

Approval Chart for Curriculum Changes

A = Approve I = Information Item¹ R = Advise & Respond²

Course Number ENGR 281 - new course or Degree Plan(s) _____
 State the requested change and reason. A memo may be attached if more space is necessary.

Currently the degree plan lists ENGR 481. ENGR 481 is not appropriate as the first thermodynamic class in Engineering, the new course, ENGR 281 focuses on applications and engineering design of macroscopic thermodynamics.

The prerequisites will be ~~changed to~~ PHYS 222 and MATH 186.

The course and content level is appropriate for the sophomore year, thus the number will be ENGR 281.

Circle the number that corresponds to the requested change. Degree plan changes are on the second page.

Change to a Course		COUNCIL ³								
		Dept./School	College Academic	Deans	TEC	UGEC	UUAC	GRAD	Provost	President
1.	Title (description unchanged)	A	A	A		I			I	I
2.	Description (not affecting content)	A	A	A		I			I	I
3.	Content (substantive change)	A	A	A		I			A	A
4.	Number of hours (lecture, lab, contact)	A	A	A		A			A	A
5.	Course number within the hundred	A	A	I		I			I	I
6.	Course number beyond the hundred	A	A	A		A			A	A
7.	Prerequisites	A	A	A		I			I	I
8.	Course fee(s)	A	--	A		--			A	I
9.	From U to G or G to U	A	A	A		A			A	A
10.	Cross list with another department: U or G level	A	A	A		A			A	A
11.	Department of record	A	A	A		A			A	A
12.	Open or close a course	A	A	A		A			A	A
⑬.	New course — See website for application and process. This change includes combining or splitting a course(s).	A	A	A		A			A	A

Note: When an academic unit does not have a council, the UGEC and/or UUAC will serve as its academic council, depending on the nature of the issue.

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		COUNCIL ³							President	Faculty	Provost	GRAD	UAC	UGEC	TEC	Deans	College Academic	Dept./School	Change to a Degree Plan
1.	University Requirements — Change in approved course content ⁶	A	A	A	A			A	--	A	--								
2.	University Requirements — Add or drop a required course from the University Requirements chart ⁶	A	A	A	A			A	A	A	--								
3.	University Requirements — Add or drop a course from a menu within the University Requirements ⁶	A	--	--	A			A	--	A	--								
4.	University Requirements — Change hours within a menu on the University Requirements chart ⁶	A	A	A	A			A	A	A	--								
5.	Major — Revision of major ^{4,5}	A	A	A	A			A	--	A	--								
6.	Major — Adopt or change admission requirements	A	A	A	A			A	--	A	--								
7.	Major — Add ^{4,5}	A	A	A	A			A	A	A	I								
8.	Major — Discontinue (proposed by the department or college)	A	A	A	A			A	A	A	I								
9.	Major — Discontinue (proposed by the Provost)	See below.																	
10.	GPA — Revise major or cumulative requirement	A	A	A	A			A	A	A	--								
11.	Minor — Revise course selection	A	A	A	I			I	--	I	--								
12.	Minor — Add	A	A	A	A			A	--	A	--								
13.	Minor — Discontinue (proposed by the department or college)	A	A	A	A			A	--	A	--								
14.	Minor — Discontinue (proposed by the Provost)	See below.																	
15.	Degree — Add	A	A	A	A			A	A	A	I								
16.	Degree — Discontinue (proposed by the department or college)	A	A	A	A			A	A	A	I								
17.	Degree -- Discontinue (proposed by the Provost)	See below.																	
18.	Any change to a graduate degree program	A	A	A	A			A	--	A	--								

		COUNCIL ³							President	Board of Trustees
Provost-Proposed Change		Provost	Department	Dean	TEC	UUAC	Graduate	Faculty		
1.	Major/Graduate Program — Discontinue (proposed by the Provost)	A	R	R	A			A	A	I
2.	Minor — Discontinue (proposed by the Provost)	A	R	R	A			--	A	--
3.	Degree — Discontinue (proposed by the Provost)	A	R	R	A			A	A	I

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COUNCIL ³										
	Change to the Catalog Information	Dept./School	College Academic	Deans	UGEC	UUAC	GRAD	Provost	Faculty	President
1.	General requirements for graduation including course requirements that are common to all majors for all degrees ⁷					A		A	A	A
2.	Admission requirements					A		A	A	A
3.	Policies governing academic probation and suspension					A		A	A	A
4.	Requirements for graduating with honors					A		A	A	A
5.	Other academic policy changes					A		A		A

¹ Councils may request additional information about "Information" items. These items are approved as "Consent Agenda."

