

Undergraduate Handbook for Students in
Linda & Bipin Doshi Department of Chemical and Biochemical Engineering
Updated October 2023

CHEMICAL ENGINEERING PROGRAM MISSION STATEMENT

- Prepare chemical engineers for successful careers as leaders and innovators in chemical engineering and related fields
- Expand the knowledge base of chemical engineering through its scholarly pursuits
- Develop technology to serve societal needs
- Benefit the public welfare through service to the chemical engineering and related professions

CHEMICAL ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES

Within five years of graduation, our students will become successful in their chosen career path by:

- Making a positive impact as an individual contributor or leader in their industry, business, and community;
- Working collaboratively to improve the economic and societal environment of their industry sector and community with an emphasis on process safety and a consideration of means to safeguard the environment; and
- Expanding career skills through life-long learning.

UNDERGRADUATE CHEMICAL ENGINEERING PROGRAM STUDENT OUTCOMES

Upon graduation, our students will exhibit the following:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- 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.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions on global, economic, environmental, and societal contexts.
- 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.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The Educational Mission and Objectives were adopted by the ChBE Faculty in January 2017. The Educational Mission and Objectives were reviewed by the ChBE Faculty in May 2021.

1 Introduction

1.1 Department Faculty and Staff

Department Chair: Dr. Hu Yang
huyang@mst.edu
(573) 341-4854
110E Bertelsmeyer Hall

The Chair of the ChBE department coordinates and monitors the efforts of the ChBE faculty and enforces graduation requirements that are specific to the department. Most questions and forms are handled by the associate chairs. You should, however, contact the department chair directly when you have concerns, complaints, or compliments regarding a member of the faculty.

Associate Chair for Academic Affairs: Dr. Christi Luks
luksc@mst.edu
(573) 341-7641
210N Bertelsmeyer Hall and
110D Bertelsmeyer Hall

The Associate Chair for Academic Affairs of the ChBE department handles admission to the undergraduate program. She has the authority to sign for the chairman on all enrollment and undergraduate forms:

- PERMISSION NUMBER REQUESTS
- COURSE SUBSTITUTION AND WAIVERS
- ADD/DROP
- REQUEST TO TRANSFER PART OF THE LAST 60 HOURS FOR A DEGREE
- EXPERIENTIAL LEARNING
- NOTIFICATION OF SCHOLASTIC ACTION
- AUTHORIZATION TO CHANGE UNDERGRADUATE CATALOG YEAR
- UNDERGRADUATE READMISSION REQUEST
- REQUEST TO WITHDRAW FROM SCHOOL
- PETITION FOR EXCESS SCHEDULE ON PROBATION
- UNDERGRADUATE REQUEST TO CHANGE MAJORS

The Associate Chair can also sign other documents in the ChBE department chair's absence.

Associate Chair for Research: Dr. Jee-Ching Wang
jcwang@mst.edu
(573) 341-6705
210H Bertelsmeyer Hall

The Associate Chair for Research of the ChBE department coordinates all aspects of the department's graduate programs including admission, selection of chancellor's fellows, graduate teaching assistants (GTAs) and graduate research assistants (GRAs). Undergraduate students interested in the Grad Track Pathway should contact the

Associate Chair for further information. The Associate Chair for Research also signs graduate paperwork on behalf of the chair.

Administrative Assistant IV: Theresa Brown
theresabrown@mst.edu
(573) 341-4421
110B Bertelsmeyer Hall

This administrative assistant serves as the office manager and handles paperwork for graduate students. She works closely with the Chair and Associate Chairs. She manages Miner Bytes and grants permission for posting items on the building's bulletin boards. Students who need access to offices or laboratories will need to contact her.

Administrative Assistant IV: Lan Liu
lanliu@mst.edu
(573) 341-4421
110C Bertelsmeyer Hall

This administrative assistant manages the office and handles paperwork for undergraduates. She works closely with the office manager as well as the Chair and Associate. She manages the department website and grants permission for posting items on the building's bulletin boards. Students who work for the department as a grader or undergraduate researcher will work with her to complete the hiring paperwork.

Office Assistant: chemeng@mst.edu
(573) 341-4416
110A Bertelsmeyer Hall

The department office assistant(s) are undergraduates who serve as receptionist to the department. She supports the department in a variety of ways as needed.

Financial Assistant: Patricia Lungstrum
plungstrum@mst.edu
(573) 341-4662
110D Bertelsmeyer Hall or 123A McNutt Hall

The ChBE financial assistant serves as the accountant for the department. If you are hired by the department or make purchases on behalf of a department project, you may interface with her.

Technician: Micheal Murphy
murphym1@mst.edu
(573) 341-4108
B16 Bertelsmeyer Hall

The technician works with our research and teaching laboratories to keep our equipment operating and to update our facilities. If you notice anything in the building that is broken or needs repair, please report it to the main office (110 Bertelsmeyer Hall).

Academic Advisor: Kevin Walkup
walkupk@mst.edu
(573) 341-4213

210S Bertelsmeyer Hall or 118 McNutt Hall

The ChBE academic advisor will be the official advisor of many of our undergraduate students. He is available also to supplement the advising of your faculty advisor. He can help you identify campus or community resources to help you. If you need assistance with career advising, please communicate with your faculty advisor.

