Syllabus for ME202-01: Transport Phenomena

Fall 2017
Instructor: Gerardo Diaz

Designation:	Transport Phenomena
Catalog Description:	Systematic analysis of fluid flow, heat transfer and mass transfer phenomena, with emphasis on analogies and specific techniques used in treating such boundary value problems.
Text Books and Other Required Materials:	R. Bird, W.E. Stewart, and E.N. Lightfoot. Transport Phenomena, Revised Second Edition. John Wiley & Sons, New York NY. ISBN: 978-0-470-11539-8.
Course Objectives/ Student Learning Outcomes:	This is course is intended to level off the background of new graduate students in the fields of fluid mechanics, heat and mass transfer. The course is roughly divided as 30% Fluid Mechanics, 30% Heat Transfer and 40% Mass Transfer. Emphasis is placed on analytical and numerical solution of fundamental problems in order to build a strong foundation for more advanced courses.
Program Learning Outcomes:	
Prerequisites by Topic:	Fluid Mechanics Heat Transfer
Course Policies:	
Academic Dishonesty Statement:	a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work. b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action. c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.
Disability Statement:	Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the

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	semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.
Topics:	Classification of Flows; Transport Properties; Navier-Stokes Equations; Exact Solutions; Similarity; Low-Reynolds Flows; Stokes Drag on a Sphere; High-Reynolds Laminar Flows; Laminar Boundary Layers; The Energy Equation; Diffusion and Convection; Convection on a Sphere; Energy Boundary Layer Flows; Mass Diffusion, Low Mass Transfer Rates; Evaporative Cooling; Film Theory; Heat Pipes; Droplet Evaporation; Species Boundary Layers; Convective Heat and Mass Transfer (High Mass Transfer Rates).
Class/laboratory Schedule:	Class: Tuesdays & Thursdays 12:00-1:15pm (CLSSRM 263)
Midterm/Final Exam Schedule:	Final exam: 8:00-11:00am (CLSSRM 263) DEC 14
Course Calendar:	
Professional Component:	Engineering Science: 100%
Assessment/Grading Policy:	Midterm: 30%; Final: 30%; Homework Assignments: 10%; Project : 30%.
Coordinator:	Gerardo Diaz
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Office Hours:	