

**CHEMISTRY, CONCENTRATION PROFESSIONAL CHEMISTRY ACADEMIC MAP:
 DEGREE BS (120 CREDIT HOURS)**

This degree map is a semester-by-semester sample course schedule for students majoring in **Chemistry with a concentration in Professional Chemistry**. The milestones listed to the right of each semester are designed to keep a student on track to graduate in four years. The schedule serves as a general guideline to help build a full schedule each semester. Milestones are courses and special requirements necessary for timely progress to complete a major. When one or more milestones are missed, students should consult with an academic advisor to determine if another degree path would be more suitable.

This program is designed for students pursuing professional chemists' career opportunities in industry or government laboratories. The program is also for those students desiring to pursue advanced studies in graduate school. A minimum of 59 semester hours in Chemistry is required, 36 of which must be in 3000-or 4000-level courses. This curriculum is based upon recommendations by the American Chemical Society. For admission into the Upper Division, students must have removed all high school deficiencies and completed all requirements in the General Education Core (1000 and 2000). No grades less than a "C" in any Chemistry course will be accepted as credit toward meeting Departmental requirements and towards graduation. Thus, a 2.0 Grade Point Average is required to graduate with this degree.

Tennessee State University recognizes that students have diverse learning, life, and professional experiences. The University provides opportunities for students to earn college credit toward the degree through a number of assessment options that evaluate their learning experiences. These paths are grouped under the category "Prior Learning Assessment" (PLA). Various means of earning PLA credit at TSU are the following: Advanced Placement Program, American Council of Education (ACE) Military Credit, College Level Exam Program (CLEP), DSST Credit by Examination Program (includes DANTES Examination), Institutional Course Challenge Exams (Departmental Exams), International Baccalaureate Credit, Other Military Service, Portfolio Assessment. To learn more about PLA contact your academic advisor or the Office of Student Support Services for Adult and Distance Learners at (615) 963-7001 or adultstudentsupport@tnstate.edu.

Department Chair: Dr. Mohammad Karim, Email: mkarim@tnstate.edu
 Mapping Coordinator: Dr. Joshua Moore, Email: jmoore17@tnstate.edu
 Department Web Address: www.tnstate.edu/chemistry

Fall Schedule		Milestones
Semester 1	Hrs.	Semester 1
CHEM 1110/1111 OR 1112/ 1113	4	Pre-Requisite Course: Must be taken before CHEM 1120/1121 or 1122/1123; Minimum grade of "C" Required
ENGL 1010	3	Pre-Requisite Course: Must be taken before ENGL 1020, and HIST 2010, HIST 2020, HIST 2030, HIST 2060, HIST 2070, or HIST 2700; Minimum grade "C" Required
MATH 1910	4	Pre-Requisite Course: Must be taken before CHEM 3210, MATH 1920
UNIV 1000*	1	
HUMANITIES**	3	
Total Hours	15	

*An Orientation course taken at another University does **NOT** meet this requirement. Students with less than 60 credit hours must take UNIV 1000 at TSU.

**Students must take credit hours from the following list of approved general education Humanities courses:
 AREN 2310, ART, 1010, HIST 1000, THTR 1020, MUSC 1010, PHIL 1030, or RELS 2010.

Spring Schedule		Milestones
Semester 2	Hrs.	Semester 2
CHEM 1120/ 1121 OR 1122/ 1123	4	Pre-Requisite Course: Must be taken before CHEM 2010/2011 or 2012/2013. Minimum grade of "C" Required
ENGL 1020*	3	Pre-Requisite Course: Must be taken before taking HIST 2010, HIST 2020, HIST 2030 HIST 2060, HIST 2070, or HIST 2700; Minimum grade "C" Required
MATH 1920	4	
Social/ Behavioral Sciences**	3	
COMM 2200	3	
Total Hours	17	

*Pre-Requisite Course: Must be taken before HIST 2010, HIST 2020, HIST 2030, HIST 2060 AND HIST 2700; Minimum grade "C" Required. Students must remember not to duplicate course options from a previous semester.

**The following courses can meet the Social Science requirement AFAS 2010, ANTH 2300, ECON, 2010, GEOG 1010, HPSS 1510, POLI 1010, PSYC 2010, WMST 2000, and URBS 2010.

Fall Schedule		Milestones
Semester 3	Hrs.	Semester 3
CHEM 2100/2101	4	Pre-Requisite Course: Must be taken before CHEM 3210, CHEM 4100; Minimum grade of "C" Required
CHEM 2010/ 2011 OR 2012/ 2013	4	Pre-Requisite Course: Must be taken before CHEM 2020/2021 or 2022/2023; CHEM 3410 also must be taken before 3000/4000 level CHEM courses; Minimum grade of "C" Required
ENGL LIT*	3	Minimum grade of "C" Required
PHYS 2110/2111	4	
Total Hours	15	

*Courses within the range of ENGL 2012 through ENGL 2320 will meet this requirement.

Spring Schedule		Milestones
Semester 4	Hrs.	Semester 4
CHEM 2020/2021 OR 2022/2023	4	Pre-Requisite Course: Must be taken before CHEM 3210, CHEM 4100, CHEM 4200; Minimum grade of "C" Required
HUMANITIES*	3	
HIST 2010**	3	
PHYS 2120/2121	4	Minimum grade of "C" Required
Total Hours	14	Make Application to the Upper Division

*Students must take 6 credit hour course from the following list of approved general education Humanities courses:

AREN 2310, ART, 1010, HIST 1000, THTR 1020, MUSC 1010, PHIL 1030, or RELS 2010.