Additional Full Time Faculty:

Dr. Muthanna Al-Dahhan
aldahhanm@mst.edu
(573) 341-7518
210K Bertelsmeyer Hall

Dr. Hany Elazab
Hany.elazab@mst.edu
(573) 341-4417
210G Bertelsmeyer Hall

Dr. Daniel Forciniti
forcinit@mst.edu
(573) 341-4427
(573) 341-7787
210I Bertelsmeyer Hall

Dr. Forciniti serves as the Associate Provost for Faculty Affairs

Dr. Douglas Ludlow
dludlow@mst.edu
(573) 341-4457
210M Bertelsmeyer Hall

Dr. Monday Okoronkwo
okoronkwom@mst.edu
(573) 341-4349
210F Bertelsmeyer Hall

Dr. Fateme Rezaei
rezaeif@mst.edu
(573) 341-7625
210B Bertelsmeyer Hall

Mr. Matthew Senter
Msnp2@mst.edu
(573) 341-4701
210Q Bertelsmeyer Hall

Dr. Joseph Smith
smithjose@mst.edu
(573) 341-4294
210C Bertelsmeyer Hall

Dr. Mark Towler
mtowler@mst.edu
(573) 341-7632
210A Bertesmeyer Hall

1.2 Required Reading for Every Student

1.2.1 Missouri S&T Student Academic Regulations

The Student Academic Regulations is the definitive guide to the rules and policies governing all students at Missouri S&T. You are responsible for knowing and meeting these regulations. This document is available at <http://registrar.mst.edu/academicregs/>

1.2.2 Missouri S&T Undergraduate Catalog

The Missouri S&T Undergraduate Catalog describes the undergraduate degree programs and requirements at Missouri S&T. It is published annually in the fall and can be found online at <http://catalog.mst.edu/undergraduate/> You should read the sections relating to the Chemical Engineering curriculum and courses.

We occasionally change graduation requirements to improve our program, but students attending Missouri S&T are allowed to continue under the catalog in force when they began their college studies as long as continuous enrollment is maintained. You should view the most recent copy of this catalog for the newest graduation requirements. If you prefer the new set of requirements, you may file a petition to change to the new program by filling out an [Authorization to Change Catalog Year form](#) obtained from the registrar's office.

If you are a transfer student or have interrupted your studies, special rules may apply to you. Contact the registrar's office if you have questions.

1.2.3 Degree Audits

The registrar's office maintains a degree audit for each student. The degree audit lists all your courses and grades along with your degree requirements and how each requirement has been satisfied. You can view your degree audit at <http://joess.mst.edu/> at any time. The registrar has additional information published at [MyDegree – Office of the Registrar | Missouri S&T \(mst.edu\)](#)

1.2.4 Schedules of Courses

You can find the most recent schedule of classes at [Class Offerings/ Schedule of Classes – Office of the Registrar | Missouri S&T \(mst.edu\)](#). This schedule describes which courses are offered, their meeting times, locations, and other information. The registrar also publishes a schedule of official times for final exams on this page. Before enrolling in a class, you should check the schedule of classes and make plans to attend every class meeting including the final examination. Please note that all requests to change a final exam date or time must be completed through the Registrar's Office at least one week before final exams week. If you are unable or unwilling to attend some of these meeting times, you should either not enroll in the class or contact the instructor prior to enrolling. Instructors have the authority to drop you from a class because of absences, lack of prerequisites, etc. You can use the Schedule Planner in Joe'SS to plan your schedule for the upcoming semester. The Schedule Planner gives you a visual representation of your schedule and displays all possible scheduling options. It also allows you to place breaks in your schedule.

1.2.5 ChBE Department E-Mail List

The department distributes announcements concerning scholarships, job opportunities, schedule changes, and a host of other information by email. If you do not receive these emails and would like to be included in this list, contact chemeng@mst.edu.

2 Admission to the Department

2.1 First Year Experience Program (FYE)

You must be formally admitted into Missouri S&T before you can apply for admission to enter the Chemical Engineering program. Your questions concerning general Missouri S&T admission procedures and requirements should be directed to the admissions office. Many of your questions are addressed on the admissions office website at <http://admissions.mst.edu/>.

We do not admit high-school seniors directly into the Chemical Engineering program. You should first apply for admission into the First Year Experience Program (FYE). After completing the FYE (normally two semesters), you may apply for admission to the Chemical Engineering program.

2.2 ChBE Entry Requirements

You will be routinely admitted into the B.S. Chemical Engineering program if you have

- Earned a cumulative GPA of 2.50 or above in:
 - Chem 1310 (General Chemistry 1) with a grade of C or better
 - Chem 1319 (General Chemistry 1 Lab) with a grade of C or better
 - Chem 1320 (General Chemistry 2) with a grade of C or better
 - Math 1214 (Calculus I) with a grade of C or better
 - Math 1215 (Calculus II) with a grade of C or better
 - Phys 1135 (Engineering Physics I) with a grade of C or better
- These courses should also be completed:
 - FE 1100 (Study and Careers in Engineering)
 - Engl 1120 (Exposition & Argumentation)
 - MechEng 1720 (Engineering Design with Computer Applications)

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- CompSci 1500 or CompSci 1972 & 1982 (Computer Programming or MATLAB)

If you fail to meet these requirements, you should contact the Associate Chair for Academic Affairs before applying to the program. Experience has shown that few students who enter the program with a Missouri S&T GPA below 2.50 are able to successfully complete the program.

2.3 Transfer Students and Courses

Information for transfer students is located at <http://admissions.mst.edu/transfer>. If you are currently attending another university or college, or a Missouri S&T student enrolled in a major other than FEP, and wish to transfer to the Chemical Engineering program, we consider you to be a transfer student. You will be routinely admitted into the department if you meet the criteria outlined in Section 2.2. Otherwise, you will be admitted into the FEP program.

Prior to graduation, you must transfer to Missouri S&T all college courses taken at institutions of higher education. These affect your cumulative GPA. Some of these courses may also fulfill some graduation requirements. The restrictions and procedures for transferring courses are based on the University policies. Many courses have been evaluated for routine transfer. See [Transfer Credit – Office of the Registrar | Missouri S&T \(mst.edu\)](#). Courses that are not on the University list will require evaluation by the Associate Department Chair for Academic Affairs (Dr. Christi Luks, luksc@mst.edu). You need to provide a syllabus for the course(s) to the Associate Chair for consideration. In some cases, additional documents will be requested. If the course is not a chemical engineering course, the Associate Chair will work with the appropriate department to determine whether credit will be granted.

When transfer courses are being used as a prerequisite for a Missouri S&T course, the student is responsible for arranging for the transcript to be sent to S&T and checking that the course is credited properly before the semester when needed as a prerequisite. Failure to do so will prevent you from taking the Missouri S&T course and may delay your graduation.

