

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Undergraduate Programs</b>	UUPC Approval <u>11/7/2022</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	<b>Department</b> Ocean & Mechanical Engineering <b>College</b> Engineering & Computer Science	
<b>Current Course Prefix and Number</b> EML 4142	<b>Current Course Title</b> Heat Transfer	
<i>Syllabus must be attached for ANY changes to current course details. See <a href="#">Template</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 <input type="checkbox"/> Remove <input type="checkbox"/> <b>Change General Education Requirements***</b> Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*See <a href="#">Definition of a Credit Hour</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>***GE criteria must be indicated in syllabus and approval attached to this form. See <a href="#">Intellectual Foundations Guidelines</a>.</small>	<b>Change description to:</b>    <b>Change prerequisites/minimum grades to:</b> EML 3701 Fluid Mechanics/Min. C grade MAP 3305 Engineering Mathematics 1/Min. C grade  <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 Term/Year for Changes:</b> Spring 2023	<b>Terminate course? Effective Term/Year for Termination:</b>	
<b>Faculty Contact/Email/Phone</b> Dr. Davood Moslemian/moslemia@fau.edu/561-297-2652		
<b>Approved by</b> Department Chair <u>Pierre Philippe Beaujean</u> College Curriculum Chair <u>Hongbo Su</u> College Dean <u>[Signature]</u> UUPC Chair <u>Ethlyn Williams</u> Undergraduate Studies Dean <u>Dan Meeroff</u> UFS President _____ Provost _____	<b>Date</b> <u>10/26/2022</u> <u>10/26/22</u> <u>11/7/2022</u> <u>11/7/2022</u> _____ _____	

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

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<b>1. Course title/number, number of credit hours</b>	
Heat Transfer – EML 4142	3 credit hours
<b>2. Instructional Method</b>	
<p>IMPORTANT-PLEASE READ CAREFULLY</p> <p>This class is offered as “in person with live remote”, it is also recorded. The instructor will occasionally call upon students with questions or comments during the live remote sessions to ensure engagement. Students should also be available to present in real-time with proper notice from the instructor. This is not a fully online class and students should expect to be occasionally called upon to answer questions and make comments. Please see the attendance policy in section 15 below.</p>	
<b>3. Course pre-requisites, co-requisites, and where the course fits in the program of study</b>	
<p><b>Prerequisites:</b>  EML 3701-Fluid Mechanics/Minimum C Grade;  MAP 3305 Engineering Mathematics 1/Minimum C Grade;</p>	
<b>4. Course logistics</b>	
<p><b>Term: Spring 2023</b></p> <p><b>Time &amp; Location:</b>  Lectures: <b>Class location and time: 9:30-10:50 AM Fleming Hall 424</b>  <b>Also live remote and recorded*</b>  <b>*Please see the guidelines for attendance</b></p>	
<b>5. Instructor contact information</b>	
<p><i>Instructor Name :</i> Dr. Homayoon “Amir” Abtahi  <i>Office Address:</i> Room 109-Engineering West-Building 36  <i>Office Hours:</i> Tuesday and Thursdays, 11 AM to 12:30 PM  <i>Telephone :</i> 561-297-3425  <i>Email:</i> <a href="mailto:abtahi@fau.edu">abtahi@fau.edu</a></p>	
<b>6. TA contact information</b>	
<i>TA’s name</i> <i>Office address</i> <i>Office Hours</i> <i>Contact telephone number</i> <i>Email address</i>	None
<b>7. Course description</b>	
<p>Heat transfer applications include heat exchangers, thermal envelope design of homes and buildings, micro-electronic cooling that insure phones, lights and motors do not overheat and numerous other applications. This course introduces some of the applications which then lead into the need to understanding the 3 main topics in heat transfer: Conduction,</p>	

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Convection, and thermal Radiation. Each of these are then expanded to introduce compound conduction, different modes of convection, and some of the complexities of radiative heat transfer.

