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| **COMMUNITY COLLEGE OF PHILADELPHIA****Degree Program Revision Template** |
| Name of Degree Program | Biological Sciences |
| Academic Pathway | Science and Technology |
| Department | Biology |
| Faculty Developer | Linda Powell |
| Facilitator | Amy Birge-Caracappa |
| Recommended Starting Semester | Fall 2021 |
| **Today’s Date** | February 22, 2021 |

1. **Description of and Rationale for Revision**

This program revision replaces the general elective in the first semester with a new four-credit First-Year Experience course, updates the catalog grid, course sequence, and curriculum map, updates the course titles for HIST 121 and HIST 122, and corrects an error in the second semester in the catalog grid.

**New Course:** When the Biological Sciences program was approved in Spring 2020, it included a three-credit general elective and the stated intention to replace it with an FYE course. The addition of the four-credit BIOL 100: Introduction to the Life Sciences raises the total number of credits from 60 to 61. In addition, the catalog grid and course sequence have been updated to reflect the College’s revised general education requirements, effective Fall 2021.

BIOL 100 - Introduction to Life Sciences

3-2-4 **Credit Hours:**4

Introduction to Life Sciences is a first-year experience course designed to assist students interested in any career related to biological/life sciences in the development of the behaviors and strategies required for college-level academic inquiry and college success. The course introduces the scientific method, including critical thinking, problem-solving, and data interpretation as well as effective communication and academic integrity. Students must demonstrate classroom behaviors associated with success (attendance, punctuality, participation) and develop college preparedness skills (such as time management, reading and note taking for comprehension, study methods, and test taking strategies). Students in the Biological Sciences AA program will be required to enroll in BIOL 100 within the first 18 credits.

**Course Learning Outcomes**

Upon successful completion of the course, students will be able to:

1. Work successfully within an LMS (currently Canvas) through downloading, modifying, saving and uploading files from/to LMS.
2. Explain the importance of time management for academic success and submit assignments in a timely manner.
3. Develop an academic plan, a financial plan and a career/transfer plan based on the student’s individual academic and career goals.
4. Take accurate and comprehensive notes from a lecture and by outlining material from a textbook.
5. Explain the steps in the scientific method and apply them to solve a problem.
6. Perform basic mathematical functions, standard data presentation forms, and data interpretation
7. Evaluate a word problem and define the essential question and the process necessary to solve/answer it.
8. Use of laboratory equipment commonly employed in biological research e.g. light microscope, and measuring devices.

**Course Substitutions:** To accommodate the new Oral Communication/Creative Expression requirement for general education, effective Fall 2021, several of the current directed elective options in areas such as humanities and social sciences have been redistributed, and ENGL 115: Public Speaking has been added to the course sequence. ENGL 115 is a particularly apt choice because it also appears in the Biology AS degree.

**Course Eliminations:** This revision does not eliminate any courses from the program.

**Other Requirements:** There are no other changes to the program.

**Change in Credits:** The addition of the four-credit BIOL 100: Introduction to the Life Sciences raises the total number of credits from 60 to 61.

1. **Supporting Data**

The Office of Institutional Research’s 2019 First Year Experience Outcomes Survey shows that students enrolled in FYE 101, BUSL 101, and AH 101 were more likely to complete college mathematics and first-year composition courses in their first full academic year and had better fall-to-fall retention outcomes compared to students who did not take a first-year experience course (see Appendix).

1. **Program Learning Outcomes**

This change will not affect the program learning outcomes.

1. **Effect on Other Programs**

This revision will not affect other degree and certificate programs at the College.

1. **Space or Technology Requirements**

The revision does not involve new space or technology requirements.

1. **Current/Proposed Catalog Page**

**Biological Sciences (current)**

**Description:** The Associate in Arts Degree in Biological Sciences is a non-select two-year program in the Science and Technology academic pathway primarily intended to prepare students for transfer to four-year programs in science and technology related fields, including but not limited to pharmaceuticals, biotechnology, elementary and middle school education. Students in this program include those interested in non-allied health STEM-related fields, those who wish to build prerequisites for select programs in the Science and Technology academic pathway, and those who wish to obtain a two-year Science and Technology degree with the intention of transfer into a related field.

**Student Learning Outcomes:**

Upon successful completion of this program, students will be able to:

* Demonstrate an understating of the Scientific Method and utilize it for the development of hypotheses, the collection and analysis of data, and the presentation of results.
* Effectively communicate, in a classroom setting, scientific information via written and graphical methods.
* Summarize the major biological and chemical concepts and processes essential to the living organism.
* Explain the hierarchy of organization in living things, from the chemical level to the biosphere.

**Program Entry Requirements:** This program is open to all interested students. New students are normally required to take College’s placement tests at their time of entry. Students who are identified as needing developmental course work must satisfactorily complete the appropriate English and mathematics courses as part of their degree program.

