ME 657 Convection Heat Transfer
Fall 2015
Course Syllabus

Prerequisites: ME 452 or equivalent

Instructor: Fletcher J. Miller, Ph.D. in Mechanical Engineering, UCB 1988.

Class Hours: Monday/Wednesday 7:00 – 8:15 p.m., Engineering 300
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Course Attendance  Students are expected to attend each class and to participate in discussions and answer occasional questions. Attendance is not the same as participation; active engagement is encouraged. If you will miss a class, please send an e-mail ahead of time. More than four absences or no participation will result in the grade being lowered 1/3 (Example: A becomes A-, A- becomes B+, etc.).

Absences  Please notify me in the first two weeks of the course if you will miss a class period due to a religious holiday or a University approved event (e.g., a sporting event, field trip, etc.)

Credit:  3 units credit
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Contact Info:  E 323J Engineering Building
Tel. 619-594-5791, fax 619-594-3599
fletcher.miller@sdsu.edu

Office Hours:  Tues./Thurs. 3 PM – 4 PM or by advance appointment (please e-mail me)

Textbook:  *Convection Heat Transfer*, 4th Edition by Adrian Bejan. Other books may be put on reserve in the library, and will be announced in class if/when needed. Also, there will be some material posted on Blackboard to read.

Homework:  Homework will be assigned approximately bi-weekly. It is ok to ask questions of other students, but group efforts are discouraged. Direct copying will result in a zero for all parties involved.
Examinations: There will be two examinations during the semester: a midterm and a comprehensive final examination.

Final Exam: Wed. Dec. 16th 7 PM to 9 PM.

Grading:
Homework 30%
Midterm examination 30%
Final examination 40%
(see also statement about participation above)
Classroom behavior:

Use of electronics (laptops, cell-phones, music players, etc.) is prohibited during class time, except as approved as part of the lesson. Please turn cell-phones off during the class; advance permission to keep them on with a justifiable reason can be requested. Eating during class is also prohibited. Water bottles or covered drinks are allowed.
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Americans with Disabilities Act (ADA) Accommodation:

The University is committed to providing reasonable academic accommodation to students with disabilities. The Students Disabilities Services office provides university academic support services and specialized assistance to students with disabilities. Individuals with physical, perceptual, or learning disabilities as addressed by the Americans with Disabilities Act should contact Students Disabilities Services for information regarding accommodations. Please notify me in private or via e-mail so that reasonable efforts can be made to accommodate you. If you expect accommodation through the Act, you must make a formal request through Students Disabilities Services Calpulli Center, Suite 3100, Telephone: (619) 594-6473 or (619) 594-2929 (TDD/TTY).
Computer/internet access requirement:

At San Diego State University, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. In the curriculum and class assignments, students are presumed to have access to a computer workstation and the necessary communication links to the internet and the University’s information resources.
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Student Learning Outcomes

• Appreciation of the breadth and importance of convective heat transfer. Qualitative analysis of flow fields and heat transfer phenomena in every-day life and specialized situations.

• Derivation and appraisal (through scaling or non-dimensional analysis) of conservation equations.

• Classification of flow regimes, boundary conditions, and identification of proper solution methods.

• Formulation of boundary layer theory (scaling and Blasius approaches).

• Use of correlations for non-ideal external forced flows.
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• Evaluation of heat transfer and pressure drop in forced internal flows.

• Modeling of external and internal natural convective flows and estimates of heat transfer.

• Physical understanding of the onset and effect of turbulence, and calculation of the change it causes in convective heat transfer using turbulence models.

• Calculation of mass transfer using similarity to heat transfer processes.

Time permitting:

Properties of free jets and shear layers.