DEPARTMENT OF
CHEMICAL ENGINEERING

TEXAS TECH
Whitacre College of Engineering

UNDERGRADUATE STUDENT HANDBOOK

2026-2027

Department of Chemical Engineering
Texas Tech University
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Table of Contents

INTRODUCTION

Dear students of Chemical Engineering at Texas Tech – welcome to the department! Our aim is to provide each and every student with the tools and technical knowledge to become a successful engineer in their chosen field, and along the way provide opportunities to be involved with student organizations, research and outreach to the local community. We understand that navigating college can be overwhelming at times, so this document was written to provide you with clear guidance for your degree, curriculum, general information, and department policies so that there are no surprises along the way.

While many aspects of the information contained herein are available elsewhere, it is all compiled here for the purpose of giving you a single document to refer to when you need information about your degree plan, curriculum, or just have some general "what-if" questions. Not every single eventuality will ever have been thought through, and there are sometimes extenuating circumstances that arise; however, this handbook should always be your first port of call before seeking help or advice from others.

By now, you are probably aware that most degrees in engineering are accredited by an external agency known as the Accreditation Board for Engineering and Technology (ABET). This, along with guidance from the industry via our external advisory board, and general university policies and standards, form the basis for a certain rigor that you will encounter in the Chemical Engineering program, including things like course sequencing and pre-requisite structure that must be adhered to. For this reason, it is important for students to acquaint themselves with the curriculum, which courses are taught when, and what we will approve in terms of transfer of credit, online courses and summer make-up courses.

We encourage you to explore opportunities like the AICHE student chapter and the ChemE Car and ChemE Cube teams, Undergraduate Research, Mentor Tech, The Honors College Programs, and more. Ultimately, we hope that you all not just succeed but excel in your studies here!

Sincerely,

Dr. Jeremy Marston
Director of Undergraduate Studies
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CHEMICAL ENGINEERING PROGRAM

What is chemical engineering?

Chemical engineering, broadly speaking, involves the application of basic sciences (chemistry, biology, physics) and mathematics for creating and processing products for the benefit of mankind, in the most sustainable and environmentally friendly manner possible. Typically, chemical engineers are responsible for taking raw materials or synthesized chemicals and converting/processing them into more useful or secondary products. However, they also play an increasingly prominent role in the development of sustainable practices and environmental pollution remediation, such as carbon capture and sequestration. Graduates from Chemical Engineering programs are sought after in a wide range of industrial sectors such as energy and fuel production, fine chemical production, pharmaceuticals, consumer products, construction, food and biotechnology.

Student Outcomes: What will I learn throughout the BS-CHE Program?

The BS program in chemical engineering (BS-CHE) at Texas Tech comprises classroom instruction, laboratory practice, computational/simulations and project work designed to prepare graduates to accomplish our Program Educational Objectives. In alignment with our external accreditation, the program is designed to ensure that students achieve the following learning outcomes by the time they graduate:

1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3) an ability to communicate effectively with a range of audiences
4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Program Educational Objectives: What can I achieve after my TTU education?

The Program Educational Objectives define future roles for which we are preparing our graduates. The program educational objectives for the graduates of the Chemical Engineering BS program at Texas Tech University are:

- Graduates will be successful in chemical engineering-related careers and other diverse career paths.
- Graduates will continue professional development and will pursue continuing education opportunities relevant to their careers.
- Some graduates will pursue advanced degrees.

CHEMICAL ENGINEERING CURRICULUM 2026-2027

The following plan contains all the general education, foundational engineering and core chemical engineering requirements for your BS Chemical Engineering degree (total = 129 credit hours). ***It is likely that you will have some transfer credits from high school and/or take some of the general education courses (e.g. ENGL, HIST, POLS) out of sequence compared to the table below, so refer to this as a guide only.*** Always be sure to consult with the academic advisor about completion of the general education requirements. Also, make sure to understand the prerequisite structure for the core CHE classes.

Freshman Year (Foundational Engineering Core)	
Fall Semester (15 hrs)	Spring Semester (17 hrs)
ENGR-1110 Engineering Seminar	ENGR-1340 Intro. Engineering Design
ENGR-1330 Comp Thinking/Data Sci	ENGR-2392 Engineering Ethics
MATH-1451 Calculus I	MATH-1452 Calculus II
CHEM-1307/1107 Principles of Chemistry I	PHYS-1408 Principles of Physics I
ENGL-1301 Essentials of College Rhetoric	ENGL-1302 Advanced College Rhetoric

Sophomore Year	
Fall Semester (17 hrs)	Spring Semester (16 hrs)
CHE-2310 Intro. Chemical Processes	**CHE-2321 Chemical Engineering Thermodynamics I**
MATH-2450 Calculus III	**CHE-3315 Fluid Mechanics**
CHEM-1308/1108 Principles of Chemistry II	**CHE-2306 Exposition of Technical Information**
PHYS-2401 Principles of Physics II	MATH-3350 Advanced Math for Engineers I
POLS-1301 American Government*	CHEM-3305/3105 Organic Chemistry I

Junior Year	
Fall Semester (16 hrs)	Spring Semester (15 hrs)
CHE-3322 Chemical Engineering Thermodynamics II	**CHE-3323 Chemical Reaction Engineering**
CHE-3326 Heat Transfer	**CHE-3341 Mass Transfer Operations**
CHE-3305 Computations/Simulations in Chem Eng.	**CHE-3232 Transport Lab**
CHE-4372 Engineering Experimentation	**CHE-3330 Engineering Material Science**
CHEM-43xx/41xx Chemistry Elective*	IE-2324 Engineering Economic Analysis

Senior Year	
Fall Semester (17 hrs)	Spring Semester (16 hrs)
CHE-4353 Process Control	**CHE-4356 Process Safety**
CHE-4232 Unit Operations Lab	**CHE-4202 Chemical Engineering Design II**
CHE-4201 Chemical Engineering Design I	**CHE-43xx Chemical Engineering Elective***
CHE-43xx Chemical Engineering Elective*	CHEM-43xx Chemistry Elective*
POLS 2306 Texas Politics and Topics*	HIST-3xxx History Elective*
HIST-2300 History of the US to 1877*	Creative Arts Elective (also Multicultural) *

*Some of these courses may be offered in the summer or can be taken in other semesters.
The courses in bold are all the **core Chemical Engineering** courses that are only guaranteed to be offered in the semesters shown. The description for each course can be found by typing the course code into the search box on the main TTU catalog her: https://catalog.ttu.edu/

COURSE PRE-REQUISITES (ENGINEERING AND SCIENCE COURSES)