**Program of Study and Graduation Requirements:** To qualify for the Associate in Arts (AA) degree in Biological Sciences, a student must complete a minimum of 61 credits as prescribed and attain a minimum grade point average of 2.0 (“C” average).

**Course Sequence:**

Semester 1

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 106 - General Biology I](https://ccp.edu/biol-106-general-biology-i) |   | 4 credits | Natural Science |
| [ENGL 101 - English Composition](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-101-english-composition) | ENGL 101 Placement | 3 credits | ENGL 101 |
| [FNMT 118 - Intermediate Algebra](https://ccp.edu/college-catalog/course-offerings/all-courses/fnmt-118-intermediate-algebra) | FNMT 118 Placement | 3 credits | Mathematics |
| [SOC 101 - Introduction to Sociology](https://ccp.edu/college-catalog/course-offerings/all-courses/soc-101-introduction-sociology) |   | 3 credits | Social Sciences Interpretive Studies Writing Intensive Am/Global Diversity |
| General Elective |   | 3 credits |   |

Semester 2

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 107 - General Biology II](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-107-general-biology-ii) | [BIOL 106](https://ccp.edu/biol-106-general-biology-i) with a "C" or better. |  |   |
| [CHEM 110 - Introductory Chemistry](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-110-introductory-chemistry) | [FNMT 118](https://ccp.edu/college-catalog/course-offerings/all-courses/fnmt-118-intermediate-algebra) or MATH 118 placement and [ENGL 101](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-101-english-composition) ready. |  |   |
| [CIS 103 - Computer Applications & Concepts](https://ccp.edu/college-catalog/course-offerings/all-courses/cis-103-computer-applications-concepts) |   |  | Technological Competency |
| [ENGL 102 - The Research Paper](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-102-research-paper) |   |  | ENGL 102, Information Literacy |
| Humanities Elective (Choose one):[FREN 101 - Elementary French](https://ccp.edu/college-catalog/course-offerings/all-courses/fren-101-elementary-french) or[HUM 101 - Cultural Traditions](https://ccp.edu/college-catalog/course-offerings/all-courses/hum-101-cultural-traditions) or[SPAN 101 - Elementary Spanish](https://ccp.edu/college-catalog/course-offerings/all-courses/span-101-elementary-spanish) |   |  | Humanities |

Semester 3

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 108 - Essentials of Human Anatomy and Physiology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-108-essentials-human-anatomy-and-physiology) |   | 4 credits |   |
| [MATH 161 - Precalculus I](https://ccp.edu/college-catalog/course-offerings/all-courses/math-161-precalculus-i) |   | 3 credits |   |
| **Directed Elective (Choose two):**[ANTH 101 - Introduction to Anthropology](https://ccp.edu/college-catalog/course-offerings/all-courses/anth-101-introduction-anthropology) or [ECON 181 - Principles of Economics (Macroeconomics)](https://ccp.edu/college-catalog/course-offerings/all-courses/econ-181-principles-economics-macroeconomics) or[ECON 182 - 182 Principles of Economics (Microeconomics)](https://ccp.edu/college-catalog/course-offerings/all-courses/econ-182-182-principles-economics-microeconomics) or[HIST 101 - United States History: Colonial America through the Revolutionary Era](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-101-united-states-history-colonial-america-through-revolutionary-era) or[HIST 102 - United States History: The 19th Century](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-102-united-states-history-19th-century) or[HIST 103 - United States History: The 20th Century](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-103-united-states-history-20th-century) or[HIST 121 - Global History I](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-121-global-history-i) or[HIST 122 - Global History II](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-122-global-history-ii) or[PHIL 101 - Introduction to Philosophy](https://ccp.edu/college-catalog/course-offerings/all-courses/phil-101-introduction-philosophy) or[POLS 111 - American Government](https://ccp.edu/college-catalog/course-offerings/all-courses/pols-111-american-government) or[PSYC 101 - Introduction to Psychology](https://ccp.edu/college-catalog/course-offerings/all-courses/psyc-101-introduction-psychology) or[PSYC 201 - Child Psychology](https://ccp.edu/college-catalog/course-offerings/all-courses/psyc-201-child-psychology) or[SOC 231 - Social Problems](https://ccp.edu/college-catalog/course-offerings/all-courses/soc-231-social-problems) | For PSYC 201: [PSYC 101](https://ccp.edu/college-catalog/course-offerings/all-courses/psyc-101-introduction-psychology)For SOC 231: [SOC 101](https://ccp.edu/college-catalog/course-offerings/all-courses/soc-101-introduction-sociology) or [ANTH 112](https://ccp.edu/college-catalog/course-offerings/all-courses/anth-112-cultural-anthropology) | 6 credits |   |