² The Dean and Department should respond to the Provost's recommendation to close a program in writing. Advise & Respond (R) requires that the voting body should receive the written responses at least one week prior to the vote.

³ All courses that meet University Requirements for general education must go through UGEC. Courses or degrees offered only to students seeking teacher certification must go through the Teacher Education Council. All undergraduate changes must go before the UUAC. All graduate degree plan changes must go through the Graduate Council.

⁴ A minimum of 30 hours is required for a major. A maximum is specified for each degree (e.g., BA, BS). The university minimum for elective hours is 6, unless the requirements of external accrediting bodies make it impossible.

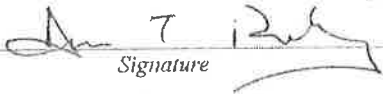
⁵ Program or course changes that apply to any major that includes Teacher Certification will be reviewed by the college, the Teacher Education Council (TEC), and then the UUAC.

⁶ Courses that satisfy ACU's University Requirements (General Education) will normally have lower-level numbering, be free of prerequisites and co-requisites, appeal to more than one or two majors, and "not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession" (SACS 2.7.3). Departments may request exceptions to the first three criteria.

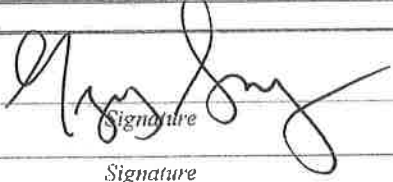
⁷ The UUAC approved the clarification that "general requirements for graduation" means the enumerated items in the "General Requirements for Bachelor's Degrees" section of the catalog.

Revised 1-29-16

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
 Signature	2/20/17 Approval date
_____ Signature	_____ Approval date

College Academic Council(s)	
 Signature	3.3.17 Approval date
_____ Signature	_____ Approval date

Dean(s)	
 Signature	3/7/17 Approval date
_____ Signature	_____ Approval date

Teacher Education Council	
_____ Chair's signature	_____ Approval date

General Education Council	
_____ Chair's signature	_____ Approval date

Undergraduate Academic Council	
_____ Chair's signature	_____ Approval date

Graduate Council	
_____ Chair's signature	_____ Approval date

Provost	
_____ Signature	_____ Approval date

Faculty	
_____ Chair of faculty senate	_____ Approval date

President	
_____ Signature	_____ Approval date

Application for a New Course v10.6

Course ID <i>Subject and Number</i>	ENGR 281
Date APPROVED	
Date DENIED	

I. Systems and Catalog Information Complete each item.

1	Course Developer	Timothy Kennedy
2	Course Teacher	A member of the Engineering & Physics Department Faculty
3	Course Title	Thermodynamics I
4	Course Abbreviation (if title is over 30 characters)	Thermodynamics I
5	College	Arts and Sciences
6	Department	Engineering and Physics
7	Number of Credit Hours	3
8a.	Number of contact hours - lecture	3
8b.	Number of contact hours – lab/activity	N/A
9	Is the course for a fixed or variable number of credit hours?	Fixed
10	Explanation for variable credit	N/A
11	Is the course repeatable for additional credit?	No
12	Maximum total number of credit hours a student can earn for this course	3
13	What type of course is this? (Select one. Please see Schedule Type definitions above.)	☒ Traditional lecture ☐ Traditional lab ☐ Traditional lecture/lab ☐ Experiential Learning ☐ Seminar ☐ Studio ☐ Thesis ☐ Dissertation

14	Instructor Workload	3
15	Grade Mode (check all appropriate):	☐ Standard ☐ Credit/No Credit (undergrad only)
16	Maximum Enrollment	40
17	Catalog Description (50 words or less)	A study of the basic concepts of thermodynamic systems. Addresses the first and second laws of thermodynamics, the properties pure substances, entropy, ideal gas behavior, power and refrigeration cycle analysis, use of psychometric charts. Applications to engineering systems.
18	List any prerequisites (course/s, test scores, class standing, major, etc.)	PHYS 222 and MATH 186
19	List any co-requisites	N/A
20	If the course is cross listed, specify the Course ID(s); MUST have signature in Section V from all Department Chairs	N/A
21	Does this course have any special student costs?	X_No ☐ Yes (If yes, must attach a <u>completed</u> "Request to Add or Change Course Fees" form. Describe in section IV-F.)
22a	How frequently will the course be offered in the Fall ? All, even or odd years?	N/A
22b	How frequently will the course be offered in the Spring ? All, even or odd years?	Yearly, All
22c	How frequently will the course be offered in the Summer ? All, even or odd years?	N/A
23	First semester this course will be offered <i>New courses may not be taught under their approved course ID until they appear in the catalog, therefore, no earlier than the coming fall.</i>	Spring 2018
24	List course/s that should be deleted, (Also, include the last semester for course/s being deleted) <i>A course cannot be deleted when it is</i>	N/A

