
**Instructor:** Dr. Reza Baghaei Lakeh
**Office:** Building 9 – Office #315
**Phone:** (909) 869-2493
**Email:** rblakeh@cpp.edu
**Office hours:** Monday 8-10 am and Wednesday 2-3 pm (face to face)
Tuesday 11am-12 pm (online, skype id: rezab60)
or by appointment

**Lecture Times/Location:** Monday & Wednesday 10:00 - 11:50 am / 24A-1407

**Pre-requisites:** ETM 306, ETM 312, MAT 132.
**MAT 132:** Techniques of multidimensional calculus, introduction to ordinary differential equations

**Required Textbooks:**
or

Electronic version will not be sufficient and will not be allowed on potential open-book exams or quizzes.

**Required Software/Hardware**
Engineering Calculator approved for F.E. Exam, Personal Computer (windows or Mac), Programing Language (C, MATLAB, Fortran,…), Microsoft Office (Word and Excel), ANSYS/FLUENT (Available at CPP for free to download for students)

Catalog Course Description: Application of basic principles governing the three modes of heat transfer: conduction, convection and radiation. Empirical and practical relations for forced convection heat transfer and heat exchanger analysis and design.

Course Requirements and Objectives: The Applied Heat Transfer is the first course in heat transfer for engineering technology students. Although the emphasize will be on the applications of heat transfer theory, the nature of the subject requires having a good understanding of the following phenomena before starting this course:

- Calculus especially derivation and integration
- Multivariable differential equations
- First and Second laws of Thermodynamics
- Conservations laws (mass and flow) for flow fields

After finishing this course, the student should have a good understanding on the following topics:

- Engineering problem solving methodology in heat transfer
- Fundamental understanding on different heat transfer mechanisms, i.e., conduction, convection, and radiation
- Steady-state conduction
- Transient conduction
- Convection and boundary layer equations
- Convection in internal and external flows
- Free convection
- Boiling, and condensation
- Heat exchanger analysis and design
- Basics of radiation heat transfer
- Application of Computational Fluid Dynamics in heat transfer using ANSYS/FLUENT software
Evaluation and Grading Policy:

- Participation/Professionalism (explained below) 10%
- Midterm Exam 30%
- Quizzes and Homework 30%
- Final Examination 30%

A (93%-100%), A- (90%-92%), B+ (87%-89%), B (84%-86%),
B- (80%-83%), C+ (77%-79%), C (74%-76%), C- (70%-73%),
D+ (67%-69%), D (64%-66%), D- (60%-63%), F(≤59%),

Important Notes:

1. Communications and announcements will be through Cal Poly Pomona’s email account or Blackboard. Students are responsible to check their emails regularly.
2. You are expected to be present in all of the sessions. If you have to miss a class for legitimate reasons (mostly medical), you should communicate this with the instructor beforehand.
3. There are no make-up classes and examinations under normal circumstances. In case of medical emergency a note from a doctor registered in California will be requested to coordinate a make-up exam. It is student’s responsibility to know the material covered in the class during one’s absence.
4. Professionalism is an important part of education and will be evaluated based on respecting the following rules:
   - Students should show up on time for classes and attend the entire class session. Late arrivals (more than 5 minutes) will not be accepted due to the fact that they are disturbing and distracting to the class. You will be asked to leave the class in case the delay is more than 5 minutes.
   - Using cellphones in class for texting or leaving the classroom for using the phone or texting is very easy to detect and is considered extremely unprofessional (except for emergency situations!). This includes calls/texts related to university clubs and/or activities. I will make sure to remember this behavior when assessing your professionalism in class.
   - Using electronics (cell phones, laptops, ipods, tablets, …) is not allowed unless authorized by the instructor. Absolutely no electronics during exams and quizzes.
   - This is a senior level class. Carrying on a conversation with classmates is not permitted unless authorized by the instructor. In case any side conversation starts, the instruction will pause until everybody’s attention is available. You are not responsible to make sure neighboring students are understanding the material, it is my responsibility and I always make sure to do it.
5. **Homework** will be assigned routinely but will not be collected. The homework solutions will be posted on blackboard. Students are encouraged to study the homework solutions to prepare for the quizzes and exams.

6. **Quizzes** will be given as shown on the schedule of the class. Pop-quizzes may also be given randomly. The quizzes start at the beginning or the end of the class for 15-20 minutes. No extra time will be given to students who come to class late.

