OBR	
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Ohio Articulation Number (OAN)
Course Submission Form
2005-2006

College/University Lakeland Community College

Course(s) Submitted(Title & Course #) Statics ENGS 2010 for
Ohio Articulation Number OES 002

Date 9/16/2005

Name and title of individual submitting on behalf of the college/university

Name Marilyn S. Jones Title Associate Provost

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Credit Hours 3 qtr _____ sem X
Lecture Hours 3
Laboratory Hours _____ (if applicable)
Pre-Requisites(s) Course work (if applicable)
Math 2600 or equivalent

Placement Score (if applicable)
(Name of test)
(Domain) (Score)

Catalog/Course Description (Includes Course Title and Course #)

ENGS 2010 Statics: This course introduces students to the mechanics of forces and force systems, static equilibrium, forces in structures and machines, friction, centroids, moments of inertia, radii of gyration, and virtual work.

Texts/Outside Readings/Ancillary Materials

No text required

Course Objectives and/or Plan of Work

GENERAL COURSE GOALS:
Introduce students to the engineering applications of the statics branch of Mechanics.

COURSE OBJECTIVES:
Upon completion of the course, the student should be able to:

1. Given a statically loaded coplanar or noncoplanar system in equilibrium, determine all support reactions and forces acting on all internal two-force members. Apply the equations of friction as required.

2. Given a statically loaded truss, analytically determine forces acting on all internal members by the application of the methods of joints and the method of sections.

3. Given all dimensions of any composite geometrical shape, determine the location of the center of gravity.

4. Given a table of formulas for calculating moment of inertia, determine the moment of inertia and radius of gyration of any composite geometrical area.

Description of Assessment and/or Evaluation of Student Learning

SUGGESTED GRADING PROCEDURES:

Homework	20%
Tests (3 min)	50%
Final	30%

Master Syllabi and Working Syllabi (if both are used)

LAKELAND COMMUNITY COLLEGE - COURSE OUTLINE FORM

ORIGINATION DATE: 08/02/99 APPROVAL DATE: / /
LAST MODIFICATION DATE: 11/16/00 EFFECTIVE TERM/YEAR: FALL 2000

PRINTED: 09/16/05

COURSE NUMBER: ENGS2010
COURSE TITLE: Statics

	LECTURE	LAB	CLINICAL	TOTAL	OBR MIN	OBR MAX
CREDITS:	3.00	0.00	0.00	3.00	3.00	3.00
CONTACT HOURS:	3.00	0.00	0.00	3.00		

PREREQUISITES:
MATH2600 OR EQUIVALENT

PROGRAMS & CERTIFICATES FOR WHICH THIS COURSE IS REQUIRED:
NONE

PROGRAMS & CERTIFICATES FOR WHICH THIS COURSE IS AN ELECTIVE:
NONE

COURSE ACCEPTED AS TRANSFER CREDIT BY:

RECOMMENDED CLASS SIZE: 16 RATIONALE: DEPARTMENT STANDARD

FREQUENCY OF OFFERING: 2 X YEAR
TERMS NORMALLY OFFERED: FALL SPRING

LAB FEE: NONE

RATIONALE FOR COURSE:
Students interested in transferring to a B.S. program in Engineering should take this sophomore level course prior to transferring.

COURSE DESCRIPTION:
This course introduces students to the mechanics of forces and force systems, static equilibrium, forces in structures and machines, friction, centroids, moments of inertia, radii of gyration, and virtual work.

GENERAL COURSE GOALS:
Introduce students to the engineering applications of the statics branch of Mechanics.

COURSE OBJECTIVES:

Upon completion of the course, the student should be able to:

1. Given a statically loaded coplanar or noncoplanar system in equilibrium, determine all support reactions and forces acting on all internal two-force members. Apply the equations of friction as required.

2. Given a statically loaded truss, analytically determine forces acting on all internal members by the application of the methods of joints and the method of sections.

3. Given all dimensions of any composite geometrical shape, determine the location of the center of gravity.

4. Given a table of formulas for calculating moment of inertia, determine the moment of inertia and radius of gyration of any composite geometrical area.

