



Course Syllabus



EMA 4125 Transport Mechanisms in Materials Processing

Class #: 14104

Section: 1E02

Course periods: M, W, F 8:30 - 9:20

Location: CSE E119

Academic term: Spring 2019

Instructor:

Michael Tonks

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158 Rhines Hall

(352) 846-3779

TA:

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267 Rhines Hall

(352) 846-3766

Office hours: ?

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Course Description

This course covers the fundamental mechanisms driving mass and heat transport in materials and how to use knowledge of those mechanisms to predict the transport using both analytical and numerical solutions.

Course Pre-Requisites

EMA 3010 and MAP 2302.

Course Objectives

Students completing this course should know the fundamental mechanisms defining diffusion, heat transport, and fluid transport. They should also be able to predict these behaviors using both analytical solutions and numerical finite difference solutions using MATLAB.

Anticipated Outcomes:

- Ability to apply knowledge of mathematics, science, and engineering to materials systems
- Ability to identify, formulate, and solve engineering problems

Required Textbooks and Software

Required Textbook

None



Recommended Textbook

Transport Phenomena in Materials Processing

Author: William D. R. Poirier and G. H. Geiger

Publisher: TMS Publications, Warrendale PA , 1994

Fundamentals of Momentum, Heat and Mass Transfer

Author: James Welty, Charles Wicks, Robert Wilson and Gregory Rorrer

Publisher: 4th edition NY, John Wiley and Sons. 2001

Introduction to Heat and Mass Transfer

Author: Frank Incropera and David Dewitt

Publisher: NY John Wiley and Sons, 2000

Required Software

Matlab. You can access it through [UF Apps \(https://info.apps.ufl.edu/\)](https://info.apps.ufl.edu/).

Course Policies

Attendance Policy

Each class period will be used for course lectures and the working of example problems. Attendance will be a critical aspect of learning the material, as the lectures will not be recorded. However, attendance will not be taken.

Class Demeanor

Students are expected to arrive to class on time and be respectful to the instructor and to fellow students. Please avoid the use of cell phones and conversations that do not contribute to the discussion should be held at minimum.

Course Communication

E-Learning will be the primary avenue for communication and course management. All announcements for the course will be made using the announcement system on the E-Learning site. Discussion groups will be made for each module. All questions regarding the module and the homework assignment should be made using the discussion groups. Course notes will be posted on E-Learning before each lecture.

Homework

Homework problems will be given

Quizzes

Quizzes will be given through e-Learning, one in each module. You will have 15 minutes to take each quiz, and they will be open book, open note, and open internet. The lowest quiz grade will be dropped.

Exams

You will be given three exams throughout the semester, the exam content may change but the dates will
Each exam is weighted equally and will be worth 20% of your final grade.



Make-up exams will be provided only with the prior approval of the instructor or excused absence. In general, acceptable reasons for excused absence include illness, serious family emergencies, special curricular requirements, military obligation, court-imposed legal obligations, religious holidays and participation in official university activities such as music performances, athletic competition or debate.

Calculators: Only scientific and non-graphing calculators will be permitted during exams. If you are unsure about your calculator, it is your responsibility to check with the instructor for approval. Calculators will not be provided if you forget or bring the wrong calculator.

Final Project

There is a final project in this course that will be carried out in teams.

Grade Appeal

Your homework will be graded by the TA. If you feel there is a problem with a homework grade, contact the TA. For questions on exams, also contact Dr. Tonks. After two weeks have passed since the due date, no grades will be changed.

Grading Scheme

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Score	93	90	87	83	80	77	73	70	67	63	60	>60

Note that the score listed on the table for each grade is the lower bound for that grade.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the [Disability Resource Center \(http://www.dso.ufl.edu/drc/\)](http://www.dso.ufl.edu/drc/) (352392-8565) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Approximately half way through the course, a mid-term evaluation will be given to the students. The comments and suggestions provided during the mid-term evaluation will be carefully considered by Dr. Tonks and appropriate changes will be made to the course to address the comments, if possible.

Students are also expected to provide feedback on the quality of instruction at the completion of the course by completing online evaluations at <https://evaluations.ufl.edu> (<https://evaluations.ufl.edu>). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times

when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/> (<https://evaluations.ufl.edu/results/.%20>).



University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” [The Honor Code](#)

(<https://www.dso.ufl.edu/sccr/process/student%C2%ADconducthonor%C2%AD%20code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TA in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

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Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center:

<http://www.counseling.ufl.edu/cwc> (<http://www.counseling.ufl.edu/cwc>), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.



Sexual Assault Recovery Services (SARS):

Student Health Care Center, 392-1161.

University Police Department:

392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/> (<http://www.police.ufl.edu/>).

Academic Resources

E-learning technical support

352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml> (<https://lss.at.ufl.edu/help.shtml>).

Career Resource Center

Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/> (<https://www.crc.ufl.edu/>).

Library Support

<http://cms.uflib.ufl.edu/ask> (<http://cms.uflib.ufl.edu/ask>). There are various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center

Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/> (<https://teachingcenter.ufl.edu/>).

Writing Studio

302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/> (<https://writing.ufl.edu/writing-studio/>).

Student Complaints

https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf (https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

Course Summary:

Date

Details