Semester 4

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 104 - Forensic Biology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-104-forensic-biology) or[BIOL 123 - Principles of Biology I](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-123-principles-biology-i) or[BIOL 211 - Genetics](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-211-genetics) or[BIOL 225 - Ecology and Field Biology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-225-ecology-and-field-biology) or[BIOL 241 - Principles of Microbiology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-241-principles-microbiology) or[STS 101 - Introduction to Science, Technology and Society](https://ccp.edu/college-catalog/course-offerings/all-courses/sts-101-introduction-science-technology-and-society) | For BIOL 104 and STS 101: [FNMT 118](https://ccp.edu/college-catalog/course-offerings/all-courses/fnmt-118-intermediate-algebra) or MATH 118 or higher placementFor BIOL 123: [CHEM 121](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-121-college-chemistry-i) or [CHEM 110](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-110-introductory-chemistry) with a grade of "C" or better and high school biology or permission of the department headFor BIOL 211: [BIOL 106](https://ccp.edu/biol-106-general-biology-i) or [BIOL 108](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-108-essentials-human-anatomy-and-physiology) or [BIOL 109](https://ccp.edu/biol-109-anat-phys-i) or [BIOL 123](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-123-principles-biology-i) with a grade of "C" or better or permission of the department headFor BIOL 225: [BIOL 107](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-107-general-biology-ii) or [BIOL 124](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-124-principles-biology-ii) with a grade of "C" or better in eitherFor BIOL 241: [BIOL 106](https://ccp.edu/biol-106-general-biology-i) or [BIOL 107](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-107-general-biology-ii) or [BIOL 109](https://ccp.edu/biol-109-anat-phys-i) or [BIOL 123](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-123-principles-biology-i) with a "C" or better or permission of the department head | 4 credits |   |
| [CHEM 118 - Introduction to Biochemistry](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-118-introduction-biochemistry) | [CHEM 101](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-101-fundamentals-chemistry-i-lab-based), [CHEM 110](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-110-introductory-chemistry) or [CHEM 121](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-121-college-chemistry-i) with a grade of "C" or better. | 4 credits |   |
| [MATH 162 - Precalculus II](https://ccp.edu/college-catalog/course-offerings/all-courses/math-162-precalculus-ii) | [MATH 161](https://ccp.edu/college-catalog/course-offerings/all-courses/math-161-precalculus-i) with a grade of "C" or better, or placement in MATH 162 or higher. | 3 credits |   |
| [ART 103 - History of Art: Ancient to Renaissance](https://ccp.edu/college-catalog/course-offerings/all-courses/art-103-history-art-ancient-renaissance) or [ENGL 190 - Introduction to Literature](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-190-introduction-literature) or[FREN 101 - Elementary French](https://ccp.edu/college-catalog/course-offerings/all-courses/fren-101-elementary-french) or[MUS 103 - Introduction to Music](https://ccp.edu/college-catalog/course-offerings/all-courses/mus-103-introduction-music) or[PHIL 101 - Introduction to Philosophy](https://ccp.edu/college-catalog/course-offerings/all-courses/phil-101-introduction-philosophy) or[PHIL 211 - Ethical Problems](https://ccp.edu/college-catalog/course-offerings/all-courses/phil-211-ethical-problems) or[SPAN 101 - Elementary Spanish](https://ccp.edu/college-catalog/course-offerings/all-courses/span-101-elementary-spanish) | For ENGL 190: [ENGL 101](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-101-english-composition), which may be taken concurrently | 3 credits |   |

**Minimum Credits Needed to Graduate: 60**

**Biological Sciences (proposed)**

**Description:** The Associate in Arts Degree in Biological Sciences is a non-select two-year program in the Science and Technology academic pathway primarily intended to prepare students for transfer to four-year programs in science and technology related fields, including but not limited to pharmaceuticals, biotechnology, elementary and middle school education. Students in this program include those interested in non-allied health STEM-related fields, those who wish to build prerequisites for select programs in the Science and Technology academic pathway, and those who wish to obtain a two-year Science and Technology degree with the intention of transfer into a related field.

**Student Learning Outcomes:**

Upon successful completion of this program, students will be able to:

* Demonstrate an understating of the Scientific Method and utilize it for the development of hypotheses, the collection and analysis of data, and the presentation of results.
* Effectively communicate, in a classroom setting, scientific information via written and graphical methods.
* Summarize the major biological and chemical concepts and processes essential to the living organism.
* Explain the hierarchy of organization in living things, from the chemical level to the biosphere.

**Program Entry Requirements:** This program is open to all interested students. New students are normally required to take College’s placement tests at their time of entry. Students who are identified as needing developmental course work must satisfactorily complete the appropriate English and mathematics courses as part of their degree program.

**Program of Study and Graduation Requirements:** Students in the Biological Sciences program are required to enroll in BIOL 100: Introduction to Life Sciences within the first 18 credits. To qualify for the Associate in Arts (AA) degree in Biological Sciences, a student must complete a minimum of 61 credits as prescribed and attain a minimum grade point average of 2.0 (“C” average).

