
| | h) Radius of Gyration | |
| | i) Angular Momentum | |
| III | <u>Kinetics: Forces and Motion</u> | A -- Chapter 11 |
| | a) Newton's Second Law of Motion | |
| | b) Accelerating Forces - horizontal and vertical motion | |
| | c) Dynamic Equilibrium - The Inertia Force | |
| IV | <u>Work, Energy and Power</u> | A - Chapter 12 B " chapter 6 |
| | a) The concept of work | |
| | b) Work done by constant forces | |
| | c) Work done by variable forces | |
| | d) Energy | |
| | e) Gravitational Potential Energy | |
| | f) Kinetic Energy | |
| | g) Conservation of Energy | |

Continued ,...

Impulse and Momentum

A - Chapter 13
B " chapter 8

- a) Linear Impulse
- b) Linear Momentum
- c) Conservation of Linear Momentum
- d) Elastic Impact

GRADE REQUIREMENTS

MCH111

APPLIED MECHANICS - DYNAMICS

(Aviation Technology - Flight)

Your final grade in MCH 111 will be determined on the basis of four tests to be administered during the semester. Each test will examine your knowledge of a number of topics and will be administered within one week of completing those topics. The topics covered in each of the four tests are as follows:

Test #1_____Topic No. I & Topic No. II

Test #2_____Topic No. III

Test #3_____Topic No. IV

Test #4_____Topic No. V

The four tests are of equal weight (i.e. each of the four tests is worth 25% of your final grade). As a result, provided you have received a passing grade in each of the four tests, your final grade will simply be an average of your four test results. In order to obtain your letter grade the following percentage-letter grade equivalents will be used:

| | | |
|----------------|------------|--|
| A ⁺ | 90% - 100% | (<u>Consistently</u> outstanding achievement) |
| A | 80% - 89% | (Outstanding achievement) |
| B | 70% - 79% | (<u>Consistently</u> above average achievement) |
| C | 55% - 69% | (Satisfactory or acceptable achievement) |
| X or R | 0% - 54% | (Incomplete or Repeat) |

If your final average is below 55%, or if you have received a failing grade in one or more of the unit tests, whether you receive an 'X' (Incomplete) or an 'R' (Repeat) grade is entirely at the instructor's discretion. The decision will be based upon your final average (e.g. 32% would result in an R grade while 50% might result in an X grade); your attendance during the semester; your attitude while in the classroom; your perceived level of effort during the semester; etc..

In any case, should you find yourself with an X grade at the end of the semester, in order to upgrade your mark to a passing grade you will be required to write a make-up examination covering the entire course content. Should you receive a passing grade on the make-up examination (55% or higher) your X grade will be upgraded. The best you can do after receiving an X grade as a result of a failing average is a C! If you were required to write the make-up examination as a result of having failed one test you may substitute the exam result for this test result.

Prior to administering any test you will be notified a full week in advance. Should you for any reason not be able to be in attendance on a day for which a test has been scheduled it is your responsibility to notify the instructor prior to the test! If your reasons are acceptable a date will be set during which you may write a substitute test for the one you have missed.