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

<i>Course objectives</i>	The understanding of heat transfer topics that involve conduction, convection and radiation. Applied problems such as heat exchanger design and solar hot water panel analysis will allow the integration of different modes of heat transfer in a single engineering application.
<i>Student learning outcomes &amp; relationship to ABET 1-7 objectives</i>	The students will be able to: 1. Identify, analyze, and solve problems on the steady and transient heat conduction problems. (a,e,k)/ ABET 1, 2, 6 2. Be familiar with both forced and natural convection, the underlying mechanisms, and empirical correlations, including solving skills. (a,e,k)/ABET1, 2, 6 3. Explain the principle of radiation heat transfer, view factors, and use them in radiation heat transfer calculations. (a,e,k)/ABET 1, 2, 6 4. Solve heat transfer problems as part of a group-effort class project. (a,e,d,k)/ABET 1, 2, 5, 6

**9. Course evaluation method**

Quiz 1	10%-The date to be announced 2 weeks in advance
Test 1	20%- The date to be announced 2 weeks in advance
Class Project	40%, Due Dates will be announced 2 weeks in advance
Final Examination	20%-
Homework, and Class Engagement, Feedback and Discussion Participation	10 %

**10. Course grading scale**

**Course Letter Grade:** A: 100-93%; A-: 92-90%  
 B+: 89-87%; B: 86-83%; B-: 82-80%  
 C+: 79-76; C: 75-72% C-: 71-70%  
 D+: 69-66%; D: 65-62%; D-: 61-60%  
 Below 60%: F

**11. 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.

***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. Special course requirements**

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**13. 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.

**14. Policy on the Recording of Lectures**

Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

**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/)

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<b>17. Counseling and Psychological Services Center</b>
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 <a href="http://www.fau.edu/counseling/">http://www.fau.edu/counseling/</a>
<b>18. Code of Academic Integrity Policy Statement</b>
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 <a href="http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf">www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf</a>
Cell phones are not allowed during exams. If cell phones are detected during any exam periods, this will result in a <b><u>grade of "zero" on that exam and a note in the student's academic file.</u></b>
<b>19. Required texts/reading/Lab kits</b>
The material for reading and assignments will be selected from instructor's notes and the reference below.
<b>20. Supplementary/recommended readings</b>
A reference for the class is <i>Heat and Mass Transfers</i> , 7 <sup>th</sup> edition by Bergman, Lavine, Incropera, and deWitt
<b>21. Course topical outline, including dates for exams/quizzes, papers, completion of reading</b>
<b>See Table Below</b>

**Tentative Class Topics and Schedule**

<b>Week</b>	<b>Material</b>	<b>Chapters</b>	<b>Homework</b>
	<b>Why teach heat transfer from applications back to fundamentals. History of Heat Transfer Basic Definitions Units Conservation of Mass Hands-on Project 1: The Heat Pipe Experiment</b>	<b>Review selections from Chapter 1</b>	<b>Problems: 1.20, 1.52a, 1.71, 1.77 NOTE! Assigned late, for in class solution and discussion</b>

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	<b>Selected Topics from Chapter 2</b>	<b>Chapter 2 Selected Sections: 2.1, 2.2.2, 2.3 and study Example 2.4</b>	<b>2.11, 2.12, 2.13, 2.14, 2.28, 2.31, 2</b>
	<b>Chapter 2 Continued</b>	<b>Chapter 2</b>	<b>2.69 and Problem Set HT-1</b>
	<b>Project 1: Discussion of Results</b>	<b>Chapter 3</b>	<b>3.7, 3.13, 3.18, 3.24, 3.46 (follow-up to 1.48), 3.53, 3.79, 3.84,</b>
	<b>Chapter 3-Continued</b>		<b>3.100 (a only), 3.111, 3.130, 3.142</b>
	<b>Introduction to Numerical Methods</b>	<b>Chapter 4</b>	<b>Finite Difference Project</b>
	<b>Introduction to Convection</b>	<b>Chapter 6</b>	<b>Problem Set HT-2</b>
	<b>More convection</b>	<b>Chapter 7 and 8</b>	<b>TBA</b>
	<b>Heat Exchanger Design Project introduced</b>		<b>TBA</b>
	<b>Numerical Techniques for Heat Transfer Applications</b>	<b>Supplemental reading and selections from Chapter 11</b>	<b>TBA</b>
	<b>Heat Exchanger Design Project Continues</b>	<b>Chapters 7, 8, 9 sections TBA</b>	<b>TBA</b>
	<b>Convection topics and problems from Chapters 7, 8, and 9</b>	<b>Chapters 7, 8, 9 sections TBA</b>	<b>TBA</b>
	<b>Thermal Radiation</b>	<b>Chapter 12 and selections from Chapter 13</b>	<b>TBA</b>
	<b>Boiling and Condensation-Selections from Chapter 10</b>	<b>Notes from Abtahi</b>	<b>TBA</b>
	<b>Topics in micro-electronic cooling</b>	<b>Supplemental Readings</b>	<b>TBA</b>
	<b>Final Report on all Projects are Due</b>	<b>Review</b>	
	<b>Final Exam as per University Schedule</b>		