3 Graduation Requirements

3.1 Required Courses for Chemical Engineering Students

You will need to check your degree audit in Joe'SS for the specific requirements for your catalog year. For students entering Missouri S&T in Fall 2021, the degree plan is:

B.S. in Chemical Engineering

Freshman Year			
First Semester	Credits	Second Semester	Credits
FR ENG 1100 Study & Careers in Engineering.	1	MECH ENG 1720 Intro to Engineering Design	3
CHEM 1100 Lab Safety	1	COMP SCI 1500, 1972/1982, or 1570/1580	3
CHEM 1310 General Chemistry I Lecture	4	CHEM 1320 General Chemistry II Lecture	3
CHEM 1319 General Chemistry I Lab	1	MATH 1215 Calculus II	4
ENGLISH 1120 Exposition & Argumentation	3	PHYSICS 1135 Engineering Physics I	4
HIST 1200, 1300, 1310, or POL SCI 1200	3		
MATH 1214 or 1211 Calculus I or I-B	4		
	17		17
Sophomore Year			
First Semester	Credits	Second Semester	Credits
CHEM ENG 2100 Material & Energy Balances	4	CHEM ENG 2110 Thermodynamics I	3
CHEM 2210 Organic Chemistry I Lecture	3	Chemistry Elective: Advanced Lecture	3
MATH 2222 Calculus III	4	Chemistry Elective: Advanced Lab	1
PHYSICS 2135 Engineering Physics II	4	MATH 3304 Differential Equations	3
		STAT 3113 Applied Engineering Statistics	3
		Humanities and Social Sciences Elective	3
	15		16
Junior Year			
First Semester	Credits	Second Semester	Credits
CHEM ENG 3101 Transport	4	CHEM ENG 3131 Separations	3
CHEM ENG 3111 Numerical Computing	3	CHEM ENG 3141 Process Operations	3
CHEM ENG 3120 Thermodynamics II	3	CHEM ENG 3150 Reactor Design	3
ECON 1100 or 1200 Micro/Macro Economics	3	ENGLISH 3560 Technical Writing (Comp II)	3
Upper level Humanities or Social Science	3	SP&M S 1185 Principles of Speech	3
	16		15
Senior Year			
First Semester	Credits	Second Semester	Credits
CHEM ENG 4091 Chemical Process Design I	3	CHEM ENG 4097 Design II	3
CHEM ENG 4101 Unit Operations I	3	CHEM ENG 4130 Unit Operations II	3
CHEM ENG 4110 Process Control	3	CHEM ENG 4311 Ethics (Spring) (CHEM ENG 2300)	1
CHEM ENG 4241 Process Safety	3	CHEM ENG 5xxx	3
CHEM ENG 4301 Materials (CHEM ENG 2300)	1	CHEM ENG 5xxx	3
CHEM ENG 5xxx	3	CHEM ENG 5xxx	3
	16		16

Total 128

3.2 Required Courses for Chemical Engineering with Biochemical Emphasis Students

You will need to check your degree audit in Joe'SS for the specific requirements for your catalog year. For students entering Missouri S&T in Fall 2021, the degree plan is:

B.S. in Chemical Engineering with Biochemical Emphasis

Freshman Year					
First Semester		Credits	Second Semester		Credits
FR ENG 1100 Study & Careers in Engineering	1		MECH ENG 1720 Intro to Engineering Design	3	
CHEM 1100 Lab Safety	1		COMP SCI 1500, 1972/1982, or 1570/1580	4	
CHEM 1310 General Chemistry I Lecture	4		CHEM 1320 General Chemistry II Lecture	3	
CHEM 1319 General Chemistry I Lab	1		MATH 1215 Calculus II	4	
ENGLISH 1120 Exposition & Argumentation	3		PHYSICS 1135 Engineering Physics I	4	
HIST 1200, 1300, 1310, or POL SCI 1200	3				
MATH 1214 or 1211 Calculus I or I-B	4				
		17			18
Sophomore Year					
CHEM ENG 2100 Material & Energy Balances	4		CHEM ENG 2110 Thermodynamics I	3	
CHEM 2210 Organic Chemistry I Lecture	4		ENGLISH 3560 Technical Writing (Comp II)	3	
MATH 2222 Calculus III	4		MATH 3304 Differential Equations	3	
PHYSICS 2135 Engineering Physics II	4		Science Elective (Lecture)	3	
			Science Elective (Lab)	1	
			STAT 3113 Applied Engineering Statistics	3	
		16			16
Junior Year					
CHEM ENG 3101 Transport	4		CHEM ENG 3131 Separations	3	
CHEM ENG 3111 Numerical Computing	3		CHEM ENG 3141 Process Operations	3	
CHEM ENG 3120 Thermodynamics II	3		CHEM ENG 3150 Reactor Design	3	
SP&M S 1185 Principles of Speech	3		CHEM ENG 5250 Isolation & Purification (Spring)	3	
Science Elective (Lecture)	3		Science Elective (Lecture)	3	
Science Elective (Lab)	1		Science Elective (Lab)	1	
		17			16
Senior Year					
CHEM ENG 4091 Design I	3		CHEM ENG 4097 Design II	3	
CHEM ENG 4201 Biochem Separations & Control Lab (Fall Only)	3		CHEM ENG 4110 ChE Process Dynamics & Control	3	
CHEM ENG 4210 Biochem Reactors (Fall Only)	3		CHEM ENG 4220 Biochem Reactors Lab (Spring Only)	3	
CHEM ENG 4241 Process Safety	3		CHEM ENG 4311 Ethics (CHEM ENG 2310)(Spring Only)	1	
CHEM ENG 4301 Materials (CHEM ENG 2300)	1		ECON 1100 or 1200 Micro/Macro Economics	3	
Upper Level Humanities or Social Science	3		Humanities or Social Science Elective	3	
		16			16

Total 132

3.3 The Grad Track Pathway

Undergraduates currently majoring in Chemical Engineering including the Biochemical emphasis at Missouri S&T may opt to apply for a Grad Track Pathway. In this pathway, a student can achieve both Bachelor's and Master's degrees faster than if pursued separately. The benefits of the program for admitted students include: (1) six credit hours of specified Chemical Engineering coursework may be transferred from the bachelor's degree to the master's degree, (2) the classes taken for transfer credit may be taken at the lower undergraduate tuition rate, (3) the GRE is not required for admission to the master's degree, and (4) work on a thesis project may begin before the BS requirements are completed (if the thesis option is chosen).

