How to use the map
This map is designed to give you information about your chosen major that will help keep you on track for graduation within 4 years. The introductory sections will help orient you to the “big picture” ideas like the topics and areas of interest inside your major, the kinds of courses you will take, university policies including admissions, and other general topics. The chart on the second page will help you to develop a productive plan to make the most of your 4 years at East Carolina University and prepare yourself for the job market after graduation.

Remember, it is important that you diversify your experiences, both for success in your degree program and for success outside of school. While coursework is important, it should not be your only focus. This chart below will show you how to incorporate other kinds of experiences that will expand your knowledge of your chosen field and make you a more desirable job candidate.

The map is only a guideline. Remember to speak with your advisor often to learn about new opportunities, clarify concerns, and develop a plan that is right for you.

WHAT CAN I LEARN?
Pursuing a major in the Department of Chemistry at ECU will challenge you to solve problems related to technology, medicine, food and drug safety, the environment, and beyond. Our coursework builds on general and organic chemistry to prepare you to answer a variety of questions in your career, such as:

- What part of this medicine is effective? How is it metabolized in the body?
- How will the ecosystem repair itself after exposure to this chemical?
- Are there traces of this illicit compound present in this sample?
- Can we design a molecule to transport this drug to treat this disease?

Our department provides hands-on experience with methods and techniques used in industry, healthcare, forensics, and many other fields. Advanced laboratory and undergraduate research experiences help you problem-solve and think outside the box. All degrees offered in the Department of Chemistry provide strong math and science foundations and are excellent preparation for employment, professional (medical, dental, pharmacy) school, or graduate school in the sciences.

Questions?
East Carolina University offers an array of support to help you grow and learn from your first day of orientation until your graduation. New Student Orientation, Pirate to Pirate Mentoring, the University Writing Center, and the Career Center are only a few of the services and centers available to assist you throughout your time on campus.

ABOUT THE MAJOR
Chemistry is the central science. Its impact can be easily seen across our world through all human experiences. Everything you hear, see, smell, taste and touch involves chemistry and chemicals. A degree in chemistry maximizes the opportunity to explore and change your world. The guiding principles of chemistry are the basis for much of Pharmaceutical Science, Environmental Science, Forensics, Biochemistry, and beyond. Chemists are leaders, collaborators, inventors, and game changers, and our professors are experts in their field who will mentor you in a caring, encouraging environment.

There are five main areas of Chemistry:
- Analytical Chemistry focuses on the measurement of the amount and composition of materials. Most analytical chemists develop and use instrumental tools for their chemical analyses.
- Biological Chemistry can be thought of as the study of the chemistry of life. This discipline applies the concepts and tools of chemistry to the investigation of the structure and properties of molecules found in living organisms.
- Inorganic Chemistry involves the study of non-hydrocarbon molecules. A quick glance at the periodic table reveals that this encompasses a wide variety of species. Despite the inorganic label, inorganic chemistry can involve the study of organic molecule transformations at metal centers - processes that are at the heart of enzyme reactions and catalysis.
- Organic Chemistry involves the study of carbon-based molecules. Organic chemists are interested in making novel and interesting compounds, as well as understanding the structures and functions of these molecules.
- Physical chemistry focuses on the study of chemical systems and processes. Physical chemists incorporate the principles of thermodynamics, kinetics, and quantum theory into their experimental approaches.

DEGREE OPTIONS
You may choose to pursue a Bachelor of Science (BS) or Bachelor of Arts (BA) degree in Chemistry, or a BS degree in Biochemistry with a Chemistry concentration. The BS degree in Chemistry offers in-depth coverage of all major areas of chemistry, and is certified by the American Chemical Society. The BA degree in chemistry provides excellent grounding in chemistry principles, including specially focused 3000-level coursework. The Chemistry concentration in the BS Biochemistry degree is rooted in structural biochemistry and emphasizes the dynamics of biochemically important systems.
## Chemistry MAJOR MAP

### DEGREE INFORMATION

#### FIRST YEAR

<table>
<thead>
<tr>
<th>THE COURSES YOU NEED</th>
<th>Gain Relevant Experience</th>
<th>Community Connection</th>
<th>Think Globally</th>
<th>Career Preparedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>The most important courses for you to take are Math and Chemistry. Register for the hardest Math course in your required Math sequence so that you can place into. Take CHEM 1150/1151 in the fall, and 1160/1161 in the spring. Be sure to take ENGL 1100 during your first year. Fill out your schedule with General Education requirements.</td>
<td>Explore your major and career options in consultation with your advisor. Learn more about the types of extracurricular activities and other research opportunities available on campus so you can begin to identify potential employment and graduate or professional schools.</td>
<td>Emails from the department will let you know about upcoming guest lectures, internship opportunities, and special events. Follow the department social calendar to attend events such as bi-monthly sponsored seminars from speakers in government, private industries, and other university laboratories.</td>
<td>Being internationally aware and culturally competent is increasingly important. Think about ways you could build these skills, which may include foreign language or Global Understanding courses, study abroad, or internationally-focused courses or student organizations.</td>
<td>Visit Career Services to learn about their resources. Check out the Bureau of Labor Statistics and Virtual Job Shadow to explore potential careers. Log in to Handshake to set up your profile, check out career events, and begin to explore potential employers and job opportunities.</td>
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#### SECOND YEAR

