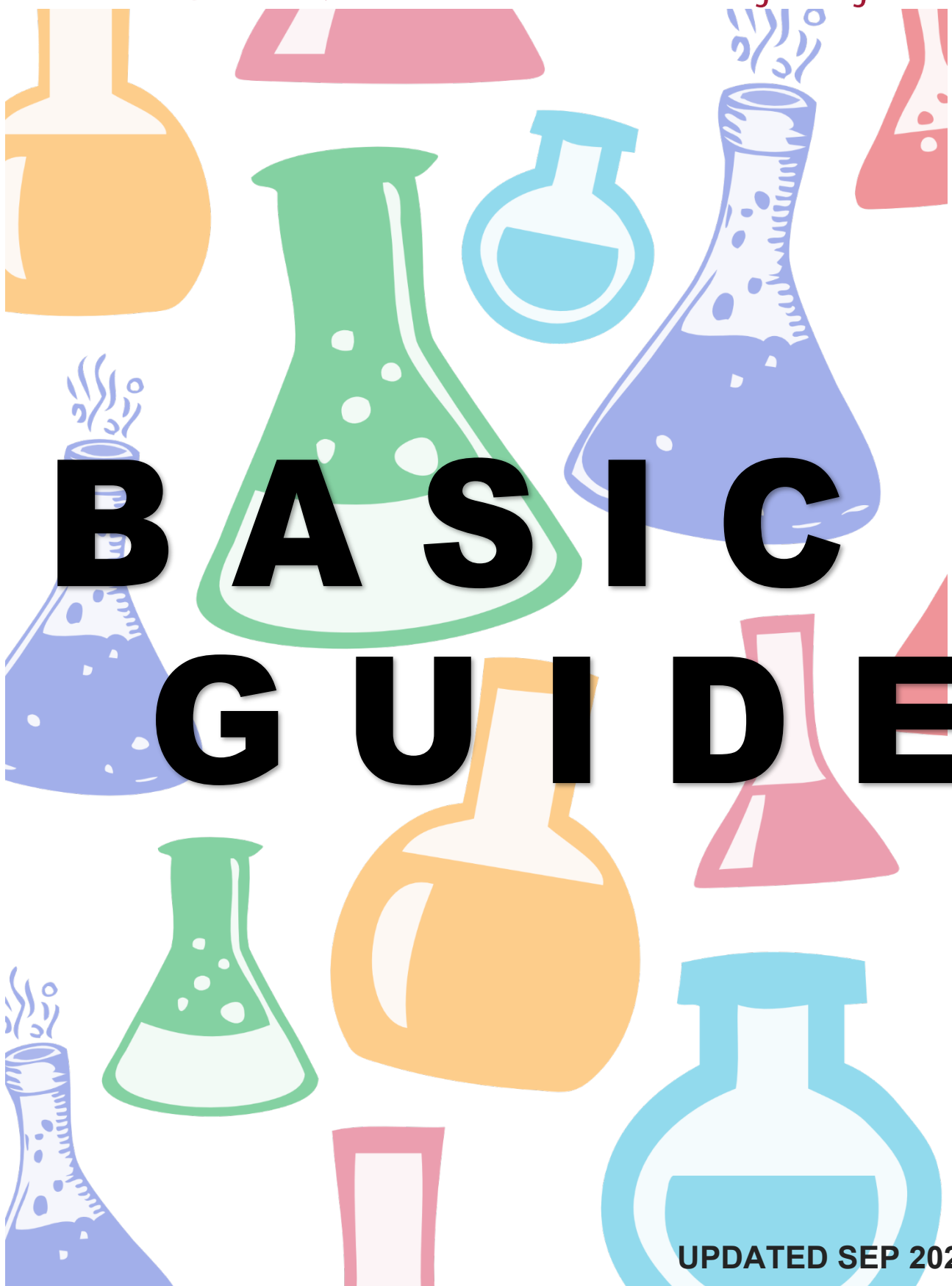




Department of
**Chemical & Biological
Engineering**

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Interim Department Head

Dr. Yuping Bao
Graduate Program Chair

Dr. Tibor Szilvási
Graduate Program Coordinator

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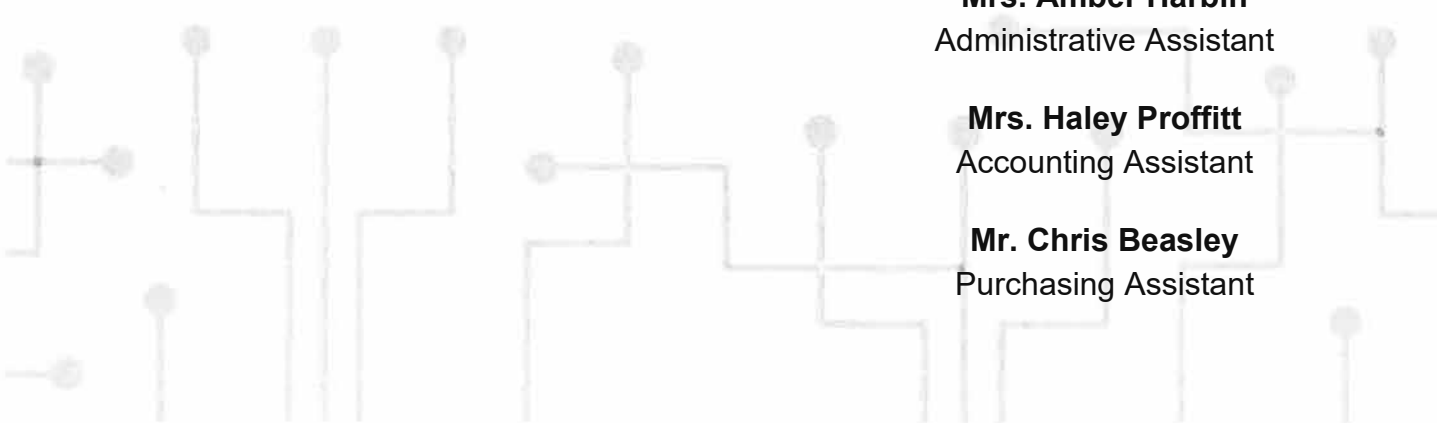
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ChBE Honors Coordinator &
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DEPARTMENT CURRICULUM FLOWCHARTS