To be eligible for the Chemical Engineering Grad Track Pathway, a Chemical Engineering undergraduate must be (1) one year from graduation of their BS (excluding the semester they are currently enrolled), (2)

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have completed 18 credit hours of Chemical Engineering courses at Missouri S&T, (3) have at least a 3.50 GPA in Chemical Engineering courses, and (4) have a 3.0 cumulative GPA.

Eligible students must apply to the master's program in Chemical Engineering. The deadline for application to this program is 30 days before the end of the last undergraduate semester. This requires submitting a formal application for admission so the semester admission term for the master's degree immediately follows the semester the bachelor's degree is awarded. In the admission application, the student will be able to indicate that they are currently enrolled as a Grad Track Pathway student. Students who do not satisfy the pathway requirements may still be admitted to the master's program but will not be able to apply the courses from the BS degree towards their master's program of study.

Eligible students must submit the "Admission and Course Approval" form to the graduate advisor, the department Associate Chair for Research, and the Office of Graduate Studies. Students must have a letter of recommendation by one Chemical Engineering faculty member. The signed "Admission and Course Approval" form ensures the pathway course will satisfy degree requirements for the student's BS degree program.

Students must maintain a cumulative GPA of 3.00 until they receive their bachelor's degree and must receive grades of B or better in the graduate courses they enroll in as part of the pathway course sequence. Grades earned in graduate level courses while officially registered as an undergraduate student will count to the student's cumulative undergraduate GPA and cannot be factored into the cumulative graduate GPA. If the student exits the program before completion of the MS degree requirements or fails to maintain continuous enrollment Missouri S&T, the transfer credit courses will not apply toward graduate requirements in the event of future readmission. Credits earned in graduate-level courses will be posted according to established registrar procedures to the undergraduate transcript and will apply toward the student's undergraduate degree hours as needed to obtain the undergraduate degree and, thus, ensure all state degree requirements are met.

Once the bachelor's degree is awarded, the student is fully admitted to the associated master's program, and [Form 1](#) is approved, the courses from the pathway will be included on the student's graduate degree audit.

3.4 Global Engineering Program

In Fall 2020, Missouri S&T launched the Global Engineering program. This program gives you the skills needed to succeed as an engineer in today's global and interconnected industries. You can earn two degrees in five years as you gain important foreign language skills and cross-cultural experiences. In this program you will complete:

- A bachelor of science (B.S.) in Chemical Engineering (or another S&T engineering discipline)
- A bachelor of arts (B.A.) in multidisciplinary studies with an emphasis in language and culture
- A semester of study abroad during the fall of your fourth year
- And engineering internship abroad in the spring of your fourth year.

To learn more about this program, contact globalengineering@mst.edu.

3.5 Experiential Learning

All students at Missouri S&T are required to complete an experiential learning activity in order to graduate. This is an opportunity for you to develop skills that will be useful in your future career. These activities are intended to take you beyond mastering basic skills and knowledge to applying that material to problem solve challenges. The activity should involve collaboration and reflective learning and allow you to learn in an environment that aligns with your aptitudes. The department accepts the following activities:

- Undergraduate research (1 semester)
- Internship (1 semester)
- Co-op (1 semester)
- Student Design Teams (2 semesters)
- Study Abroad (1 semester)
- Leadership positions (2 semesters)
- Mentor/coach/tutor (2 semesters)
- Service learning (2 semesters)

The [form for experiential learning](#) is in two parts. Page one is to be completed BEFORE the activity and must be approved by your academic advisor and the department Associate Chair for Academic Affairs. Page two requires you to write a reflection essay about your experience and get the approval signatures of your activity supervisor and the department. This must be completed no later than 8 weeks before graduation.

3.6 Co-operative Education

The cooperative education program is designed to provide you with an employment opportunity to gain practical, degree-related work experience before your graduate. Most students find positions through [COER](#) (Career Opportunities and Employer Relations) and work full time for one or more semesters (spring/summer or summer/fall). You will need to register the co-op with [Handshake](#) in order to remain an active S&T student. Failure to do this will result in having to re-apply for admission to the university when you return.

3.7 Civics Exam

In accordance with the Missouri Senate Bill 807 (section 170.013.1), 'any student entering a public institution of higher education for the first time after July 2019 who is pursuing an associate's or bachelor's degree from such institution shall successfully pass an examination on the provisions and principles of American civics with a score of seventy percent or greater as a condition of graduation from such institution'. To satisfy this requirement at Missouri S&T, students access the exam through the Canvas site. This requirement will be listed in the degree audit system as "ALL STUDENTS ARE REQUIRED TO PASS A CIVICS EXAM PRIOR TO GRADUATION. EXAM IS AVAILABLE IN CANVAS" and listed on the transcript as 'Missouri Civics Examination'. Any student who has a catalog year of FS2019 or later is required to pass this civics exam prior to graduation.

3.8 Senior Assessment

Missouri S&T requires that all students complete a senior assessment prior to graduation. The Linda & Bipin Doshi Department of Chemical Engineering has two options for this.

Option 1: It is recommended that you take the Fundamentals of Engineering (FE) exam administered by the Missouri Society of Professional Engineers. This exam is offered year-round at approved Pearson VUE test centers. Visit <http://ncees.org/exams> for details. The FE exam is the first step in becoming a licensed Professional Engineer (PE). If you achieve a score of 70 or greater, the “pass” will remain valid indefinitely.

Option 2: For students who have no interest in becoming a licensed PE or prefer not to take the FE exam before graduation, the department has written a similar exam which is available in Canvas. This will be open to students during the last 8 weeks of the semester in which they graduate.

3.9 Substitutions and Waivers

It is important for all students to check their degree audit once a semester to be certain that courses they are taking or have completed are properly credited. Transfer courses occasionally do not transfer into the course number that you were expecting. Occasionally, a course has been discontinued or modified since when you started taking courses and you must take an equivalent course. In cases such as these, you may expect to see a green check mark on your degree audit, but see instead a red “x”. A [substitution and waiver form](#) must be used to correct this. Work with your advisor to complete this form.

