

Approval Chart for Curriculum Changes

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

Course Number ENGR 378 or Degree Plan(s) _____

State the requested change and reason. A memo may be attached if more space is necessary.

See Attached

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

Change to a Course		Dept./School	College Academic	Deans	COUNCIL ³				Provost	President
					TEC	UGEC	UUAC	GRAD		
1.	Title (description unchanged)	A	A	A		I			I	I
2.	Description (not affecting content)	A	A	A		I			I	I
3.	Course term(s)	A	I	A		I			I	I
4.	Content (substantive change)	A	A	A		I			A	A
5.	Number of hours (lecture, lab, contact)	A	A	A		A			A	A
6.	Course number within the hundred	A	A	I		I			I	I
7.	Course number beyond the hundred	A	A	A		A			A	A
8.	Prerequisites	A	A	A		I			I	I
9.	Course fee(s)	A	--	A		--			A	I
10.	From U to G or G to U	A	A	A		A			A	A
11.	Cross list with another department: U or G level	A	A	A		A			A	A
12.	Department of record	A	A	A		A			A	A
13.	Open or close a course	A	A	A		A			A	A
14.	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 ¹										
	Change to a Degree Plan	Dept./School	College Academic	Deans	TEC	UGEC	UAC	GRAD	Provost	Faculty	President	Board of Trustees
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 ¹										
	Provost-Proposed Change	Provost	Department	Dean	TEC	UAC	Graduate	Faculty	President	Board of Trustees
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	1

Approval Chart for Curriculum Changes

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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.

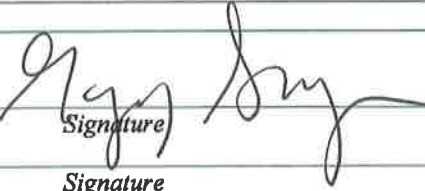
⁷ The UUAC approved the clarification that "general requirements for graduation" means the enumerated items in the "General Requirements for Bachelor's Degrees" section of the catalog.

Revised 3-8-17

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
	10/29/18
<i>Signature</i>	<i>Approval date</i>
<i>Signature</i>	<i>Approval date</i>

College Academic Council(s)	
	11-20-2018
<i>Signature</i>	<i>Approval date</i>
<i>Signature</i>	<i>Approval date</i>

Dean(s)	
	11/27/18
<i>Signature</i>	<i>Approval date</i>
<i>Signature</i>	<i>Approval date</i>

Teacher Education Council	
<i>Chair's signature</i>	<i>Approval date</i>

General Education Council	
<i>Chair's signature</i>	<i>Approval date</i>

Undergraduate Academic Council	
<i>Chair's signature</i>	<i>Approval date</i>

Graduate Council	
<i>Chair's signature</i>	<i>Approval date</i>

Provost	
<i>Signature</i>	<i>Approval date</i>

Faculty	
<i>Chair of faculty senate</i>	<i>Approval date</i>

President	
<i>Signature</i>	<i>Approval date</i>

Application for a New Course v10.6

Course ID <i>Subject and Number</i>	ENGR 378
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 faculty or an adjunct with a PE.
3	Course Title	Introduction to Environmental Engineering
4	Course Abbreviation (If title is over 30 characters)	Intro to Environ. Engr.
5	College	CAS
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	0
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):	<u> x </u> Standard ___Credit/No Credit (undergrad only)
16	Maximum Enrollment	18
17	Catalog Description (50 words or less)	Introduction to environmental engineering and science fundamentals including chemistry, microbiology, mass balance, and applications. Applications include: water quality, water and wastewater treatment, water reuse, solid and hazardous waste, and air pollution.
18	List any prerequisites (course/s, test scores, class standing, major, etc.)	CHEM 131/133 ENGR 333 (or simultaneous enrollment)
19	List any co-requisites	Credit for or concurrent enrollment in ENGR 333
20	If the course is cross listed, specify the Course ID(s); MUST have signature in Section V from all Department Chairs	None
21	Does this course have any special student costs?	<u> X </u> 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?	Even years
22b	How frequently will the course be offered in the Spring ? All, even or odd years?	none
22c	How frequently will the course be offered in the Summer ? All, even or odd years?	none
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>	Fall 2020

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 a requirement in a degree plan in any department.</i>	none
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 An elective in Civil Concentration.
26	Should the addition of this course be retroactively applied to the degree plan it supports?	☒ No ☐ Yes
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. (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>	None