07/01/2016

	<i>a requirement in a degree plan in any department.</i>	
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25	Is this course required for a degree/s? <i>If "Yes," attach a revised degree plan(s) reflecting the placement of the new course.</i>	☐ No ☒ Yes
26	Should the addition of this course be retroactively applied to the degree plan it supports?	☐ No ☒ Yes Explanation: 481 will be replaced by 281 in BSE degree plan. Number and prerequisites are changing. Original listing (481) investigated microscopic thermodynamics, while new course (281) investigates macroscopic thermodynamics with engineering applications. The course application is to formally have the number and prerequisites changed.
27	Has this course been offered as a Special Topics course?	☒ No ☐ Yes <i>If "Yes," specify the Course ID and enrollment for each term it was taught.</i> <i>(Note: New courses are NOT required to be taught as Special Topics courses prior to being approved. However, a course may be taught once as Special Topics before it is proposed. See the Course Descriptions section of the Catalog for details.)</i>
28	List any courses in which the content overlaps the proposed course. (Course ID and Name) <i>Attach a statement from the instructor/dept chair of the existing course justifying the new offering in Section IV-D.</i>	PHYS 481. Email justification from Assistant Chair attached.

per discussion with Dr. Dawdy 8/31/17

II. Curriculum

1	Degree Plan Explanation of how this course affects degree requirements.	The course is already included in the catalog degree plans for engineering. This application is simply to change the number along with the appropriate content information, prerequisites, etc.
2	Justification State the justification for adding this course to the current curriculum. Represent the need.	This course is already a required part of the degree plan. This application is simply to change the number along with the appropriate content information, prerequisites, etc.

III. Course Design

07/01/2016

1. Audience and Course Goal

1	Describe the intended audience, including prerequisite skills.	This course is required for engineering majors and will normally be taken in the second year of the engineering degree program. Prerequisite skills require completion of PHYS 222 and MATH 186 or its equivalent
2	State the overarching course goal(s) in performance terms.	Math, Science and Engineering Principles: • Apply the laws of thermodynamics to a variety of problems • Make adequate and reasonable assumptions in order to analyze a problem • Understand concepts such as enthalpy and entropy and apply these concepts to analyze energy related problems Problem Solving Skills: • Apply data contained in tables and graphs to the solution of a problem • Organize a problem so that the solution can be presented in a neat, clear and logical manner

2. Competencies and Measurements

	Competency	Measurement
1	Determine the properties of real substances and ideal gases using tabular data and equations of state.	Homework and Exam 1
2	Analyze processes involving ideal gases and real substances as working fluids in closed and open systems or in control volumes.	Homework and Exam 2
3	Apply the first law of thermodynamics to perform energy balances involving heat and work transfers.	Homework and Exam 2
4	Analyze systems and control volumes through application of the second law of thermodynamics.	Homework and Exam 3
5	Analyze gas and vapor power cycles	Homework and Exams 3 and 4

6	Calculate cycle efficiencies or coefficients of performance for power and refrigeration cycles.	Homework and Exam 4
7	Plot and analyze heating and air conditioning processes using psychrometric charts.	Homework and Exam 4

3. Text and Resources

1. Give the full publication information of the textbook/s and other required resources and outside readings.
2. For **combined undergraduate/graduate** courses, make two lists:
 - a. full publication information; label **Undergraduate**.
 - b. full publication information; label **Graduate**. Indicate number of pages required.

Text: *Thermodynamics, An Engineering Approach*, 8th Edition, Cengel and Boles, McGraw-Hill, 2015.

Software: *Connect* by McGraw-Hill; software access is provided with the text.

IV. Supporting Documentation

Supporting documents must accompany proposal prior to preliminary approval by chair and dean.