Prerequisites →	**Key Course →**	Prerequisite for
	ENGR 1110	Completion of Foundational Engineering and Junior courses in Chemical Engineering
A score of at least 4000 on the STA2, 530 on the SATM and composite score of 1010 or a score of at least 19 on the ACTM and composite score of 23, or TSI Math of 350 or TSI2.0 Math of 950 or TSI2.0 Math Diagnostics 6, or a C or better in either MATH 0302, REF 0302, TSI 0502, TSI 0330, or TSI 0340	**ENGR 1340**	Completion of Foundational Engineering and Junior courses in Chemical Engineering
	ENGR 1330	CHE 2310, CHE 3305
	ENGR 2392	Completion of Foundational Engineering and Junior courses in Chemical Engineering
MATH 1350 or MATH 1550 with a grade of C or better, or MATH 1321 with a grade of C and Code 5 on MPE, or MATH 1321 with a grade of B or better, or Code 7 on MPE, or a score of at least 660 on the SATM, or a score of at least 29 on the ACTM, or a score of at least 3 on AP AB Calculus and Code 5 on MPE	**MATH 1451**	MATH 1452, IE 2324
MATH 1451	**MATH 1452**	MATH 2450, CHE 2310, CHE 3330
CHEM 1301 or meet CHEM 1307 placement criteria of the Chemistry Placement Exam or CHEM 1101 with a grade of A+	**CHEM 1307/1107**	CHEM 1308/1108, CHE 2310
MATH 1451	**PHYS 1408**	PHYS 2401, CHE 2310
Successful completion of ENGL 0301 or a satisfactory score on SAT, ACT, or English department writing sample	**ENGL 1301**	ENGL 1302, CHE 2310
ENGL 1301	**ENGL 1302**	CHE 2306
ENGR 1330* (may be taken concurrently), CHEM 1307, ENGL 1301, MATH 1451, PHYS 1408	**CHE 2310**	CHE 2321*, CHE 3315* (can be taken concurrently only with department approval), CHE 3305
MATH 1452	**MATH 2450**	
CHEM 1307	**CHEM 1308/1108**	
PHYS 1408, MATH 1452	**PHYS 2401**	

MATH 1452	**MATH 3350**	CHE 3315* (can be taken concurrently), CHE 3322, CHE 3326, CHE 4353
CHE 2310* (can be taken concurrently with department approval), MATH 2450	**CHE 2321**	CHE 3322, CHE 3326, CHE 3330, CHE 3305
CHE 2310*, MATH 3350* (can be taken concurrently)	**CHE 3315**	CHE 3326, CHE 3232, CHE 3305, CHE 4353, CHE 4356
ENGL 1302	**CHE 2306**	CHE 3232* (can be taken concurrently)
CHEM 1308	**CHEM 3305/3105**	CHE 3322
CHE 2321, CHE 2310, MATH 3350, CHEM 3305	**CHE 3322**	CHE 3323, CHE 3341, CHE 4455
CHE 2321, CHE 3315, MATH 3350	**CHE 3326**	CHE 3323, CHE 3232
CHE 2321, CHE 2310, CHE 3315	**CHE 3305**	CHE 4201
Junior or Senior standing	**CHE 4372**	CHE 3232* (may be taken concurrently)
CHE 3315, CHE 3326, CHE 2306*, CHE 4372*	**CHE 3232**	CHE 4232
CHE 3322, CHE 3326	**CHE 3323**	CHE 4353, CHE 4201
CHE 3322	**CHE 3341**	CHE 4353, CHE 4356, CHE 4201
CHE 2321, CHEM 1308, MATH 1452	**CHE 3330**	
MATH 1451	**IE 2324**	CHE 4201
CHE 3315, CHE 3341, CHE 3323, MATH 3350	**CHE 4353**	CHE 4201 (co-req), CHE 4202
CHE 3232	**CHE 4232**	
CHE 3305, CHE 3323, CHE 3341, IE 2324	**CHE 4201**	CHE 4202
CHE 4201, CHE 4353	**CHE 4202**	CHE 4365 (co-req)
CHE 3315, CHE 3341	**CHE 4356**	CHE 4202 (co-req)
Variable/Instructor Consent	**CHE 43xx**	
Typically, Sophomore Standing	**CHE 4000**	

SUMMER COURSES AND COURSES TAKEN ELSEWHERE

To help facilitate timely graduation, transfer students into our program, and the MDE program with TTUHSC, we will typically offer a limited selection of courses throughout the summer terms (either summer 1 term, summer 2 term, or the full summer session). The following is a typical list of courses and terms offered:

Summer 1
CHE-3315 Fluid Mechanics or CHE-2321 Thermodynamics I
CHE-3341 Mass Transfer
CHE-43xx (Bio-focused elective)

Summer 2
CHE-2321 Thermodynamics I or CHE-3325 Fluid Mechanics
CHE-3323 Chemical Reaction Engineering
CHE-43xx (Bio-focused elective)

Offering these courses is subject to several factors such as departmental resources for teaching, instructor availability, and minimum enrollment (> 10 undergraduates), so do not count on these being offered each summer.

In the event that we do not offer a class that is needed in order to progress to the next year, it is the student's responsibility to find a suitable course substitute that is offered at another institute of similar standing and ranking to TTU. In previous years, Prof. Sindee Simon, department chair at North Carolina State University, compiled a comprehensive list of courses offered at various institutions over the summer, and sent that to other department chairs. We will try to provide that list to students, when requested.

Request to Transfer credit.
To ensure that a course taken at another institution will transfer in as an equivalent course, it is the student's responsibility to initiate a transfer equivalency request via the Texas Tech Registrar's office through the following website: https://db.reg.ttu.edu/teoequiv/#/. To do this, you must first have the syllabus for the course being offered.

To facilitate internships and cooperative work experiences, the department may approve a summer course to be taken online. However, it will only be approved strictly to facilitate internships, and subject to the departmental policy (see relevant section later) on the maximum number of online courses that can be taken.

ELECTIVES, MINORS, AND CHEMISTRY ELECTIVE CHOICES

All students are currently required to complete 2 elective courses in Chemical Engineering, and a total of 7 credit hours of Chemistry electives (including 1 hr of lab). Additionally, the department of Chemical Engineering administers minors in bioengineering and polymers. This section provides a list of recommended courses that can be taken to fulfil these requirements.

ELECTIVES IN CHEMICAL ENGINEERING

To fulfil the elective requirements for the degree plan, students can choose from a range of courses that interests them. It is not feasible to offer our whole portfolio of electives each year, and they may appear cyclically every 2 or 3 years, depending on the teaching capacity and instructor availability in the department. However, the following is a list of courses that have been offered in recent years (bold highlight indicates courses that will be offered regularly to support the bioengineering minor, BS Biological Systems Engineering and MS Bioengineering programs)

CHE-4363 Biochemical Engineering
CHE-4364 Chemical Engineering Applications to biosystems
CHE-4365 Biotransport
CHE-4366 Biomicrofluidics
CHE-4385 Bioprocess Control
CHE-4394 Soft Matter Engineering
CHE-4391 Chemical Engineering Applications in Energy Science
CHE-4393 Colloid Science and Engineering
CHE-4390 Heterogeneous Catalysis
CHE-4322 Chemical Engineering Review
CHE-4378 Sustainable Chemical Engineering Concepts and Design
CHE-4330 Chemical Engineering Principles in Coffee Brewing
CHE-4392 Entrepreneurship for Chemical Engineers
CHE-4330 New Product Development in Chemical Engineering
CHE-4330 Pilot Plant Studies/Start-up Operations
CHE-4341 Polymerization Engineering
CHE-4375 Analysis of Electrochemical Systems

Outside of this list, students may choose to undertake undergraduate research for credit under CHE-4000, up to a maximum of 3 credit hours to substitute as an elective course (see section on undergraduate research later in this document). In addition, students are free to select one upper-division course (at the 3000 or 4000-level) in another engineering discipline, and it will substitute as one of their chemical engineering electives. This is to provide breadth to your education. You must check the pre-requisites for any courses you wish to take. Two courses that we will approve are ME-2301 Statics, and ECE 3301 General Electrical Engineering