II. Curriculum

1	Degree Plan Explanation of how this course affects degree requirements.	The course will be a depth elective for students pursuing an emphasis in Civil Engineering within the Bachelor of Science in Engineering degree.
2	Justification State the justification for adding this	Based upon recent (Fall '17 and Spring '18) feedback from the ACU Engineering Industrial Advisory Board, ACU admissions, recent ('17 and '18) senior exit

07/01/2016

	Represent the need.	Educators, additional depth in engineering disciplines is needed within our degree plan to increase competitiveness of ACU graduates in the job market. Environmental Engineering is one of the major disciplines within Civil Engineering and is a large portion of the Civil FE taken by students upon graduation.
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III. Course Design

1. Audience and Course Goal

1	Describe the intended audience, including prerequisite skills.	Junior Engineering students with an interest in Civil Engineering or any student with an interest in environmental engineering
2	State the overarching course goal(s) in performance terms.	To equip engineering students with an overall introduction to the field of environmental engineering, develop marketable skills with the field such as water and wastewater treatment design, air pollution control, and solid waste design.

2. Competencies and Measurements

	Competency	Measurement
1	Define and discuss the implications of water quality parameters.	Daily homework, weekly quizzes, exams 1, final exam.
2	Convert chemical concentrations among units of measurement commonly used in environmental engineering (e.g., mole/L, ppm).	Daily homework, weekly quizzes, exam 1, final exam.
3	Estimate how concentrations of chemicals change over the course of a reaction using zero-, first-, and second-order rate equations.	Daily homework, weekly quizzes, exam 2, final exam.
4	Apply the principles of material balances to determine the fate and transport of pollutants and process products in natural and engineered systems.	Daily homework, weekly quizzes, exam 2 and final exam.

5	To understand important regulatory aspects of water quality and treatment	Daily homework, weekly quizzes, exam 2 and final exam.
6	To understand how solid and hazardous wastes are defined and addressed	Daily homework, weekly quizzes, exam 3 and final exam.
7	To discuss examples of micro, meso, and macro air pollution and explain impact of atmospheric stability on air quality	Daily homework, weekly quizzes, exam 3 and final exam.
8	Describe the impact of civil and environmental engineering on society and the environment.	Homework, weekly quizzes, exams 1, 2, and 3, final exam.

3. Text and Resources

1. Give the full publication information of the textbook/s and other required resources and outside readings.

The required text for this course is Environmental Engineering: Fundamentals, Sustainability, and Design, by James Mihelcic and Julie Zimmerman, 2013, ISBN 978-1118741498.

2. For **combined undergraduate/graduate** courses, make two lists:

- full publication information; label **Undergraduate**.
- full publication information; label **Graduate**. Indicate number of pages required.

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 378

Primary Department


Department Chair

10/29/18
Date


Dean of the College

11/7/18
Date

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

Department Chair
Dean of the College

Date

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: _____

Course Title: _____

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:

October 16, 2018

Dr. Timothy Kennedy
OSC137D
Timothy.kennedy@acu.edu
325-674-2165

Re: Review of ENGR378

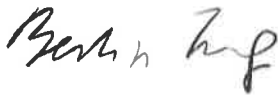
Dear Dr. Kennedy,

Thank you for submitting ENGR378: Environmental Engineering. I have reviewed them based on the ACU Syllabus Guidelines and find the syllabus meeting the requirements. Here are a few suggestions I would make for further improvement:

- For proximity, you might want to move university policies together, such as Academic integrity, ADA, and Title IX. It also would help if you make their format consistent. For instance, ADA section is in italics, but other sections are not.
- Title IX section could use some introductory text to tell readers what it is, instead of including a link. In this document, I have some sample text which you could choose to use <https://tinyurl.com/acusyllabus>

These are changes you can make yourself. There is no need for further review at the Adams Center. However, please note that 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.

If you have any questions, please feel free to let me know. Please also let me know if we can be of any help in the design and facilitation of this course.



Director of Instructional Design
Adams Center

ABILENE CHRISTIAN UNIVERSITY

LIBRARY

M E M O R A N D U M

DATE: 20:31
TO: Dr. Tim Kennedy
FROM: Mark McCallon, Associate Dean for Library Services
RE: New Course Proposal, ENGR 378 – Introduction to Environmental Engineering

The library has examined the course application and syllabus and is able to support the proposed course. Please contact Erica Pye (exp10a@acu.edu) , Librarian Liaison to the Department of Engineering and Physics, if additional library resources are needed for the course. Thank you for letting us review the course proposal.

