B.S. Bioinformatics Four-Year Sample Curriculum Example

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1st Year – Fall Semester			1st Year – Spring Semester		
BIOL 101	**Opportunities in Biological Sciences**	1	**BIOL 115/115L**	**Cells & the Evolution of Life & Lab** *Prereq:* CHEM 101 or CHEM 111 minimum 'C' required to graduate	4
CHEM 111/111L	**Principles of Chemistry I & Lab** *Prereq:* math test or min 'C' in CHEM 101, MATH 143 or 170	4	**CHEM 112/112L**	**Principles of Chemistry II & Lab** *Prereq:* Chem 111/111L	5
MATH 170	**Calculus I** *Prereq:* math test or min 'C' in MATH 143 and MATH 144 (co-req possible).	4	**MATH 175**	**Calculus II** *Prereq:* min 'C' in MATH 170	4
	General Education Course/Elective	3	**CS 120**	**Computer Science I** *Prereq:* Math 143 with min grade of 'C'	4
ENGL 102	**College Writing and Rhetoric** *Prereq:* ENGL 101 or test scores	3			
	Total Credits	**15**		**Total Credits**	**17**
2nd Year – Fall Semester			**2nd Year – Spring Semester**		
CHEM 277	**Organic Chemistry I** *Prereq:* CHEM 112/112L	3	**CS 212**	**Practical Python** *Prereq:* Math 143	3
CS 121	**Computer Science II** *Prereq:* CS 120 and co-req of MATH 176	3	**BIOL 312** *(Spring only)*	**Molecular and Cellular Biology** *Prereq:* BIOL 115/115L and BIOL 310/315 or GENE 314 or BIOL 250	3
BIOL 310 *(Fall only)*	**Genetics** *Prereq:* Biol 115/115L or BIOL 250	3	**BIOL 444** *(Spring only)*	**Genomics** *Prereq:* 310 or GENE 314	3
MATH 176	**Discrete Mathematics** *Prereq:* math test or min 'C' in MATH 143 and MATH 144 (co-req possible).	3		**General Education Course/Elective**	**3**
	General Education/Elective	3		**General Education Course/Elective**	**3**
	Total Credits	**15**		**Total Credits**	**15**
3rd Year – Fall Semester			**3rd Year – Spring Semester**		
BIOL 380 *(Fall only)*	**Biochemistry I** *Prereq:* CHEM 112/112L and CHEM 277	4		**General Education Course/Elective**	3
STAT 301	**Probability & Statistics** *Prereq:* MATH 175	3	**BIOL 445 or BIOL 482 or BIOL 487**	**Protein Structure and Function** *even springs* *Prereq:* BIOL 380, **Phylogenetics** *odd springs* *Prereq: BIOL 310,* **Cellular and Molecular Basis of Disease** *fall only Prereq:* BIOL 380,and BIOL 310	3
Written Communication	**ENGL 202** or **207** or **208** or **317 or 318 or 320** *Prereq:* ENGL 102; Junior standing: 317,318, 320	3	**CS 415** *(Probably offered spring)*	**Sequence Analysis** *Prereq:* Knowledge of high level programming, basic probability, basic molecular biology	3
CS 395 or CS 360	**Analysis of Algorithms** *Prereq:* Math 175 and CS 121 **Database Systems** *Prereq:* CS 121 and CS 150	3	**BIOL 421** *(Spring only*	**Advanced Evolution/Population Dynamics** *Prereq:* BIOL 310 or 314 or FOR 221 or WLF 220	3
Option for BIOL 487 fall course, see spring	**General Education Course/Elective**	3		**General Education Course/Elective**	3
	Total Credits	**16**		**Total Credits**	**15**
4th Year – Fall Semester			**4th Year – Spring Semester**		
	General Education Course/Elective	3	**BIOL 400**	**Seminar**	1
	General Education Course/Elective	3	**Capstone Experience**	**BIOL 401** or **BIOL 407** or **BIOL 408** *(Fall or Spring)* or **BIOL 411** *(Spring only)*	2
	General Education Course/Elective	3		**General Education Course/Elective**	3
	General Education Course/Elective	3		**General Education Course/Elective**	3
	General Education Course/Elective	3		**General Education Course/Elective**	3
	Total Credits	**15**		**Total Credits**	**12**

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Bioinformatics Electives. Choose a minimum of 15 credits from either category: Biological Electives – Biochemistry II, Pathogenic Microbiology, Mathematical Biology, Prokaryotic Molecular Biology, Cellular and Molecular Basis of Disease, Microbiomes, Phylogenetics, Immunology, Mammalogy, Herpetology, Protein Structure and Function, Microbial Physiology, Neurobiology, Developmental Biology, Virology, Ethics in Science
Computational Electives – Python for Machine Learning, Machine Learning, Evolutionary Computation, Data Science, Data Visualization, Communicating with Data, Ordinary Different Equations, Linear Algebra, Multivariate Analysis, Statistical Analysis, Molecular Modeling
Additional classes can be substituted with prior approval from advisor and chairperson.