B.S. IN BIOLOGY

Code	Title	Credits
Major in Biology (B.S.)		
BIO 124 & BIO 124D	Integrative Biology: Genes, Cells, Change and Integrative Biology: Genes, Cells, Change Lab	4
BIO 128 & BIO 128D	Integrative Biology: Metabolism, Energy, Biodiversity and Integrative Biology: Metabolism, Energy, Biodiversity Lab	4
BIO 218	Biology in a Changing World	3
BIO 399	Introduction to Research	2
BIO 495	Biology Seminar	2
BIO 499	Symposium	0
Choose an applied experience:		2-4
BIO 481	Internship in Biology	
BIO 496 & BIO 497	Biology Research and Advanced Biology Research	
CHE 113 & CHE 113D	General Chemistry and General Chemistry Lab	4
CHE 214 & CHE 215	General Chemistry II and General Chemistry II Lab	4
CHE 224 & CHE 225	Organic Chemistry I and Organic Chemistry I Lab	4
Choose one of the following Physics courses:		4
PHY 202 & PHY 202D	Introductory Physics I and Introductory Physics I Lab [2]	
PHY 292 & PHY 292D	General Physics I and General Physics I Lab [1]	

Code	Title	Credits
Major		33-35
Emphasis		40-41
General Education *		44-52
Electives		0-3
Total Credits		**122-126**

[1] MAT 124M or Consent of instructor is a prerequisite for this course.

[2] MAT 121M, or MAT 124M, or solid understanding and competency in high school mathematics as demonstrated by at least one of the following: A Math ACT score of at least 23, 519 on the Math portion of the SAT, or a Math Placement Test score of at least 2 is a prerequisite for this course.

* Courses whose number is followed by a letter fulfill a General Education requirement.

Students may not declare a B.A. in Biology and a B.S. in Biology.

Students may not declare a B.S. in Biology and a Minor in Biology.

Biomedical Emphasis (40 credits)

Code	Title	Credits
BIO 214 & BIO 215	Human Anatomy and Human Anatomy Lab	4

BIO 216 & BIO 217	Human Physiology and Human Physiology Lab	4
BIO 234 & BIO 235	Microbiology and Microbiology Lab	4
BIO 332 & BIO 333	Genetics and Genetics Lab	4
One of the following courses:		4
CHE 304 & CHE 397	Essentials of Biochemistry and Biochemistry II Lab [4]	
CHE 388 & CHE 389	Biochemistry I and Biochemistry I Lab [1]	
Choose from the following list, including at least two 300 or 400 level BIO courses (one of which must be a designated Research course):		20
AHS 250M	Statistics and Research Methods in Applied Health Sciences	
BIO 326 & BIO 327	Vertebrate Histology and Vertebrate Histology Lab	
BIO 330 & BIO 331	Ecology and Ecology Lab	
BIO 338 & BIO 339	Endocrinology and Endocrinology Lab	
BIO 354 & BIO 355	Cell Biology and Cell Biology Lab	
BIO 358 & BIO 359	Neurobiology and Neurobiology Lab	
BIO 362 & BIO 363	Developmental Biology and Developmental Biology Lab	
BIO 384 & BIO 387	Immunology and Immunology Lab	
BIO 396 & BIO 397	Molecular Biology and Molecular Biology Lab	
BIO 409 & BIO 410	Advanced Human Gross Anatomy and Advanced Human Gross Anatomy Lab	
CHE 226 & CHE 227	Organic Chemistry II and Organic Chemistry II Lab	
MAT 207M	Statistical Analysis	
PHY 206 & PHY 207	Introductory Physics II and Introductory Physics II Lab [2]	
PHY 296 & PHY 297	General Physics II and General Physics II Lab [3]	
PSY 101 & PSY 102	Introduction to Psychology I and Introduction to Psychology II	
PSY 230M	Introduction to Statistical Methods and Experimental Design	
Total Credits		**40**

1 CHE 226/CHE 227 is a prerequisite for this course.
2 PHY 202/PHY 202D is a prerequisite for this course.
3 PHY 292/PHY 292D with a C or better and MAT 125 or Consent of instructor are prerequisites for this course.
4 Students requiring CHE 397 for their degree will require an override to take this course concurrently with CHE 304.

Courses whose number is followed by a letter fulfill a General Education requirement.