The University of Alabama's Bachelor of Science in chemical engineering program is designed to be one of the most innovative engineering degree programs, allowing students maximum flexibility to select courses that will benefit them the most in support of their own career aspirations.

For the latest curriculum flowcharts, visit the department webpage at
<https://eng.ua.edu/majors/chemical-engineering-bsche/>

Note: The University of Alabama [Undergraduate Catalog](#) is home to the official curriculum and course information. This guide is provided to assist in curriculum planning and career preparation, but if there are any discrepancies, the UA Undergraduate Catalogue takes precedence. For further information on our programs, please visit [the College of Engineering section](#) of the catalog. **The College's [Academic Advising Center](#) can assist current students with curriculum information.**

GENERAL EDUCATION

The UA core curriculum describes the requirements that all students must complete prior to graduation. In Fall 2025, UA implemented the Built By Bama General Education core curriculum framework, which will apply to all students who begin studies in Fall 2025 and after. Students who began their studies prior to Fall 2025 will be under the previous core curriculum unless they update their catalog term to Fall 2025 or later. ChBE students complete more than the minimum number of required credit hours for courses with Natural Science, Mathematics, and Writing Intensive designations.

Students entering prior to Fall 2025		
General Education Requirements	Requirements Satisfied by	Req. Credit Hours
-	-	-
Written Composition	EN 101 (3) EN 102 (3)	6
Humanities (HU) Literature (L) Fine Arts (FA)	(HU/L/FA) 1XX/2XX/3XX	9
Computing (C) Foreign Language (FL)	CHE 255 (3) CHE 324 (3)	6
History (HI) Social & Behavior Sciences (SB)	(HI/SB) 1XX/2XX/3XX	9
Natural Science (N) Mathematics (MA)	CH 101 (4) CH 102 (4) CH 231 (3) CH 232 (3) CH 237 (2) BSC 114 (3) PH 105 (4) PH 106 (4) MA 125 (4) MA 126 (4) MA 227 (4) MA 238 (3)	12
Writing Intensive (W)	CHE 321 (2) CHE 322 (2) CHE 482 (3)	6
-	-	-
Total General Education Credit Hours		48

Students beginning in Fall 2025 or later		
General Education Requirements	Requirements Satisfied by	Req. Credit Hours
First Year Compass Course (FYCC)	UA 101 (1) ENGR 101 (1)	2
Written Composition	EN 103	3
Literature (L) only	(L) 1XX/2XX	3
Humanities (HU) Literature (L) Fine Arts (FA) World Languages (WL)	(HU/L/FA/WL) 1XX/2XX	6
History (HI) only	(HI) 1XX/2XX	3
History (HI) Social & Behavior Sciences (SB)	(HI/SB) 1XX/2XX	6
Natural Science (N)	CH 101 (4) CH 102 (4) CH 231 (3) CH 232 (3) CH 237 (2) BSC 114 (3) PH 105 (4) PH 106 (4)	8
Mathematical Science (MS)	MA 125 (4) MA 126 (4) MA 227 (4) MA 238 (3)	3
Advanced Writing (W)	CHE 321 (2) CHE 322 (2) CHE 482 (3)	3
U.S. & Global Citizenship (GC)	CHE 440 (3)	3
Total General Education Credit Hours		45

PROGRAM CURRICULUM

ChBE students progress through a standard Chemical Engineering curriculum (depicted below). Most of the Mathematics and Basic Sciences courses should be taken during the first two years, while the majority of the CHE courses should be taken during the final two years of the program. Requirements in representative subject areas are shown below, categorized by core curriculum year.

B.S. in Chemical Engineering					
Mathematics and Basic Sciences		Engineering Topics		Others	
AY 2019-2024	AY 2025-present	AY 2019-2024	AY 2025-present	AY 2019-2024	AY 2025-present
MATH 125 4 MATH 126 4 MATH 227 4 MATH 238 3	MATH 125 4 MATH 126 4 MATH 227 4 MATH 238 3	ENGR 103 3 CHE 125 1	ENGR 101 1 ENGR 104 3	EN 101 3 EN 102 3	EN 103 3 UA 101 1
BSC 114 3 CH 101 4 CH 102 4 CH 231 3 CH 232 3 CH 237 2 PH 105 4 PH 106 4	BSC 114 3 CH 101 4 CH 102 4 CH 231 3 CH 232 3 CH 237 2 PH 105 4 PH 106 4	CHE 254 4 CHE 255 4 CHE 304 3 CHE 305 3 CHE 306 3 CHE 321 2 CHE 322 2 CHE 324 3 CHE 354 3 CHE 440 3 CHE 481 3 CHE 482 3 CHE 493 3	CHE 254 4 CHE 255 4 CHE 304 3 CHE 305 3 CHE 306 3 CHE 321 2 CHE 322 2 CHE 324 3 CHE 354 3 CHE 440 3 CHE 481 3 CHE 482 3 CHE 493 3 CHE 414 3	History/Social Behavioral Sciences Electives 9 Humanities/Literature/Fine Arts Electives 9 Career Electives 6 TOTAL 30	History/Social Behavioral Sciences Electives 6 Literature 3 Humanities/Literature/Fine Arts/World Languages Electives 6 Career Electives 6 TOTAL 28
Advanced Science Elective 3 Biochemistry Elective 3	Advanced Science Elective 3 Biochemistry Elective 3	Chemical Engineering Elective 3 Engineering Elective 3	Chemical Engineering Elective 3 Engineering Elective 3		
TOTAL 48 Minimum 30	TOTAL 48 Minimum 30	TOTAL 49 Minimum 45	TOTAL 52 Minimum 45		
		AY 2019-2024 TOTAL 127	AY 2025-present TOTAL 128		