Semester 1

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 106 - General Biology I](https://ccp.edu/biol-106-general-biology-i) |   | 4 credits | Scientific Reasoning |
| [ENGL 101 - English Composition](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-101-english-composition) |  | 3 credits | Writing, Research, Info Lit 1 |
| [FNMT 118 - Intermediate Algebra](https://ccp.edu/college-catalog/course-offerings/all-courses/fnmt-118-intermediate-algebra) | FNMT 017 or FNMT 019 completed or FNMT 118 (or higher) placement | 3 credits | Quantitative Reasoning |
| [SOC 101 - Introduction to Sociology](https://ccp.edu/college-catalog/course-offerings/all-courses/soc-101-introduction-sociology)\* or[ANTH 101 - Introduction to Anthropology](https://ccp.edu/college-catalog/course-offerings/all-courses/anth-101-introduction-anthropology) or [ECON 181 - Principles of Economics (Macroeconomics)](https://ccp.edu/college-catalog/course-offerings/all-courses/econ-181-principles-economics-macroeconomics) or[POLS 111 - American Government](https://ccp.edu/college-catalog/course-offerings/all-courses/pols-111-american-government) |   | 3 credits | Cultural Analysis & Interpretation  |
| BIOL 100: Introduction to Life Sciences | FNMT 017 or FNMT 019 completed or placement in FNMT 118 or higher | 4 credits |   |

Semester 2

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 107 - General Biology II](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-107-general-biology-ii) | [BIOL 106](https://ccp.edu/biol-106-general-biology-i) with a "C" or better. | 4 credits |   |
| [CHEM 110 - Introductory Chemistry](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-110-introductory-chemistry) | [FNMT 118](https://ccp.edu/college-catalog/course-offerings/all-courses/fnmt-118-intermediate-algebra) or MATH 118 placement and [ENGL 101](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-101-english-composition) ready. | 4 credits |   |
| [CIS 103 - Computer Applications & Concepts](https://ccp.edu/college-catalog/course-offerings/all-courses/cis-103-computer-applications-concepts) |   | 3 credits | Technological Competency |
| [ENGL 102 - The Research Paper](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-102-research-paper) |   | 3 credits | Writing, Research, Info Lit 2 |
| **Directed Elective (choose one)**[FREN 101 - Elementary French](https://ccp.edu/college-catalog/course-offerings/all-courses/fren-101-elementary-french) or[HUM 101 - Cultural Traditions](https://ccp.edu/college-catalog/course-offerings/all-courses/hum-101-cultural-traditions): Ancient to the 13th Century or[SPAN 101 - Elementary Spanish](https://ccp.edu/college-catalog/course-offerings/all-courses/span-101-elementary-spanish) |   | 3 credits |  |

Semester 3

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 108 - Essentials of Human Anatomy and Physiology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-108-essentials-human-anatomy-and-physiology) |   | 4 credits |   |
| [MATH 161 - Precalculus I](https://ccp.edu/college-catalog/course-offerings/all-courses/math-161-precalculus-i) | [FNMT 118](https://www.ccp.edu/college-catalog/course-offerings/all-courses/fnmt-118-intermediate-algebra) with a grade of "C" or better  | 3 credits |   |
| **Directed Elective (Choose two):**ART 103 - History of Art: Ancient to Renaissance or [ECON 182 - Principles of Economics (Microeconomics)](https://ccp.edu/college-catalog/course-offerings/all-courses/econ-182-182-principles-economics-microeconomics) or[HIST 101 - United States History: Colonial America through the Revolutionary Era](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-101-united-states-history-colonial-america-through-revolutionary-era) or[HIST 102 - United States History: The Civil War and the 19th Century](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-102-united-states-history-19th-century) or[HIST 103 - United States History: The 20th Century](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-103-united-states-history-20th-century) and Beyond or[HIST 121 - World History: The Distant Past](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-121-global-history-i) or[HIST 122 - World History:](https://ccp.edu/college-catalog/course-offerings/all-courses/hist-122-global-history-ii) The Recent Past orENGL 190 - Introduction to Literature orMUS 103 - Introduction to Music or[PHIL 101 - Introduction to Philosophy](https://ccp.edu/college-catalog/course-offerings/all-courses/phil-101-introduction-philosophy)\*  orPHIL 211 - Ethical Problems or[PSYC 101 - Introduction to Psychology](https://ccp.edu/college-catalog/course-offerings/all-courses/psyc-101-introduction-psychology)\* or[PSYC 201 - Child Psychology](https://ccp.edu/college-catalog/course-offerings/all-courses/psyc-201-child-psychology) or[SOC 231 - Social Problems](https://ccp.edu/college-catalog/course-offerings/all-courses/soc-231-social-problems) or | For ENGL 190: [ENGL 101](https://ccp.edu/college-catalog/course-offerings/all-courses/engl-101-english-composition), which may be taken concurrently For PSYC 201: [PSYC 101](https://ccp.edu/college-catalog/course-offerings/all-courses/psyc-101-introduction-psychology)For SOC 231: [SOC 101](https://ccp.edu/college-catalog/course-offerings/all-courses/soc-101-introduction-sociology) or [ANTH 112](https://ccp.edu/college-catalog/course-offerings/all-courses/anth-112-cultural-anthropology) | 6 credits |   |