MINOR IN BIOENGINEERING

In addition to their major in Chemical Engineering, students can complete a minor in bioengineering by accumulating a minimum of 21 credit hours in biology, chemistry and bioengineering courses as follows:

Required courses (15 hrs):

BIOL 1403 (Biology I)
CHEM 1308/1108 (Principles of Chemistry II)
CHEM 3306/3106 (Organic Chemistry II) or BIOL 1404 (Biology II) or MBIO 3400 (Microbiology)
CHE 4363 (Biochemical Engineering) or ECE 5356 (Biosensors and Bioelectronics)

Two courses (6 hrs) from the following approved list (bold = recommended for CHE students):

CHE 4364 Chemical Engineering Applications to Biosystems
CHE 4365 Biotransport
CHE 4366 Biomicrofluidics
CHE 4385 Bioprocess Control
CHE 4394 Soft Matter Engineering
CS 3368 Artificial Intelligence
CS 4379 Concurrent and parallel programming
CS 5393 Bioinformatics
ECE 4367 Image Processing
ECE 5351 Biomedical Signal Processing
ECE 5355 Genomic Signal Processing and Control
ECE 5356 Bioinstrumentation/Biosensors
ENVE 3309 Environmental Engineering
ENVE 4385 Microbial Applications in Environmental Engineering
ENVE 4399 Biological Municipal Wastewater Treatment
IE 4301 Engineering Design for People I
IE 4306 Work and Product Safety Engineering
MBIO 3401 Principles of Microbiology or CHEM 3310 Molecular biochemistry or BIOL 3320 Cell Biology

STRONGLY RECOMMENDED FOR CHE STUDENTS WHO WANT THE BIOENGINEERING MINOR
Since the chemical engineering degree plan already requires CHEM 1308/1108, 2 chemical engineering electives and 7 hours of chemistry (including 1 hour of lab), an ***easy way to satisfy all the requirements for the bioengineering minor and your CHE electives*** is as follows:
BIOL 1403 (required) CHEM 1308/1108 (already required for BS Chemical Eng.) CHEM 3306/1106 (counts for both CHEM elective on the BS Chemical Eng, and the bioengineering minor) CHEM 3310 (requires CHEM 3306 as pre-req, but counts toward CHEM elective on the BS Chemical Eng) CHE 4363 (required for minor, and counts as CHE elective) CHE 4364 or CHE 4365 or CHE 4366 or CHE 4385 or CHE 4394 (counts as CHE elective and towards minor)

This option means that the only additional burden on top of what you would have to do anyway is BIOL 1403.

MINOR IN POLYMERS AND MATERIALS

In addition to their major in Chemical Engineering, students can complete a minor in polymers and materials by accumulating a minimum of 18 credit hours in polymers and materials as follows:

Required courses (6 hrs)

CHE 3330 Engineering Material Science or ME 3311 Materials Science
CHE 4344 Polymers and Materials Laboratory

Four courses from the following list (12 hrs)

CHEM 3306 Organic Chemistry II
CHEM 4310 Polymer Chemistry
CHE 4394 Soft Matter Engineering
CHE 4340 Polymer Processing
CHE 4341 Polymerization Engineering
CHE 4342 Polymer Physics and Engineering
CHE 4346 Polymer Viscoelasticity
ECE 4381 VLSI Processing
ME 3328 Materials and Mechanics Laboratory

MINOR IN MATHEMATICS

In addition to their major in Chemical Engineering, students can complete a minor in mathematics by accumulating a minimum of 18 credit hours in mathematics courses as follows:

Required courses (12 hrs)

MATH 1451 Calculus I
MATH 1452 Calculus II
MATH 2450 Calculus III
MATH 3350 Higher Mathematics for Engineers and Scientists I (Diff EQ I) or MATH 3354 Diff Eqns I

Two courses from the following recommended list (6 hrs, other course may also be approved)

MATH 2360 Linear Algebra
MATH 3342 Mathematical Statistics for Engineers and Scientists
MATH 3351 Higher Mathematics for Engineers and Scientists II (Diff Eq II)
MATH 4310 Introduction to Numerical Analysis I
MATH 4354 Differential Equations II

CHEMISTRY ELECTIVES

All chemical engineering students are required to take upper-level chemistry courses, according to the degree plan in their catalog year. Chemistry courses from which you can choose are as follows:

Fall semesters:

- CHEM 3107 Physical Chemistry I Lab (lab only)
- CHEM 3301 Descriptive Inorganic Chemistry (lecture only)
- CHEM 3306/3106 Organic Chemistry II (lecture plus lab)
- CHEM 3310 Molecular Biochemistry (lecture only)
- CHEM 3341/3141 Analytical Chemical Methods (lecture plus lab) **

Spring semesters:

- CHEM 3201 Advanced Organic Chemistry Lab (lab only)
- CHEM 3301 Descriptive Inorganic Chemistry (lecture only)
- CHEM 3306/3106 Organic Chemistry II (lecture plus lab)
- CHEM 3308/3108 Physical Chemistry II (lecture plus lab)
- CHEM 3310 Molecular Biochemistry (lecture only)
- CHEM 3351/3251 Analytical Chemistry (lecture plus lab)**
- CHEM 4310 Polymer Chemistry (lecture only)

**Students may take either CHEM 3341/3141 or CHEM 3351/3251, not both.

Students must meet pre-requisites for the chemistry classes, which can be found in the course descriptions in the catalog: https://catalog.ttu.edu/

ACCREDITATION AND STUDENT LEARNING OUTCOMES

The BS Chemical Engineering program and Texas Tech University is accredited by the Accreditation Board for Engineering and Technology (ABET: https://www.abet.org/). This is a good thing for students because it means you can be assured that the education you receive, the course structure, and assessments have all been externally reviewed and approved through a strict and rigorous process and is on par with other engineering programs offered across the United States. The program is reviewed every 6 years, with the last review in fall of 2023. During that cycle, our program was given a flawless evaluation, i.e. no concerns or weaknesses were identified.

ABET has developed a series of criteria that each program must meet in order to attain accreditation. One of these criteria is the key learning outcomes (called Student Outcomes) that each student is expected to achieve by the end of the program. These outcomes are listed as follows:

1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3) an ability to communicate effectively with a range of audiences
4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The BS Chemical Engineering program at Texas Tech achieves these student outcomes through a combination of classical classroom instruction, laboratory practice, computational and simulation work, experimental projects, and design projects, and the outcomes are assessed using a variety of tools. The table below indicates where each of the student outcomes are addressed throughout our core curriculum.