SAMPLE CURRICULUM

The schedule below describes the CHE standard curriculum for students starting in 2025 and after and matches the B.S. CHE Degree Standard flowchart. Students who follow this plan can graduate in four years. Participating in the Co-Op, STEM Path to the MBA, or other program may necessitate deviation from the plan below. The Flowcharts for various degree paths can be found on the ChBE website (<https://eng.ua.edu/majors/chemical-engineering-bsche/>).

Semester 1		
Course		Credits
CH 101	General Chemistry	4
MATH 125	Calculus I	4
ENGR 104	Fundamentals of Engineering	3
ENGR 101	The World of Engineering	1
EN 103	Adv. English Composition	3
UA 101	1 st Year Compass Course	1
Total		16

Semester 2		
Course		Credits
CH 102	General Chemistry	4
BSC 114	Principles of Biology I	3
PH 105	General Physics W/ Calc I	4
MATH 126	Calculus II	4
EL	HI/SB Elective course	3
Total		18

Semester 3		
Course		Credits
CH 231	Elem Organic Chemistry I	3
PH 106	General Physics W/ Calc II	4
MATH 227	Calculus III	4
CHE 254	CHE Calculations	4
Total		15

Semester 4		
Course		Credits
CH 232	Elem Organic Chem II	3
CH 237	Elem Organic Chem Lab	2
MATH 238	Applied Diff Equations I	3
CHE 255	CHE Thermodynamics	4
CHE 414	Computer Methods in CHE	3
Total		15

Semester 5		
Course		Credits
CHE 304	Fluid Flow Operations	3
CHE 306	Heat Transfer Operations	3
EL	Career Elective	3
EL	HU/L/FA/WL Elective	3
EL	Hi/SB Elective	3
Total		15

Semester 6		
Course		Credits
CHE 321	Basic CHE Lab	2
CHE 324	Transport Phenomena	3
CHE 354	Chemical Reactor Design	3
CHE 305	Separation Processes	3
EL	Career Elective	3
EL	HI/SB Elective	3
Total		17

Semester 7		
Course		Credits
CHE 322	Unit Operations Laboratory	2
CHE 481	Chemical Process Design I	3
CHE 493	Process Dynamics & Control	3
EL	CHE Elective	3
EL	ADV SCI Elective	3
EL	HU/L/FA/WL Elective	3
Total		17

Semester 8		
Course		Credits
CHE 440	Health & Safety	3
CHE 482	Chemical Process Design II	3
EL	Biochemistry Elective	3
EL	Career Elective	3
EL	HU/L/FA/WL	3
Total		15

ELECTIVES

There are six types of electives that must be completed towards your B.S. degree in Chemical Engineering.

- Advanced Science Elective (ADV SCI): 3 hrs
- Biochemistry Elective (BIOCHEM): 3 hrs
- Career Electives: 6 hrs
- Chemical Engineering Elective (CHE): 3 hrs
- Engineering Elective (ENG): 3 hrs
- History, Social & Behavioral Sciences (HI/SB; 9 hrs) and Humanities, Literature, Fine Arts, & World Languages (HU/L/FA/WL; 9 hrs) Electives

ChBE students must satisfy the 3 hours of ADV SCI, 3 hours of ENG, 3 hours BIOCHEM, **AND** 3 hours CHE electives. A course may be used as an elective if it appears on the approved list which is current at the time the course is taken. One course cannot count in more than one place on the curriculum flowchart.

Advanced Science Elective (ADV SCI; 3 hrs)

A number of 300, 400, and 500 level courses in BSC, CE, CH, CHE, GEO, MS, and PH courses can be taken as ADV SCI. Undergraduate Research hours may be acceptable if the research is in a technical subject and pending approval by the Undergraduate Program Director.

Biochemistry Elective (BIOCHEM; 3 hrs)

Students can select **CH 461** (Biochemistry I), **BSC 450** (Fundamentals of Biochemistry), or **CHE 445** (Biochemical Engineering). CH 231 (with a C- or better) is a pre-requisite for CHE 445.

Career Electives (CAREER; 6 hrs)

Students can choose 6 hours of classes to count as "career electives." These 6 hours can be directed toward a minor (ex., 2 math classes) or just something that you feel will help you in your career (ex., a foreign language, communication, finance, marketing, additional CHE classes, etc.). For students pursuing a pre-med option, a common way to achieve the 6 career elective hours is to combine BSC 115 (1 hour), BSC 116 (3 hours), BSC 117 (1 hour), plus one other hour of class (AS 299 is recommended).

If you wish to count a class not on the career electives list, fill out the [ChBE Career Electives Approval Form](#). The ChBE Curriculum Committee will review requests to add a course to the list. Students should write one paragraph explaining how the career electives will help their career, attach a recent syllabus from the class and have the form signed by their COE advisor. Students generally select career electives in their junior year, although these classes can be taken at any time. You may change your selections while working on your CHE degree.