Semester 4

| **Course Number and Name** | **Prerequisites and Corequisites** | **Credits** | **Gen Ed Requirements** |
| --- | --- | --- | --- |
| [BIOL 104 - Forensic Biology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-104-forensic-biology) or[BIOL 123 - Principles of Biology I](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-123-principles-biology-i) or[BIOL 211 - Genetics](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-211-genetics) or[BIOL 225 - Ecology and Field Biology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-225-ecology-and-field-biology) or[BIOL 241 - Principles of Microbiology](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-241-principles-microbiology) or[STS 101 - Introduction to Science, Technology and Society](https://ccp.edu/college-catalog/course-offerings/all-courses/sts-101-introduction-science-technology-and-society) | For BIOL 104 and STS 101: [FNMT 118](https://ccp.edu/college-catalog/course-offerings/all-courses/fnmt-118-intermediate-algebra) or higher placementFor BIOL 123: [CHEM 121](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-121-college-chemistry-i) or [CHEM 110](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-110-introductory-chemistry) with a grade of "C" or better and high school biology or permission of the department headFor BIOL 211: [BIOL 106](https://ccp.edu/biol-106-general-biology-i) or [BIOL 108](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-108-essentials-human-anatomy-and-physiology) or [BIOL 109](https://ccp.edu/biol-109-anat-phys-i) or [BIOL 123](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-123-principles-biology-i) with a grade of "C" or better or permission of the department headFor BIOL 225: [BIOL 107](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-107-general-biology-ii) or [BIOL 124](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-124-principles-biology-ii) with a grade of "C" or better in eitherFor BIOL 241: [BIOL 106](https://ccp.edu/biol-106-general-biology-i) or [BIOL 107](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-107-general-biology-ii) or [BIOL 109](https://ccp.edu/biol-109-anat-phys-i) or [BIOL 123](https://ccp.edu/college-catalog/course-offerings/all-courses/biol-123-principles-biology-i) with a "C" or better or permission of the department head | 4 credits |   |
| [CHEM 118 - Introduction to Biochemistry](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-118-introduction-biochemistry) | [CHEM 101](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-101-fundamentals-chemistry-i-lab-based), [CHEM 110](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-110-introductory-chemistry) or [CHEM 121](https://ccp.edu/college-catalog/course-offerings/all-courses/chem-121-college-chemistry-i) with a grade of "C" or better. | 4 credits |   |
| [MATH 162 - Precalculus II](https://ccp.edu/college-catalog/course-offerings/all-courses/math-162-precalculus-ii) | [MATH 161](https://ccp.edu/college-catalog/course-offerings/all-courses/math-161-precalculus-i) with a grade of "C" or better, or placement in MATH 162 or higher. | 3 credits |   |
| [ENGL 115](http://ccp.edu/college-catalog/course-offerings/english-courses#engl115) - Public Speaking  | [ENGL 101](file:///%5C%5Cad.ccp.edu%5Cdata%5CSHARED%5CCurrDevelop%5CCurric%20Development%20Office%5CApplied%20Studies%5CENGL%20101), which may be taken concurrently | 3 credits | Oral Communication/Creative Expression |

**Minimum Credits Needed to Graduate: 61**

**\*** Students who wish to transfer to the Associate of Science in Biology degree program should take SOC 101, PSYC 101 and PHIL 101. Students should consult an advisor and the requirements of their chosen transfer institution before choosing their directed electives.

1. **Current/Proposed** [**Courses and Completion Sequence**](https://www.ccp.edu/academic-offerings/all-offerings/)

**Courses and Completion Sequence (current)**

The following courses and sequence of courses is designed for the optimal success and completion of the AA in Biological Sciences degree/certificate. Any alterations should be discussed with your academic advisor.

Semester 1

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| BIOL 106 - General Biology I | 4 credits |  | Natural Science  |
| ENGL 101 - English Composition I | 3 credits |  | Fulfills English 101 General Education Requirement  |
| FNMT 118 - Intermediate Algebra | 3 credits |  | Fulfills Mathematics General Education Requirement |
| SOC 101 - Introduction to Sociology  | 3 credits |  | Fulfills Social Science General Education and Interpretive Studies, Writing Intensive, and American/Global Diversity requirements |
| General Elective | 3 credits |  |  |

Semester 2

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| BIOL 107 - General Biology II | 4 credits |  | Major Course |
| CHEM 110 - Introductory Chemistry | 4 credits |  |  |
| CIS 103 - Applied Computer Technology | 3 credits |  | Fulfills Technological Competency General Education Requirement |
| ENGL 102 - The Research Paper | 3 credits |  | Fulfills ENGL 102/Information Literacy General Education Requirement |
| Choose one:FREN 101 - Elementary French HUM 101 - Cultural TraditionsSPAN 101 - Elementary Spanish | 3 credits |  | Fulfills Humanities General Education requirement |

