## **BIOLOGY**

## **Plan of Study**

Title

Course

Below is a <u>sample</u> plan of study that illustrates one way to achieve the program requirements. Any given student's plan of study may differ based on a variety of factors (e.g., advanced credit, placement exams, adding a minor). Enrolled students will work with their academic advisor; utilize the degree audit/planner to create a specific plan of study.

Feshman           Fall           BIO 130         Evolution & Diversity         4           MA 111         Calculus I         5           CHEM 1111         General Chemistry I Lab         1           HIT 100         Foundations for Rose-Hulman Success         1           HUT 100         Foundations for Rose-Hulman Success         1           HUT 100         Cell Structure and Function         4           MA 112         Calculus II         5           CHEM 113         General Chemistry II         3           CHEM 113         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           HOurs         17           Spring         4           BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         Hours         17           Sophomore         Fall         4           Fall         BiO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3	Course	Title	Hours
BIO 130	Freshman		
MA 111         Calculus I         5           CHEM 1111         General Chemistry I         3           CHEM 111L         General Chemistry I Lab         1           RHIT 100         Foundations for Rose-Hulman Success         1           Hours         14           Winter         10           BIO 110         Cell Structure and Function         4           MA 112         Calculus II         5           CHEM 113         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           Hours         17           Spring           BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         4           Hours         17         5           Sophomore         Fall         1           Fall         BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251         Organic Chemistry I         4           PH 1111         Physics	Fall		
CHEM 1111         General Chemistry I Lab         1           RHIT 100         Foundations for Rose-Hulman Success         1           Hours         14           Winter         18           BIO 110         Cell Structure and Function         4           MA 112         Calculus II         5           CHEM 113         General Chemistry II         3           CHEM 113L         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           HOURS         17           Spring         10           BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         4           Hours         17         5           Sophomore         Fall         1           Fall         4         1           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I Laboratory         1           PH 1111         Physics I Lab         0           MA 223         Engineering Statistics	BIO 130	Evolution & Diversity	4
CHEM 111L         General Chemistry I Lab         1           RHIT 100         Foundations for Rose-Hulman Success         1           Winter         14           BIO 110         Cell Structure and Function         4           MA 112         Calculus II         5           CHEM 113         General Chemistry II Laboratory         1           HUM 113L         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           HOURS         17           Spring         10           BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         4           HOURS         17         5           Sophomore         Fall         1           Fall         10         4         6           BIO 210         Mendelian & Molecular Genetics         4         4           CHEM 251         Organic Chemistry I Laboratory         1         3           CHEM 251         Organic Chemistry I Laboratory         1         4           Whiter <td>MA 111</td> <td>Calculus I</td> <td>5</td>	MA 111	Calculus I	5
RHIT 100	CHEM 111	General Chemistry I	3
Hours   14	CHEM 111L	General Chemistry I Lab	1
Winter         BIO 110         Cell Structure and Function         4           MA 112         Calculus II         5           CHEM 113         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           HOUR         Hours         17           Spring           BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         17           Sophomore           Fall           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251         Organic Chemistry I Laboratory         1           PH 111         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter         18           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II Laboratory         1           PH 1112         Physics II Lab         0	RHIT 100	Foundations for Rose-Hulman Success	1
BIO 110   Cell Structure and Function   4   MA 112   Calculus II   5   CHEM 113   General Chemistry II   3   CHEM 113L   General Chemistry II   Laboratory   1   HUM H190   First-Year Writing Seminar   4   Hours   17   Spring   BIO 120   Comparative Anatomy & Physiology   4   CSSE 120   Introduction to Software Development   4   MA 113   Calculus III   5   HSSA Elective   4   Hours   17   Sophomore   Fall		Hours	14
MA 112         Calculus II         5           CHEM 113         General Chemistry II         3           CHEM 113L         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           Hours         17           Spring           BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         4           Hours         17         5           Sophomore         Fall         18           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251         Organic Chemistry I Laboratory         1           PH 111         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter         810 220         Microbiology         4           GHEM 252         Organic Chemistry II         3           CHEM 252         Organic Chemistry II Laboratory         1 <t< td=""><td>Winter</td><td></td><td></td></t<>	Winter		
CHEM 113         General Chemistry II         3           CHEM 113L         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           Hours         17           Spring         BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         4           Hours         17         3           Sophomore         Fall         8           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251         Organic Chemistry I Laboratory         1           PH 111         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter         8         16           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II Laboratory         1           PH 112         Physics II         4           PH 112         Physics II         4 <t< td=""><td>BIO 110</td><td>Cell Structure and Function</td><td>4</td></t<>	BIO 110	Cell Structure and Function	4