Sometimes a student will need to transfer in a course within the last 60 hours of graduation. Although this is not allowed, exceptions can be made. The [form](#) must be submitted to the department Associate Chair for Academic Affairs for approval before being sent to the registrar’s office for final approval.

3.10 Retaking Courses

Missouri S&T has a repeat course GPA adjustment policy. When a grade of “D” or “F” is received in a Missouri S&T course, the grade may be replaced in the calculation of the GPA if the course is repeated at Missouri S&T. No more than 15 semester hours will be dropped from the calculation of the student’s GPA and a repeated course may only be used to replace one previous grade in that same course in the GPA calculation. Grades of “I”, “W”, “HR” or “Pass/Fail” will not replace the previous grade. All grades earned will appear on the student’s transcript. A statement of the repeat policy will be included on the transcript to explain the calculation of the GPA. After repeating a course, the student must submit a [Repeat Course GPA Adjustment](#) form to the Registrar’s Office to have the GPA changed. The new grade will replace the old grade in all GPA calculations in which the previous grade was used, except for UM GPA used for calculation of graduation honors. If a student does not submit the Repeat Course GPA Adjustment, both grades will be used in GPA calculations. The scholastic standing of a student for a past semester will not be changed as a result of repeating a course. This policy applies to undergraduate students only and may not be applied once the student has graduated.

3.11 What to Expect in Your Final Semester

It is recommended that you check your degree audit within the first two weeks of your final semester. Every item should have either a blue or green icon next to it. If you see any red “x” on the degree audit (indicating an incomplete requirement), meet with your academic advisor or the department’s Associate Chair for Academic Affairs to correct these problems. Since this may involve enrolling in a course, it is important that you do this within the first two weeks of the semester.

The next thing you need to do is to apply for graduation via Joe’S. You must do this within the first month of the semester. This will enroll you in a Canvas course called Senior Assessment where you will either upload evidence that you completed the FE exam or allow you to take the in-house exam for the required senior assessment. You will also complete an exit survey in Canvas.

If you intend to attend commencement, follow the instructions on the [registrar’s Commencement page](#) for ordering announcements, cap and gown, and more.

The department generally hosts a celebration of our graduates each semester. The format varies, but it gives the faculty one last opportunity to say farewell to you. Check for emails from the department in the last few weeks of the semester with details about this event.

3.12 Minors

Pursuing a minor is not necessary, but when you start job search, this may be what differentiates you and your interests from your peers. Many students earn a minor in Chemistry or Mathematics along with their chemical engineering degree. Biomedical engineering is frequently paired with our biochemical emphasis program but works nicely with the general chemical engineering degree also. Foreign languages, technical communication, or writing minors are less common, but useful in the modern global market. Are you wanting to move into management? Check out engineering management, finance, or pre-MBA (among others). A combination of chemical engineering with a minor in theatre might lead to creating special effects for your local theater group. A minor can be a fun way to pursue your side interest and see where the combination leads. The list of minors is in the [course catalog](#).

Students choosing to add a minor need to work with the home department for that minor. [The form to apply for the undergraduate minor](#) must be submitted to the home department for that minor.

4 The Mechanics of Enrolling in Courses

4.1 Advising Appointments

Advising week is set by the registrar’s office for the week after mid-semester grades are released. You will need to set an appointment with your academic advisor. Each faculty member has their own way of setting these appointments. Some have a paper sign-up sheet posted on their door. Some prefer to use electronic scheduling through S&T Connect. You will probably receive an email from your advisor with instructions, but if you do not see it, just email your advisor for guidance.

Before you meet with your advisor you should look at your degree audit in Joe’S to verify that your record matches your understanding of where you are and what courses you need to take next. Be aware that prerequisites matter, so it is not wise to deviate from the degree plan outlined in Section 3.1 or 3.2. If you have electives to choose, use our list of suggested science and engineering [electives for Focus Areas](#) to

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guide your choices. Once you have determined which courses you should be taking, look at the class offerings in Joe'SS. The Schedule Planner allows you to plan a schedule that suits your personal needs. [Instructions for using Schedule Planner](#) are provided by the registrar. Not all courses are offered every semester. ChemEng 2300 (Materials) and ChemEng 2310 (Ethics) are only offered once a year. Elective courses are also typically offered only once every year or every other year.

To complete a degree audit, you need to sign into Joe'SS. Then Click the "Student Center" button. Once in the student center, on the left-hand side of the screen, click the "Request Degree Audit" option. Sign in to Shibboleth (your Missouri S&T sign-on). Click the option which states, "Run Declared Programs." You will need to wait approximately 15 to 20 seconds for the degree audit to complete. Once completed, click the "View Audit" option on the right-hand side of the screen. Now, you are viewing your degree audit.

The next step would be to complete the [professional development plan](#) and update your resume. Submit this along with your filled out [Advisor/Student Scheduling Agreement Form](#) to your advisor before your appointment. The preferred format for submission is via email. Be sure to include your name and the word "advising" in the subject of the email to prevent it from getting lost.

At the advising appointment, you will discuss the courses that you anticipate taking with your advisor. You will also have an opportunity to discuss other steps that you should take to meet your personal career goals. After you have met with the advisor and finalized the [Advisor/Student Scheduling Agreement Form](#), the advisor will lift advising hold so that you can register for classes.

4.2 Registration

Priority registration for existing students is by appointment. You can find your appointment in Joe'SS. Be sure to look at the date and time entered there! You may register for classes and add or drop classes from your schedule through Joe'SS any time until the semester begins.

4.3 Prerequisites and Corequisites

Most of the courses in engineering build on material introduced in other courses. Therefore, it is important that you have completed all prerequisites before enrolling in the course. A corequisite course may be taken prior to or concurrent with the specified course. Occasionally a student must take a course before completing all the prerequisite courses or a student may have taken a prerequisite at another college and has not yet transferred the course to S&T. In these cases, the programming in the registration system will block your enrollment in the course. If you and your faculty advisor agree that it is appropriate for you to take the course without the co- or pre-requisite, then you will need to get a permission number to enroll.