Semester 3

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| BIOL 108 - Essentials of Human Anatomy and Physiology | 4 credits |  |  |
| MATH 161 - Precalculus I | 3 credits |  |  |
| Choose two:ANTH 101 - Introduction to AnthropologyECON 181 - Principles of Economics (Macroeconomics)ECON 182 - Principles of Economics (Microeconomics)HIST 101 - United States History: Colonial America thorough the Revolutionary EraHIST 102 - United States History: The 19th CenturyHIST 103 - United States History: The 20th CenturyHIST 121 - Global History IHIST 122 - Global History IIPHIL 101 - Introduction to PhilosophyPOLS 111 - American GovernmentPSYC 101 - Introduction to PsychologyPSYC 201 - Child PsychologySOC 231 - Social Problems | 6 credits |  | Directed Elective |

Semester 4

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| **Biology Elective (choose one):**BIOL 104 - Forensic BiologyBIOL 123 - Principles of BiologyBIOL 211 - GeneticsBIOL 225 - Ecology and Field BiologyBIOL 241 - Principles of MicrobiologySTS 101 - Science, Technology and Society | 4 credits | If students desire to transfer to Associate of Science in Biology degree program, BIOL 123 is recommended at this time. | Concentration Elective |
| CHEM 118 - Introductory Chemistry | 4 credits | If students desire to transfer to Associate of Science in Biology degree program, CHEM 121 is recommended at this time. |  |
| MATH 162 - Precalculus II | 4 credits |  |  |
| ART 103 - History of Art: Ancient to RenaissanceENGL 190 - Introduction to LiteratureFREN 101 - Elementary FrenchMUS 103 - Introduction to MusicPHIL 101 - Introduction to PhilosophyPHIL 211 - Ethical ProblemsSPAN 101 - Elementary Spanish | 3 credits |  |  |

**Courses and Completion Sequence (proposed)**

The following courses and sequence of courses is designed for the optimal success and completion of the AA in Biological Sciences degree/certificate. Any alterations should be discussed with your academic advisor.

Semester 1

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| BIOL 106 - General Biology I | 4 credits |  | Fulfills Scientific Reasoning General Education Requirement |
| ENGL 101 - English Composition I | 3 credits |  | Fulfills Writing/Research/Info Lit 1 General Education Requirement  |
| FNMT 118 - Intermediate Algebra | 3 credits |  | Fulfills Quantitative Reasoning General Education Requirement |
| SOC 101 - Introduction to Sociology orANTH 101 - Introduction to Anthropology or ECON 181 - Principles of Economics (Macroeconomics) orPOLS 111 - American Government | 3 credits | Students who wish to transfer to the Associate of Science in Biology degree program should take SOC 101. Students should consult an advisor and the requirements of their chosen transfer institution before choosing their directed electives. | Fulfills Cultural Analysis & Interpretation General Education Requirement |
| BIOL 100: Introduction to Life Sciences | 4 credits |  |  |

Semester 2

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| BIOL 107 - General Biology II | 4 credits |  | Major Course |
| CHEM 110 - Introductory Chemistry | 4 credits |  |  |
| CIS 103 - Applied Computer Technology | 3 credits |  | Fulfills Technological Competency General Education Requirement |
| ENGL 102 - The Research Paper | 3 credits |  | Fulfills Writing/Research/Info Lit 2 General Education Requirement |
| **Choose one:**FREN 101 - Elementary French HUM 101 - Cultural Traditions: Ancient to the 13th CenturySPAN 101 - Elementary Spanish | 3 credits |  |  |

Semester 3

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| BIOL 108 - Essentials of Human Anatomy and Physiology | 4 credits |  | Major Course |
| MATH 161 - Precalculus I | 3 credits |  |  |
| **Choose two:**ART 103 - History of Art: Ancient to RenaissanceECON 182 - Principles of Economics (Microeconomics)ENGL 190 - Introduction to LiteratureHIST 101 - United States History: Colonial America thorough the Revolutionary EraHIST 102 - United States History: The Civil War and the 19th CenturyHIST 103 - United States History: The 20th Century and BeyondHIST 121 - World History: The Distant Past orHIST 122 - World History: The Recent Past orMUS 103 - Introduction to MusicPHIL 101 - Introduction to PhilosophyPHIL 101 - Introduction to PhilosophyPHIL 211 - Ethical ProblemsPSYC 101 - Introduction to PsychologyPSYC 201 - Child PsychologySOC 231 - Social Problems | 6 credits | Students who wish to transfer to the Associate of Science in Biology degree program should take PSYC 101 and PHIL 101. Students should consult an advisor and the requirements of their chosen transfer institution before choosing their directed electives. | Directed Elective |