Chemical Engineering Elective (CHE; 3 hrs)

Any non-required CHE course can be used for this elective. These include CHE 412/413, 414/415, 416/417, 418/419, 445/446, or independent study courses: 491, 492, 498, or 499. CHE 325 honors forum can also be used, but only counts for one hour each time it is taken.

*** A **MAXIMUM of 6 hours** of independent study (non-lecture, including research-based) classes can be used in the electives slots for Career Electives, Advanced Science Elective, and Chemical Engineering Elective.***

Engineering Elective (ENG; 3 hrs)

Students may select AEM 201, MTE 271, or ECE 320 to count for the engineering elective.

HI/SB (9 hrs) and HU/L/FA/WL (9 hrs)

All engineering students must complete:

- 9 hours of History, Social & Behavioral Sciences (HI/SB) electives, and
- 9 hours of Humanities, Literature, Fine Arts, and World Languages (HU/L/FA/WL) electives

Pre-2025 Curriculum: Of these 18 hours, 6 must be a depth sequence; i.e. two courses in the same subject (e.g., EC 110-EC 111), and of the same HI/SB or HU/L/FA/WL designation.

New Curriculum:

- Of the 9 hours of HI/SB electives, at least 3 must be from a course approved for the History designation.
- Of the 9 HU/L/FA/WL electives, at least 3 must be from a course approved for the Literature designation.
- The World Language Proficiency requirement may be met prior to enrolling at UA by completing two years of world language in high school, but this would not count toward the 9 required hours. Students may fulfill the WL requirement after admission by completing a two-semester sequence of introductory language courses in a single world language.

Visit **DegreeWorks** or
<http://registrar.ua.edu/academics/core-curriculum>
for a list of courses for each of these categories.

Note: If you take a class that can fit into more than one elective slot, DegreeWorks will place it in one of the empty slots, and when you take additional electives, DegreeWorks will shift the classes so hours are optimized towards the degree.

Biological Engineering Concentration

The Biological Engineering Concentration is designed to allow chemical engineering majors to focus their elective courses on biochemical and biological engineering-related topics. The Concentration is designed to fit into the main Chemical Engineering curriculum by using elective courses and does not add additional course requirements for graduation.

To complete the Biological Engineering Concentration, students must complete a minimum of 15 credit hours (3 biochemistry credit hours plus 12 elective credit hours) from the approved course list below.

Required (Must complete one of the following courses)		Hours
CHE 445 or	Introduction to Biochemical Engineering	3
CHE 446	Honors Introduction to Biochemical Engineering	
CH 461	Biochemistry I	3
BSC 450	Fundamentals of Biochemistry	3

If a student selects CH 461 or BSC 450 for the biochemistry requirement, they cannot count the other course, but may count CHE 445/446 as an elective course.

Electives (Must complete 12 hours from the list below)		Hours
CHE 418 or	Tissue Engineering	3
CHE 419	Honors Tissue Engineering	
CHE 416 or	Stem Cell Engineering	3
CHE 417	Honors Stem Cell Engineering	
CHE 492	Special Topics (Microbial Engineering)	3
CHE 492	Special Topics (Cancer Bioengineering)	3
CHE 492	Special Topics (Bioseparations)	3
BSC 300	Cell Biology	3
BSC 310	Microbiology	3
BSC 312	Microbiology Lab	2
BSC 315	Genetics	3
BSC 385	Ecology and Evolution	3
BSC 424	Human Physiology	3
BSC 425	Human Physiology Lab	2
BSC 435	Immunology	4
BSC 441	Developmental Biology	3
BSC 442	Integrated Genomics	4
BSC 444	General Virology	3
BSC 449	Endocrinology	3
BSC 451	Molecular Biology	3
BSC 465	Principles of Toxicology	3
BSC 496	Bioremediation	3
CHS 425	Biostatistics	3
PH 411	Biophysics	3

For latest information, visit <https://che.eng.ua.edu/undergraduate/biological-engineering-concentration/>.

ADVISING FAQs

1. TRANSFER CREDITS (TAKING CLASSES OFF CAMPUS) and ADVANCED PLACEMENT (AP) CREDITS

You can take classes away from UA: junior colleges and other university classes will often transfer to UA and count towards your major. Check with the Office of Academic Records to make sure the classes will transfer before enrolling. You can check UA's course equivalency tables on <http://registrar.ua.edu/core-curriculum>. If taking a CHE class away from UA, check with your Academic Advisor to determine if the class will transfer. For study-abroad CHE courses (not led by UA faculty), you will need to check with Capstone International or with the ChBE International Programs Coordinator about transfer credit. Organic Chemistry can be a little tricky, though. UA offers the organic chemistry sequence as CH 231 (3 hours lecture), CH 232 (3 hours lecture), and CH 237 (2 hours lab). Many other colleges and universities offer the sequence as two 4-hour classes, where the lab is included with the class. So, it is advisable to either take ALL organic chemistry at UA, or all of it off-campus. Consult the undergraduate catalog for further information about transfer credits. Also, it is important to note that writing credit from a (W)-designated course **cannot** be transferred to UA. The required minimum hours of (W) course credit must all be earned from UA-instructed courses.

A maximum of 12 hours of upper division courses (300/400 level) in the CHE major, as shown in the Major requirements block of the DegreeWorks audit, can be transferred. Senior design course(s) must be taken at UA and cannot be transferred from another institution.