CHEM 113L         General Chemistry II Laboratory         1           HUM H190         First-Year Writing Seminar         4           Hours         17           Spring           BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         17           Sophomore           Fall           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251L         Organic Chemistry I Laboratory         1           PH 1111         Physics I         4           Hours         16           Winter         16           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II Laboratory         1           PH 112         Physics II         4           PH 112         Physics II         4           PH 112         Physics II         4           PH 112         Physics II Lab         0           ENGL H290         Technical & Professional	MA 112	Calculus II	5
HUM H190   First-Year Writing Seminar   4   Hours   17   Spring   BIO 120   Comparative Anatomy & Physiology   4   CSSE 120   Introduction to Software Development   4   MA 113   Calculus III   5   HSSA Elective   4   Hours   17   Sophomore   Fall   BIO 210   Mendelian & Molecular Genetics   4   CHEM 251   Organic Chemistry I   3   3   CHEM 251L   Organic Chemistry I   4   PH 111L   Physics I   4   PH 111L   Physics I   4   Hours   16   Max 223   Engineering Statistics   4   Hours   16   Microbiology   4   CHEM 252   Organic Chemistry II Laboratory   1   1   1   Physics I   1   1   1   1   1   1   1   1   1	CHEM 113	General Chemistry II	3
Hours   17   Spring	CHEM 113L	General Chemistry II Laboratory	1
Spring         BIO 120         Comparative Anatomy & Physiology         4           CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4         4           Hours         17           Sophomore           Fall           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251L         Organic Chemistry I Laboratory         1           PH 111         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II         3           CHEM 252         Organic Chemistry II Laboratory         1           PH 112         Physics II Lab         0           PH 112         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring         4           BIO 230	HUM H190	First-Year Writing Seminar	4
BIO 120   Comparative Anatomy & Physiology		Hours	17
CSSE 120         Introduction to Software Development         4           MA 113         Calculus III         5           HSSA Elective         4           Hours         17           Sophomore           Fall           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251L         Organic Chemistry I Laboratory         1           PH 1111         Physics I         4           PH 1111         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II Laboratory         1           PH 112         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring         4           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           Hours	Spring		
MA 113       Calculus III       5         Hours       17         Sophomore         Fall         BIO 210       Mendelian & Molecular Genetics       4         CHEM 251       Organic Chemistry I       3         CHEM 251L       Organic Chemistry I Laboratory       1         PH 1111       Physics I       4         PH 111L       Physics I Lab       0         MA 223       Engineering Statistics       4         Hours       16         Winter         BIO 220       Microbiology       4         CHEM 252       Organic Chemistry II       3         CHEM 252L       Organic Chemistry II Laboratory       1         PH 112       Physics II Lab       0         ENGL H290       Technical & Professional Communication       4         Hours       16         Spring         BIO 230       Cell Biology       4         CHEM 330       Biochemistry I       4         Math Elective       4         Hours       16         Hours       16	BIO 120	Comparative Anatomy & Physiology	4
Hours   17   Sophomore   Fall	CSSE 120	Introduction to Software Development	4
Hours   17   Sophomore   Fall     BIO 210   Mendelian & Molecular Genetics   4     CHEM 251   Organic Chemistry   3     CHEM 251L   Organic Chemistry   Laboratory   1     PH 111   Physics   4     PH 111L   Physics   Lab   0     MA 223   Engineering Statistics   4     Hours   16     Winter     BIO 220   Microbiology   4     CHEM 252   Organic Chemistry    Laboratory   1     PH 112   Physics    4     PH 112   Physics    4     PH 112   Physics    4     PH 112   Physics    4     PH 112   Physics    1   4     PH 112   Physics    1   4     PH 112   Physics    1   4     Physics    16     Spring     BIO 230   Cell Biology   4     CHEM 330   Biochemistry   4     Math Elective   4     HSSA Elective   4     Hours   16     Junior     Fall     BIO 320   Ecology   4     BIO Elective   4	MA 113	Calculus III	5
Sophomore           Fall           BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251L         Organic Chemistry I Laboratory         1           PH 111         Physics I         4           PH 111L         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II         3           CHEM 252L         Organic Chemistry II Laboratory         1           PH 112         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HOurs         16           Junior           Fall           BIO Elective         4	HSSA Elective		4
Fall         BIO 210         Mendelian & Molecular Genetics         4           CHEM 251         Organic Chemistry I         3           CHEM 251L         Organic Chemistry I Laboratory         1           PH 1111         Physics I         4           PH 1111         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II         3           CHEM 252         Organic Chemistry II         4           PH 112         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Hours         16           Junior           Fall         BIO 320         Ecology         4           BIO Elective         4		Hours	17
BIO 210   Mendelian & Molecular Genetics   4	Sophomore		
CHEM 251       Organic Chemistry I       3         CHEM 251L       Organic Chemistry I Laboratory       1         PH 111       Physics I       4         PH 111L       Physics I Lab       0         MA 223       Engineering Statistics       4         Hours       16         Winter         BIO 220       Microbiology       4         CHEM 252       Organic Chemistry II       3         CHEM 252L       Organic Chemistry II Laboratory       1         PH 112       Physics II       4         PH 112L       Physics II Lab       0         ENGL H290       Technical & Professional Communication       4         Hours       16         Spring         BIO 230       Cell Biology       4         CHEM 330       Biochemistry I       4         Math Elective       4         Hours       16         Junior       4         Fall       BIO 320       Ecology       4         BIO Elective       4	Fall		