1	Library — Submit new course application and syllabus to the Dean of the Library. Consult with the director and establish a deadline for completion of the library report. Attach the signed copy of the Library report.
2	Instructional Design — The application and syllabus must be reviewed by the Adams Center. Attach a copy of the Adams Center Review Letter.
3	Content Overlap — Include one document for each course you listed in Section I-I. Attach statement from instructor/dept chair of existing course justifying the new offering.
4	Departmental Resources — List the resources that support the course and are available only through the department, if applicable. Attach the list of the holdings and the location/s.
5	Resources — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). Attach a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.
6	Expenses — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). Attach a complete list of all items, the estimated cost of each and the source of the funds.
7	Justification — Attach all documents referred to in Section II-2
8	Syllabus — Attach the syllabus for the course based upon the anticipated first-semester offering.
9	Provide documentation for all additional attachments here

V. Preliminary Approvals

All supporting documentation has been assembled and attached to this application. I believe this course is ready to be presented to appropriate councils. We have a plan to fund this new course.

Course Number and Name ENGR 281- Thermodynamics I

Primary Department

Don T. Donly
Department Chair

2/22/17
Date

Dean of the College

Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair

Date

Dean of the College

Date

Cross-listing Department *Add more lines if multiple departments are cross-listing*

Department Chair
Dean of the College

Date

Date

VI. Actions *Place all actions on one page.*

Course ID: ENGR 281

Course Title: Thermodynamics I

1. College Academic Council: (for all courses)

Note: Insert additional lines for College Academic Council action for each college involved in cross-listed courses.

Approved ☐ Denied ☐ _____
College Dean or Director Date

Approved ☐ Denied ☐ _____
College Dean or Director Date

2. Graduate Council: (for graduate level courses)

Approved ☐ Denied ☐ _____
Dean of Graduate School Date

3. Teacher Education Council: (when applicable)

Approved ☐ Denied ☐ _____
TEC Chair Date

4. University General Education Council: (when applicable)

Approved ☐ Denied ☐ _____
Provost's designee Date

5. University Undergraduate Academic Council: (*undergraduate level courses*)

Approved ☐ Denied ☐ _____
Vice Provost Date

6. Academic Provost: (for all courses)

Approved ☐ Denied ☐ _____
Provost Date

7. President of the University: (for all courses)

Approved ☐ Denied ☐ _____
President Date

Attach notes, comments, or conditions from appropriate councils:

Thermo Course Application

4 messages

Timothy Kennedy <timothy.kennedy@acu.edu>
To: Jess Dowdy <jtd10a@acu.edu>

Tue, Feb 7, 2017 at 3:47 PM

Jess,

Can you write me a short explanation justifying the information below. I am trying to get prerequisites and number changed.

List any courses in which the content overlaps the proposed course. (Course ID and Name)

Attach a statement from the instructor/dept chair of the existing course justifying the new offering

Grace and Peace,

Timothy Kennedy, PhD
Assistant Professor of Engineering and Physics
Abilene Christian University
Phone: (325) 674-2165

Timothy Kennedy <timothy.kennedy@acu.edu>
To: Tim Head <tim.head@acu.edu>

Tue, Feb 14, 2017 at 1:42 PM

Tim,

Can you write a short blurb explaining the need for a new offering of Thermo (different focus, student needs, etc) so I can get these materials to council

Grace and Peace,

Jess,

Can you write me a short explanation justifying the information below. I am trying to get prerequisites and number changed.

Attach a statement from the instructor/dept chair of the existing course justifying the new offering

Grace and Peace,

Timothy Kennedy, PhD
Assistant Professor of Engineering and Physics
Abilene Christian University
Phone: (325) 674-2165

Tim Head <tlh07b@acu.edu>
To: Timothy Kennedy <timothy.kennedy@acu.edu>
Cc: Jess Dowdy <jtd10a@acu.edu>

Tue, Feb 14, 2017 at 6:20 PM

Hi Tim,

Here is a short statement concerning how the department arrived at the decision to offer separate ENGR and PHYS Thermodynamics sections. Is this sufficient for your needs?

Tim H.