AP credits are accepted for college credit, commensurate with UA guidelines. Common courses in the CHE curriculum where AP credits can be applied include Math, Chemistry, English, Biology and Physics, as well as History and Foreign Languages. For pre-med students, see the section on the Pre-Med track below for advice on AP Biology credit. For physics, only AP Physics C test scores can be used to replace calculus-based physics (PH 105 and 106). PH 101 and PH 102 are not calculus-based and cannot be used to meet CHE curriculum requirements.

2. MINORS and the DUAL CHEMISTRY/CHE PROGRAM

Minors are available to Chemical Engineering majors as described in the undergraduate catalog. The department offering the minor sets the rules for the minor, so questions should be directed to that department. Some common minors that ChBE students obtain include (see the undergraduate catalog for minor requirements):

- **Math** (6 additional hours: two- 300 or 400 level MATH courses)
- **Chemistry** (8 additional hours): CH 223 (Analytical Chem + lab) and physical chem and lab
- **Biology** (22 hours; BSC classes taken towards the CHE degree are counted toward the minor; CHE 445/446 and CH 461 are both usually considered "biology courses" and count towards the minor)
- **Business** (22 total business hours) (several classes can be taken as HI/SB or Career Electives to reduce the total number of additional hours needed above those on the CHE flowchart)
- **Environmental Engineering** (23 hours required; administered through Civil, Construction, and Environmental Engineering)

In most cases, the electives in the CHE curriculum can be used to complete some of the requirements for minors. Consult the undergraduate catalog (under the section for the department offering the minor) for further information.

A special program has been developed to combine chemistry and chemical engineering that is more advanced than a minor, yet less comprehensive than a double major. The Dual CH/CHE program allows students to earn a single diploma from UA that indicates earning a B.S. degree in Chemical Engineering with majors in chemical engineering and chemistry. See the ChBE website (<http://che.eng.ua.edu>) for a flowchart or the undergraduate catalog for more information about the DUAL program.

3. CAREER PATHS

The Chemical Engineering curriculum is designed to prepare students for careers in process engineering, product development, process optimization, or engineering design. With the many electives in the curriculum (Biochem-3 hrs, CHE-3 hrs, Engineering-3 hrs, Advanced Science-3 hrs, Career Electives-6 hrs, and HI/SB and HU/L/FA-18 hrs), students may pursue numerous career paths.

Pre-Med (Medical School, Dental, Optometry) Track

The CHE curriculum offers slots for all of the required classes to enter medical or dental school. Beyond the required courses, pre-med students must take BSC 115, 116, and 117 (or honors equivalents BSC 118/120). Most medical schools require 2 semesters each of: biology with lab, general chemistry and lab, organic chemistry and lab, calculus, English, and physics. Most dental schools also require 12 hours of biology classes. Additional advanced biology courses may help prepare students for the MCAT or DAT and the rigors of medical or dental school, 3 hours-of which may fit into the Advanced Science elective slot. The 5 hours of 115-117 (beyond the CHE requirement of BSC 114) can count towards the 6 hours of career electives. Students interested in pre-med should consult the UA's **Health Professions Office** in 200 Clark Hall early in their college careers. Programs offered by UA ChBE, BMES, or AED may help with preparing for medical/dental school. Classes such as BSC 300, 310, 315 and 450, CH 461, and CHE 418 and 445 should be considered in the junior year. AS 299 is recommended as well. Recent changes to medical school applications and the MCAT dictate that students consider taking biochemistry as well as psychology/sociology classes (which can be part of the core HI/SB electives). Students will generally want to prepare for the MCAT or DAT at the end of their junior year at UA, while filling out applications in the summer prior to their senior year. Medical and dental schools start in the fall semester only. For those interested in medical research, PhD or MD/PhD programs offer a career option that leads to medical R&D as opposed to clinical or hospital practice.

**** Note:** AP credits can be used for many classes at UA and will count toward your B.S. degree in chemical engineering (although the grade will not be included in your UA GPA). HOWEVER, for students planning to apply to a medical school, most medical schools require the following classes be taken ON CAMPUS (i.e., not AP credit): 2 semesters of biology (plus labs); 2 semesters of chemistry (plus labs); 8 hours of organic chemistry (including the lab). One way to do this is take the classes required in the CHE curriculum, plus BSC 115, 116, & 117. An alternative would be to use AP credit for some of these but take higher-level CH or BSC classes with labs to satisfy these requirements.

Pre-Pharmacy Track

See above for pre-med and contact a health professions advisor to learn more about the requirements for entering a graduate pharmacy program (entrance requirements vary widely).

Pre-Law Track

Some engineers decide to pursue law degrees, often practicing patent, corporate, or environmental law. Some Career Electives can be used to prepare for the LSAT and law school. Consult a pre-law advisor (200 Clark Hall) or the undergraduate catalog for information about preparing for a career in legal

studies. AS 299 is recommended.

Business and Management Track (including MBA)

With the electives available in the curriculum, students that wish to prepare for entering an MBA program may want to consider a minor in Business to complement their engineering degree. Courses in economics, finance, management, and accounting will be useful in preparing for a career in business management. Several of these classes can be used for HI/SB or Career Electives. The STEM-MBA path is popular among engineering students at UA (see <https://manderson.culverhouse.ua.edu/programs/mba-programs/stem-path-to-the-mba/> for more information).

Traditional Engineering (FE) Track

Electrical engineering, materials engineering, and statics and dynamics can complement your CHE degree and prepare you for work in a traditional engineering job, where you will interact with engineers with different backgrounds. These classes can also be helpful in passing the Fundamentals of Engineering (FE) exam in your senior year. While this exam is not required for obtaining a degree in the Chemical and Biological Engineering program, it is required if you want to eventually be licensed as a professional engineer (a second exam, the Professional Engineer (PE) exam, is required after several years of work experience beyond the BS degree). The FE and PE are generally most important to those who seek careers in consulting or government positions.

