

**CELL AND MOLECULAR BIOLOGY CONCENTRATION ACADEMIC MAP:
DEGREE BS (122) CREDIT HOURS)**

This degree map is a semester-by-semester sample course schedule for students majoring in **Biology with a concentration in Molecular Biology**. 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.

Biology majors are assigned an academic advisor from the Biological Sciences Department faculty. This advisor can answer all questions pertaining to meeting Biology degree requirements. All biology majors are expected to maintain a 2.0 GPA and are required to earn a "C" grade or higher in all biology courses taken (those designated BIOL). If a major earns a lower grade, he or she must retake the course and earn an acceptable grade in order to count that course toward satisfying their biology degree requirements. The biology department advisor can help students who are on probation or having difficulty passing courses to make use of University academic aid programs.

Students must also satisfy all of the requirements listed in the undergraduate catalog for the year appropriate for them. The requirements are listed under the heading "University requirements for a bachelor's degree". This section includes both required courses and additional requirements (such as minimum number of credit hours at the 3000 level or above, minimum number of credit hours in a major, etc.). See the appropriate year's catalog for a complete list.

Students taking many upper division (3000 to 4999) courses and some lower division (1000 to 2999) courses may have to meet pre-requisites in order to enroll in the course. These pre-requisites are usually courses that must be taken before the student can enroll in the course. The pre-requisites for a course, if any, are listed as part of that course's description in the TSU Undergraduate Catalog. A course description is found in the section of the catalog dedicated to the department offering the course (Biological Sciences for BIOL, Chemistry for CHEM, etc.).

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.

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Department Web Address: <http://www.tnstate.edu/biology/bsbiologycellmolecular.aspx>

First Year Fall Schedule		Milestones
Semester 1	Hrs.	Semester 1
BIOL 1110/1111 or 1112/1113*	4	Pre-Requisite Course: Must be taken before BIOL 2110/2111, BIOL 2121, BIOL 4120/4121; Minimum Grade "C" Required.
CHEM 1110/1111**	4	Pre-Requisite Course: Must be taken before CHEM 1120/1121, CHEM 2010. This is a required support course for BIOL majors.
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.
SOCIAL BEHAVIORAL ELECTIVE***	3	
UNIV 1000****	1	
Total Hours	15	

*The course and the lab must be taken at the same time. BIOL 1112/1113/ is limited to students in the University Honors Program.

**Students must have taken either High School Chemistry earning at least a 75% or CHEM 1000/1001 and two years of High School Algebra before enrolling in CHEM 1110/1111.

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

****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.

First Year Spring Schedule		Milestones
Semester 2	Hrs.	Semester 2
BIOL 1120/1121 or 1122/1123*	4	Pre-Requisite Course: Must be taken before BIOL 2110/2111, BIOL 2120/2121, BIOL 4210/4221; Minimum Grade of "C" Required.
CHEM 1120/1121	4	Pre-Requisite Course: Must be taken before CHEM 2010/2011; This is a required support course for BIOL majors.
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 1910 or higher	3	Pre-Requisite Course: Must be taken before PHYS 2010/2011, PHYS 2020/2021, BIOL 3110 MATH 1720 or 1730 or permission of Math Department Chair If placed lower than MATH 1720, students must take course or courses required for entry into MATH 1910.
SOCIAL BEHAVIORAL SCIENCE ELECTIVE**	3	
Total Hours	17	

*BIOL 1122/1123 is limited to students in the University Honors Program.

The following courses can meet the Social Science elective AFAS 2010, ANTH 2300, ECON, 2010, GEOG 1010, HPSS 1510, POLI 1010 PSYC 2010, WMST 2000, and URBS 2010. Students must remember **NOT to duplicate course option from a previous semester.

Second Year Fall Schedule		Milestones
Semester 3	Hrs.	Semester 3
BIOL 2110/2111	4	Minimum Grade of "C" Required.
CHEM 2010/2011	4	Pre-Requisite Course: Must be taken before CHEM 2020/2021, CHEM 3410/3411. This is a required support course for BIOL majors.
ENGLISH LIT*	3	
HISTORY**	3	
COMM 2200	3	
Total Hours	17	

*The range of ENGL 2012 - ENGL 2320 will meet this requirement.

**HIST 2010 will meet this requirement; however, HIST 2020, HIST 2030, HIST 2060, HIST 2070 or HIST 2700 will also satisfy the requirement.