**The Department recommends HIST 2020; however, HIST 2030, HIST 2060, HIST 2070 or HIST 2700 satisfy this requirement.

Fall Schedule		Milestones
Semester 5	Hrs.	Semester 5
		Students must have completed 63 hours and should be admitted into Upper Division with Chemistry Major.
CHEM 3210/3211	4	Pre-Requisite Course: Must be taken before CHEM 3220/3221; Minimum grade of "C" Required
CHEM 4200/4201	4	Pre-Requisite Course: Must be taken before CHEM 4210, Minimum grade of "C" Required
MATH/SCIENCE ELECTIVE*	3	
LOWER OR UPPER DIVISION ELECTIVE**	2	
HIST 2020***	3	
Total Hours	16	

*Students may select MATH or SCIENCE elective from the Upper Division (3000-4000 level). Disciplines could include: Biology, Chemistry, Engineering, Physics or Mathematics.

**Lower and upper division electives may be taken in ANY academic department.

***The Department recommends HIST 2020; however, HIST 2030, HIST 2060, HIST 2070 or HIST 2700 satisfy this requirement.

Spring Schedule		Milestones
Semester 6	Hrs.	Semester 6
CHEM 3220/ 3221	4	Pre-Requisite Course: Must be taken before CHEM 4505/4506; Minimum grade of "C" Required
CHEM 4100	2	Minimum grade of "C" Required
CHEM 4210	3	Minimum grade of "C" Required
MATH/SCIENCE ELECTIVE*	3	
SOC/BEHAVIROL SCIENCE	3	
Total Hours	15	

*Students may select MATH or SCIENCE elective from the Upper Division (3000-4000 level). Disciplines could include: Biology, Chemistry, Physics or Mathematics.

Fall Schedule		Milestones
Semester 7	Hrs.	Semester 7
CHEM 3410	3	Pre-Requisite Course: Must be taken before CHEM 3420; Minimum grade of "C" Required
CHEM 4505	2	Co-Requisite Course: CHEM 4910; Pre-Requisite Course: Must be taken before CHEM 4506; Minimum grade of "C" Required; A research advisor must be chosen within the first two weeks of class
CHEM 4910	1	Co-Requisite Course: CHEM 4505; Pre-Requisite Course Must be taken before CHEM 4920; Minimum grade of "C" Required
UPPER DIVISION CHEM ELECTIVE	3	
UPPER DIVISION ELECTIVE*	3	
UPPER DIVISION ELECTIVE*	3	
Total Hours	15	

*Lower and upper division electives may be taken in ANY academic department.

Spring Schedule		Milestones
Semester 8	Hrs.	Semester 8
		Take Senior Exit Exam and Apply for Graduation
CHEM 4320/4321	4	Minimum grade of "C" Required
CHEM 4506	2	Co-Requisite Course: CHEM 4920; This is a continuation of CHEM 4505. Minimum grade of "C" Required
CHEM 4920	1	Co-Requisite Course: CHEM 4506; Minimum grade of "C" Required
CHEM ELECTIVES	3	TWO courses in 3000/4000 level; Minimum grade of "C" Required.
CHEM 3420	3	Minimum grade of "C" Required
Total Hours	13	

Employment Information:

The employment world for chemical professionals can be divided into four main sectors: industry, academia, government, and entrepreneurship. Each sector has its own culture, values and expectations, though there is still tremendous variation within sectors. Knowing something about this can help you focus your employment search on the sector that best matches your personal values, interests and skills. Increasingly, opportunities are arising in areas where the sectors overlap: industrial-academic research partnerships, government contracts for product or process development, technology transfer programs that allow university professors to form startup companies based on their discoveries, or consortia that involve three or four job sectors. Taking advantage of these opportunities requires an ability to work well and communicate in more than one environment.

Representative Job Titles Related to this Major:

Chemist, quality control chemist, laboratory technician, technical sales representative, chemical and drug sales representative, consumer protection specialist, water quality analyst / technician, technical writer, aerosol development manager, quality assurance chemist, methods development chemist, process development chemist, organic mass spectrometrists, forensic lab analyst, pulp and paper chemist, paint formulation chemist, paper product developer, chemical information specialist, occupational health and safety officer, medical laboratory technician analytic chemist, associate chemist, research assistant, chemical safety officer, clinical technician, food and drug analyst, pollution controller, information analyst soil tester laboratory analyst chemical technologist assayer product tester, production chemist, lab coordinator, chemical analyst, pest control technician, textile chemist, occupational hygienist, geologist, color development specialist, environmental engineer, geochemist, industrial hygienist, teacher, crime lab analyst, dentist, medical technologist

Representative Employers:

Educational institutions, science museums, quality control laboratories, pharmaceutical/biotech., mineral and metal industries, hospital research laboratories, industrial laboratories, food and beverage companies, health protection branches, waterworks departments, hazardous waste management, chemical testing companies, research centers/institutes, cosmetic companies, utility companies, chemical distributors, hospitals, newspapers/magazines, oil companies, chemistry consulting firms, environmental consulting, pulp and paper industries, chemical laboratories, agricultural companies, professional chemical societies, textile manufacturers, police laboratories, chemical manufacturing, petroleum refineries, government, aerospace companies, technical librarian

International study is available for all TSU students and may include opportunities for internships or taking course work towards various minors. International study may have an impact on the academic map; therefore, it is important to consult with the academic advisor for this major before participating in an international Program opportunity. Students interested in study abroad opportunities should contact the Office of International Programs and consult with their academic advisor.

This map is not intended to be a contract, either expressed or implied, between the University and the students, but represents a flexible program of the current curriculum which may be altered from time to time to carry out the academic objectives of the University. TSU specifically reserves the right to change, delete or add to any MAP at any time within the student's period of study at the University.