

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Undergraduate Programs</b>	UUPC Approval <u>11-8-21</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department _____ College _____	
<b>Current Course Prefix and Number</b>		<b>Current Course Title</b>
<i>Syllabus must be attached for ANY changes to current course details. See <a href="#">Checklist</a>. Please consult and list departments that may be affected by the changes; attach documentation.</i>		
<b>Change title to:</b>  <b>Change prefix</b> From: _____ To: _____ <b>Change course number</b> From: _____ To: _____ <b>Change credits*</b> From: _____ To: _____ <b>Change grading</b> From: _____ To: _____ <b>Change WAC/Gordon Rule status**</b> Add _____ Remove _____ <b>Change General Education Requirements***</b> Add _____ Remove _____ <small>*Review <a href="#">Provost Memorandum</a></small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See <a href="#">WAC Guidelines</a>.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See <a href="#">GE Guidelines</a>.</small>		<b>Change description to:</b>  <b>Change prerequisites/minimum grades to:</b>  <b>Change corequisites to:</b>  <b>Change registration controls to:</b>  Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).
<b>Effective Date</b> (TERM & YEAR)		<b>Terminate course</b> <b>List final active term</b>
<b>Faculty Contact/Email/Phone</b>		
<b>Approved by</b> Department Chair <u>Manhart Chanak</u> College Curriculum Chair <u>[Signature]</u> College Dean <u>[Signature]</u> UUPC Chair <u>[Signature]</u> Undergraduate Studies Dean <u>Edward Pratt</u> UFS President _____ Provost _____		<b>Date</b> <u>10-25-21</u> <u>11-8-21</u> <u>11-8-21</u> <u>11-9-21</u> <u>11-9-21</u> _____ _____

Email this form and syllabus to [mjenning@fau.edu](mailto:mjenning@fau.edu) seven business days before the UUPC meeting.

**Department of Ocean and Mechanical Engineering, Florida Atlantic University**  
**Course Syllabus**

<b>1. Course title/number, number of credit hours</b>	
EOC 4193 – Ocean Thermal Systems	3 credit hours
<b>2. Instructional Method</b>	
<p>This class consists of lectures (and labs, if applicable) which will be conducted live using Webex or Zoom, and recorded so students can watch the lectures (and do the labs, if applicable) at a later time and date. Unless otherwise noted, there will be no option (at least during the beginning of the semester) for students to attend the lectures in person. Students will be accommodated as much as possible with their needs during the pandemic.</p> <p><b><u>You will need to have a computer (or laptop), a reliable WIFI access, and a webcam and micro-phone connected to your computer for this course.</u></b></p> <p><i>“After two full weeks of face to face instruction with consecutive ‘no show’ of any students in person in the classroom, the modality of this course section may be changed to remote instruction only at the discretion of the university”.</i></p> <p>In the event you might not have a computer, there is a Laptop Loaner Program at FAU for first-generation, low-income students.  <a href="https://www.fau.edu/newsdesk/articles/fau-announces-laptop-loaner-program.php">https://www.fau.edu/newsdesk/articles/fau-announces-laptop-loaner-program.php</a></p> <p>In the event you might not have reliable internet access remotely, you may use the internet connection on campus. You may use the classroom (ST-233) during the live course times for watching lectures, (doing labs, if applicable) and taking quizzes and exams. Note that there are only reduced seating capacities in the classroom, and only those who do not have reliable internet access should use the classroom. Social distancing must be strictly followed in the classroom at all times. You will need to make reservation for your seating every week on Canvas. The instructions for the reservation are provided at the following link:  <a href="https://fau.edu/oit/instructional/support/files/seatReservationTool_student.pdf">https://fau.edu/oit/instructional/support/files/seatReservationTool_student.pdf</a></p>	
<b>3. COVID 19 Statement</b>	
<p>All students in face-to-face classes are required to wear masks during class, and students must sanitize their own workstations upon entering the classroom. Taking these measures supports the safety and protection of the FAU community. Students who do not adhere to these rules will be asked to leave the classroom and/or be removed from the course. Students experiencing flu-like symptoms (fever, cough, shortness of breath), or students who have come in contact with an infected person should immediately contact FAU Student Health Services (561-297-3512).</p>	
<b>4. Course pre-requisites, co-requisites, and where the course fits in the program of study</b>	
<p><b><u>List Prerequisites, Co-requisites:</u></b></p> <p>Prerequisites:              EGN 3343 Engineering Thermodynamics, EOC 3123 Ocean Engineering Fluid Mechanics (both with a grade of C or above)</p> <p>Co-requisites: EOC 3123 Ocean Engineering Fluid Mechanics</p> <p>If students have not completed the required prerequisites for the course and do not inform their course instructor and advisor, they will be dropped from the course. If this occurs after the first week of the semester, they will be fee liable to the University.</p>	
<b>5. Course logistics</b>	
<p><i>Term:</i> Spring 2022          This is a lecture course          Lectures: WF 11:00 am -12:20 pm, (WebEx, or ST-233 with limited seating capacity)</p>	
<b>6. Instructor contact information</b>	
<i>Instructor's name</i>	Dr. Francisco J. Presuel-Moreno

**Department of Ocean and Mechanical Engineering, Florida Atlantic University**  
**Course Syllabus**

Office address Office Hours Contact telephone number Email address	SeaTech, Room 239 Wed 4:00 -5:00 pm, Available by appointment. (via Zoom) (954) 924-7236 <a href="mailto:fpresuel@fau.edu">fpresuel@fau.edu</a>
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**7. TA contact information**

TA's name Office address Office Hours Contact telephone number Email address	
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**8. Course description**

The course deals with basic concepts of heat transfer concepts with application to the ocean and ocean systems. Applications will include power cycles and heat exchangers in ocean systems. Modes of heat transfer, one and two-dimensional steady state heat conduction, unsteady heat conduction, numerical methods for heat conduction, empirical correlations for forced and free convection, heat exchangers, radiation properties, shape factors, radiation heat transfer.