CHEM 251L       Organic Chemistry I Laboratory       1         PH 111       Physics I       4         PH 111L       Physics I Lab       0         MA 223       Engineering Statistics       4         Hours       16         Winter         BIO 220       Microbiology       4         CHEM 252       Organic Chemistry II       3         CHEM 252L       Organic Chemistry II Laboratory       1         PH 112       Physics II       4         PH 112L       Physics II Lab       0         ENGL H290       Technical & Professional Communication       4         Hours       16         Spring         BIO 230       Cell Biology       4         CHEM 330       Biochemistry I       4         Math Elective       4         Hours       16         Junior         Fall         BIO 320       Ecology       4         BIO Elective       4	BIO 210	Mendelian & Molecular Genetics	4
PH 1111       Physics I       4         PH 111L       Physics I Lab       0         MA 223       Engineering Statistics       4         Hours       16         Winter         BIO 220       Microbiology       4         CHEM 252       Organic Chemistry II       3         CHEM 252L       Organic Chemistry II Laboratory       1         PH 112       Physics II       4         PH 112L       Physics II Lab       0         ENGL H290       Technical & Professional Communication       4         Hours       16         Spring         BIO 230       Cell Biology       4         CHEM 330       Biochemistry I       4         Math Elective       4         Hours       16         Junior       Fall         BIO 320       Ecology       4         BIO Elective       4	CHEM 251	Organic Chemistry I	3
PH 111L         Physics I Lab         0           MA 223         Engineering Statistics         4           Hours         16           Winter           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II         3           CHEM 252L         Organic Chemistry II Laboratory         1           PH 112         Physics II         4           PH 112L         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           Hours         16           Junior         4           Fall         8           BIO 320         Ecology         4           BIO Elective         4	CHEM 251L	Organic Chemistry I Laboratory	1
MA 223         Engineering Statistics         4           Hours         16           Winter           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II         3           CHEM 252L         Organic Chemistry II Laboratory         1           PH 112         Physics II         4           PH 112L         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HOurs         16           Junior         Fall           BIO 320         Ecology         4           BIO Elective         4	PH 111	Physics I	4
Hours   Hour	PH 111L	Physics I Lab	0
Winter           BIO 220         Microbiology         4           CHEM 252         Organic Chemistry II         3           CHEM 252L         Organic Chemistry II Laboratory         1           PH 112         Physics II         4           PH 112L         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HSSA Elective         4           Hours         16           Junior         Fall           BIO 320         Ecology         4           BIO Elective         4	MA 223	Engineering Statistics	4
BIO 220   Microbiology		Hours	16
CHEM 252         Organic Chemistry II         3           CHEM 252L         Organic Chemistry II Laboratory         1           PH 112         Physics II         4           PH 112L         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HSSA Elective         4           Hours         16           Junior         5           Fall         8           BIO 320         Ecology         4           BIO Elective         4	Winter		
CHEM 252L         Organic Chemistry II Laboratory         1           PH 112         Physics II         4           PH 112L         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HSSA Elective         4           Hours         16           Junior         5           Fall         8           BIO 320         Ecology         4           BIO Elective         4	BIO 220	Microbiology	4
PH 112         Physics II         4           PH 112L         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HSSA Elective         4           Hours         16           Junior           Fall           BIO 320         Ecology         4           BIO Elective         4	CHEM 252	Organic Chemistry II	3
PH 112L         Physics II Lab         0           ENGL H290         Technical & Professional Communication         4           Hours         16           Spring         8           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4         4           HSSA Elective         4         4           Junior         16         5           Fall         8         8           BIO 320         Ecology         4           BIO Elective         4	CHEM 252L	Organic Chemistry II Laboratory	1
ENGL H290         Technical & Professional Communication         4           Hours         16           Spring         8           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4         4           HSSA Elective         4         4           Junior         16         5           Fall         8         10         320         Ecology         4           BIO Elective         4         4         4	PH 112	Physics II	4
Hours   16	PH 112L	Physics II Lab	0
Spring           BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HSSA Elective         4           Hours         16           Junior           Fall           BIO 320         Ecology         4           BIO Elective         4	ENGL H290	Technical & Professional Communication	4
BIO 230         Cell Biology         4           CHEM 330         Biochemistry I         4           Math Elective         4           HSSA Elective         4           Hours         16           Junior         Fall           BIO 320         Ecology         4           BIO Elective         4		Hours	16
CHEM 330         Biochemistry I         4           Math Elective         4           HSSA Elective         4           Hours         16           Junior           Fall           BIO 320         Ecology         4           BIO Elective         4	Spring		
Math Elective         4           HSSA Elective         4           Hours         16           Junior           Fall         810 320         Ecology         4           BIO Elective         4	BIO 230	Cell Biology	4
Hours   16	CHEM 330	Biochemistry I	4
Hours         16           Junior         Fall           BIO 320         Ecology         4           BIO Elective         4	Math Elective		4
Junior           Fall           BIO 320         Ecology         4           BIO Elective         4	HSSA Elective		4
Fall           BIO 320         Ecology         4           BIO Elective         4		Hours	16
BIO 320         Ecology         4           BIO Elective         4	Junior		
BIO Elective 4	Fall		
BIO Elective 4	BIO 320	Ecology	4
HSSA Elective 4	BIO Elective		4
	HSSA Elective		4