Introduction to Environmental Engineering

ENGR 378, Section 01

Abilene Christian University

Fall 2020

Course Description

The course will cover fundamental principles (e.g., from chemistry, biology, and math) that are routinely used in environmental engineering. Additionally, the course affords students an opportunity to examine some of the greatest challenges facing Texas, the U.S., and the world. In Texas we are faced with a depleting water sources alongside increasing population. In the US, we face challenges associated with crumbling, out-of-date civil and environmental engineering infrastructure, water quality, and air quality. According to the United Nations, 900 million people do not have safe drinking water, while 2.6 billion people lack access to basic sanitation. Many of these live in less developed countries with low wages.

Prerequisites: CHEM 131/133

Corequisite: Credit for or concurrent enrollment in ENGR 333

Credit hours: 3.

Class Meeting Times and Location

This class meets Tuesday and Thursday from 9:30 a.m. to 10:50 a.m. in Onstead Science Center B61.

Required Text

The required text for this course is Environmental Engineering: Fundamentals, Sustainability, and Design, by James Mihelcic and Julie Zimmerman, 2013, ISBN 978-1118741498.

Intended Audience

This is a required course for Engineering majors and intended to be completed during their Junior or Senior year who are interested in Civil or Environmental Engineering.

Catalog Description

Introduction to environmental engineering and science fundamentals including chemistry, microbiology, mass balance, and applications. Applications include: water quality, water and wastewater treatment, water reuse, solid and hazardous waste, and air pollution.

Contact Information

Name: Dr. Timothy Kennedy, Assistant Professor of Engineering
Office: Onstead Science Center 137D
Phone: 325-674-2165
Email: timothy.kennedy@acu.edu
Office hours: Daily 8-10 a.m. Additional office hours can be arranged as needed.

Teaching Philosophy

Engineering and physics are well respected professions. The public places great trust in these professionals being honest, competent, and ethical. Many codes of ethics for these fields indicate that the 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. Christian engineers should be honest (Matthew 5:37), work hard to ensure competency (Colossians 3:23), and put the public's interest ahead of his or her own (Luke 6:31). In light of these principles, this course will be taught such that you will gain an appreciation for the professional nature of engineering and physics. It will be taught so as to give you every opportunity to begin to develop competency in these fields. This will require reading assignments, homework, quizzes, tests, and group discussion. The instructor especially encourages the discussion of topics that would bear on integrating faith and professional responsibilities (cheating on licensure exams, weapons design and manufacture, environmental laws and employment opportunities in developing nations, etc.).

Competencies and Measurements

	Competency	Measurement
1	Define and discuss the implications of water quality parameters	Daily homework, weekly quizzes, exams 1, final exam.
2	Convert chemical concentrations among units of measurement commonly used in environmental engineering (e.g., mole/L, ppm).	Daily homework, weekly quizzes, exam 1, final exam.
3	Estimate how concentrations of chemicals change over the course of a reaction using zero-, first-, and second-order rate equations.	Daily homework, weekly quizzes, exam 2, final exam.
4	Apply the principles of material balances to determine the fate and transport of pollutants and process products in natural and engineered systems.	Daily homework, weekly quizzes, exam 2 and final exam.
5	To understand important regulatory aspects of water quality and treatment	Daily homework, weekly quizzes, exam 2 and final exam.
6	To understand how solid and hazardous wastes are defined and addressed	Daily homework, weekly quizzes, exam 3 and final exam..
7	To discuss examples of micro, meso, and macro air pollution and explain impact of atmospheric stability on air quality	Daily homework, weekly quizzes, exam 3 and final exam..
8	Describe the impact of civil and environmental engineering on society and the environment.	Homework, weekly quizzes, exams 1, 2, and 3, final exam.