Course Number (Name)	ABET Student Outcome						
	1	2	3	4	5	6	7
ChE 2306 (Expo. Tech. Info.)			H	M	H		M
ChE 2310 (Intro. Chem. Proc.)	H						M
ChE 2321 (Thermo I)	H						M
ChE 3315 (Fluid Mech.)	H					H	M
ChE 3305 (Comp./Simul.)	H						H
ChE 3322 (Thermo II)	H					M	
ChE 3326 (Heat Transfer)	H	M					
ChE 4372 (Engr. Experimentation)				M		H	
ChE 3232 (Transport Lab)			H	M	H	H	
ChE 3323 (Reaction Engr)	H	M					
ChE 3330 (Material Sci.)	H			M			M
ChE 3341 (Mass Transfer)	H	M					M
ChE 4232 (Unit Ops Lab)			H	M	H	H	
ChE 4353 (Process Control)	H						H
ChE 4356 (Process Safety)	H	H		H			M
ChE 4455 (Process Design) CHE 4201/ CHE 4202		H	H	H	H	H	M
ChE 4330 (Start-up/Op. Ind. Plant)		M		M	H	H	
ChE 4363 (Biochemical Engr.)	H			M			M
ChE 4364 (ChE Appl. Biosystems)	H			M			M
ChE 4366 (Biomicrofluidics)	H			M		M	
ChE 4378 (Sustainable ChE Design)	H			M			
ChE 4322 (CHE Review)	H	M					
ChE 4000 (Research)			H	H	H	H	H
# core classes (+ electives) where outcome is addressed	11 (+5)	5 (+2)	4 (+1)	7 (+7)	4 (+2)	6 (+3)	10 (+3)

H – indicates high support of outcome
M – indicates moderate support of outcome

UNDERGRADUATE RESEARCH

Texas Tech University is an R1 institution, as per the Carnegie Classification of Institutions of Higher Education. This classification is broadly based upon the volume of research occurring on campus, as evidenced by metrics such as peer-reviewed research articles, the amount of spending on research and development, and the number of doctoral degrees award. This means that undergraduates have a good opportunity to be involved in novel research projects led by the many research-active faculty across campus. The department of Chemical Engineering, in particular, is very research active with many faculty advising multiple graduate students and funded by multiple federal agencies.

We strongly encourage students to explore opportunities to be involved in research, and there are a number of ways you can do this:

1. **Undergraduate Research for Credit:** If you find a faculty member willing to advise you on a specific research project, you can earn course credit under CHE-4000. These credit hours can count toward your degree plan by fulfilling one of your elective requirements. To do this, however, you must first identify the faculty member and a research project, then seek approval from the director of undergraduate studies.
2. **Paid Research Experience:** If a faculty member has funding to do so, they may agree to accept you as a paid researcher. Your faculty advisor will need to initiate your employment as a Student Assistant (SA) in consultation with the departmental business manager (Chance Riggins). You will be responsible for filling out a time sheet via Raiderlink. The hourly rate of pay is to be determined by your research advisor, and the maximum number of hours will be either 10 hrs/wk (0.25 FTE) if you already hold another appointment on campus, or 20 hrs/wk (0.5 FTE) if it is your sole employment at TTU. Note that the actual number of hours worked will be agreed upon in consultation with your advisor.
3. **Honors College URS program:** If you qualify for the honors college, you are also eligible for their generous Undergraduate Research Scholars program. This is an excellent opportunity. You should first consult with the honors college, but typically this process involves you reaching out to a potential faculty mentor/advisor, identifying a research project for you to work on, then completing a simple form through the honors college website (below). The hourly rate of pay and number of hours for this mechanism is determined by the honors college. https://www.depts.ttu.edu/honors/academicsandenrichment/urs/
4. **TTU TrUE Scholars Program:** The University offers a campus-wide scholars' program for students to participate in research, which entails a structured multi-year approach. The application window for this typically closes in May, so students should make sure to check the main website for details: https://www.depts.ttu.edu/true/scholars/

INTERNSHIP AND COOPERATIVE WORK EXPERIENCES

Internships and co-ops are extremely valuable experiences, where students work for companies in their field of interest. The first-hand experience either in field work or process simulation and design adds significant depth to your education and thus is strongly encouraged.

An internship typically takes place over the summer, in between the regular long semesters (spring and fall), while a co-op is an extended work experience, which can cover either spring and summer, or summer and fall semesters.

The best way to secure these work experiences is by attending one of the engineering job fairs, the largest of which takes place in mid-September. You can visit the college of engineering webpage for more details: https://www.depts.ttu.edu/coe/careers/students/jobfair.php

Students should be aware that taking a co-op placement will almost certainly have implications for their core class completion, because many of our classes are offered only once per year. This could therefore result in a 1-year delay in graduation. Therefore, students should consult with both the academic advisor and director of undergraduate studies to make sure they are fully aware of the consequences of taking a full long semester away on a co-op. Students should see the sections on departmental policy and the student FAQs for more details on how you can potentially catch up with core course completion and avoid delay in graduation. Ultimately, it is your responsibility to gather information and make an informed decision about accepting internships and co-ops. However, here is an overview of the implications/plans for co-ops taken at various stages (note only core CHE classes are listed here, you also need to think about Math and Chemistry classes):

Co-op in fall of sophomore year:
Class missed: CHE-2310 (Intro Chemical Processes)
Catch-up: Take CHE 2310 in spring (always offered)

Co-op in Spring of Sophomore year:
Classes missed: CHE-2321, CHE-3315
Catch-up plan: Take CHE-2321 and CHE-3315 in the summer, likely to be offered (but not guaranteed). Otherwise, this will result in a 1-year delay in graduation.

Co-op in Fall of junior year:
Classes missed: CHE-3322, CHE-3326, CHE-4372, CHE-3305
Catch-up plan: Since these 4 core classes are pre-requisites to spring classes, there is no remedial/catch-up plan for missing these classes, and you will delay graduation by 1 year.

Co-op in Spring of Junior year
Classes missed: CHE-3323, CHE-3341, CHE-3232
Catch-up plan: Take CHE-3323 and CHE-3341 in the summer, if they are offered (not guaranteed), and take CHE-3232 the next spring, otherwise this will result in a 1-year delays in graduation.

DEPARTMENT POLICIES

The department of Chemical Engineering, including the faculty, staff and advisors, are all committed to your success as a student. However, we are also responsible for maintaining the academic and professional standards set forth by the profession/industry, the institution and our external accrediting agency. As such, we have developed policies concerning student conduct, course approvals/substitutions, online courses, etc., that will be implemented. The following is not an exhaustive list, but it does cover many common occurrences. In the event that a situation arises that is not covered herein, the undergraduate committee and department chair will vote and provide a final decision to the students.

1. GOOD STANDING (College Policy)

To remain in the program, you must maintain a GPA of 2.5 or higher. Once your GPA drops below 2.5, you will be on academic probation for 1 semester, during which you must raise your GPA back above 2.5. Otherwise, you will be removed from the college for 1 long semester. All courses must be passed with C-grade or higher to be degree-applicable.

2. PREREQUISITES

The table provided in the section of prerequisite clearly indicates the courses for which prerequisites (or co-requisites) are required. Students can also refer to the general TTU catalog for this information. The purpose of prerequisites is to ensure that you have sufficient knowledge and skills to be successful in subsequent courses. Prerequisites are also verified on student transcripts during our ABET accreditation audit. Therefore, **prerequisites will not be waived for any reason**. There are a few courses which can be taken either as a prerequisite or concurrently.

3. DROPPING CLASSES

Students who either struggle with the material of a certain class or simply become overwhelmed with the sheer workload due to poor planning need to be aware of the potential consequences of doing so. A grade of "DG" will count toward the maximum number of times any course can be taken – you cannot attempt any given course more than 3 times (counting all D, F, and DG grades). Dropping a class that is a strict prerequisite for another class means that you cannot progress to that next class and could result in a 1-year delay in graduation.

4. ONLINE COURSES

Students who fail or drop a class will need to repeat the class either at Texas Tech or elsewhere. In the event that a course is offered over the summer, we may offer it both in-person and online. However, students will only be allowed to take **one CHE class online in any given summer**, and a **maximum of two total CHE courses can be taken online throughout the entire degree plan**. Do not take courses online or at other institutions in an attempt to expedite your degree. You must have approval from the undergraduate committee before taking any online CHE courses to count toward your degree plan.

