

MEC502 – Conduction and Radiation Heat Transfer

The State University of New York, Korea

Fall 2017

Instructor: Prof. Achilles Vairis, B625 Academic Building
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Lectures: Tuesday @ 19:00-21:50 (A117)

Textbook (suggested): Heat Conduction, Y.Yener and S.Kakac, 4th edition, Publisher: Taylor & Francis
Radiative Heat Transfer, M.F. Modest, 3rd edition, Publisher: Academic Press

Office Hours: Tuesday and Thursday 1530 -1700 (or by appointment)

Grading:

Homework	20%
Midterm exam (TBA)	30%
Final exam	40%
Attendance	5%
Quiz	5%

Policies:

- Homework assignments and their solutions will be posted on the Blackboard.
- The Blackboard can be accessed at <https://blackboard.stonybrook.edu/>.
- The time and details about exams will be announced in the class (and also posted on the Blackboard).
- It is the responsibility of students to make sure that they can access the Blackboard and they have a working email registered with it. The Blackboard should be checked frequently for new materials.
- Exams will be closed book and note. Each person should have a calculator for the required computations.

Course Description: Fundamental aspects of heat conduction and radiation will be covered. Lectures will present basic laws and macroscopic equations for heat transfer as well as analytical solution techniques.

Topics:

- Introduction/Basic concepts of heat transfer
- Heat conduction equations
- 1-D, steady state heat conduction
- Scaling analysis and lumped analysis

- Solution techniques #1: Characteristic values and functions
- Solution techniques #1: Separation of variables
- Solution techniques #2: Laplace Transforms
- Heat Radiation: Definitions/Basic Concepts
- Radiation Equations
- Ideal (Black/White) Body Radiant Heat Exchange
- Real (Gray) Body Radiant Heat Exchange
- Special topic: Radiant heating/cooling & thermal homeostasis in buildings

Disability Support Services (DSS):

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact One-Stop Service Center, Academic Building A201, (82) 32-626-1117. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website: http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management Statement:

The State University of New York, Korea expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.

Attendance Policy of SUNY Korea:

1. All students of SUNY Korea are required to attend every class.
2. Unexcused absences will affect seriously the student's final grade in the course.
3. If a student has over 20% unexcused absence, the student's final course grade will be an 'F'.
4. Students should report the reason of absence to the instructor in advance, or immediately after the absence.
5. When a student excuses his/her absence, the student must provide documentation of the reason for the absence to the instructor.
6. The instructor of the course reserves the right to excuse absences.
7. The course instructor may excuse the absence if the submitted documentation fulfills the conditions below.
 - Extreme emergencies (e.g. death in the family)
 - Severe medical reasons with doctor's note (Not a slight illness)
 - Very important events (e.g. national conference, official school event)
8. At the end of semester, the course instructor should submit a copy of the attendance sheet to the Academic Affairs Office.