Biological Engineering Concentration

Students interested in biotechnology-related careers should consider the Biological Engineering Concentration, which will be listed on their academic transcript. Students must be chemical engineering majors and must complete a minimum of 15 credit hours in biochemistry- or biology-related topics (see list to follow). To satisfy the biochemistry requirement, students must take 3 hours of CHE 445/446, CH 461, or BSC 450. The student must complete an additional 12 hours from the following list: CHE 418/419, CHE 416/417, CHE 492 (Microbial Engineering), CHE 492 (Cancer Bioengineering), CHE 492 (Bioseparations), BSC 300, 310, 312, 315, 385, 424, 425, 435, 441, 442, 444, 449, 451, 165, 496, CHS 425, or PH 411. If a student selects CH 461 or BSC 450 for the biochemistry requirement, they cannot count the other course, but may count CHE 445/446 as an elective course.

Research and Development Track/Engineering Graduate School

A graduate degree is the springboard to a career in R&D. While some may enter industrial R&D with a B.S. degree, research is the main theme of a graduate education in chemical and biological engineering and other engineering fields. To prepare for graduate school, consider opportunities working in research labs at UA. Many faculty in ChBE, as well as other related departments (such as Chemistry, Biology, Metallurgical and Materials Engineering, Mechanical Engineering, Physics, etc.), have openings for undergraduate researchers. The research can be done for credit (using CHE 491 or 498, or equivalent courses in other disciplines), as a part-time job, or as part of a fellowship. Up to 6 hours of CHE 491/498 can be applied toward graduation. Talk with professors or the ChBE Undergraduate Research Coordinator to find out about opportunities. REU (Research Experiences for Undergraduates) programs sponsored by the National Science Foundation (NSF) are available during the summer at a number of universities across the US. There are many advertisements that usually come out around January each year, or check <https://www.nsf.gov/crssprgm/reu/> and look for REU programs. Advanced math courses beyond differential equations are also helpful in preparing for graduate-level classes. In most cases, students will be required to take the GRE (Graduate Record Exam) during their senior year while applying to graduate school. Unlike other advanced degree programs (law, medicine, business), attending graduate school in chemical and biological engineering (or related fields) will usually include a tuition waiver as well as a monthly stipend to cover living expenses while earning an MS or PhD. Some CHE graduate programs will allow students to start in the spring or summer, though most programs begin with a new class of graduate students in the fall semester. You may also opt to switch majors when entering

graduate school- many students earn a BS degree in chemical engineering before entering a biomedical engineering graduate program. Check with the graduate program of schools you wish to apply to on requirements for acceptance. For additional guidance about graduate school, talk to your research mentor or the ChBE Graduate Program Director.

4. CO-OPERATIVE EDUCATION AND INTERNSHIPS

There are opportunities for students to gain valuable industrial or other work experience by participating as a co-op or intern student. Both programs are strong assets to career development and successful job placement upon graduation. In some cases, University credits can be earned through honors special problems courses in conjunction with advanced work projects (see the ChBE Honors Program Coordinator for more information).

Co-operative Education Program

The Cooperative Education program is an alternating study/work program that can begin as early as the summer following your freshman year. Three work periods are generally expected, with the student following an alternating schedule of work/school/work/school, etc. over the spring, summer, and fall semesters. Three work periods generally add one year to the time required to complete the B.S. degree, but the salaries can be used to help with tuition costs, and the experience gained is a strong addition to your resume and is helpful in finding full-time employment upon graduation. The UA Co-Op office coordinates interviews for Co-Op positions. See <https://coop.sa.ua.edu/> for more information on the Co-Op program.

Internships

Internships usually involve summer work programs that are arranged by the student with targeted companies. Check with the Engineering Career Development Center (<https://coop.sa.ua.edu/>) in 2004 HM Comer for more information about open positions. REU programs offer an alternative for internships for students interested in pursuing research-related careers. See the Research Track/Graduate School section for info on REUs.

ChBE Honors Co-Op/Internship Course

Honors students may earn course credit for work completed through a Co-Op, Internship, or REU by registering for CHE 497. As part of the course, students will be required to present their work to a freshman- or sophomore-level CHE course. Students must submit the ChBE Honors Co-Op/Internship/REU Approval Form (<https://che.eng.ua.edu/wp-content/uploads/sites/7/2021/11/ChBE-Honors-co-op-and-internship-approval-form-rev-07-21-acc.pdf>) before the Co-Op/Internship/REU period ends and receive approval by the ChBE Honors Program Chair prior to registering for the course. The CHE 497 course should be taken in the semester following completion of the Co-Op/Internship.

5. TEACHING ASSISTANTS

The ChBE Department allows students to serve as Teaching Assistants for (TAs) course credit. This is a unique educational opportunity, especially for students who are interested in graduate or other professional school after graduation. Tasks for the student TAs can include assistance with grading homework, exams, and quizzes, offering office hours or recitation times to work out problems, and assistance in-class with tests, projects, etc. Student TAs should be willing to commit 6-8 hours per week. An email with a link to apply as a TA for the following semester will be sent to students around one month before registration. To be considered as a TA, students must have junior standing when applying, have previously passed the course with a grade of B+ or higher, and have a minimum overall GPA of 3.3. TAs earn 3 credit hours of credit via CHE 499, which can be applied as a CHE or CAREER elective.