5. COURSES TAKEN ELSEWHERE

Texas Tech will facilitate transfer students to join our program, typically in the sophomore year. We have agreements in place with a number of junior colleges to reduce the course requirement and financial burden. For Chemical Engineering students at Texas Tech, you may seek approval to take a core CHE class elsewhere

at some point during your degree plan. This situation may arise due to a co-op or failing a class. In this case, you will need prior approval from the undergraduate committee, and you will need to submit the transfer equivalency request through the Registrar's office. However, you will also need to make sure you meet the prerequisites for the course to be taken at the external institute. It may happen that the courses offered elsewhere are online; however, you will also be subject to the limit of online courses as per item #4 above. **A maximum of two core CHE classes to be taken elsewhere** (at other institutions or other departments within TTU) will be approved, subject to timely submission of documentation (i.e., syllabi) for prior approval. Do not register for courses elsewhere unless you have prior-approval and the transfer equivalency decision.

6. STUDENT CONDUCT

Students in the Chemical Engineering program are expected to behave professionally and adhere to a high standard of ethical conduct. This means that you attend class and arrive on time and are respectful to the instructor and your fellow classmates. You do not have the right to distract anyone else from learning. Moreover, the institution has clear policy for students that prevent faculty and staff from fulfilling their assigned duties – this means that **if you engage in distracting behavior in class, you will be subject to administrative withdrawal from the course**. Students should refer to OP 34.29 and the Student Code of Conduct Section B.

7. ACADEMIC INTEGRITY

In line with item #6 above, we expect nothing but the best in terms of integrity in all aspects of your education here at Texas Tech. **The faculty of the department of Chemical Engineering has a zero-tolerance policy toward any form of cheating or plagiarism. You will receive a failing grade and automatic referral to the office of student conduct for cheating on any assignment or exam**. It is your responsibility to understand TTU's operating policy on academic integrity (see OP 34.12)

CHEMICAL ENGINEERING ACADEMIC ADVISING INFORMATION

General Information

Prior to registering for each semester, it is the student's responsibility to seek out their academic advisor, Ms. Kristina Thompson, to consult on their academic status and progress towards graduation. Each student must consult his or her advisor at least once each semester to review academic plans and progress and to be cleared for registration for the next semester. Prior to an advising meeting, students complete a pre-advising worksheet (see Appendix A), which will help both the advisor and the student plan which course to take in the next semester/academic year.

The primary purpose of the required advising meetings is to select courses for the coming semester and stay on-track for a timely graduation. The student is expected to actively participate in preparing a schedule that follows the academic policies of the Department, including meeting all prerequisites. Students are instructed to come to their advising meeting with a projected schedule for the coming semester. The role of the academic advisor is to review the student's plan of courses, to confirm that the plan is appropriate or to advise them on necessary corrections, and to make sure that the student is on a correct path towards graduation. A student's advising appointment is an opportunity to ask questions regarding the Chemical Engineering curriculum and requirements for completing the Chemical Engineering degree. Students may also take this opportunity to ask their advisor about other questions regarding other opportunities in the department (e.g., research, cooperative education, internship, study abroad, graduate school, etc.). Students are sometimes redirected to the Director of Undergraduate Studies, Dr. Jeremy Marston, for additional information as needed, and referrals are made to other resources if necessary. After the advisor approves a plan of study for the coming semester, the advisor provides the student with information required for registration/enrolling.

Students should consult their advisor before making decisions regarding their academic progress.

Other Key Advising information:

- Students may take one upper-division course (3000 or 4000 level) outside of Chemical Engineering in place of one elective (listed as CHE-43xx).

- In addition to institutional requirements, candidates for a BS degree in Chemical Engineering are required to have a cumulative grade-point average of 2.50 or higher to remain in the program and in the college of engineering.

- The foundational engineering program (i.e., All ENGR courses) must be completed before proceeding to the junior year.

- No student may exceed a maximum of three attempts at any CHE course, including a *DG or DW*, to complete successfully.

Implications / Recovery Plans for failing core CHE classes

1. **Fail CHE-2310 (Chem Processes) in the fall semester:**
   Re-take in spring (always offered), concurrently with CHE-2321 and CHE-3315.
   Students must have passed PHYS 1408 and ENGR 1330 for this option to be open.
   If a student fails CHE-2310 and either PHYS 1408 or ENGR 1330, they cannot take CHE-2321 and CHE-3315 in the spring, they must take them the next offering (likely summer).

2. **Fail CHE-2310 (Chem Processes) in the spring semester:**
   Re-take it in the fall semester.

3. **Fail CHE-2321 (Thermo I) or CHE-3315 (Fluids) in the spring semester:**
   Re-take either or both courses the next time they are offered. Most likely, these will both be offered in the summer. However, students cannot take more than one core CHE class online in any given summer, as per departmental policy.

4. **Fail CHE-3322 (Thermo II) in the fall semester but pass CHE-3326 (Heat transfer):**
   Since CHE-3322 is a pre-req for CHE-3323 (Reactions) and CHE-3341 (Mass Transfer), failing CHE-3322 currently delays graduation by at least one semester. If we offer Thermo II in the spring (or you can find another institution offering it in the spring), students can re-take it alongside CHE-3232 (transport lab), then take CHE-3341 and CHE 3323 in the summer and proceed into the senior year on schedule. Again, students are limited to how many summer courses they can take online.

5. **Fail CHE-3326 (Heat Transfer) but pass CHE-3322 (Thermo II) in the fall semester:**
   Students can take CHE-3341 (mass transfer), but in order to register for CHE-3232, they must be enrolled concurrently with ME-3371 Heat transfer in the spring. They must pass Heat transfer in order to take CHE-3323 (reactions) over the summer, then proceed to the senior year on schedule.

6. **Fail both CHE-3322 and CHE-3326 in the fall semester [worst case scenario]:**
   Re-take CHE-3322 in the spring (assuming we offer it or find another institution offering it) and ME-3371 (ME heat transfer), then take CHE-3323 and CHE-3341 in the summer, then proceed into senior year on schedule. Re-take transport lab the next time it is offered (the next spring), then unit ops lab the following fall [this will put students back by 1 semester]. Alternatively, re-take both courses the next fall, which would result in a1-year delay in graduation.

7. **Pass CHE-3322 / CHE-3326 in the fall but fail CHE-3341 and/or CHE-3323 in the spring:**
   Re-take CHE-3323 and/or CHE-3341 in the summer and proceed to senior year on schedule.

8. **Fail CHE-4353 (Process Control) in the fall of senior year:**
   Re-take next time it is offered or find another institution offering it. Since CHE 4353 is a prerequisite to senior design, this will likely result in a 1-year delay in graduation.

9. **Fail CHE-4201 (Senior Design I) in the fall of senior year with a D-grade:**
   We may offer a re-take of a comprehensive final exam covering design topics, to allow students to

progress to CHE-4202. Otherwise, students must re-take the next time it is offered, which will likely result in a 1-year delay in graduation.

10. **Fail both CHE-4202 (Senior Design II) and CHE-4356 (Process Safety) in spring of senior year:** Re-take both classes the next time they are offered (i.e., next spring) at TTU. This will result in a 1-year delay in graduation.