The determination of the need to offer a new ENGR section of Thermodynamics separate from the PHYS class was made after two faculty members with significant teaching experience, one with an engineering background and one with a physics background attempted to team teach a Thermodynamics to see if both engineering students and physics students could get what they need to be prepared for careers and/or graduate school. At the end of this trial semester, both faculty had come to the conclusion that students would be best served by having separate ENGR and PHYS

classes that stress the material that is most important to fulfilling the needs of each type of student. In particular, the Physics students need to focus more on the microscopic aspects of thermodynamics often called Statistical Mechanics, and Engineers need to focus more on applications of macroscopic thermodynamics. The Engineering and Physics Department faculty believes that this end is best accomplished through having two separate classes.

[Quoted text hidden]

—
Timothy L. Head, Ph. D.
Associate Professor
Assistant Department Chair
Department of Engineering and Physics
Abilene Christian University
354 Onstead Science Center
Abilene, TX 79699
Tel:(325) 674-2495
email:tim.head@acu.edu

Timothy Kennedy <timothy.kennedy@acu.edu>
To: Tim Head <tlh07b@acu.edu>
Cc: Jess Dowdy <jtd10a@acu.edu>

Wed, Feb 15, 2017 at 10:00 AM

Thanks Tim! This is perfect.

Grace and Peace,

Timothy Kennedy, PhD
Assistant Professor of Engineering and Physics
Abilene Christian University
Phone: (325) 674-2165

[Quoted text hidden]

ABILENE CHRISTIAN UNIVERSITY

LIBRARY

M E M O R A N D U M

DATE: 21:59
TO: Dr. Tim Kennedy
FROM: Mark McCallon, Associate Dean for Library Services
RE: New Course Proposal, ENGR 281 - Thermodynamics

The library has examined the course application and syllabus and is able to support the proposed course. Please contact Jasmine Hoover, Librarian Liaison to the Department of Engineering and Physics, if additional library resources are needed to support students working on their projects. Thank you for letting us review the course proposal.

Professor Rich Jinkerson

Onstead Science Center 317D

325-674- 4815

richard.jinkerson@acu.edu

Re: Review of ENGR281: Thermodynamics

Dear Professor Jinkerson,

Thank you for the submission of Thermodynamics ENGR281. I reviewed the syllabus based on the ACU application requirements and the syllabus meets those requirements. Please also see the attached checklist and make changes as needed. Specifically, here are a few sections you might want to revise:

- Within the Class Meeting Times and Location section, you do not list which semester and year the course is offered.
- Consider including the Title IX anti-harrassment information. This is a recommended syllabus item.

Other than these, the syllabus is exemplary! However, this letter is not meant to be a final approval in the course application process. Instead it is intended as a reference, which will be read by your department chair and members of the council, who may also have questions or comments of their own.

We would like to thank you for allowing the Adams Center team to review your course application. The instructional design team would love to work with you on your syllabus, as well as the design, development or revision of this and other courses. If there is anything else we can do to help you, please feel free to let me know.

Sincerely yours,



Amy Boone
alb17a@acu.edu

Thermodynamics I – ENGR 281, Section 01

Abilene Christian University

Spring 2017

Catalog Description

A study of the basic concepts of thermodynamic systems. Addresses the first and second laws of thermodynamics, the properties pure substances, entropy, ideal gas behavior, power and refrigeration cycle analysis, use of psychometric charts. Applications to engineering systems.

Prerequisites: PHYS 222 and MATH 186.

Credit Hours: 3

Class Meeting Times and Location

This class meets on Monday, Wednesday and Friday from 8:00 to 8:50 AM in Bennett Room 119, but changes in time and location may occur with changes in department scheduling.

Required Text and Software

Text: *Thermodynamics, An Engineering Approach*, 8th Edition, Cengel and Boles, McGraw-Hill, 2015.

Software: *Connect* by McGraw-Hill; software access is provided with the text.

Intended Audience

This course is required for engineering majors and will normally be taken in the third year of the engineering degree program. Prerequisite skills require completion of PHYS 222 and MATH 186 or its equivalent.

Contact Information

Name: Rich Jinkerson, PE, Associate Professor of Engineering and Physics
Office: Onstead Science Center 317D
Office Phone: 325-674-4815
Email: richard.jinkerson@acu.edu
Office hours: TWR 1:30 PM - 4:30 PM, or by appointment.

The mission of ACU

To educate students for Christian service and leadership throughout the world.

The mission of the College of Arts and Sciences

The College of Arts and Sciences engages students with humanity's greatest ideas to create understanding, apply insights, and serve the world as Christian thinkers and problem solvers.

