



Program Map: Biology with Pre-Calculus

Completion Award
AS Degree

Program Length
6 Quarters

Program Code
AS1B

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This is the Associate in Science Track 1 Biology Emphasis program map for the Math & Science Area of Study. It is intended for students who need MATH& 141 and MATH& 142 before taking calculus. This map is intended as a general guide. Please work with an academic advisor regarding your specific goals and transfer requirements.

Suggested Order

Order	Category	Course	Credits
1	Required Pre-Major	CHEM& 161L: General Chemistry with Lab I	5
2	Communication Skills	ENGL& 101: Composition I	5
3	Remaining Credit	MATH&141: Precalculus (if needed)	5
4	Required Pre-Major	CHEM& 162L: General Chemistry with Lab II	5
5	Remaining Credit	MATH&142: Precalculus II (if needed)	5
6	Humanities	CMST&220: Public Speaking	5

30 Credits

7	Required Pre-Major	CHEM& 163L: General Chemistry with Lab III	5
8	Required Pre-Major Math (if MATH& 146) or Social Science or Humanities	Choose one: MATH& 146: Introduction to Statistics OR ECON& 202: Macroeconomics HIST& 126, 127, or 128: World Civilizations I, II, or III SOCSI 101: Contemporary Global Issues OR ART& 100: Art Appreciation CMST& 102: Introduction to Mass Media DRMA& 101: Intro to Theatre ENGL& 111: Introduction to Literature FILM 100: Art of Film IS 101: Understanding the Humanities IS 107: History of Reason MUSC& 105: Music Appreciation PHIL& 101: Introduction to Philosophy	5
9	Social Science	Choose one: ECON& 202: Macroeconomics HIST& 126, 127, or 128: World Civilizations I, II, or III SOCSI 101: Contemporary Global Issues	5

45 Credits

Suggested Order

Order	Category	Course	Credits
10	Quantitative Skills 1	MATH& 151: Calculus I: Analytic Geometry	5
11	Required Pre-Major	BIOL& 221L Ecology and Evolution	5
12	Additional Requirement	<i>Choose one:</i> BIOL 290-294: Undergraduate Research in Biology CHEM& 242L: Organic Chemistry II* <i>and</i> CHEM& 252L: Organic Chemistry Lab II* <i>* Must be taken together for 7 credits</i> PHYS& 115L: General Physics II with Lab PHYS& 222L: Engineering Physics II	4-5
13	Quantitative Skills 2	MATH& 152: Calculus II: Analytic Geometry	5
14	Required Pre-Major	BIOL& 222L: Molecular and Cellular Biology	5
15	Additional Requirement	<i>Choose one:</i> CHEM& 242L: Organic Chemistry II* <i>and</i> CHEM& 252L: Organic Chemistry Lab II* <i>* Must be taken together for 7 credits</i> PHYS& 115L: General Physics II with Lab PHYS& 222L: Engineering Physics II	5-7
16	Required Pre-Major	<i>Choose one:</i> MATH& 146: Introduction to Statistics MATH& 163: Calculus 3: Analytic Geometry OR ECON& 202: Macroeconomics HIST& 126, 127 or 128: World Civilizations I, II, or III SOCSI 101: Contemporary Global Issues OR ART 126, 127, or 128: History of Art I, II, or III ENGL 250: Intercultural Literature ENGL& 254: World Literature I IS 109: Introduction to Indigenous Humanities MUSC& 141: Music Theory I PHIL& 115: Critical Thinking PHIL 130: Ethics	5
	Math (if not taken earlier) or Humanities 2 or Social Science 2		
17	Required Pre-Major	BIOL& 223L: Organismal Biology	5
18	Additional Requirement	<i>Choose one:</i> BIOL 290-294: Undergraduate Research in Biology CHEM& 243L: Organic Chemistry III* <i>and</i> CHEM& 253L: Organic Chemistry Lab III* <i>* Must be taken together for 6 credits</i> PHYS& 116L: General Physics II with Lab PHYS& 223L: Engineering Physics II	5-6

Total credits required:

90-92



Math & Science

Area of Study Outcomes

Communication Competencies

- Comprehend the difference between written opinions vs ideas supported by scientific inquiry.
- Demonstrate the ability to communicate scientific ideas and the process of science.

Quantitative Reasoning

- Manipulate numbers (large and small), use common measurement systems, and solve simple linear algebraic problems.
- Recognize functional relationships between and among measurable phenomena.
- Apply systematic approaches and logic to solving quantitative problems.
- Translate mathematical symbols into words and words into mathematical symbols.
- Demonstrate the ability to use modeling and simulation to solve scientific problems.

Information Competencies

- Recognize the difference between questions of high scientific impact vs those unlikely to provide critical information about a scientific phenomenon or process.
- Ability to apply the process of science.

Critical Thinking

- Identify and troubleshoot scientific problems.
- Demonstrate the ability to use quantitative reasoning and analyze data.
- Demonstrate the ability to apply the process of science.

Personal and Interpersonal Competencies

- Gain an understanding of the relationships between science and society.
- Gain familiarity with and an appreciation for the interdisciplinary nature of science.
- Demonstrate the ability to collaborate and understand the importance of collaboration in science.

Career Pathways

By earning a degree or certificate in the area of Math & Science you'll be on your way to any of the following career opportunities listed below:

- Astronomer
- Atmospheric scientist
- Bioengineer
- Biologist
- Chemist
- Computer Scientist
- Engineer
- Environmental scientist
- Mathematician
- Materials scientist
- Physicist
- Sustainable agriculturist

Program Notes

Please note that many universities require a foreign language for admission.

Possible additional pre-college classes depending upon placement level:

- Engl 90 (5 credits) and Math 63/90/98 (5-15 credits).
- CHEM&121L or a 2.0 in high school Chemistry is a prerequisite for CHEM&161L. If needed, CHEM&121L could be counted as an additional requirement.
- Degree must include 15 credits combined of Social Sciences and Humanities (10 credits of Social Science and 5 credits of Humanities OR 10 credits of Humanities and 5 credits of Social Science).