BIO 399	Practice of Science	4
	Hours	16
Winter		
BIO 330	Evolutionary Biology	4
BIO 496	Senior Thesis Research I	2
CHEM 331	Biochemistry II	4
Math Elective		4
	Hours	14
Spring		
BIO 310	Plant Structure & Function	4
BIO 497	Senior Thesis Research II	4
PHIL H201	Bioethics	4
HSSA Elective		4
	Hours	16
Senior		
Fall		
BIO 498	Senior Thesis Research III	4
Science/Technical Elective	4	
Science/Technical Elective	4	
Free Elective		4
	Hours	16
Winter		
BIO 499	Senior Thesis Research IV	2
Science/Technical Elective	4	
BIO Elective		4
HSSA Elective		4
	Hours	14
Spring		
BIO Elective		4
Science/Technical Elective	4	
HSSA Elective		4
HSSA Elective		4
	Hours	16
	Total Hours	188

## **Notes**

Hours

A biology Science/Technical Elective is any Rose-Hulman course that does not have an HSSA Department course prefix or have the prefix AS, MS, or GRAD. At least two of these courses must be 300-level or above.

A BIO Elective is any Rose-Hulman course with a BIO prefix at 400-level or above or the following three BE courses: BE 314 Musculoskeletal Systems Physiology with Applications, BE 324 Neural and Endocrine Systems Physiology with Applications, and BE 334 Cardiovascular, Respiratory, and Renal Systems Physiology with Applications.