Semester 4

| **Course Number and Name** | **Credits** | **Advisory Notes** | **Course Type** |
| --- | --- | --- | --- |
| **Biology Elective (choose one):**BIOL 104 - Forensic BiologyBIOL 123 - Principles of BiologyBIOL 211 - GeneticsBIOL 225 - Ecology and Field BiologyBIOL 241 - Principles of MicrobiologySTS 101 - Science, Technology and Society | 4 credits | If students desire to transfer to Associate of Science in Biology degree program, BIOL 123 is recommended at this time. | Concentration Elective |
| CHEM 118 - Introductory Chemistry | 4 credits | If students desire to transfer to Associate of Science in Biology degree program, CHEM 121 is recommended at this time. |  |
| MATH 162 - Precalculus II | 4 credits |  |  |
| ENGL 115 - Public Speaking | 3 credits |  | Fulfills Oral Communication/Creative Expression General Education Requirement |

1. **Current and Proposed Curriculum Map (current)**

**Curriculum Map (current)**

**Key:** **I**—Introduced **R**—Reinforced and opportunity to practice

**M**—Mastery at exit level **A**—Assessment evidence collected

|  |  |
| --- | --- |
| Required Courses🡻 | **Program Learning Outcomes** |
| Demonstrate an understating of the Scientific Method and utilize it for the development of hypotheses, the collection and analysis of data, and the presentation of results. | Effectively communicate, in a classroom setting, scientific information via written and graphical methods. | Summarize the major biological and chemical concepts and processes essential to the living organism. | Explain the hierarchy of organization in living things, from the chemical level to the biosphere. |
| BIOL 104 | I, R, A | I, A |  |  |
| BIOL 106 | I, R, A | I  | I, R, A | I, A |
| BIOL 107 | R, A |  |  | R, A |
| BIOL 108 | I, R, A | I, A | I, R, A | I, A |
| BIOL 123 | R, M, A, | R, A | R, A | R, A  |
| BIOL 211 | R, A | R, A | R, A |  |
| BIOL 225 | R, A | R, M, A | R, M, A | R, M, A |
| BIOL 241 | R, M, A | R, M, A | R, M, A | R, M, A |
| STS 101 | I, R, A | I, R, A | I, R, A |  |
| CHEM 110 | I, A | I, A |  |  |
| CHEM 118 | I, A | I, A |  |  |

**Curriculum Map (proposed)**

**Key:** **I**—Introduced **R**—Reinforced and opportunity to practice

**M**—Mastery at exit level **A**—Assessment evidence collected

|  |  |
| --- | --- |
| Required Courses🡻 | **Program Learning Outcomes** |
| Demonstrate an understating of the Scientific Method and utilize it for the development of hypotheses, the collection and analysis of data, and the presentation of results. | Effectively communicate, in a classroom setting, scientific information via written and graphical methods. | Summarize the major biological and chemical concepts and processes essential to the living organism. | Explain the hierarchy of organization in living things, from the chemical level to the biosphere. |
| BIOL 100 | I | I |  |  |
| BIOL 104 | I, R, A | I, A |  |  |
| BIOL 106 | I, R, A | I  | I, R, A | I, A |
| BIOL 107 | R, A |  |  | R, A |
| BIOL 108 | I, R, A | I, A | I, R, A | I, A |
| BIOL 123 | R, M, A, | R, A | R, A | R, A  |
| BIOL 211 | R, A | R, A | R, A |  |
| BIOL 225 | R, A | R, M, A | R, M, A | R, M, A |
| BIOL 241 | R, M, A | R, M, A | R, M, A | R, M, A |
| STS 101 | I, R, A | I, R, A | I, R, A |  |
| CHEM 110 | I, A | I, A |  |  |
| CHEM 118 | I, A | I, A |  |  |

1. **Appendix**

**First Year Experience Outcomes Summary**

The Guided Pathways research finds that students are more likely to succeed when they understand the steps they need to complete a certificate or degree – and understand the institutional support systems in place to help them achieve their goals.

**Momentum-based Key Performance Indicators (KPI)**

**Credit Momentum** It is clear that students who enroll full-time rather than part-time are more likely to graduate. First-year experience courses are designed to support the successful academic and social transition of new students into the CCP community. As Astin[[1]](#footnote-1) writes, student success requires intentional efforts to establish, develop, and nurture student connections within the institution. Credit-momentum is a near-term measure tracking students through their first-term progress toward their goals. A first-step toward improvement in students’ long-term success is increasing the percent of FTIC[[2]](#footnote-2) students who successfully complete a full-time, college-level credit load in their first-term; credit-momentum provides a summary review of this measure.

