

 FLORIDA ATLANTIC UNIVERSITY	NEW COURSE PROPOSAL Undergraduate Programs		UUPC Approval <u>4-26-21</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Ocean & Mechanical Engineering College Engineering & Computer Science <i>(To obtain a course number, contact erudolph@fau.edu)</i>		
Prefix EOC Number 4510	<i>(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)</i> Lab Code	Type of Course <input style="border: 1px solid red;" type="text" value="Lecture"/>	Course Title Introduction to Ship Structural Design
Credits <i>(Review Provost Memorandum)</i> 3	Grading <i>(Select One Option)</i> Regular <input checked="" type="radio"/> Pass/Fail <input type="radio"/> Sat/UnSat <input type="radio"/>	Course Description <i>(Syllabus must be attached; Syllabus Checklist recommended; see Guidelines)</i> To introduce fundamental knowledge of ship theory needed to design and analyze ship structures under hydrostatic and wave induced forces that result in primary hull stresses.	
Effective Date <i>(TERM & YEAR)</i> Fall 2021	Prerequisites, with minimum grade* Prerequisites: EGN 3331 (Strength of Materials) and EOC 3410C (Structural Analysis) with minimum C		
		Corequisites None	Registration Controls <i>(Major, College, Level)</i>
*Default minimum passing grade is D-. Prereqs., Coreqs. & Reg. Controls are enforced for all sections of course			
WAC/Gordon Rule Course <input type="radio"/> Yes <input type="radio"/> No WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See WAC Guidelines .		Intellectual Foundations Program (General Education) Requirement <i>(Select One Option)</i> None General Education criteria must be indicated in the syllabus and approval attached to the proposal. See GE Guidelines .	
Minimum qualifications to teach course PhD in related areas			
Faculty Contact/Email/Phone Dr. P. Edgar An/pan@fau.edu/561-297-2792		List/Attach comments from departments affected by new course	
Approved by Department Chair _____ College Curriculum Chair _____ College Dean <u>Fred Bloetscher</u> UUPC Chair <u>Jerry Haky</u> Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____		Date <u>4-12-21</u> <u>4/12/2021</u> <u>4-15-21</u> <u>4-26-21</u> <u>4-26-21</u> _____ _____	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

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1. Course title/number, number of credit hours

EOC 4510 - Introduction to Ship Structural Design (3 credits)

2. Course prerequisites, co-requisites, and where the course fits in the program of study

Prerequisites: EGN 3331 (Strength of Materials) and EOC 3410C (Structural Analysis), both with a grade of C or above

3. Course Logistics

The class room lecture will be delivered either at SeaTech or at Boca Raton campus and broadcast live to the other campus. Lecture will also be recorded in Canvas for students registering in online sections. The course does not have any laboratory experiment, but it has a project assignment.

4. Instructor(s) contact information

Instructors name: Dr. Hassan Mahfuz, Professor

Office address: Room 179, Bldg 36, Ocean and Mechanical Engineering Dept., Boca Campus

Office Hours: TBA

Contact telephone number: 561 297 3483

Email address: hmahfuz@fau.edu

5. TA contact information

TA's name: TBA

Office Address: TBA

Contact Phone: TBA

Office Hours: TBA

6. Course description

To introduce fundamental knowledge of ship theory needed to design and analyze ship structures under hydrostatic and wave induced forces that result in primary hull stresses.

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7. Course objectives/student learning outcomes/program outcomes

Course objectives: To introduce fundamental knowledge of ship theory needed to design and analyze ship structures under hydrostatic and wave induced forces that result in primary hull stresses.

Student learning outcomes

1. Ability to understand naval society-based and rationally-based structural design;
2. Ability to analyze hull girder response under wave loads;
3. Ability to determine wave loads – statistical, dynamic, and nonlinear aspects;
4. Ability to apply matrix stiffness method to analyze Frames and Grillages;
5. Ability to perform hull strength analysis;
6. Ability to use Finite Element Codes for ship structural analysis

8. Course evaluation method

Home Work	10%
Midterm	30%
Project	20%
Final Exam	40%

9. Course grading scale:

Above 90% = A- to A; Between 80% and 90% = B- to B+; Between 70% and 79% = C- to C+; Between 60% and 69 % = D- to D+; Below 60% = F (+ grade will be given if the score is at the high end of the grade range and – grade for the score at the low end. For example, total score of between 74 and 76 will be given a C grade, a score from 70 to 73 will be given C- and that from 77 to 79 will be given C+).

10. Policy on makeup tests, late work, and incompletes:

Makeup test will be given only if there is a valid reason (medical, family emergency etc) that prevented the student from taking tests. Similarly, an incomplete grade will be considered if the student has compelling reasons for not being able to complete the course requirements.

11. Special course requirements:

N/A

12. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

13. Attendance Policy Statement

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is

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determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

14. Disability policy statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS)—in Boca Raton, SU 133 (561-297-3880); in Davie, LA 203 (954-236-1222); or in Jupiter, SR 110 (561-799-8585) —and follow all SAS procedures.

15. Counseling and Psychological Services Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

16. Code of Academic Integrity Policy Statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

17. Required texts/reading

- Lecture Notes
- Ship Structural Design: A Rationally-Based, Computer-Aided Optimization Approach - Owen F. Hughes, Published by SNAME, Jersey City, New Jersey, 1988

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- Basic Ship Theory – 5th edition, K.J. Rawson and E.C. Tupper, Butterworth-Heinemann, Oxford, U.K., 2001

18. Supplementary/Recommended readings

- Elementary Linear Algebra, 5th Ed., R.E. Larson, and B.H. Edwards, D.C. Heath and Company, 2012
- Structural Analysis, 10th Ed., R.C. Hibbeler, Prentice Hall, 2019
- Introduction to Matrix Methods of Structural Analysis, Harold C. Martin, McGraw Hill – Inc., 1966

19. Course topical outline, including dates for exams/quizzes, papers, completion of reading

Each of the topics shown below would require about 3 contact hours;

1. Naval Society-Based Structural Design
2. Rationally-Based Structural Design
3. Floatation and Trim
4. Hull Girder Analysis – Prismatic Beam
5. Influence Lines for Ship Structures
6. Hull Girder Transverse Shear Stress Analysis
7. Hydrostatic and Wave Loads
8. Vertical, Horizontal, and Torsional Moments; Coupling at Quartering Seas
9. Matrix Stiffness Analysis
10. Introduction to Finite Element Method
11. Beam and Frame Analysis
12. Ultimate Strength Analysis of Ship Hulls
13. Slamming Loads on Ship Structures

Tentative Test Dates:

Midterm: TBA

Project Presentation: TBA

Project Report Due: TBA

Final Exam: TBA