11. **Pass CHE-4356 but fail CHE-4202 (Senior Design II) with a D-grade:** With approval from the undergraduate committee, they can register for CHE-4000 (2 credits) in the summer term and do a design project chosen by the design instructors. Upon satisfactory completion, they can earn a C- grade that will go onto their transcripts to complete the degree requirement. This option allows students to graduate in the summer. Otherwise, they repeat the class the next time it is offered, i.e. next spring, resulting in a 1-year delay in graduation.

12. **Pass CHE-4202 (Senior Design II) but fail CHE-4356 (Process Safety) with a D-grade** With approval from the undergraduate committee, they can register for CHE-4000 (3 credits) and take the AICHE process safety boot camp (or an equivalent to be approved by the undergraduate committee). Upon successful completion and submission of their certificates, students can earn a passing grade of C- that will go on their transcripts to complete the degree requirement.

13. **Fail CHE-4356 (Process Safety) with an F-grade** Re-retake the course, either here in the spring or at another institution if they offer it before then, provided TTU will accept/recognize the transfer equivalency.

Note that the above recovery options are not guaranteed to be offered, and are not available for students who fail because of academic misconduct.

APPEAL PROCESS

Grade Appeal

In the event that a student believes they have received an incorrect grade, they should follow the standard grade appeals process set forth by the institution (OP 34.03). The first point of call is always to make an appointment with the instructor to discuss your grade. If that does not resolve the situation satisfactorily, you can submit a grade appeal to the college grade appeal committee by contacting the Associate Dean of Engineering for Undergraduate Affairs, Dr. Ali Nejat.

Other Situations

In the event that a student believes extenuating circumstances exist that have directly or indirectly resulted in a student's inability to meet any of the chemical engineering degree requirements, the student may submit a formal appeal to the Undergraduate Committee for evaluation. The appeal should be made in the form of a written memo and submitted via email to the Associate Chair of Undergraduate Programs with a copy to your academic advisor. The memo should contain an explanation of the circumstances and include any supporting documentation. For example, in the event of an unforeseen personal tragedy, a letter from a medical doctor or registered grief counselor may be included as an attachment. All submitted documentation will be held confidential within the department.

All appeals will be evaluated by the Undergraduate Committee and the Department Chair. For cases requiring further deliberation, the Undergraduate Committee will gain insight from other members of the Departmental Faculty and the Associate Dean for Undergraduate Affairs.

GRADUATE STUDY OPPORTUNITIES

Disclaimer: much of this section was taken from notes that appear in the handbook written originally by the faculty at Clemson University

What is graduate school?
You may attend graduate school in chemical engineering to earn an M.S. degree, a Ph.D. degree, or both. The M.S. degree typically requires 2 years, while the Ph.D. degree typically requires 4-5 years beyond the B.S. degree. You will take advanced courses during the first one or two years, and then focus on a niche research project, culminating in a thesis/dissertation.

Who should attend graduate school?
For research and development, technical work, or teaching, a graduate degree is a definite advantage, if not a requirement. If your GPA is greater than 3.5/4.0, then your chances of being accepted into a Ph.D. program with financial aid are good. If your GPA is between 3.0/4.0 and 3.5/4.0, then you can probably still gain admission to graduate school, but your choices may be more limited.

Why does one attend graduate school?
If you are like many others, you may be tired of taking courses and living the student lifestyle when your undergraduate program is completed. It may at first seem out of the question to go through four more years of school in order to obtain a Ph.D. degree. However, there are three very important reasons for doing so:

- Graduate school is challenging and fun - Most of your graduate courses will be in areas that interest you and will offer considerable interaction with the professor and the other students. Moreover, the majority of your time spent on a Ph.D. degree will be in research on a challenging problem that is of interest to you. You will have the opportunity to develop close-knit relationships with other members of your entering class and research group.
- Graduate school is a wise investment - Although there is a short-term financial sacrifice in not taking a professional job with a B.S. degree, those who obtain advanced degrees generally receive higher starting salaries and come out ahead financially in the long-term. More important, though, is the job satisfaction that is made possible with an advanced degree. There are many exciting areas that are opening up to chemical engineers, including biotechnology, electronic devices, advanced materials, novel energy processing, and hazardous waste management. Advanced knowledge is needed to work in these so-called "frontiers of chemical engineering." In addition, a Ph.D. degree may be a distinct advantage for upper-level management jobs and is a requirement for an academic position.
- Graduate students are paid to go to school - Most full-time graduate students have their tuition paid and they receive a stipend (typically ~$30k-35k/yr) that is sufficient to live on. Many fellowships also exist that pay even higher stipends.

When is the best time to attend graduate school?
It is generally best to attend graduate school shortly after completing a B.S. degree. A small percentage of graduate students work a few years in industry first and then return to school with a clearer vision of how an advanced degree can improve career opportunities. However, the interruption of a career in this way is difficult and requires some sacrifice.

How do I find a suitable program?
If you are interested in obtaining a Ph.D., we recommend that you consider going to a different school than Texas Tech University. It is important that you apply to schools that have active research programs in one or more areas that interest you. You should search for universities in locations that you want to live in, then search the webpages for the chemical engineering departments for research areas and specific faculty you think you might want to work for. Discuss your desire to attend graduate school with faculty members here at TTU and ask them for advice on schools that are well-suited for you and that have faculty members with active research programs in areas that interest you.

Of course, TTU has strong and active research programs in several areas, such as biomedical device engineering, polymers, machine learning, and energy and sustainability. We would welcome your application and certainly encourage you to consider studying here. We also offer an MS Chemical Engineering, MS Bioengineering, and accelerated programs (BS-MS) for both (see below). You can view our research areas here: https://www.depts.ttu.edu/che/research/index.php or simply view the individual faculty webpages by looking for the corresponding links here: https://www.depts.ttu.edu/che/faculty/

How to apply for graduate school?
First, talk to the Department Director of Graduate Studies, or any of your professors. If you are interested in applying to TTU, they can supply you with the necessary resources. They can also counsel you on other graduate schools to consider and suggest other TTU faculty to talk with about particular research areas. In general, though, early in the fall term of your senior year you should contact departments that you are interested in requesting information about the program and details on how to apply. It is probably best to apply to schools that you are seriously interested in. The applications should be submitted in the fall, or early in the winter.

When a school accepts you for graduate study, it will specify a decision date. An important element in making your decision will be the financial aid available. If you are interested in a Ph.D. and have good qualifications, then most schools will offer you a fellowship, teaching assistantship, or research assistantship that will cover tuition and provide a monthly stipend that is adequate for living expenses. Also, it is a good idea to visit the one or two schools that you are most interested in. Often, the school will pay for part of your visit.

What is the combined BS/MS plan?
Undergraduate Chemical Engineering majors who have completed at least 90 credit hours can begin work toward an MS (Master of Science) in Chemical Engineering or an MS in Bioengineering by selecting approved graduate courses for the respective MS program. Typically, you would take 2 or 3 graduate-level electives in your senior year, at the 5000-level in place of the regular 4000-level (e.g. CHE-5364 instead of CHE-4364). Then, in your 5th year of study, you can choose to follow either a thesis-track or non-thesis track. We highly recommend the thesis track so that you can have a more meaningful research experience with mentorship from your research advisor. More details on these programs can be found here:
MS Bioengineering: https://www.depts.ttu.edu/coe/bioengineering/program.php
MS Chemical Engineering: https://www.depts.ttu.edu/che/grad/ms/

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS STUDENT CHAPTER

It is traditional that professionals band together to promote their profession and to disseminate information. Medical doctors join the American Medical Association, lawyers belong to the American Bar Association, and chemical engineers affiliate themselves with the American Institute of Chemical Engineers (AIChE). As a chemical engineering student at TTU you are invited (and encouraged) to join our outstanding Student Chapter of the American Institute of Chemical Engineers (AIChE).