6. PROFESSIONAL STUDENT ORGANIZATIONS

Within the ChBE department, the **AICHE (American Institute for Chemical Engineers)** student chapter hosts industrial speakers, fields intramural sports teams, offers department tours (E-Day), and organizes regular meetings and plant trips, among other activities. AIChE is a great way to find out what chemical engineers do after graduation, network with your peers in the major, and build your resume. The Chem-E-Car team focuses on development of a small car that runs on a chemical reaction with competition between AIChE student chapters at other universities.

Omega Chi Epsilon is the national honor society for chemical engineering. Eligible students are invited to join in their junior or senior year, with membership based on academics.

Other engineering and science-related organizations that can help with career planning include:

- Ambassadors to the College of Engineering (ACEs)
- Biomedical Engineering Society (BMES)
- National Society of Black Engineers (NSBE)
- Society of Hispanic Professional Engineers (SHPE)
- Society of Asian Scientists and Engineers (SASE)
- Pre-Health Advising Office (located in 200 Clark Hall)
- Pre-Law Advising Office (located in 200 Clark Hall)
- Pre-Med (Alpha Epsilon Delta, AED)
- Society of Women Engineers (SWE)
- Student Engineers in Action (SEA)
- Tau Beta Pi (Engineering Honor Society)
- Theta Tau Co-ed Professional Engineering Fraternity
- Tri-Beta Biology

7. PROGRAMS

Honors Programs

The University Honors Program (UHP), International Honors Program, and Randall Research Scholars Program (RRSP; formally called Computer-Based Honors Program) are administered by the Honors College (<https://honors.ua.edu/>), located in Honors Hall.

ChBE Honors

<http://che.eng.ua.edu/undergraduate/honors-program/> (Contact: ChBE Honors Coordinator)

The ChBE department offers an undergraduate honors program for students who seek to be challenged by both independent and team projects and receive additional distinction with their undergraduate degrees. This individually tailored program culminates with the awarding of an Honors Certificate and recognition at the Honors Day Ceremony in the student's senior year. The requirements to graduate with ChBE honors are:

- maintain overall UA GPA of 3.3
- complete at least one 1-hour ChBE honors forum class (CHE 325)
- complete at least one 3-hour experiential (hands-on) course (Co-Op, Internship, Independent research or design)
- complete a minimum of 6 hours of CHE honors courses (including any 300-level or higher course as honors by contract); this can include honors forum hours or research hours in chemical engineering
- complete an additional 6 hours of honors courses in the chemical engineering curriculum (CHE, CH, BSC, MA, PH, EN, HI/SB, etc.)
- complete an additional 6 hours of any honors courses at UA (even if not on the CHE flowchart)

Students must complete a total of 18 hours of UA honors credits (minimum).

CHE honors classes include: 325 honors forum, 413, 419, 441, 446, 497, 498, and 499. They require a 3.3 GPA and honors standing to enroll.

Accelerated Masters Program (B.S./M.S.) / Ph.D. Scholars Program (B.S./Ph.D.)

<http://che.eng.ua.edu/undergraduate/accelerated-masters/> (Contact: ChBE Graduate Program Chair)

Eligible undergraduate students can elect one of two advanced Scholars programs: one earns both the B.S. and M.S. CHE degrees in five years, while the B.S./Ph.D. Scholars Program allows undergraduates to begin work on their Ph.D. degree in their senior year. The Ph.D. Scholars program started in 2015 and is the first of its kind at UA. Both programs allow students to count up to 12 credit hours toward both the B.S. and graduate degree, reducing the course load needed to complete the graduate degree. A plan of study should be developed with the help of an advisor. The stipends associated with graduate school generally don't apply for the B.S./M.S. Scholars program, as the stipends are given to students pursuing a thesis- or dissertation-based (research-based) graduate degree. The B.S./Ph.D. Scholars program involves hands-on research with a professor/advisor and students in this program are eligible for receiving fellowships and stipends once they begin graduate courses full-time. For more information, see the undergraduate catalog, or consult the ChBE Graduate Program Director.

8. MY DEGREE IS IN CHEMICAL ENGINEERING, BUT THE DEPARTMENT IS CHEMICAL AND BIOLOGICAL ENGINEERING. WHY?

The Alabama Commission on Higher Education has approved the degree plan and regulates our offering an official degree in chemical engineering. The department's official name includes biological engineering and reflects the importance of biology and the life sciences for all students.

9. I WANT TO STUDY BIOMEDICAL ENGINEERING. WHAT SHOULD I CHOOSE AT UA?

UA does not offer a B.S. degree in biomedical engineering (BME), but we do offer a **concentration** in Biological Engineering (see p.7) and a M.S. in BME (starting Fall 2026). Most universities offering BME degrees are located alongside major medical schools, such as at the University of Alabama at Birmingham (UAB). If your career goal is to work as a biomedical engineer, be prepared to continue studies toward a Ph.D. in biomedical engineering as there are fewer job opportunities at the B.S. level for biomedical engineering than most traditional engineering disciplines. BME programs usually have three areas where research is conducted, all coming out of traditional engineering disciplines: mechanical engineering (for prostheses and devices to aid with movement or structure), electrical engineering (for medical equipment, imaging, signaling/biosensing) and chemical engineering (for materials used in tissue engineering, wound healing, or drug delivery). At UA, you can select one of these areas to earn a B.S. degree, then apply to a BME program (including at UA) to continue graduate study. It is common for students to shift majors from B.S. to M.S. or Ph.D., although you may need to take an additional class or two at the beginning of graduate school to cover the breadth of classes needed for a BME program. The ChBE department at UA offers four degrees: B.S., M.S. and Ph.D. in chemical engineering and M.S. in Biomedical Engineering.