The mission of the Engineering and Physics Department

The ACU engineering program strongly supports the university's mission of educating students for Christian service and leadership throughout the world. In support of the university mission and in response to the needs of program constituents, the Program Educational Objectives (PEOs) are that within a few years of graduation:

1. Alumni are succeeding in engineering practice or other diverse fields that value analytical, problem solving, and professional practice skills.

2. Alumni are engaging in life-long learning that builds upon foundational knowledge acquired in their undergraduate education through graduate study, career-specific or other professional training.
3. Alumni are glorifying God through thoughtful integration of work and life facilitating service to others through their profession.

Teaching Philosophy

Engineering is a respected profession and the public places great trust in engineers as individuals who are honest, competent and ethical. Many codes of ethics demonstrate that a commitment to protecting the health, safety, and welfare of the public is of paramount importance. These values are in harmony with Christian principles and ideals that are exhibited in the Bible. This course will be taught so that students may gain an appreciation for the professional nature of engineering. The instructor encourages the discussion of topics that relate to the integration of faith and professional responsibilities.

Class Format

Class time will usually be spent in lecture and discussion that builds on the treatment in the text of engineering thermodynamics principles. Class participation will not be graded formally, but active engagement by students will enhance the learning process. Reading before class will make the discussions more meaningful. Preparation should also be made so that a student is ready to assist in derivation and solution work if invited to do so.

Learning Objectives

This courses provides significant direct focus on the following ABET Student Program Outcomes:

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (e) An ability to identify, formulate, and solve engineering problems

These program outcomes will be promoted and actualized through instruction, graded homework assignments and examinations.

Competencies and Measurements

	Competency	Measurement
1	Determine the properties of real substances and ideal gases using tabular data and equations of state.	Homework and Exam 1
2	Analyze processes involving ideal gases and real substances as working fluids in closed and open systems or in control volumes.	Homework; Exam 2
3	Apply the first law of thermodynamics to perform energy balances involving heat and work transfers.	Homework; Exam 2
4	Analyze systems and control volumes through application of the second law of thermodynamics.	Homework; Exam 3
5	Analyze gas and vapor power cycles	Homework; Exams 3 and 4
6	Calculate cycle efficiencies or coefficients of performance for power and refrigeration cycles.	Homework; Exam 4
7	Plot and analyze heating and air conditioning processes using psychrometric charts.	Homework; Exam 4

Course Policies

Academic Integrity

Academic integrity involves completion of assigned academic work for each class by the individual or group responsible for the work. Violations of academic integrity and other forms of cheating include the intention to deceive, mislead, or misrepresent, which are a form of lying. Academic misconduct includes, but is not limited to: failing to give credit to sources used in a work in an attempt to present the work as one's own; submitting papers or projects obtained from another source as one's own; falsifying information orally or in writing; and receiving, giving, or using unauthorized aid on examinations. Such actions may result in, but are not limited to, a zero grade for the assignment and/or a failing grade in the course. The Department Chairman, the Dean of the College of Arts and Sciences and the Dean of Student Life will also be notified of this activity. The full university policy, including the process for appealing a decision, may be found at the link: <http://www.acu.edu/academics/provost/policies/index.html>.

Attendance Policy

Attendance with prompt arrival is expected for all class sessions. Classes will typically involve the presentation and discussion of new material, discussion of reading assignments from the text, or the consideration of problem solutions. Students are required to attend at least 80% of class meetings in order to receive credit for the course. A student who misses more than 20% of the scheduled classes may be dropped from the class with a grade of WF, which is averaged in the student's overall GPA as a grade of F.

Calculator Policy

In the interest of preparing students for the Fundamentals of Engineering (FE) examination, only calculators that have been approved by NCEES will be allowed for use on examinations in this course. The approved calculators are the following:

- **Hewlett Packard** – HP 33s, HP 35s, and no other
- **Casio** – All FX-115 models. Any Casio calculator must contain FX-115 in its model name.
- **Texas Instruments** – All TI-30X and TI 36X models. Any TI calculator must contain either TI-30X or TI-36X in its model name.

The NCEES policy may be reviewed at <http://ncees.org/exams/calculator-policy>.

