DO NOT TYPE IN THIS BOX

Bulletin #: _____

Academic Year: _____

FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE
Proposal for a Course Change

PART I. FILL OUT THIS SECTION COMPLETELY

1. **School/College** Engineering and Computing

   Div./Dept. in Which Taught School of Computing and Information Sciences

2. _____ ____ _____ _____ 3 ____

   Alpha Prefix | **1st Digit** | **Last 3 Digits** | **"C"-lec-lab "L"-Lab** | **Cr. Hrs.**

3. **Present Course Title** _____

PART II. FILL OUT CHANGE INFORMATION ONLY

Change Effective _____ / _____ / 20____

4a. **New Course Title** _____

b. **New Abbreviated course Title** *(for computer class schedules, transcripts)* _____

LIMITED TO 25 Characters *(including spaces)*

5a. _____ ____ _____ _____

New Alpha Prefix | **New 1st Digit** | **New Last 3 Digits** | **Change "C"-lec-lab "L"-Lab**

5b. Change Credit Hours: From _____ **To** _____

6. **New Catalog Description/Major Topics** *(not to exceed 200 characters including spaces)*

College of Medicine and College of Law: Attach description not exceeding 1,000 characters including spaces.

7. **New Prerequisite(s):** _____

8. **New Corequisite(s):** _____

9. **Explain Reclassification Request:**

10. **Does this proposed change impact the assessment process of a program or certificate? If yes, then send notification to assessment@fiu.edu.**

PROPOSAL REQUESTED BY:

Faculty Contact Nagarajan Prabakar _____ / _____ / 20 19

(Type name) **(Signature)**

prabakar@cis.fiu.edu 305-348-2033

(Email address) **(Phone number)**

Chairperson (Dept./Div.) S.S. Iyengar _____ / _____ / 20 19

(Type name) **(Signature)**

Chairperson (Curr. Comm.) Wei-Chiang Lin _____ / _____ / 20 19

(Type name) **(Signature)**

College/School Dean John Volakis _____ / _____ / 20 19

(Type name) **(Signature)**

Submit one original form. Attach one copy of the Course Justification and Course Syllabus: Course Description, Objectives, Learning Outcomes, Major Topics and textbooks.

BCN 2405 – Structural Design I
COURSE SYLLABUS – SPRING 2019

INSTRUCTOR

Dr. David Ramsey
Office: EC 2952
Tel: 305-348-3174
E-mail: dramsey@fiu.edu (This is the email used for all communication regarding the course)

Office Hours:
MW 10:00am – 12:00pm

or by appointment

COURSE TIME AND LOCATION:
M 6:25pm – 9:05pm, Room EC 2410

CATALOG DESCRIPTION

Applications of the principles of Statics and Strength of Materials to engineering problems of equilibrium, strength and stiffness. Topics include equilibrium of forces, stress, strain, beams, and columns.

COURSE LEARNING OUTCOMES

Students will be introduced to the fundamental principles of statics and strengths of materials. They will develop and understanding of the principles and the behavior of structures, and the knowledge and skills required to perform engineering calculations of statically determinate structures. The material covered in this course provides the foundation for the subsequent studies in structural design of timber, structural steel, reinforced concrete, pre-stressed concrete, aluminum, and other structural building materials. The topical contents covered in this course will include:

- Introduction to statics and mechanics of materials

Upon completion of this course, students should be able to:

Course Learning Outcome (CLO)	SLO	Assessment
1. Understand basic structural behaviors and analysis methods	19	Homework and Exams
2. Define tributary areas and associated loads		Exam 1
3. Determine location and magnitude of maximum shear and moments on simply-supported beams		Exam 2 and Final Exam
4. Determine compressive and tensile loads, stresses, and buckling loads on pin-ended axial members such as truss members and columns		Final Exam

PRE-REQUISITES

PHY 2053 – Physics without Calculus
PHY 2048L – Physics Laboratory
MAC 1114 – Trigonometry OR MAC 1147 – Pre-calculus Mathematics

REQUIRED TEXT BOOK

Morrow, H.W. & Kokernak, R.P., **Statics and Strength of Materials**, 7th Edition, Prentice Hall. ISBN13: 9780135034521

OTHER REFERENCE MATERIALS

The instructor will provide supplementary notes/handouts when needed.