To get a permission number for a ChemEng xxxx course, you will need to fill out the [permission number request form](#) and submit it to the instructor of the course in question. The form will also need to be signed by your faculty advisor and by the department Associate Chair for Academic Affairs. After all signatures have been secured, you will be issued a permission number. Enter this number in Joe'SS when you add the class.

It is important to note that the permission number does not guarantee you enrollment in the course. The automatic programming will check whether all students have completed their prerequisites two weeks before classes. If your prerequisites are not satisfied at that time, the program will generate an email

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warning you that you will be dropped from class. If you need to transfer a class into S&T, let this serve as a reminder to complete the paperwork. If your permission number is granted for another reason, ignore this first notice. In the next day or two the department will have an opportunity to accept your enrollment without the prerequisite (if that is so noted on the permission number request form). If you continue to receive notices, please contact the department for assistance.

4.4 Adding a Course

In the first two weeks of the semester you will be able to add a class, but you will need to use a permission number. The [permission number request form](#) may be used for this. Emailing this form to the department Associate Chair for Academic Affairs is the most efficient way to get that number. Once you have the permission number, you should be able to successfully enroll online.

In the event you have a time conflict, exceed permissible hours, or are a first-time new undergraduate student, you will need to add your course with a paper add/drop form. Go to the registrar's office to get that form.

Courses may not be added after the first two weeks of class except in very rare circumstances. You will need to work with the registrar and the instructor to get that approved.

4.5 Changing Sections of a Course

Changing sections of a course may be done by dropping and then adding the course if there is space in the new section. Check with the instructor of the course to verify whether this needs to be done. Some instructors manage multiple sections in such a way that it will not be necessary. In other instances, it is very important that you are enrolled in the section that you will be attending.

4.6 Dropping a Course

You should discuss your intention of dropping with your advisor prior to dropping any course. Dropping a course may severely impact your time-to-degree if this course is a prerequisite for other upcoming courses. You can drop a course through Joe'SS within the published deadlines for the semester. Overnight a notification will be sent to the instructor and your advisor notifying them of the drop. Students dropping a course that is a co-requisite of another will not be able to drop within Joe'SS unless you drop both courses. If you are only dropping the co-requisite you will need to use the paper add/drop form from the registrar's office and must have signatures of the instructor and the advisor.

4.7 Taking a Class as a Hearer

Every student attending a class must be registered for that class. If you wish to attend the lectures for a course, but not to receive a grade, you must register as a hearer. You may register as a hearer or you may change to hearer status during the first six weeks of the semester. The [form for this](#) is on the registrar's webpage.

4.8 Incomplete Grades

If you are unable to complete a class due to illness or other unavoidable reasons in the last four weeks of the semester, you may request the instructor to assign a grade of I (Incomplete). This is a temporary grade. It states that you will be allowed to complete the coursework after the end of the semester. To be assigned a grade of I you must:

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- Regularly attend class during the first 12 weeks of the semester
- Be earning a passing grade at the time the unavoidable absence started
- Be forced to miss class due to unavoidable circumstances during the last three weeks of regularly scheduled classes or finals week.
- Receive permission from the instructor. Instructors are not required to assign a grade of I. They may assign a normal letter grade if they prefer
- Receive permission from the department chair of the teaching department. The chair is not required to approve requests for I grades and may force instructors to assign normal letter grades.

If you receive a grade of I, you need to make arrangements with the instructor for a plan to complete the missing work. Your I grade will be translated to the earned letter grade if you complete the work within one year. At the end of one year, this grade will automatically become an F. There is no way for you, the instructor, or the department chair to prevent this. Withdrawing from school will not prevent it and you cannot withdraw from the course. If your instructor leaves Missouri S&T before they assign a normal letter grade, another faculty member will be given the responsibility of evaluating your work. If you do not satisfactorily perform the specified work in the allowed time, you will fail the course. Your work must be completed within one calendar year from the close of the semester in which you receive the incomplete grade. There are no exceptions to this deadline.

Please note that a grade of I in a course will not satisfy prerequisites for subsequent courses.

4.9 Pass/Fail Grades

If you take a course pass/fail, you will receive a grade of S (satisfactory or pass) or a grade of U (unsatisfactory or fail). If a grade of S is received, courses taken pass/fail can be used to satisfy cumulative-hours requirements and the last-60-hours-on-campus requirement. Courses taken pass/fail do not satisfy any other degree requirements. (Note that an exception was made for the Spring 2020 semester which was disrupted due to COVID. Courses with an S grade during that semester will count towards the appropriate degree requirement.)

In order to take a course pass/fail, you must submit a [request](#) to the registrar prior to the start of the semester or during the first two weeks of class.

4.10 Special ChBE Courses

4.10.1 Cooperative Engineering (ChE 3002)

Cooperative (co-op) education is a structured educational strategy integrating classroom studies with learning through productive work experiences in a field related to your academic or career goals. You need to register your co-op with [COER](#) which will enroll you in zero credit hours for the semester. This allows you to remain an active student status. If you wish to earn academic credit and have this appear on your transcript, you may enroll in ChE 3002. It is graded pass/fail. You will be required to prepare a report related to your co-op assignments. The report and any work evaluations from your supervisor(s) on the work assignment will be used for pass/fail grading by the faculty instructor for ChE 3002.

4.10.2 Special Problems (ChE 4000)

ChE 4000 is used for individual-study courses. You might study a topic that is not regularly taught in the department. If you are interested in enrolling in ChE 4000, contact a faculty member in your area of

interest and make the request. This should cover a range of topics similar to a conventional lecture course. Faculty are often eager to work with students in this way, but a faculty member is under no obligation to do so. These courses may be taken for a letter grade and used for technical elective credit only with permission of the department.