Grading Policy

Course Components

Homework

Homework assignments and due dates are included in the Daily Schedule that is posted in the Class Info folder for this course on myACU. Homework will use the software package Connect that is provided by the textbook publisher. Each homework problem will have points assigned based upon the level of effort that is required to solve the problem. Although this package will provide the primary mechanism for the submittal and grading of homework, it is expected that students will develop necessary engineering skills by solving problems manually using conventional methods of computation and sketching. For this reason, some homework problems will be submitted on engineering paper following the guidelines listed below. Manual homework will be due at the beginning of class on the date shown on the Daily Schedule. **No late homework will be accepted.**

Students are encouraged to start on all homework in advance of the due

<u>Dates</u>	<u>Weight</u>
date, and to visit with the instructor when difficulties are encountered with	Shown on the Daily Schedule

50%

particular problems. Working together on problems is also encouraged, but all solutions presented for credit must be defensible by the student submitting them for credit. The final homework grade will be calculated as a percentage ratio of the number of points awarded to the number of points possible.

Manual Homework Guidelines:

- All manual homework solutions must be submitted on engineering paper which may be purchased at the ACU Bookstore or from Mr. Ray Smith.
- Homework must be neat and legible with only one problem per page.
- The problem statement and associated figures must be shown along with the answer.
- Any assumptions must be clearly stated or shown for each problem.
- Drawings must be complete and well labeled.
- All work that is needed to reach an answer or conclusion must be shown to receive full credit.
- Proper units must be included with final answers that are identified clearly with a box or circle, or by underlining.

Regular Exams

Four examinations are scheduled for this class, with dates and times for the exams shown on the Daily Schedule. Each exam will focus on material covered during the period immediately preceding the exam, but each exam will build on concepts and skills that have been developed in the course until that time. All students are expected to take each exam at the scheduled times. Each student will be allowed to bring one single-sided 8½ X 11 sheet of handwritten notes to the exam containing content that is selected by the student.

Exam 1 – 2/5	10%
Exam 2 – 2/29	10%
Exam 3 – 4/4	10%
Exam 4 – 4/29	10%

Final Exam

The final examination will be comprehensive and will cover material from throughout the period of the course.

Friday – 5/6	10%
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Calculation of Final Course Grade*

90% and above	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
59% and below	F

*The instructor reserves the right to decrease the lower bound for grade cut-offs.

ADA Compliance Statement

Abilene Christian University is dedicated to removing barriers and opening access for students with disabilities in compliance with ADA and Section 504 of the Rehabilitation Act. The Alpha Scholars Program facilitates disability accommodations in cooperation with instructors. In order to receive accommodations, a student must be registered with Alpha Scholars Program, and must complete a specific request for each class in which he or she needs accommodation. If a student has a documented disability and wishes to discuss academic accommodations, he or she may call the office directly at 325-674-2667.

Harassment policy:

As a Christian community, Abilene Christian University has committed itself, unequivocally, to ensuring a working and learning environment in which the dignity of every individual is respected. Harassment is defined as unwelcome behavior or conduct based on sex, religion, race, age, color, national origin, veteran's status, disability, or any other characteristic protected by law when (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, education, or participation in University programs or activities, (2) submission to, or rejection of, such conduct by an individual is used as the basis for a decision affecting an individual's employment, education, or participation in University programs or activities, or (3) such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive environment for work, education, or participation in a University program or activity. See the full university policy by following [this link](#).

Tentative Course Schedule

While every effort will be made to closely follow this schedule, there may be a need to deviate from it. The instructor reserves the right to alter this schedule to best achieve the objectives of the class.

Assignments may vary from that presented below, but will be similar in content, number, and frequency.

Week	Sections	Topics and Events
1	Ch. 1	Basic Concepts and Definitions
2	Ch. 2	Properties of Pure Substances
3	Ch. 3	Energy Transfer by Heat, Work, and Mass Flow,
4	Ch. 4	First Law of Thermodynamics, EXAM 1
5	Ch. 4	First Law of Thermodynamics
6	Ch. 5	Second Law of Thermodynamics
7	Ch. 5	Second Law of Thermodynamics EXAM 2
8	Ch. 9	Gas Power Cycles
		Spring Break
9	Ch. 9	Gas Power Cycles
10	Ch. 10	Vapor Power Cycles
11	Ch. 10	Vapor Power Cycles
12	Ch. 11	Refrigeration Cycles, EXAM 3
13	Ch. 11	Refrigeration Cycles
14	Ch. 14	Gas-vapor mixtures and air-conditioning
15	Ch. 14	Gas-vapor mixtures and air-conditioning, EXAM 4
16		Final Exam