**FTIC Populations**

To establish comparable measures, the populations used in calculating momentum-based KPIs, include only students that were first-time in college, completed high school, and enrolled in a credit program in the associated terms.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall 2016 | Fall 2017 | Fall 2018 |
| AH 101[[3]](#footnote-3) | 352 | 328 | 275 |
| BUSL 101 |  | 192 | 194 |
| FYE 101 | 249 | 264 | 216 |
| FTIC Baseline[[4]](#footnote-4)(No FYE course) | 3,457 | 2,915 | 2,850 |

**Earned 12+ College Credits in 1st Term**

*Percent of fall cohort students who earned 12 or more college-level (i.e., non-developmental) credits (with grade A-D or P) in the first term*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall 2016 | Fall 2017 | Fall 2018 |
| AH 101 | 15.3 % | 11.3 % | 14.9% |
| BUSL 101 |  | 14.1 % | 25.8% |
| FYE 101 | 15.7 % | 20.8 % | 15.3% |
| FTIC Baseline(No FYE course) | 8.6 % | 10.1 % | 9.6% |

**FTIC Fall to Spring Retention**

*Percent of fall cohort students who enrolled in at least one credit-bearing course (including developmental) in term 2 (spring term)*

|  |  |  |  |
| --- | --- | --- | --- |
|  | *Fall 2016* | *Fall 2017* | *Fall 2018* |
| AH 101 | 81.0 % | 83.5 % | Available Fall 2019 |
| BUSL 101 |  | 70.3 % |  |
| FYE 101 | 83.1 % | 82.6 % |  |
| FTIC Baseline(No FYE course) | 72.0% | 71.1 % |  |

**Medium-term indicators**, such as courses completed/credits earned in the first year and fall to fall retention, to assess student persistence and progression.

**Earned 15+ College Credits in 1st Year**

*Number and % of fall cohort students who earned 15 or more college-level (i.e., non-developmental) credits (with grade A-D or P) in first full academic year*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall 2016 | Fall 2017 | Fall 2018 |
| AH 101 | 40.1 % | 37.8 % | Available Fall 2019 |
| BUSL 101 |  | 33.9 % |  |
| FYE 101 | 45.0 % | 47.7 % |  |
| FTIC Baseline (No FYE course) | 23.2 % | 24.3 % |  |

**Gateway Momentum**

**Completion of College Math in 1st Year**

*Percent of fall cohort students who attempted and passed at least one college level (i.e., non-developmental) Math 118 or higher (with grade A-D or P) in the first full academic year. Withdrawals are counted as attempting but not passing the course.*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall 2016 | Fall 2017 | Fall 2018 |
| AH 101 | 34.1 % | 29.0% | Available Fall 2019 |
| BUSL 101 |  | 32.8 % |  |
| FYE 101 | 32.9 % | 35.6 % |  |
| FTIC Baseline (No FYE course) | 23.2 % | 23.6 % |  |

**Completion of College English in 1st Year**

*Percent of fall cohort students who attempted and passed English 101, college level (i.e., non-developmental) (with grade A-D or P) in the first full academic year. Withdrawals are counted as attempting but not passing the course.*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall 2016 | Fall 2017 | Fall 2018 |
| AH 101 | 56.3 % | 58.8% | Available Fall 2019 |
| BUSL 101 |  | 44.8 % |  |
| FYE 101 | 61.4 % | 63.3 % |  |
| FTIC Baseline (No FYE course) | 41.2 % | 42.1 % |  |

**Completion of Both College Math & English in 1st Year**

*Percent of fall cohort students who attempted and passed Math 118 or higher and English 101, college level (i.e., non-developmental) (with grade A-D or P) in the first full academic year. Withdrawals are counted as attempting but not passing the course.*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall 2016 | Fall 2017 | Fall 2018 |
| AH 101 | 27.0 % | 24.7% | Available Fall 2019 |
| BUSL 101 |  | 21.9 % |  |
| FYE 101 | 28.9 % | 29.9 % |  |
| FTIC Baseline (No FYE course) | 15.2 % | 17.0% |  |

**FTIC Fall to Fall Retention**

*Percent of fall cohort students who enrolled in at least one credit-bearing course (including remedial) in the second fall term*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall 2016 | Fall 2017 | Fall 2018 |
| AH101 | 57.4 % | 50.6% | Available Spr 2020 |
| BUSL 101 |  | 41.1% |  |
| FYE 101 | 64.7 % | 51.5% |  |
| FTIC Baseline (No FYE course) | 46.9 % | 46.5% |  |

1. Astin, A. W. ( 1993). “What Matters in College? Four Critical Years Revisited.” San Francisco, CA: Jossey-Bass. [↑](#footnote-ref-1)
2. FTIC refers to First-time in college students, incudes full-time and part-time enrollment and excludes transfer and non-degree seeking students. The count varies from semester to semester fall 2016 represented 4,058 students; fall 2017 represented 3,702 students. [↑](#footnote-ref-2)
3. For comparison purposes, KPI Momentum outcomes are based on the subgroup of FYE the students that meet the FTIC student definition. [↑](#footnote-ref-3)
4. FTIC Baseline refers to the corresponding First-time in college cohort not enrolled in a First Year Experience Course (FYE 101, AH 101, or BUSL 101), incudes full-time and part-time enrollment and excludes transfer and non-degree seeking students. [↑](#footnote-ref-4)