COURSE OUTLINE:

I. Introduction to Statics
   - A. Fundamental Properties of Vectors
   - B. Representation of Vectors Using Rectangular
   - C. Vector Multiplication

II. Basic Operations with Force Systems
   - A. Types of Vectors
   - B. Reduction of Concurrent Force Systems
   - C. Moment of a Force About a Point
   - D. Moment of a Force About an Axis
   - E. Replacing a Force with a Force and a Couple

III. Resultants of Force Systems
   - A. Reducing a Force System to a Force and a Couple
   - B. Resultants of Coplanar Force Systems
   - C. Resultants of Noncoplanar Force Systems
   - D. Introduction to Distributed Normal Loads

IV. Coplanar Equilibrium Analysis
   - A. Free-Body Diagram of a Body
   - B. Coplanar Equilibrium Equations.
   - C. Writing and Solving Equilibrium Equations
   - D. Equilibrium Analysis for Single-Body Problems
   - E. Free-Body Diagrams Involving Internal Reactions
   - F. Equilibrium Analysis of Composite Bodies
   - G. Special Cases: Two-Force and Three-Force Bodies
   - H. Description of a Truss
   - I. Method of Joints and Sections

V. Noncoplanar Equilibrium

A. Definition of Equilibrium
B. Free-Body Diagrams
C. Independent Equilibrium Equations
D. Improper Constraints
E. Equilibrium Analysis

VI. Dry Friction
A. Coulomb's Theory of Dry Friction
B. Problem Classification and Analysis
C. Impending Tipping
D. Angle of Friction; Wedges and Screws
E. Ropes and Flat Belts

VII. Centroids and Distributed Loads
A. Centroids of Plane Areas and Curves
B. Centroids of Curved Surfaces, Volumes, and Space Curves
C. Theorems of Pappus-Guldinus
D. Center of Gravity and Center of Mass
E. Distributed Normal Loads

VIII. Moments and Products of Inertia of Areas
A. Moments of Inertia of Areas and Polar Moments of Inertia
B. Products of Inertia of Areas
C. Transformation Equations and Principal Moments of Inertia of Areas

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INSTRUCTIONAL PROCEDURES THAT MAY BE UTILIZED:
Lecture

SUGGESTED GRADING PROCEDURES:

Homework	20%
Tests (3 min)	50%
Final	30%

SUGGESTED COURSE EVALUATION PROCEDURE:
Use of student evaluations and Biennial Review by the Engineering Technology Division Dean.

[End of Course Outline for 'ENGS2010']

Additional Documentation

OBR Use	Action
Approved	
Additional Information Requested	
Rejected	
Date	

Ohio Articulation Number Form Directions

This form is each institution's OAN course information. This information will be submitted to the Ohio Board of Regents, as part of the faculty review process for each OAN within a given TAG. This document is a locked form, so the only fields that need to be filled in can be opened. When you open this document, make sure the top of the screen, where the name of the document is displayed, says "Document1". The file can be saved in a Word folder or to your desktop and it creates a blank template to fill in. Please fill it in with as much of the requested information as possible. All of the fields in this document are expandable, and will adjust to fit as many characters as you need. Each field is design to accept cut and pastes from other document sources that you may have on campus.

Once you are done filling in your course information, you need to save this file. Since the Word document opened a blank version of this file, you will need to rename is it to save it. Under file, choose "Save as" and then input the name of the file. The naming scheme for this form is Institution-Year-OAN number-Course Title and Number.

Example, if you were ABC Community College, and you were submitting your Calculus I - Math110 course, the name of the file would be ABC-2005-OMT005-Calculus I-Math110. If two (or more) courses are required to fulfill that same OAN, you would submit ABC-2005-OMT005-Calculus I MTH 110 - Calculus II Math 111, and so on for multiple submissions.

When you are done with your submissions, please send them electronically to the Ohio Board of Regents so we can keep your information on file. Please send these to Ora McRae at omcrae@regents.state.oh.us .