

# ME 126: HEAT TRANSFER

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## In Workflow

1. ME Committee Chair (akuma@csus.edu)
2. ME Chair (akuma@csus.edu)
3. ECS College Committee Chair (troy.topping@csus.edu)
4. ECS Dean (kevan@csus.edu)
5. Academic Services (torsetj@csus.edu;%20212408496@csus.edu;%20cnewsome@skymail.csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu;%20celena.showers@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (212408496@csus.edu;%20torsetj@csus.edu;%20cnewsome@skymail.csus.edu)
10. Registrar's Office (wwd22@csus.edu;%20w lindsey@csus.edu;%20sac19595@csus.edu;%20danielle.ambrose@csus.edu;%20h.skocilich@csus.edu;%20j.espera@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

## Approval Path

1. Wed, 17 Apr 2019 19:41:56 GMT  
Akihiko Kumagai (akuma): Approved for ME Committee Chair
2. Wed, 17 Apr 2019 19:44:07 GMT  
Akihiko Kumagai (akuma): Approved for ME Chair
3. Fri, 19 Apr 2019 20:41:43 GMT  
Troy Topping (troy.topping): Approved for ECS Committee Chair
4. Fri, 26 Apr 2019 23:57:01 GMT  
Kevan Shafizadeh (kevan): Approved for ECS Dean
5. Wed, 08 May 2019 15:02:22 GMT  
212408496: Approved for Academic Services
6. Wed, 15 May 2019 19:07:13 GMT  
Katherine Chalmers (chalmers): Rollback to Initiator
7. Tue, 27 Aug 2019 16:40:15 GMT  
Akihiko Kumagai (akuma): Approved for ME Committee Chair
8. Tue, 27 Aug 2019 16:41:44 GMT  
Akihiko Kumagai (akuma): Approved for ME Chair
9. Fri, 30 Aug 2019 17:28:14 GMT  
Troy Topping (troy.topping): Approved for ECS College Committee Chair
10. Fri, 30 Aug 2019 17:32:01 GMT  
Kevan Shafizadeh (kevan): Approved for ECS Dean

Date Submitted: Mon, 12 Aug 2019 16:36:55 GMT

## Viewing: ME 126 : Heat Transfer

Last edit: Mon, 12 Aug 2019 16:36:54 GMT

Changes proposed by: Dongmei Zhou (102063583)

### Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Dongmei Zhou	zhoud@csus.edu	916-278-7504

### Catalog Title:

Heat Transfer

### Class Schedule Title:

Heat Transfer

### Academic Group: (College)

ECS - Engineering & Computer Science

### Academic Organization: (Department)

Mechanical Engineering

**Will this course be offered through the College of Continuing Education (CCE)?**

Yes

**Please specify:**

CCE and Stateside

**Catalog Year Effective:**

Spring 2020 (2019/2020 Catalog)

**Subject Area: (prefix)**

ME - Mechanical Engineering

**Catalog Number: (course number)**

126

**Course ID: (For administrative use only.)**

148146

**Units:**

3

**In what term(s) will this course typically be offered?**

Fall, Spring, Summer

**Does this course require a room for its final exam?**

Yes, final exam requires a room

**Does this course replace an existing experimental course?**

No

**This course complies with the credit hour policy:**

Yes

**Justification for course proposal:**

Update the prerequisites from ENGR124 and ENGR132 to ENGR124 and ME120.

To clarify subcommittee's confusion of the course component and classification field which proposes change this course from a discussion/laboratory to a lecture class, the justification that the course is changed from a discussion/laboratory to a lecture is that, the former Mechanical Engineering Department chair anticipated that the course ME126 might add lab element in the future when the course was first proposed but now the department curriculum decided that the course ME126 will stick to the format of lecture in the way that this course has been taught for decades without adding or changing to a lab and discussion combined course.

**Course Description: (Not to exceed 80 words and language should conform to catalog copy.)**

Basic principles of heat transfer, including processes of conduction, convection, radiation, evaporation and condensation. Lecture three hours.

**Are one or more field trips required with this course?**

No

**Fee Course?**

No

**Is this course designated as Service Learning?**

No

**Does this course require safety training?**

No

**Does this course require personal protective equipment (PPE)?**

No

**Does this course have prerequisites?**

Yes

**Prerequisite:**

ENGR 124 and ME 120.

**Prerequisites Enforced at Registration?**

Yes

**Does this course have corequisites?**

No

**Graded:**

Letter

**Approval required for enrollment?**

No Approval Required

**Course Component(s) and Classification(s):**

Lecture

**Lecture Classification**

CS#02 - Lecture/Discussion (K-factor=1WTU per unit)

**Lecture Units**

3

**Is this a paired course?**

No

**Is this course crosslisted?**

No

**Can this course be repeated for credit?**

No

**Can the course be taken for credit more than once during the same term?**

No

**Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc."**

Students will be able to:

- 1) Identify the important and/or possible heat transfer modes in any physical system.
- 2) Write surface and control volume energy balances with the appropriate heat transfer rate equations for any physical system.
- 3) Represent any steady-state, 1-D conduction system as a thermal circuit and solve for unknown heat rates and/or temperatures or other physical variables.
- 4) Design/specify a fin array or heat sink to meet a temperature or heat rate requirement.
- 5) Use the lumped capacitance method or appropriate analytical solution to solve transient conduction problems.
- 6) Calculate a convection heat transfer coefficient (h) from an appropriate empirical correlation and use it to determine a heat transfer parameter for a variety of fluid flow configurations.
- 7) Calculate fluid outlet temperatures, heat transfer rate, or required surface length/ area for pipe flows (and heat exchangers).
- 8) Determine view factors, compute radiation heat rates and/or temperatures in an n-sided enclosure with gray, diffuse surfaces.
- 9) Identify, formulate, and solve any multimode heat transfer problems

**Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.**

Homework (ELOs 1-3, 5-9)

Quizzes (ELOs 1-3, 5-9)

Projects (ELOs 1-9)

Tests (ELOs 1-3, 5-9)

**Is this course required in a degree program (major, minor, graduate degree, certificate?)**

Yes

**Has a corresponding Program Change been submitted to Workflow?**

No

**Identify the program(s) in which this course is required:**

**Programs:**

BS in Mechanical Engineering

**Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?**

No

**Will there be any departments affected by this proposed course?**

No

**I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.**

I/we agree

## **University Learning Goals**

### **Undergraduate Learning Goals:**

Competence in the disciplines  
Knowledge of human cultures and the physical and natural world  
Integrative learning  
Personal and social responsibility  
Intellectual and practical skills

### **Graduate (Masters) Learning Goals:**

Disciplinary knowledge

**Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?**

No

## **GE Course and GE Goal(s)**

**Is this a General Education (GE) course or is it being considered for GE?**

No

### **Reviewer Comments:**

**212408496 (Wed, 08 May 2019 15:02:19 GMT):**Fall 2019 CMS Entry deadline has passed. Effective term changed to next available, Spring 2020.

**Katherine Chalmers (chalmers) (Wed, 15 May 2019 19:07:13 GMT):**Rollback: The subcommittee is somewhat confused by the course component and classification field which proposes to change this course from a discussion/laboratory to a lecture class when this is NOT mentioned in the justification at all.

Key: 3303