Course Grading

Course Assignments	Due Date*	Weight
Daily Homework Unless notified to the contrary, you are highly encouraged to work together on the homework assignments. When working together students should not copy one another's answers, but help guide and teach one another when one student understands a concept more clearly. Homework will be assigned at each meeting (with the exception of exam days) and due at the beginning of class the following meeting. Homework is due at the beginning of class on the due date and must be submitted in person. To get full credit, the homework must be completed on engineering computation paper and turned in on time. Additionally, all work in the solution process (including units) shall be documented in a neat and logically arranged manner, clearly show the final answer with the correct units. <u>Late homework will not be graded</u> (if you only have part of it done, turn in what you have done on time). <u>Homework problem solving approach:</u> 1. Restate the problem and sketch the system 2. Identify the given information 3. Identify the governing equations and state assumptions 4. Solve for unknowns and calculate results 5. Discuss the results	Weekly	20%
Quizzes A total of 12 quizzes will be given, typically at the beginning of class (note none will be given on exam weeks). Thus, it is important that you be in class and on time to complete the quiz. No makeup quizzes will be given except in the rare circumstances of pre-approved absences. However, the lowest quiz grade will be dropped in calculating the quiz portion of your final grade. Quiz material will cover previous lecture material, recent homework assignments and/or the text reading assignment for that day. All assignments, quizzes, and exams are considered to be comprehensive. That is, it will be likely that you will need to sufficiently know and understand previously covered material to adequately solve currently covered problems on quizzes or exams. No unauthorized help may be given or received on the quizzes.	Mondays beginning January 19	20%
Regular Exams (2 @ 15%, 1 @ 10%) Three regular exams and one final exam will be given during the semester. Your lowest regular exam score will be worth 10% or your grade, while the other two regular exams will be worth 15%. All exams are comprehensive and will emphasize problem solving both qualitatively and quantitatively. Calculators may be used during the exams, however only NCEES approved calculators will be permitted during tests. This is to help you begin preparing for the FE exam. If you are caught using a non-approved calculator, your test will be collected and your grade will be a zero. The approved calculators include the following:	February 12 March 19 April 23	40%

• 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. • If you are unsure about your calculator, it is your responsibility to check with the instructor for approval. Exams will likely be closed book and no unauthorized help may be given or received on the exams.		
Final Exam The final exam will be comprehensive in nature including any new material covered after the third exam. <u>Exams may not be taken late without preapproval.</u>	May 4 from 10:00 a.m. to 11:45 a.m.	20%

Calculation of Final Course Grade*

The grading scale will be as follows:

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

*Instructor reserves the right to decrease the lower bound of the grade cut-offs.

Course Policies

Communication

ACU email and Canvas are the two official forms of class communication. General announcements and supplementary course materials will be posted on Canvas, and Canvas will also be used to report grades. Announcements that are time sensitive will be sent via ACU email.

Classroom rules

Cell Phones should be placed on 'Silent' mode while in class. In the case of an emergency you may answer your phone and quietly leave the room and return when you have finished your call. It is not in your best interest to text while in class.

Computers, laptops, tablets, etc. are not permitted to be used in the classroom unless they are being utilized as part of an in-class activity.

Removal from course

The instructor reserves the right to remove from the course any student whose behavior is disruptive to the learning environment for students or faculty.

Departmental Policies

Calculators

If the course instructor determines that calculators may be used during the exams or other in-class graded activities, only NCEES approved calculators will be permitted. This is to

help you begin preparing for the FE exam. Also per NCEES policy, software that simulates approved calculators will not be permitted. The NCEES policy may be reviewed at <http://ncees.org/exams/calculator-policy>. If you are unsure about your calculator, it is your responsibility to check with the instructor for approval. If you are caught using a non-approved calculator, you will not be allowed to complete the activity, and you will receive a zero for that activity (including tests).

The approved calculators include 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.

Late work: In order to assist students in developing the discipline of meeting deadlines, assignments must be turned in on time in order to receive credit. Students who are absent, for any reason and including absences for University approved activities, on the day an assignment is due should contact the instructor before the assignment is due for directions.

Academic Integrity

Academic integrity is defined as academic work completed as assigned for each class by the individual or group responsible for the work. Violations of academic integrity and other forms of cheating involve the intention to deceive, mislead, or misrepresent and therefore, are a form of lying. Such actions are contrary to behavioral norms that flow from the nature of God. Academic misconduct includes, but is not limited to, the following: 1) Failing to give credit to sources used in a work in an attempt to present the work as one's own, 2) Submitting papers or projects obtained from another source (e.g., research service or club paper file) as one's own, 3) Falsifying information orally or in writing, and 4) Receiving, giving, or using unauthorized aid on an examination or quiz. An example of academic misconduct specific to this course might be copying an instructor's solution while their back is turned and then sharing the solution with classmates. All parties involved would be guilty of misconduct. Academic misconduct may result in, but is not limited to, a zero on the assignment and/or an F in the course. Additionally, the department chair, Dean of the College of Arts and Sciences, and the Dean of Student Life will be notified. See the full university policy, including how to appeal a decision, by following this link: <http://www.acu.edu/academics/provost/policies/index.html>.