The Student Chapter of AICHE is active at the national, regional, and local levels. At the national level, there are many benefits for the ChemE student. Joining the national organization is FREE! You can become a member and learn about student membership benefits here: https://www.aiche.org/students/membership

At the regional level, Texas Tech is part of the Southwest region. A student conference is held each year at one of the member universities, where you can socialize with ChemEs from other schools, visit chemical plants, participate in a research poster/paper competition, the ChemE Jeopardy and ChemE Car competitions. If successful in these local/regional events, you may be eligible to go to nationals.

The AIChE Student Chapter is active throughout the school year and hosts many events with guest speakers from industry, volunteer/service opportunities, and regular work on the ChemE car. The students involved in this group support each other and often form study groups and tend to perform well academically. These types of extra-curricular activities are also viewed favorably by recruiters for internships and full-time employment.

In summary, there are many excellent reasons to join AIChE. As a freshman or sophomore, it is often difficult to know whether the major you have chosen is really right for you. By joining AIChE, you can get exposure to the wide variety of jobs that will be available to you after graduation, and thus feel certain that you have chosen the right path. Membership dues are inexpensive. For more information, contact the AIChE Student Chapter Advisor (Dr. Jenifer Gomez-Pastora) or the student president (Kirsten Kuper) or visit one of the social media pages below:

https://www.instagram.com/aiche.ttu/
https://www.facebook.com/groups/35955746100/
https://www.depts.ttu.edu/coe/wcoenews/posts/2025/04/aicheawards.php

GENERAL ADVICE FROM THE FACULTY

Why Are You in College?

You are here for one overriding reason, and that is to learn. You will and should do other things while here. You will meet a lot of people, make new friends and have a lot of fun. You should participate in some extracurricular activities, take time out for personal pursuits, and allow some time to simply have fun. However, all these activities are secondary to your main purpose - learning the subject matter and intellectual discipline of your future profession. Keep that in mind.

Why do we teach fundamental concepts?

You will find that in chemical engineering education we stick to concepts and fundamentals, and that we will not teach you, except incidentally, how to make any specific product, how to solve one type of problem, how to write a very specific code, or how to run one type of simulation. The reason for our emphasis on understanding fundamental and basic concepts is that they always universally apply to various situations. Your future employer will be interested in having you solve "new" problems. If all the problems had been solved, there would be no need for engineers. Your future work will be non-routine and non-repetitive; new, unusual, and challenging problems will be the rule rather than the exception. Processes for making things change regularly, but the fundamentals on which processes are created endure.

How To Study

Many students fail in college because they don't know how to study or do not appropriate the correct amount of time to learning the material outside of class. To succeed in college, particularly in engineering, you must develop good study habits and stick to them. There are many approaches to this, but if you need help, seek out resources offered by the college of engineering;
https://www.depts.ttu.edu/coe/undergraduate/contacts.php

Here are some general points for covering new material and recapitulating lectures:

1. If you take down notes in class, make sure to re-visit them later that same day and to re-organize/re-write them. This may seem unnecessary, but there is research that indicates the simple act of writing down material with your own hand reinforces the learning process.

2. Don't be afraid to underline or highlight important passages in a book, or to make notes in the margin. When you run across something that you don't understand or are unsure of, make a note in the margin. These notes form the basis for questions at the next lecture.

3. At the lecture, if there are things you do not understand, make sure you ask the professor in the lecture. Most likely there are other students who also don’t understand, so you will be doing them a favor if you stop to ask. Don’t simply sit there confused.

4. Attempt some homework problems or supplementary problems from the textbook as soon as possible after covering new content.

5. Never depend on "cramming" for a quiz or examination. If you follow this recommended reviewing, your quizzes will be easy.

Keep Your Books and Lecture Notes

Don't succumb to the temptation to sell your books at the end of a semester for a little ready cash or to discard your lecture notes. They may come in handy for subsequent courses that build upon the concepts taught in the earlier ones. You may also want to take the Fundamentals of Engineering (FE) exam at some point, and your notes will be instrumental to reviewing / studying for that.

Read the Syllabus!

Make sure you read the syllabus for each class that you take, so that you understand all the requirements, and when key assessments are due, and when exams are scheduled. You should also understand how your grade is going to be calculated – do not expect each assessment to be equally weighted, nor the grade boundaries to be the same for each class.

If You Fall Behind in a Course

If you become aware that you are falling behind in a course, you should immediately see your instructor for advice on catching up. All faculty members maintain office hours to help students, but you must take the initiative to ask for help. You will surely fall behind in the course if you "cut class" or sleep in class. You will miss important material and announcements by doing so. Do not expect instructors to post all their material to Canvas. You (or your parents or your scholarship provider) are paying a lot of money for each credit hour of class you have scheduled.

DO'S AND DON'TS TO BE A SUCCESSFUL CHEMICAL ENGINEERING STUDENT

DO's:

1. Be independent. Gather needed information and make your own decisions.
2. Be active in your education, i.e. participate in class and group projects, check your emails, communicate to faculty in a timely manner, etc.
3. Study consistently throughout the semester on a minimum of a 2:1 ratio, i.e. 2 hours of independent study for each hour of lecture.
4. Memorize the important principles and fundamental concepts.
5. Read written instructions carefully and interpret them appropriately.
6. Look for analogies and use them to interpret new ideas.
7. Use knowledge and methods from previous courses and experiences.
8. Try to connect textbook and lecture material with "the real world" examples.
9. Develop systematic procedures to solve problems.
10. Learn to analyze data for consistency, reliability, and meaning.
11. Learn to ascribe physical meaning to equations.
12. Learn to use fundamental logic to reach a conclusion.
13. Try to judge the reasonableness of your answers. Do your numbers "make sense"?
14. Learn the basics of scientific/technical writing.
15. Present your work in a neat and orderly fashion.
16. Anticipate the consequences of your actions and realize that you alone are responsible for them.
17. Do everything you do ethically and with respect for others.

DON'Ts:

1. Expect instructors to give cookbook procedures for everything.
2. Copy homework.
3. Expect to find all the answers in one place.
4. Expect all problems to have closed-form solutions; some require iteration, i.e., trial & error.
5. Expect all problems to have a single/simple numerical solution.
6. Expect quizzes to be exactly like old homework problems.
7. Try to skip class, miss assignments, cram for exam, and then expect to pass the class.
8. Go to the instructor in the last week of semester asking for extra credit. Study instead (see Do #3)
9. Ask the instructor to "round up your grade" when you slacked off all semester. Study instead (see Do #3).
10. Ask us to waive prerequisites because it will help you graduate sooner. We won't.
11. Expect the instructor to review the whole semester before the final exam.

2026-2027 and later catalogs

Student Name _____ **TTU ID** _____ **Date** _____

Email Address _____ **ADVISING FOR** _____**(e.g., fall 2026)**

Students: For courses taken at TTU, put the grade received next to the course.
For transfer credit, use T and the grade received (ex. TB).
For courses that you are currently enrolled in and expect to pass, use an R next to that course.
DO NOT EDIT THE TEXT ON THIS FORM.
Advisors: Indicate the courses to be taken in the following semester by circling the courses.