4.10.3 Research (ChE 4099)

ChE 4099 is an individual-study course similar, in some ways, to ChE 4000. The primary difference is in the scope of the material covered. ChE 4000 should cover a range of topics similar to a conventional lecture course. ChE 4099 is more limited in scope. This course allows you to study a research-specific problem in great detail. ChE 4099 is an integral part of both the [honors program](#) and [OURE](#), but any student may enroll in ChE 4099. Three credits of ChE 4099 may be used for technical elective credit. This course will appear with the title Undergraduate Research on the student's transcript, but the area of research will not be documented.

4.10.4 Special Topics (ChE 5001)

ChE 5001 is the designation used by the university for experimental courses. These are new courses in topics of interest to the faculty member teaching them. These are typically conventional lecture courses. After an experimental course has been taught once or twice, it will either be given a permanent course number or be dropped from the curriculum. Because these courses are developed by faculty based on their personal interests, they tend to be very engaging. You may repeat ChE 5001 as long as you do not repeat the topic. The subtitle (or topic) of the course will be listed on your transcript. These courses satisfy the technical elective requirement of our department.

5 Professional Societies

5.1 American Institute of Chemical Engineers (AIChE)

AIChE is the chemical engineering professional society. We bring in speakers from academia and industry to show you what chemical engineers do and help you get a job! Contact aiche@umsystem.edu to learn more.

5.2 Omega Chi Epsilon (ChE Honor Society)

The Society of Omega Chi Epsilon promotes scholarship, encourages original investigation in chemical engineering and recognizes the valuable traits of character, integrity, and leadership. Their faculty advisor is Dr. Wang (icwang@mst.edu). Membership is by invitation only.

5.3 American Chemical Society (ACS)

The American Chemical Society is the world's largest scientific society and includes a large variety of chemistry professionals and students. The Missouri S&T student chapter of ACS works to promote the advancement of Chemistry on the S&T campus and to provide valuable networking and educational resources to its members. The S&T student chapter was founded in 1960 and originally called the W. T. Schrenk Society after Dr. Walter T. Schrenk. For further information contact schrenk@umsystem.edu.

5.4 Alpha Chi Sigma (Chemistry Fraternity)

Alpha Chi Sigma is a professional chemistry fraternity devoted to promoting fellowship among those pursuing chemistry-related careers. Their chapter advisor is Dr. Douglas Ludlow (dludlow@mst.edu).

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5.5 Tau Beta Pi (Engineering Honor Society)

Tau Beta Pi is the nation's oldest and largest engineering honor society and is the only engineering honor society representing the entire engineering profession. Membership is by invitation only.

5.6 National Society of Black Engineers (NSBE)

The mission of NSBE is to increase the number of culturally responsible black engineers who excel academically, succeed professionally, and positively impact the community. Contact nsbe@mst.edu to learn more.

5.7 Society of Women Engineers (SWE)

The Society of Women Engineers is the world's largest advocate for women in engineering and technology. Both male and female students actively participate in the organization to be a positive force in the fight for equality. In addition to regular meetings on campus, Missouri S&T SWE members participate by taking the lead in community outreach, pre-college programs, fundraising, and regional and national conferences. Contact swe@umsystem.edu for more information.

5.8 Society of Hispanic Professional Engineers (SHPE)

SHPE is a professional society whose primary functions are to provide academic, professional, leadership, and chapter development as well as community outreach. SHPE provides opportunities to all students, regardless of race or degree program. Their mission: Change lives by empowering the Hispanic community to realize their fullest potential and impact the world through STEM awareness, access, support, and development. Their vision: A world where Hispanics are highly valued and influential as leading innovators, scientists, mathematicians, and engineers. Learn more by emailing shpe@umsystem.edu.

6 Additional Opportunities

6.1 Chem-E-Car team

Chem-E-Car is an SDELC Design Team that designs a "shoe box" size car that is powered by a chemical reaction that produces electricity and is stopped by a timed reaction that can be modified by a limiting reactant. The goal of the competition is to stop at a distance (15-30 m) that is randomly generated at the competition. While mostly Chemical Engineering and Chemistry majors work on the chemistry of the car, all majors are welcome. The faculty advisor is Dr. Christi Luks (luksc@mst.edu).

6.2 ChemE Cube team

ChemE Cube is the newest competition sponsored by AIChE. The student team will compete to design, build, and demonstrate the capabilities of a one-cub-foot modular plant. For 2021, the task is to purify at least 25 liters of surface water per day to drinking water standards. In addition to the demonstration, teams will produce a three-minute ad, a poster, and a 20-minute "shark tank" style pitch to a panel of mock investors/judges. The faculty contact is Dr. Joseph Smith (smithjose@mst.edu).

6.3 Engineers Without Borders

Engineers Without Borders at Missouri S&T has four teams that work on humanitarian projects in three different countries. Our current projects are in Bolivia, Ecuador, and Guatemala. The teams mainly work

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on providing clean water and sanitation to communities, but the Guatemala team is building a school. Dr. Luks (luks@mst.edu) mentors the Ecuador team. Contact them at cewb@umsystem.edu.

6.4 iGEM (International Genetically Engineered Machine)

Synthetic biology is the engineering of biological systems to create solutions to current problems in medicine, agriculture, environmental contamination, and more. iGEM is an international collaboration to create an open gene library of standardized biological parts for genetically modifying organisms. Teams from more than 26 countries meet annually in the fall at the Regional and World Jamborees to present research, discuss the progress of synthetic biology, network with other teams and, of course, compete. The Missouri S&T iGEM team is an interdisciplinary team that uses synthetic biology to help solve real world problems. Contact igem@mst.edu.

6.5 Student Advisory Council (SAC)

The SAC provides a voice for students in the department. This group is composed of representatives from the student organizations most closely affiliated with the department. The group consists of representatives from each class year. This group seeks input from all students and presents it to the department administration to ensure continuous improvement of the department. You may contact the Associate Department Chair, Dr. Christi Luks, luks@mst.edu with additional questions.

7 Financial Assistance

You may apply for a variety of financial aid. The student financial aid office will assist you in determining programs for which you may qualify and supply the appropriate application forms. You may wish to visit their website [Home – Student Financial Assistance | Missouri S&T \(mst.edu\)](#).