Second Year Spring Schedule		Milestones
Semester 4	Hrs.	Semester 4
BIOL 2120/2121	4	Pre-Requisite Course: Must be taken before BIOL 3110, BIOL 4120/4121, BIOL 3200/3201, BIOL 3400/3401, and BIOL 4110/4111; Minimum Grade of "C" Required.
CHEM 2020/2021	4	This is a required support course for BIOL majors.
HISTORY*	3	
HUMANITIES or FINE ARTS**	3	
Total Hours	14	

*The Department will accept any History course from the following list: HIST 2010, HIST 2030, HIST 2060, HIST 2070 or HIST 2700 to satisfy the requirement. Students must remember **NOT** to duplicate a course from a previous semester.

Students must take a 3 credit hour course from the following list of approved general education Humanities courses: AREN 2310, ART, 1010, THTR 1020, MUSC 1010, PHIL 1030, HIST 1000 or RELS 2010. Courses within the range of ENGL 2012-2320 will also meet this Humanities requirement. Students must remember **NOT to duplicate a Humanities course option from a previous semester.

Third Year Fall Schedule		Milestones
Semester 5	Hrs.	Semester 5
BIOL 3200/3201, or 3210/3211, or 3400/3401 or 4300/4301*	4	Student should have junior status, 60-89 credit hours, must take one 4 credit hour Physiology Elective course with lab. Minimum Grade of "C" Required.
CHEM 3410/3411	4	This is a required support course for biology majors.
PHYS 2010/2011	4	Pre-Requisite Course: Must be taken before PHYS 2020/2021; Minimum Grade of "C" Required. This is a required support course for BIOL majors.
BIOL 3110	3	Minimum Grade of "C" Required
Total Hours	15	

*Any of these four credit hour courses with lab satisfies the physiology elective requirement.

Third Year Spring Schedule		Milestones
Semester 6	Hrs.	Semester 6
BIOL 4120/4121	4	
CHEM 3420/3421	4	
PHYS 2020/2021	4	Minimum Grade of "C" Required; This is a required support course for BIOL majors
UPPER DIVISION ELECTIVE*	3	
Total Hours	15	

*Students may select an upper division (3000-4000) course from ANY department.

Fourth Year Fall Schedule		Milestones
Semester 7	Hrs.	Semester 7
BIOL 4170 or BIOL 4180	1	Minimum Grade of "C" Required.
UPPER DIVISION BIOLOGY ELECTIVE/LAB*	4	Minimum Grade of "C" Required.
UPPER DIVISION BIOLOGY ELECTIVE/LAB*	4	
UPPER DIVISION ELECTIVE**	3	
UPPER DIVISION ELECTIVE**	3	
Total Hours	15	

*The following list of courses may be used to satisfy the Biology elective requirement: BIOL 4190/4191, BIOL 4100/4101, BIOL 4112/4113, BIOL 4130/4131/4210/4211, BIOL 4220/4221, BIOL 4230, BIOL 4260/4261, BIOL 4272/4273, or BIOL 4410/4411. Students should meet with an academic advisor to discuss elective options.

**Students may select an upper division (3000-4000) course from ANY department.

Fourth Year Spring Schedule		Milestones
Semester 8	Hrs.	Semester 8
		Take Senior Exit Exam and Apply for Graduation.
UPPER DIVISION BIOLOGY ELECTIVE/LAB*	4	Minimum Grade of "C" Required.
UPPER DIVISION BIOLOGY ELECTIVE/LAB*	4	Minimum Grade of "C" Required.
UPPER DIVISION ELECTIVE**	3	
HUMANITIES or FINE ARTS***	3	
Total Hours	14	

*Any four (4) credit hour BIOL course (excluding 4120/4121, and the Physiological elective) may be selected. Students should meet with an academic advisor to discuss elective options.

**Students may select an upper division (3000-4000) course from ANY department.

***Students must take a 3 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.

Employment Information:

Students earning a biology degree with a cell and molecular biology concentration from TSU have the option of immediate employment in entry-level positions in industry or government or further education leading to M.S. or Ph. D. degrees or certification in biology-related professions such as medicine or dentistry.

Representative Job Titles Related to this Major:

Laboratory Technician, Researcher, Physician, Dentist, Environmental Specialist, Cell Biologist, Herpetologist, Food Microbiologist, Ecologist, Molecular Biologist, Immunologist, etc.

Representative Employers:

Local, state or national government (many branches employ biologists, especially in the Public Health Service, EPA, the military, the Department of the Interior (Park Service, Wildlife, Forestry, Agriculture). Food or biotechnology companies are large private sector employers. Research universities and medical schools also employ biologists (including those with bachelor's degrees).

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.