**9. Course objectives/student learning outcomes/program outcomes**

Course objectives	To acquaint engineering students with analyzing and solving problems that arise in conduction, convection, and radiation modes of heat transfer.
Student learning outcomes & relationship to ABET 1-7 objectives	<ol style="list-style-type: none"> <li>1. Identify, analyze, and solve problems on the steady and transient heat conduction problems. (a,e,k/1,2,6)</li> <li>2. Be familiar with both forced and natural convection, the underlying mechanisms, and empirical correlations, including solving skills. (a,e,k/1,2,6)</li> <li>3. Explain the principle of radiation heat transfer, view factors, and use them in radiation heat transfer calculations. (a,e,k/1,2,6)</li> <li>4. The ability to select heat exchangers for particular applications including fouling effects (a, c/1,2)</li> <li>5. The ability to select appropriate prime mover systems for marine systems. (k/6)</li> </ol>

**10. Course evaluation method**

Midterm 1 – 30%, Midterm 2 – 30%, Project 1 – 5%, Project 2 -5%, Final Exam - 30%

**11. Course grading scale**

Grading Policy:

Letter Grade	Percentage (%)
A	≥ 94
A-	≥ 90
B+	≥ 85
B	≥ 80
B-	≥ 75
C+	≥ 70
C	≥ 65
C-	≥ 60
D+	≥ 55
D	≥ 50
F	< 50

Note: The minimum grade required to pass the course is C.

**12. Policy on makeup tests, late work, and incompletes**

Makeup tests are given only if there is solid evidence of a medical or otherwise serious emergency before the tests that prevented the student of participating in the exam. Makeup exams should be administered and proctored by department personnel unless there are other pre-approved arrangements.

**Department of Ocean and Mechanical Engineering, Florida Atlantic University  
Course Syllabus**

**Late work without verifiable justification will NOT be graded.**

*Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

**12.a Policy on homework and exams**

Homework (will not be collected)

- In general, HWs will be given on Fridays when each chapter is finished
- Solutions will be posted in the following week
- Some questions on midterm and final exam might be based on some HWs

Exam

- There will be two midterm exams and a comprehensive (or uncomprehensive) final exam. Open book only.
- Engineering calculator allowed, but no equation solver or program allowed.

**13. Special course requirements**

- Visit the University CANVAS system for important course materials and announcements
- Missing classes: If you will miss the lecture for a medical or other emergency, you should notify me IN ADVANCE by an email and must bring a supporting document later

**14. 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, are to be turned off in class sessions.

**15. 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 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.

**16. 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) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/)

**17. 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/>

**18. 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

**Department of Ocean and Mechanical Engineering, Florida Atlantic University  
Course Syllabus**

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](http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf)

Cell phones are not allowed during exams. If cell phones are detected during any exam periods, this will result in a **grade of "zero" on that exam and a note in the student's academic file.**

**19. Required texts/reading/Lab kits**

Textbook: Heat and Mass transfer: Fundamentals and Applications, 6th Edition by Yunus Cengel, Afshin Ghajar, McGraw-Hill

**20. Supplementary/recommended readings**

Class notes

- Textbook reading in advance at each class is strongly recommended.
- Course materials will be uploaded in the CANVAS web site.

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

**Course Topics**

1. Modes of Heat Transfer
2. Steady and Transient Conduction
3. Numerical Methods in Heat Conduction
4. Forced Convection
5. Boiling/Condensation
6. Heat Exchangers
7. Radiation Heat Transfer

**Tentative Course Schedule (Chapters 1 – 13)**

Week	Topics Covered	Exam
1	Introduction, Basic Concepts (Ch. 1), Heat Equations (Ch. 2)	
2	Heat Equations (Ch. 2), Steady Heat Conduction (Ch. 3)	
3	Thermal Resistances (Ch. 3)	
4	Transient Heat Conduction (Ch.4)	
5	Numerical Methods (Ch. 5), Fundamentals of Convection (Ch. 6)	<b>Midterm I</b>
6	External Convection (Ch. 7)	
7	External Forced Convection (Ch. 8), Internal Forced Convection (Ch. 8)	
8	Internal Forced Convection (Ch. 8)	
9	Natural Convection (Ch. 9), Boiling and Condensation (Ch. 10)	
10	Boiling and Condensation (Ch. 10), Heat Exchangers (Ch. 11)	<b>Midterm 2</b>
11	Heat Exchangers (Ch. 11), Prime Mover Systems,	
12	Heat Exchangers (Ch. 11),	
13	Fundamentals of Radiation (Ch. 12)	
14	Radiation Heat Transfer (Ch. 13)	
	<b>Last Day of Class (4/19), Final Exam (As per FAU schedule), Grades due (5/3)</b>	<b>Final</b>

Project 1 - prime mover systems for marine systems

Project 2 – heat exchangers for particular applications including fouling effects

Exams

Midterm 1 - Friday February 12

Midterm 2 - Friday March 19

Final Wednesday (Apr 28) 10:30am - 1:00pm