The department has many scholarships for undergraduate students. You are eligible for these once you officially enter the program. These scholarships are awarded at the recommendation of the department chair based on class rank, GPA, financial need, or other criteria set by the donor. A complete list is on the department webpage. If you are interested in more information on these or if you have an urgent need, please contact chemeng@mst.edu.

The Missouri S&T university scholarship portal can be found on [the Academic Works web page](#). The university uses the Academic Works scholarship program for most scholarships. Be sure to update your general profile before the start of the spring semester since most scholarships are awarded in early March. Once you have updated your profile, you can apply for other scholarships that may require more information than what is in the general profile. Most of these scholarships ask if you compete in a design team, have completed a co-op, or ask you to respond to a question. Please note, if you receive a scholarship, you are required to submit a thank you letter early in the semester you are receiving the assistance. If you fail to submit a thank you letter, the scholarship amount will be charged back to your account. The Financial Aid Office will email you at the start of the semester to tell you how and when to complete the thank you letters.

8 When Things Are Not Going Well

8.1 Problems with One Particular Course or Instructor

Do not hesitate to contact your instructor for the course to discuss your problems with the course.

Make sure enough time is allowed to study for the course. The rule of thumb for undergraduate courses is that approximately 2 to 3 hours a week is spent studying course material for every hour spent in class. A 3 credit-hour course should require 6 to 9 hours of study time outside of class each week during a regular semester.

If you believe an instructor is behaving in an unreasonable or unprofessional manner, contact the instructor's supervisor. If the instructor is a laboratory GTA, contact the faculty member responsible for that lab course. If the instructor is a faculty member, contact the ChBE Department Chair, Dr. Hu Yang (huyang@mst.edu).

Please make every attempt to resolve problems with the instructor before going to their supervisor. If the problems are significant or remain unresolved, it may still be necessary to contact the instructor's superior.

8.2 Problems in Several Courses

If you are having difficulty in several courses, contact your faculty advisor. Your advisor can discuss ways to lighten your academic load and how this will impact the time required to earn your degree. You should seek solutions for such problems early when there are more options available. Note the important deadline for the last day to drop a class on the registrar's calendar: [Office of the Registrar Calendars – Office of the Registrar | Missouri S&T \(mst.edu\)](#)

You may also wish to contact the Burns & McDonnell Student Success Center. This is a centralized location designed for students to visit to get information about campus resources available. The Student Success Center was developed as a campus-wide initiative to foster a sense of responsibility and self-directedness to all S&T students by providing peer mentors, caring staff, and approachable faculty and administrators who are student centered and supportive of student success. You may visit them in 198 Toomey Hall or email success@mst.edu or <http://studentsuccess.mst.edu>.

8.3 In Danger of Failing a Course

If you are in danger of failing a course, discuss the following options with your advisor and instructor:

- Reducing extracurricular activities
- Finding a tutor
- Attending LEAD (Learning Enhancement Across Disciplines) sessions for your course
- Dropping the course
- Dropping other courses to free up additional study time
- Changing to hearer status

The last three actions listed have significant restrictions and consequences associated with them. They may limit your options for courses in subsequent semesters and may delay your graduation. Thoroughly

review the appropriate sections of Sections 3 and 4 before selecting any of these options and discuss any plans with your advisor.

8.4 Scholastic Probation

If a student's semester GPA is below 2.00, the student is placed on scholastic probation. A NOTIFICATION OF SCHOLASTIC ACTION form will be mailed directly to the student indicating what action will be taken to continue enrollment. If placed on scholastic probation, the student should contact their faculty advisor and re-examine the student's schedule for the next semester.

In addition, a student on scholastic probation should review the university policies for being placed on and to be removed from probation. See the student academic regulations at [Academic Regulations – Office of the Registrar | Missouri S&T \(mst.edu\)](#). In general, students may not hold an office in any student organization and may not take more than 13 credit hours of classes (per semester in subsequent semesters?). It is important that students on probation make every attempt to raise their GPA in subsequent semesters. Students that do not take academic probation seriously often fail to graduate.

8.5 Scholastic Deficiency

If placed on academic probation a second time, the student is considered scholastically deficient. This is a very serious problem as the student is dropped from the ChE program. The student will have to apply to be readmitted into the program. There is no guarantee that this application will be accepted. A student who is scholastically deficient should contact their faculty advisor immediately to discuss options.

8.6 Withdrawing from School

A student who is unable to continue their studies needs to withdraw from school. Use the procedures stated in the student academic regulations. This is available online: [Academic Regulations – Office of the Registrar | Missouri S&T \(mst.edu\)](#)

Do not just walk away from school. The student will still be enrolled in the courses and will receive a grade of "F" unless officially withdrawing from school.

Permission Required: To withdraw from school, fill out a REQUEST TO WITHDRAW FROM SCHOOL form available from the registrar's office. Contact registrar@mst.edu for the form. The last date to withdraw from classes is 15 class days prior to the last day of class. Grades will not be recorded for any course not completed at the time of withdrawal.

The academic status will be the same as their status at the beginning of the semester in which they withdrew.

8.7 Personal Problems and Emergencies

Students who experience serious health or personal problems should contact the Associate Chair for Academic Affairs (Dr. Christi Luks, luksc@mst.edu) and the Vice Provost for Academic Affairs (Dr. Kathryn Northcut, northcut@mst.edu). Never simply walk away from school. Discuss the details of the situation and investigate all of the options before terminating studies.

8.8 ChBE Department Academic Integrity Policy

As a faculty, we believe that membership in the engineering profession requires the highest standard of honesty and ethical conduct. For this reason, we have established the following departmental guideline on academic honesty by students:

- **First Offense:** Cheating in a course will be punished by a grade of F for the corresponding work. The student will be notified in writing that a second incidence of cheating will result not only in an F grade in the course, but is cause for recommended expulsion from the department. In addition, a copy of this reprimand will be placed in the student's file at the department level. This letter will be destroyed upon graduation if no further infractions occur.
- **Second Offense:** A second incidence of academic misconduct is cause for recommended expulsion from the department. Students so expelled will be readmitted to the department only with a vote of two-thirds of the active full-time faculty.

These guidelines do not preclude further disciplinary action at the college, university, or UM System level.