

**College of Science
Bachelor of Science in Systems Biology
Major in Systems Biology
For students graduating in calendar year 2018**

I. Curriculum for Liberal Education (38 credit hours)

All courses used for the Curriculum for Liberal Education must be on the University's approved list.

Area 1 - Writing and Discourse (6 credit hours)

_____ 3_____ 3__

Area 2 - Ideas, Cultural Traditions, and Values (6 credit hours)

_____ 3_____ 3__

Area 3 - Society and Human Behavior (6 credit hours)

_____ 3_____ 3__

Area 4 - Scientific Reasoning and Discovery (8 credit hours)

BIOL 1105 Principles of Biology*^{\$} 3__ BIOL 1106 Principles of Biology*^{\$} 3__

BIOL 1115 Principles of Biology Lab*^{\$} 1__ BIOL 1116 Principles of Biology Lab*^{\$} 1__

Area 5 - Quantitative and Symbolic Reasoning (6 credit hours)

MATH 1025 Elementary Calculus*^{\$} 3__ MATH 1026 Elementary Calculus*^{\$} 3__

Area 6 - Creativity and Aesthetic Experience (3 credit hours)

_____ 3__

Area 7 - Critical Issues in a Global Context (3 credit hours)

_____ 3__

II. Systems Biology Required Core (34 credit hours)

SYSB 2025 Intro to Systems Biology*[#] 3__ SYSB 2026 Intro to Systems Biology*[#] 3__

SYSB 3035 Syst Biol Genes Proteins*[#] 4__ SYSB 3036 Syst Biol Genes Proteins*[#] 4__

SYSB 3115 Network Dyn & Cell Physiol*[#] 4__ SYSB 3116 Network Dyn & Cell Physiol*[#] 4__

SYSB 4065 Res Exp Syst Biol*[#] 4__ SYSB 4066 Res Exp Syst Biol*[#] 4__

SYSB 4135 Professionalism in Syst Biol*[#] 2__ SYSB 4136 Professionalism in Syst Biol*[#] 2__

III. Computer Science Requirement (3 credit hours) Choose from:

CS 1114 Intro to Software Design* 3__ CS 1124 Intro to Media Computation* 3__

IV. Statistics Requirement (3 credit hours) Choose from:

STAT 2004 Introductory Statistics*[#] 3__ STAT 2524 Data Science*[#] 3__

STAT 3005 Statistical Methods*[#] 3__ STAT 3615 Biological Statistics*[#] 3__

CMDA 3654 Intro Data Analytics & Visual*[#] 3__

V. Additional Mathematics and Science (21 credit hours)

MATH 1114 Elementary Linear Algebra*^{\$} 2__ CHEM 2514 Survey of Organic Chemistry*[#]^{\$} 3__

CHEM 1035 General Chemistry*^{\$} 3__ CHEM 1036 General Chemistry*[#]^{\$} 3__

CHEM 1045 General Chemistry Lab*^{\$} 1__ CHEM 1046 General Chemistry Lab*[#]^{\$} 1__

PHYS 2205 General Physics*[#]^{\$} 3__ PHYS 2206 General Physics*[#]^{\$} 3__

PHYS 2215 General Physics Lab*^{\$} 1__ PHYS 2216 General Physics Lab*[#]^{\$} 1__

VI. Restricted Electives (9 credit hours)

BIOL 3774 Molecular Biology**	3		
BIOL 4104 Developmental Biology**	3	BIOL 4624 Microbial Genetics**	3
BIOL 4634 Microbial Physiology**	3	BIOL 4734 Inflammation Biology**	3
BIOL 4824 Bioinformatics Methods**	3	BIOL 4844 Proteomics & Biol Mass Spec**	3
BIOL 4874 Cancer Biology**	3	BIOL 4884 Cell Biology**	3
CHEM 4615 Phys Chem for Life Sciences**	3	CHEM 4616 Phys Chem for Life Sciences**	3
PHYS 4714 Intro to Biophysics**	3	MATH 2214 Intro to Differential Equations**	3
MATH 2204 Intro to Multivariable Calculus**	3	MATH 4254 Chaos & Dynamical Syst**	3
MATH 4454 Applied Math Modeling**	3	MATH 4446 Intro to Numerical Analysis**	3
MATH 4445 Intro to Numerical Analysis**	3	ECE 3704 Cont & Discrete Systems**	3
STAT 3006 Statistical Methods**	3	STAT 3104 Probability & Distributions**	3
STAT 4105 Theoretical Statistics**	3	STAT 4364 Intro Statistical Genomics**	3
STAT 4444 Applied Bayesian Statistics**	3	STAT 4664 Comp Stochastics Modeling**	3
CS 2114 Software Design and Data Structures**	3	CS 3114 Data Structures & Algorithms*	3
CS 3414 Numerical Methods**	3	CS 3634 CS Foundations for CMDA**	3
CS 4214 Simulation & Modeling**	3	CS 4414 Issues in Scientific Computing**	3

VII. Free Electives (12 credit hours)

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

*Courses used to calculate in-major GPA

#Prerequisites

Some courses in the major requirements listed above may have prerequisites. Students are required to double check course prerequisites and equivalents. Please see your advisor or consult the Undergraduate Course Catalog for more information.

§Acceptable Substitutions

BIOL 1105, 1106, 1115, 1116; CHEM 1035, 1036, 1045, 1046; PHYS 2205, 2206, 2215, 2216; MATH 1025, 1026, 1114 can be substituted with ISC 1105, 1106, 1115, 1116, 2105, 2106, 2115, 2116.

CHEM 2514 can be substituted with CHEM 2535.

MATH 1114 can be substituted with MATH 2114.

MATH 1025, 1026 can be substituted with MATH 1225, 1226.

PHYS 2205, 2206, 2215 & 2216 can be substituted with PHYS 2305 & 2306.

BIOL 1105, 1115, 1106, 1116 can be substituted with BIOL 1005, 1015, 1006, 1016.

Foreign Language

The College of Science requires three units of a single foreign or classical language during high school or the second semester of a college-level foreign or classical language. These credit hours do not count toward the total minimum hours required for the declared degree program.

Satisfactory Progress Towards Degree

In order to continue in the major to the core 3000-level courses (SYSB 3035 and 3115), students must have completed all 1000-and 2000-level core required courses with grades of C or better in two or fewer attempts (including attempts that were withdrawn), and they must have an overall GPA of at least 2.5 in these courses that are required for the major.

Graduation Requirements

120 credit hours are required for graduation. These credits must include the courses required for the major (see above section). To graduate, a student must have at least a 2.0 in-major GPA and overall GPA. All required courses in SYSB, BIOL, CHEM, PHYS, and MATH must be passed with a grade of C or better. If 120 credit hours are reached and a student does not meet the GPA requirement, the student must take additional in-major courses to raise the in-major GPA to a 2.0.