Cellular and Molecular Biology Emphasis (40 credits)

Code	Title	Credits
BIO 234 & BIO 235	Microbiology and Microbiology Lab	4
BIO 332 & BIO 333	Genetics and Genetics Lab	4
BIO 354 & BIO 355	Cell Biology and Cell Biology Lab	4
BIO 396 & BIO 397	Molecular Biology and Molecular Biology Lab	4
CHE 226 & CHE 227	Organic Chemistry II and Organic Chemistry II Lab	4
CHE 388 & CHE 389	Biochemistry I and Biochemistry I Lab	4
CHE 396 & CHE 397	Biochemistry II and Biochemistry II Lab	4
Choose three courses from the following:		12
BIO 338 & BIO 339	Endocrinology and Endocrinology Lab	
BIO 358 & BIO 359	Neurobiology and Neurobiology Lab	
BIO 362 & BIO 363	Developmental Biology and Developmental Biology Lab	
BIO 376 & BIO 377	Animal Physiology and Animal Physiology Lab	
BIO 384 & BIO 387	Immunology and Immunology Lab	
MAT 124M	Calculus 1 [1]	
PHY 206 & PHY 207	Introductory Physics II and Introductory Physics II Lab [2]	
PHY 296 & PHY 297	General Physics II and General Physics II Lab [3]	
Total Credits		**40**

1. Placement at MAT 124M on the Math and Computer Science department placement exam; MAT 121M, concurrent enrollment in MAT 122, or equivalent high school or college course(s) is a prerequisite for this course.
2. PHY 202/PHY 202D is a prerequisite for this course.
3. PHY 292/PHY 292D with a C or better and MAT 125 or Consent of instructor are prerequisites for this course.

Courses whose number is followed by a letter fulfill a General Education requirement.

General Biology Emphasis (40-41 credits)

Code	Title	Credits
Choose two courses from each of the following three areas, at least one of which must be a designated research course:		

Cell and Molecular area courses:		8
BIO 234 & BIO 235	Microbiology and Microbiology Lab	
BIO 332 & BIO 333	Genetics and Genetics Lab	
BIO 354 & BIO 355	Cell Biology and Cell Biology Lab	
BIO 362 & BIO 363	Developmental Biology and Developmental Biology Lab	
BIO 384 & BIO 387	Immunology and Immunology Lab	
BIO 396 & BIO 397	Molecular Biology and Molecular Biology Lab	
CHE 304 & CHE 397	Essentials of Biochemistry and Biochemistry II Lab	
CHE 388 & CHE 389	Biochemistry I and Biochemistry I Lab [1]	
Environmental area courses:		8-9
BIO 316 & BIO 317	Wildlife Ecology and Wildlife Ecology Lab	
BIO 318KZ & BIO 496	Ecology in the Tropics: Natural History and Future Prospects and Biology Research [4]	
BIO 328 & BIO 329	Invertebrate Biology and Invertebrate Biology Lab	
BIO 330 & BIO 331	Ecology and Ecology Lab	
BIO 342 & BIO 343	Aquatic Biology and Aquatic Biology Lab	
BIO 346 & BIO 347	Animal Behavior and Animal Behavior Lab	
BIO 372 & BIO 373	Plant Taxonomy and Ecology and Plant Taxonomy and Ecology Lab	
BIO 380 & BIO 383	Environmental Plant Biology and Environmental Plant Biology Lab	
Courses from Au Sable Institute of Environmental Studies		
Organismic area courses:		8
BIO 214 & BIO 215	Human Anatomy and Human Anatomy Lab	
BIO 216 & BIO 217	Human Physiology and Human Physiology Lab	
BIO 238 & BIO 239	Human Anatomy and Physiology and Human Anatomy and Physiology Lab	
BIO 326 & BIO 327	Vertebrate Histology and Vertebrate Histology Lab	
BIO 338 & BIO 339	Endocrinology and Endocrinology Lab	
BIO 358 & BIO 359	Neurobiology and Neurobiology Lab	
BIO 368 & BIO 369	Structure and Development of Vertebrates and Structure and Development of Vertebrates Lab	

BIO 376 & BIO 377	Animal Physiology and Animal Physiology Lab	
Choose from the following list, including at least two 300 or 400 level biology courses:		16
AHS 250M	Statistics and Research Methods in Applied Health Sciences	
CHE 226 & CHE 227	Organic Chemistry II and Organic Chemistry II Lab	
MAT 124M	Calculus 1 [5]	
MAT 207M	Statistical Analysis	
PHY 206 & PHY 207	Introductory Physics II and Introductory Physics II Lab [2]	
PHY 296 & PHY 297	General Physics II and General Physics II Lab [3]	
PSY 230M	Introduction to Statistical Methods and Experimental Design	
Electives from 300 level or above biology courses excluding BIO 481, BIO 496, and BIO 497:		
Total Credits		**40-41**

1 CHE 226/CHE 227 is a prerequisite for this course.
2 PHY 202/PHY 202D is a prerequisite for this course.
3 PHY 296/PHY 297 with a C or better and MAT 125 are prerequisites for this course.
4 When taken with BIO 318KZ, BIO 496 does not count toward the research option in the applied experience.
5 Placement at MAT 124M on the Math and Computer Science department placement exam; MAT 121M, concurrent enrollment in MAT 122, or equivalent high school or college course(s) is a prerequisite for this course.

Courses whose number is followed by a letter fulfill a General Education requirement.