10. COMPUTER SPECIFICATIONS

Using computers and advanced software is essential to a chemical engineering education. Beginning fall 2020 and beyond, laptops are required for all undergraduate students in the College of Engineering. Recommended computing and software requirements are listed on the <https://ites.eng.ua.edu/laptop> website. To be compatible with software programs used in upper-level chemical engineering courses,

PC-based computers are strongly preferred over Macintosh/Apple computers.

11. DEGREEWORKS <https://degreeworks.ua.edu>

Students should monitor their progress to degree using DegreeWorks, accessed through mybama.ua.edu. The courses listed on DegreeWorks will match those required for the B.S. degree in Chemical Engineering in the undergraduate catalog in effect when you first took a class at UA. This is a useful tool for advising, but **please consult the CHE flowchart(s)** in addition to DegreeWorks to make sure that pre-requisite courses are taken in a timely fashion.

Q. I took CHE 445/446 to fill in the BIOCHEM elective class in the CHE flowchart, but on DegreeWorks it shows up as a CHE Elective. Does that mean that I need to take CH 461 to finish the BIOCHEM elective?

A. No. CHE 445/446 can fill into three different slots in the CHE curriculum (CHE Elective, BIOCHEM elective, or ADV SCI elective). You can use it in any of these slots, but after you complete the class DegreeWorks will slot it into one of these places, nearly randomly. If you later take a class that will count for the CHE elective, then CHE 445/446 will automatically be bumped to the BIOCHEM or ADV SCI slot. Similar situations occur with DegreeWorks and will resolve themselves once all the electives are taken. Check with your advisor if unsure.

12. PRE-REQUISITES, CO-REQUISITES and the C- RULE

There are numerous classes that are pre-requisites for other classes. All courses that serve as pre-requisites to courses, required in the CHE curriculum must be completed with a grade of C- or higher before you are allowed to enroll in the next class in the sequence. On the CHE flowcharts, pre-requisites are noted by solid arrows. Co-requisite classes are indicated by dashed arrows on the flowchart. A dashed arrow indicates that the class where the arrow points can only be taken if the preceding (co-requisite) class has already been completed or is enrolled during the same semester.

13. STUDY ABROAD (Contact: International Program Coordinator)

Studying abroad is a great way to enhance your degree. There are many programs that involve humanities or histories. Occasionally, there are engineering-related international programs that are available, including CHE 323 summer lab experiences in **Denmark** and other lecture courses in **Europe** (locations vary by year). To find out more about study abroad, visit the Capstone International offices in BB Comer Hall or contact the department's International Program coordinator. Check with your advisor to determine which engineering credits will transfer to UA. For international courses not led by UA faculty, it is important to investigate the course transfer issues well in advance. For answers to frequently asked questions about the international program offered by ChBE, visit <https://students.eng.ua.edu/chemical-engineering-international-courses-faq/>.

14. DEGREE ACCREDITATION (ABET)

ABET is the Accrediting Board for Engineering and Technology and certifies engineering programs at universities in the USA. This certification ensures that our program meets rigorous education goals. The accreditation process involves periodic independent reviews of our curriculum and departmental objectives. The University of Alabama's chemical engineering degree is fully accredited by ABET.

15. FLOWCHARTS & SEMESTERS TO GRADUATE

The flowcharts are designed as suggested paths to complete the CHE curriculum. They do not have to be followed exactly, but pre-requisites should be noted when selecting classes. As long as the prerequisites are met, many student schedules can be adjusted to complete the program in 8 semesters, although it is not uncommon for students to take additional time to earn the B.S. degree, particularly if the student participates in co-op programs.

16. WRITING (W) COURSE REQUIREMENTS

Six semester hours (pre-2025 curriculum) or three semester hours (new curriculum) in 300- and 400-level courses, preferably in the student's major, approved for the writing (W) designation are required in the College of Engineering in order to graduate. The (W) designation indicates that one of the conditions for a passing grade is that students write coherent, logical, and carefully edited prose in a minimum of two papers, at least one of which will be graded and returned before mid-semester. All (W) designated courses are taught and graded by instructors who have at least a master's degree and are limited to an enrollment of no more than 35 students. **The (W) requirement must be satisfied with a UA faculty-led course (i.e., NOT a transfer course).**

17. U.S. & Global Citizenship

The U.S. & Global Citizenship requirement is for students on the new General Education curriculum. Three semester hours in a 300- or 400-level course, preferably in the student's major, approved for the U.S. and Global Citizenship designation are required in order to graduate. **The requirement must be satisfied with a UA faculty-led course (i.e., NOT a transfer course).**

STUDENT ORGANIZATIONS AND FACULTY ADVISORS

AIChE (American Institute of Chemical Engineers) & AIChE's Chem-E-Car Team

Dr. Steve Ritchie sritchie@eng.ua.edu

Dr. Stephanie Loveland stephanie.loveland@ua.edu

Dr. James Sheehan jdsheehan@ua.edu

<http://aiche.eng.ua.edu/>

Omega Chi Epsilon (Chemical Engineering Honor Society)

Dr. Shreyas Rao srao3@eng.ua.edu

Electrochemical Society

Dr. Qiang Huang ghuang@eng.ua.edu

International Genetically Engineered Machines (iGEM)

Dr. Ryan Summers rsummers@eng.ua.edu

National Society of Black Engineers

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Society of Hispanic Professional Engineers (SHPE)

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Society of Asian Scientists and Engineers (SASE)

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Student Engineers in Action

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<http://sea.ua.edu/>

Society of Women Engineers

Dr. Beth Todd btodd@eng.ua.edu

Theta Tau, Professional Engineering Fraternity

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Alpha Epsilon Delta, Pre-Health Professions Society

Marian Denham marian.denham@ua.edu

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