INSTRUCTIONAL METHODS

This is a three lecture hours per week class that requires active student participation. Students are expected to read the relevant chapters from the text book before coming to class. During class time, students will be assigned in-class activities and example exercises from the book to have hands-on practice of the material covered.

CLASS ENVIRONMENT

The instructor expects and insists that the class environment remain professional, businesslike, and conducive to learning. Behavior or actions that disrupt this environment are not acceptable, and will subject the student to removal from the class by the University Public Safety Department.

Use of computers, cellular phones, PDAs, text messaging devices, or any other electronic devices is not permitted during class and any student doing so will be asked to leave the class and not return during that particular class session. Repeated disruption of the class environment will subject a student to expulsion from the course, solely at the instructor's discretion. **Students owning cellular telephones, PDAs, or any other electronic or mechanical devices that emit audible alarms must turn them off or set them to a silent mode** immediately upon the beginning of the class.

ATTENDANCE POLICY

Class attendance is not mandatory but is strongly recommended for all class sessions. Data from previous terms show significant correlation between regular class attendance and performing well in class on homework assignments and exams. Although attendance is not required, the instructor may consider attendance in the final course grade but only to improve student grades. Therefore roll will be taken at the beginning of each class, except for the first session.

It is recommended for students who are able to anticipate an absence to notify the instructor in advance. Absent students will be responsible for all material covered in class, and for completing any and all assigned work, regardless of whether the absence was excused or unexcused. It is the student's responsibility to do whatever is necessary to obtain material missed, to obtain and complete assigned work missed, and to keep informed as to when exams will be administered.

RELIGIOUS HOLIDAYS

The School adheres to the University's policy concerning religious holidays as stated in the University catalog. Any student may request to be excused from a class to observe a religious holiday for their faith. Assignments due on that day will be due the day following the holiday. If a quiz falls on a religious holiday, an alternate date will be provided. Students are expected to inform the instructor ahead of time so that appropriate arrangements may be made.

ACADEMIC HONESTY AND INTEGRITY

All students are expected to conform to the University *Code of Conduct*, and to adhere to the principles of academic integrity as defined by the University Division of Student Affairs and the Division of Academic Affairs. Violations of the University *Code of Conduct* will be prosecuted to the fullest extent available. http://integrity.fiu.edu

STUDENT CODE OF STANDARDS

By attending this class, the student is required to comply with the Florida International University Student Code of Standards, including, but not limited to, references concerning classroom behavior, discrimination, sexual harassment and academic misconduct. A copy of the Code may be found in the University Student Handbook. http://conduct.fiu.edu

DISABLED STUDENTS

Students with disabilities who may need special accommodations should register with the Disability Resource Center for Students, telephone (305) 348-3532. In addition, they are encouraged to contact the instructor so that arrangements can be made to accommodate their needs. http://drc.fiu.edu

EXAMINATION AND GRADING POLICY

Students are urged to actively participate in class discussions. For this purpose, in-class activities and example exercises are given to help students better comprehend the course materials. In addition, homework will be assigned as the semester progresses and is normally due in one week at the beginning of the class period. All assignments will be turned in via Canvas as a word document or PDF. **Late homework submissions will be graded at 50% of their original value.** There will be two (2) exams and one (1) comprehensive final examination. These will be open book and open note tests. Make-up examinations will not be given unless an excused absence is approved at least one week ahead of time or in the event of a verifiable illness or emergency. The final grade for the course will be based on the student's understanding of the course material as evidenced by his/her performance on the assignments and examinations in consonance with the following:

Homework assignments (Six (6) homework assignments)	30%
Exam #1	20%
Exam #2	25%
Final Exam	25%

These weights may be changed at the discretion of the instructor to reflect the emphasis placed on the material presented during the course. All examinations, homework, and other

student work are the intellectual property of the student, but the instructor reserves the right to retain any and all student work for the purposes of record, exhibition, and instruction. Examination and homework assignment dates indicated in this syllabus are tentative and subject to change at the instructor's discretion according to class progress. It is the responsibility of the student to keep themselves apprised of the class schedule. Absence from class is not accepted as a valid reason for missing a scheduled examination.