FIRST YEAR	*Fall (15 hrs)*		*Spring (17 hrs)*	
	ENGL 1301, Ess. Coll. Rhetoric	_____	ENGL 1302, Adv. Coll. Rhetoric	_____
	MATH 1451, Calc. I	_____	MATH 1452, Calc. II	_____
	CHEM 1307 &1107, Prin. of Chem. I	_____	ENGR 1340, Intro. Engr. Design	_____
	ENGR 1110, Engineering Seminar	_____	ENGR 2392, Engr. Ethics (LPC)	_____
	ENGR 1330, Comp.Think/Data Sc.	_____	PHYS 1408, Prin. of Phys.	_____
SECONDYEAR	*Fall (15 hrs)*		*Spring (16 hrs)*	
	MATH 2450, Calc. III	_____	MATH 3350, Adv. Math. for Engr. I	_____
	CHEM 1308 & 1108, Prin. Of Chem. II	_____	**CHE 3315, Fluid Mechanics***	_____
	CH E 2310, Intro. to Chem. Proc.*	_____	**CHE 2321, Chem. Eng. Thermo. I** *	_____
	PHYS 2401, Prin. of Phys. II	_____	**CHE 2306, Expo. Tech. Info*** (oral com)	_____
			CHEM 3305 & 3105, O-Chem I	_____
THIRD YEAR	*Fall (12 hrs)*			
	CHE 3305, Comp./Sim. In CHE	_____	*Spring (14hrs)*	
	CHE 3326, Heat Transfer*	_____	**CHE 3232, Transport Lab.***	_____
	CHE 3322, Chem. Eng. Thermo. II*	_____	**CHE 3341, Mass-Trans. Oper.***	_____
	CHE 4372 Eng. Experimentation	_____	**CHE 3323, Chem. Reaction Eng.***	_____
			CHE 3330, Eng. Materials Sci.	_____
			IE 2324, Engr. Econ. Analysis(Soc/Behavior	
FOURTH YEAR	*Fall (10 hrs)*			
			Spring (8 hrs)	
	CHE 4232, Unit Oper. Lab.*	_____	**CHE 4202, Chem. Eng. Design II***	_____
	CHE 4353, Process Control*		**CHE 4356, Process Safety***	_____
	CHE 4201 Chem. Eng. Design I*	_____	**CHE 43xx Elective**	_____
	CHE 43xx Elective	_____		

Additional Requirements - Indicate the Course (ex. ART 1309) as well as the grade.

American History (6 hrs) _____ _____ Multicultural (3 hrs) _____

Political Science (6 hrs) _____ _____ Creative Arts (3 hrs)_____

Chemistry Electives (6 hrs lecture, 1 hr. lab) _____ _____ _____

18-hr rule ____ 3 engr repeats ____ 3 attempts per course ____

Foreign language – 2 yrs HS _____ or freshman-level courses _____ _____

Additional Comments:

Advisor Signature _____

Student Signature _____ **Date** _____

***Classes in bold print are only guaranteed to be offered in the semester in which they are listed and must be taken in sequence.**

Polymer and Materials Minor#

Minimum of six courses.

Two courses are required:

_____ CH E 4344 Polym./Mat. Lab.
_____ CH E 3330 Materials Sci.

Plus four courses chosen from the following list with two in another department:

_____ CHEM 3306 Organic Chem. II
_____ CHEM 4310 Polymer Chem.
_____ CH E 4340 Polymer Proc.
_____ CH E 4341 Polymerization Eng.
_____ CH E 4342 Polymer Physics/Eng.
_____ CH E 4345 Dyn. Polym. Nonlinear Fluids
_____ CH E 4346 Polymer Viscoelasticity
_____ CH E 4393 Colloid Science/Engr.
_____ CH E 4394 Soft Materials
_____ E E 4381 VLSI Processing
_____ M E 3228 Materials & Mechanics Lab.

#Earning of the Polymer minor is contingent on the offering of polymer electives.

Math Minor

Minimum of six courses.

Three courses are required:

_____ MATH 1451 Calc. I
_____ MATH 1452 Calc. II
_____ MATH 2450 Calc. III

One elective is required for the BS Ch E degree:

_____ MATH 3350 or 3354 Diff. Eqns. I*

Plus six hours of approved courses (the following are recommended, others may be taken - see the Math Dept. for all options); for graduate school in Ch E, MATH 3351 or 4354 is recommended:

_____ MATH 2360 Linear Algebra*
_____ MATH 3342 Math. Stat. for Eng.
_____ MATH 3351 Higher Math for Eng. II
_____ MATH 4310 Intro. Num. Anal. I
_____ MATH 4354 Diff. Eqns. II

*If Dif Eq is from community college, you must take upper-level courses for remaining 6 hours.

Bioengineering Minor

Minimum of seven courses required.

Three courses are required:

_____ BIOL 1403 Biology I (Fall)
_____ CHEM 1308/1108 Prin. Chem II (Fall or Spr)

Plus one of the following:

_____ BIOL 1404 Biology II (Spring)
_____ CHEM 3306/3106 Organic Chem. II & Lab**
_____ MBIO 3400 Microbiology

Plus one of the following core bioengineering courses:

_____ CH E 4363 Biochemical Engineering**
_____ ECE 5356 Bioinstrumentation/Biosensors

Plus two of the following (note must not include core course):

_____ CH E 4363 Biochemical Engineering(if not used as core)
_____ CH E 4364 Ch E Appl. in Biological Systems**
_____ CH E 4365 Biotransport**
_____ CH E 4366 Biomicrofluidics**
_____ CH E 4385 Bioprocess Control**
_____ CS 3368 Artificial Intelligence
_____ CS 4379 Concurrent and Parallel Programming
_____ CS 5393 Bioinformatics
_____ ECE 4367 Image Processing
_____ ECE 5351 Biomedical Signal Processing
_____ ECE 5355 Genomic Signal Processing and Control
_____ ECE 5356 Bioinstrumentation/Biosensors (if not used as core)
_____ ENV E 3309 Environmental Engineering
_____ ENV E 4385 Microbial Apps. in Envir. Engineering
_____ ENV E 4399 Bio. Municipal Wastewater Treatment
_____ IE 4301 Engineering Design for People
_____ IE 4306 Work and Product Safety Engineering
_____ MBIO 3401 Principles of Microbiology (Fall or Spring):
OR CHEM 3310 Molecular Biochemistry;
OR BIOL 3320 Cell Biology

** Denotes courses preferred for CH E Majors

CH E Career Counseling Sheet

Student Name _____ R#_____ Date _____

Email Address _____

Students: Take the completed career advising sheet and your CV to your career advising appointment.

Major _____ Overall GPA _____

Minors _____ GPA in Major _____

Professional Experience (Indicate company, area of work, advisor for research, and dates of employment)

Summer Internships:

Cooperative Education:

Undergraduate Research:

Other Work Experience:

Professional Activities and/or Skills (e.g., society memberships)

Interest and Preparation for Graduate School

Career Goals and Aspirations

Faculty Advisor Comments

Advisor Signature_____ Student Signature_____ Date

Return Form to Kristina Thompson (CHE 211) For Hold Removal