7. There are absolutely no quiz make-ups. You will not receive the credit for a missed quiz. This includes traveling for clubs and other student activities.

8. Extra credits may be considered during quarter for specific tasks/projects; however, the extra credits cannot be used to pass the class. Extra credits are intended to help students get an A instead of a B+!

9. The calculators that are approved for Fundamentals of Engineering exam will be allowed in exams and quizzes. The list of calculators are given here: [http://ncees.org/exams/calculator-policy/](http://ncees.org/exams/calculator-policy/)

10. All students are expected to read, understand, and accept the College of Engineering’s Policy on Academic Integrity and Academic Dishonesty ([http://www.csupomona.edu/~engineering/current/integrity.shtml](http://www.csupomona.edu/~engineering/current/integrity.shtml)).

11. The students will not be given “Incomplete” under any circumstances.

12. **Plagiarism** is defined as “Any attempt to represent the words or ideas of another (whether published or unpublished) as one’s own.” Plagiarism is a violation of university policy and will be considered a serious offense. Dishonesty will result in failing the course and possible report to Cal Poly’s Director of Judicial Affairs.

13. Any changes to this syllabus and attached course schedule will be announced in Blackboard and/or distributed in class.

**Potential Faculty Strike on April 13**

It is very likely that the faculty will have to go on strike on the following dates: April 13. Your class would ordinarily meet on one or more of these days. If the strike takes place, it will not. I will advise you of supplementary or alternative activities to do instead of coming to campus. You are within your civil rights to ask questions or request a class discussion of any issues related to the strike, since they are educational issues that affect you. Your faculty have by contract, by HEERA law, and by tradition the privilege of academic freedom, which means the administration cannot tell us what to say in class.
# Course Schedule:

<table>
<thead>
<tr>
<th>W</th>
<th>Date</th>
<th>Book Chapter &amp; Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Monday, March 28</td>
<td>Syllabus Review and Course Introduction and Quiz 0</td>
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<tr>
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<td>Wednesday, March 30</td>
<td>Introduction to Heat Transfer Mechanisms (Chapter 1)</td>
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<td>2</td>
<td>Monday, April 4</td>
<td>Introduction to Heat Transfer Mechanisms (Chapter 1)</td>
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<td>Wednesday, April 6</td>
<td>Introduction to Conduction (Chapter 2)</td>
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<td>3</td>
<td>Monday, April 11</td>
<td>Introduction to Conduction (Chapter 2)</td>
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<td>Wednesday, April 13 *</td>
<td>One-Dimensional, Steady State Conduction (Chapter 3) - Quiz 1</td>
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<td>4</td>
<td>Monday, April 18</td>
<td>One-Dimensional, Steady State Conduction (Chapter 3)</td>
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<td></td>
<td>Wednesday, April 20</td>
<td>One-Dimensional, Steady State Conduction (Chapter 3)</td>
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<td>5</td>
<td>Monday, April 25</td>
<td>Exam 1 (cumulative)</td>
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<td>Wednesday, April 28</td>
<td>Introduction to Convection (Chapter 6)</td>
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<td>6</td>
<td>Monday, May 2</td>
<td>External Flow (Chapter 7)</td>
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<td>Wednesday, May 4</td>
<td>External Flow (Chapter 7)</td>
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<td>7</td>
<td>Monday, May 9</td>
<td>Internal Flow (Chapter 8) – Quiz 2</td>
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<td>Wednesday, May 11</td>
<td>Internal Flow (Chapter 8)</td>
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<td>8</td>
<td>Monday, May 16</td>
<td>Free Convection (Chapter 9)</td>
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<td>Wednesday, May 18</td>
<td>Heat Exchangers (Chapter 11) – Quiz 3</td>
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<td>9</td>
<td>Monday, May 23</td>
<td>Heat Exchangers (Chapter 11)</td>
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<td>Wednesday, May 25</td>
<td>Heat Exchangers (Chapter 11)</td>
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<td>10</td>
<td>Monday, May 30</td>
<td>Memorial Day (Campus Closed)</td>
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<td>Wednesday, June 1</td>
<td>Application of ANSYS/FLUENT in Heat Transfer – Quiz 4</td>
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<tr>
<td>11</td>
<td></td>
<td>Final Exam (cumulative): TBA</td>
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* Potential CPP faculty strike day.