Grades shall be based on the following scale:

A	93.0 – 100	**B**	83.0 – 86.9	**C**	70.0 – 74.9
A-	90.0 – 92.9	**B-**	80.0 – 82.9	**D**	60.0 – 69.9
B+	87.0 – 89.9	**C+**	75.0 – 79.9	**F**	0.0 – 59.9

TENTATIVE SCHEDULE AND TOPICAL OUTLINE

The instructor reserves the right to modify and/or change course content throughout the semester based on the pace of the course and collective needs to the students.

Week	Date	Discussion Topics	Homework	Due
1	**Lect. 1** M–1/7	**Class introduction and syllabus review.** Introduction to Statics. What is learning and how do people learn. Course conduct and course outcomes. Course text book and introductory quiz. **Trigonometry and Geometry.** Overview of Trig and Geometry. Law of Sines and Cosines. Geometric Properties of Shapes.	Read: Ch.1,2 (posted on Canvas)	None
2	**Lect. 2** M–1/14	**Vectors and Forces.**	Read: Ch. 3	None
3	**M–1/21**	**Martin Luther King Jr. Day. University Holiday. No Class**		
4	**Lect. 3** M–1/28	**Vectors and Forces.** **Equations of Static Equilibrium.** Properties of a force. Action and Reaction. Free Body Diagrams. Three concurrent forces in equilibrium. Equilibrium by rectangular components.	Read: Ch. 4, 5 HW #1	None
5	M–2/4	**Moments, Equilibrium of a Rigid Body.**		HW #1
6	**Lect. 4** M–2/11	**Moments.** Transmissibility of a force. Moment of a Force. Theorem of Moments. Resultant of parallel forces. Resultant of Distributed loading. **Equilibrium of a Rigid Body.** Equations of equilibrium for a Rigid Body. Rigid Body analysis	HW #2	
7	**Lect. 5** M–2/18	**Exam #1 Review Session.** This lecture will be a review session for the first exam. Homework #1 and #2 will be reviewed as well as exam format and typical problems.	Read: Review Ch. 1-5, Study for Midterm	HW #2

Week	Date	Discussion Topics	Homework	Due
8	**Lect. 6** M–2/25	**EXAM #1**	Read: Ch. 6	
9	**Lect. 7** M–3/04	**Loads on Structures.** Live and Dead Loads, Wind, Earthquake Loads **Force Analysis of Structures.** Structural Analysis of Simple Plane Trusses, Special Loading Considerations, Discussion of Stability, Types of Trusses, Method of Joints, and Method of Sections. **Midterm Exam Returned.** The last hour of the lecture will review of the midterm exam solutions and grades. The midterm will be returned to the students on this date.	Read: Ch. 9, 10, 11 HW #3	None
10	M–3/11	**Spring Break 3/11 – 3/16. No Classes**		
11	**Lect. 8** M–3/18	**Centroids and Moment of Inertia.** Center of Gravity, Centroids (1st Moment), Moment of Inertia (2nd Moment), Radius of Gyration **Stress and Strain.** Internal Forces, Stress in Axially Loaded Members, Allowable Stress, Factors of Safety, Axial Strain, Tension Test, Stress-Strain Diagram, Hooke's Law, Poisson's Ratio	Read: Ch. 13 HW #4	HW #3
12	**Lect. 9** M–3/25	**Shear Force and Bending Moments in Beams.** Types of beams, beam reactions, shear force and bending moment diagrams. **Exam #2 Review Session.** This lecture will be a review session for the second exam.	HW #5 Read: Review Ch. 9, 10, 11, and 13.	HW #4
13	**Lect. 10** M–4/01	**EXAM #2**	Read: Ch. 14	HW #5
14	**Lect. 11** M–4/08	**Bending and Shearing Stresses in Beams.** Relationship among loads, shear forces and bending moments	Read: Ch. 17 HW #6	None
15	**Lect. 12** M–4/15	**Columns.** Axially loaded compression members, Euler formula, and column buckling, effective length (k) factor. **Course Review Session.** Review typical problems and comprehensive review session for the final exam.	Read: Review Ch. 1-6, 9, 10, 11, 13, 14, 17 **STUDY FOR FINAL**	HW #6
16	**Lect. 13** F–4/26	**FINAL EXAMINATION (Comprehensive)** **5:00 pm – 7:00 pm** **EC 2410**		