Attendance Policy

Attendance is expected at all class sessions. It is also expected that you arrive promptly. If you are absent or tardy it will negatively affect your homework and quiz grades. Typically, classes will involve the presentation and discussion of new material, discussion of textual reading assignments, or the consideration of problems to solve. Occasionally during class, students will work in small groups to solve problems. You are required to attend at least 80% of class meetings in order to receive credit for the course. If you miss more than 20% of the classes, you will be dropped from the class with a WF. This grade averages in your GPA as an F.

If you are absent from class, it is your responsibility to get the lecture notes and class assignments before the next class meeting.

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, you must be registered with Alpha Scholars Program, and you

must complete a specific request for each class in which you need accommodations. If you have a documented disability and wish to discuss academic accommodations, please call our office directly at 325-674-2667."

Title IX 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 of 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](#).

The mission of ACU

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

The mission of the College of Arts and Sciences

To educate students for worldwide Christian service and leadership through programs of study and other learning experiences that blend a liberal arts education with professional and career education.

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 this mission, ACU engineering graduates will attain:

- A deep and broad understanding of engineering principles and practices as evidenced by professional employment, continued professional development, and graduate study in engineering or other professional fields.
- An extensive knowledge of the innovative design processes unique to engineering professionals as demonstrated by using critical thinking skills to contribute to the scientific and technical literature, patents and intellectual property, professional societies, and creative designs.
- A thorough understanding of Christian service and leadership as shown in their commitments to professionalism, ethics, and service and leadership within the engineering profession, the church, and society.

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	Lecture Topic	Reading
1	Course Overview & Sustainability	No new reading
	Regulations & Chemical Concentrations in Water	Ch. 1 (pp.1-11) & Ch.2 (pp. 38-40)
2	Chemical Concentrations in Air	Ch.2 (pp. 40-52)
	Water Quality Project Introduction	Ch. 8 (pp. 377-388)
	Chemical Equilibrium Air:Water	Ch. 3 (pp.80-83)
3	Equilibrium Acid Base & Alkalinity	Ch.2 (pp.48-49) & Ch.3 (pp. 83-89)
	Kinetics & Alkalinity	No new reading
	Chemistry Review	No new reading
4	Health Risks of Air Pollution & Air Pollution Project Introduction	Ch.11 (pp.577-581)
	Criteria Air Pollutants & Atmosphere	Ch. 11 (pp. 585-601)
	Midterm Exam 1	
5	Air Pollution & Dilutions	Ch. 11(pp. 602-617)
	Mass Balance	Ch.4 (pp.116-122)
6	Reactor Modeling CMFR	Ch.4 (pp.121-129)
	Reactor Modeling PFR	Ch. 4(pp. 129-139)
7	Reactor Modeling with Reactions	Ch. 4(pp. 129-139)
	Reactor Modeling Problems	No New Reading
	Reactor Modeling Wrap Up & Water Quality Quiz	Ch. 8 (pp. 377-388)
8	CMFR v. PFR, Coagulation	Ch. 8 (389-399)
	Coagulation	No Reading

9	Flocculation & Sedimentation	Ch. 8 (404-411)
	Filtration, Membranes, and Activated Carbon	Membranes (pp. 423-430)
10	Water Treatment Design Challenge	No Reading
	Midterm Exam 2	
11	Oxygen Demand	Ch.7 (p.344-351)
	Streeter Phelps	Ch. 9 (pp.442-447)
12	BOD Review	No Reading
	Wastewater Treatment Overview	No Reading
	Primary Treatment	No Reading: Review Streeter Phelps
13	Microbial Growth	Ch. 5 (188-191; 194-198) & Ch. 9 (456-462)
	Secondary Treatment	No Reading
	Modeling Secondary Treatment	Ch. 9 (457-465)
14	Midterm Exam 3	
	Secondary Treatment	Ch. 9 (480-488)
	Energy Recovery from Wastewater	No Reading
15	Solids Treatment	Ch. 9 (480-488)
	Emissions Control	Ch.11 (pp.618-635)
TBD	Final Exam	Location: TBD