| Math and Chemistry continue to be critical courses in your schedule. ENGL 2201 is also very important to take this year. Sign up for CHEM 2750/2753 and 2760/2763. For the BS degree, continue to take the appropriate Calculus courses (2171, 2172) so that you can take PHYS 2350/1251 this year. For the BA degree, take foreign language courses. | Meet with Career Services often to work on your post-graduation plans. Investigate job-related skills and identify gaps in your résumé so you can address them early. Use the Occupational Outlook Handbook, USAJobs.gov, and/or other resources available through Career Services to identify common skills in your career field. | Join student organizations that suit your interests, which may include Chemistry Club, Pre-Pharmacy Club, or the SNA Chemical Research Society. For a full list of student organizations, visit OrgSync. | Integrate internationally-oriented classes into your electives and consider a minor or second major in an international field or foreign language. Spanish and German are particularly helpful to Chemistry scholars. Consider a summer or semester-long study abroad program. Apply for study abroad scholarships in the early fall. | Meet with your Career Counselor to explore your goals and develop your résumé. Attend career fairs and other employer-related activities. Speak to your instructors and advisors about career options often. |

#### THIRD YEAR

| BS students need to complete Calculus (2173) and Physics (2360/1261) during the fall, and take CHEM 2103 and 2250/2251. BS students should also register for CHEM 3950/3951 and CHEM 3450/3451 in the spring. BA students should take at least one 3000-level chemistry course and lab this year, and complete their foreign language courses. | Undergraduate research, internships, part-time jobs, student leadership positions, and volunteer or community engagement activities can help build your résumé and give you valuable experience. Connect directly with faculty members who share your interests and attend career fairs to explore your interests, network, and identify opportunities. | Connect with the Center for Leadership and Civic Engagement to explore local opportunities. Also consider contacting community partners using the Organized directory. To build your professional network, join a professional organization like the American Chemical Society. | Make the most of your return from your study abroad or internship program by becoming more active in your student organizations. Work with the Office of Global Affairs and the Career Center to learn how to leverage your study abroad experience to improve your job placement possibilities. | Develop your LinkedIn profile. Meet with your Career Counselor to discuss postgraduation plans. If needed, research graduate schools and program requirements. Continue to attend career fairs and other employer-related career events. |

#### FOURTH YEAR

| In the fall, BS majors will enroll in CHEM 3960/3961, then 4350/4351 in the spring. They will also complete CHEM 2770 and other restricted electives. BA students have some flexibility depending on what was completed junior year. Ensure that you have enough credits to graduate. | Volunteering for political, governmental, or social organizations is a great way to get experience in your field, build your résumé, test your interest in working with diverse populations, and develop your professional network. | Submit a proposal to present a polished research paper from one of your CHEM classes at regional or national meetings of the American Chemical Society. Also consider presenting at ECU’s RICAW or SNCURS, or another state or regional conference that is open to undergraduates. | Take on a leadership position in one of your globally-oriented student organizations. Complete your program by incorporating more internationally-focused courses. | Meet with your Career Counselor to put your post-graduation plans into action. Refine your résumé, LinkedIn profile, and interview skills. Complete the Pirate Employment Survey. |

### POST-GRAD OPTIONS

- A Chemistry degree from ECU can prepare you for a variety of career options. You can advance your education by attending one of these graduate or professional schools:
  - Chemistry (MS, PSM, PhD)
  - Biomedical Sciences (MS, PhD)
  - Pharmacology (MS, PhD)
  - Toxicology (MS, PhD)
  - Forensic Science (MS, PhD)
  - Medical School (MD or DO)
  - Dental School (DDS or DMD)
  - Pharmacy School (PharmD)
  - Physician Assistant School (MS)
  - Veterinary School (DVM)
  - Optometry School (OD)

Chemists are sought after employees in a variety of fields and jobs including:
- Research and Discovery
- Pharmaceutical Manufacturing
- Forensic Science
- K-12 Education
- Food Safety
- Environmental Science
- Quality Control and Assurance

### VISIT US ONLINE

For more information and an interactive map PDF, visit: [www.ecu.edu/chem](http://www.ecu.edu/chem)