Maine Community College System
Five Year Program Review

College: Central Maine Community College
Program: Life Sciences
CIP: 26.0101
Credentials: Associate in Science (AS)

Review Team: David Lewis, Eric Berg, Diana Drown, Natalee Stotz, Jeff Green, Jim Allard, Curry Caputo, Christa Grohoski
Date: December 2025
Period of Review: AY 2021-2024

Program Overview:

1) **Program description** (*from the most recent college catalog*):

The Associate in Sciences Degree in Life Sciences is designed to provide students with a broad, general survey of scientifically accumulated knowledge. Students completing this degree could enter the workforce as scientific technicians or transfer into science, technology, engineering and math (STEM) majors at baccalaureate institutions with a primary focus on biological and life sciences. The A.S. in Life Sciences degree provides appropriate course sequencing for efficient transfer, reinforces and deepens core learning across the curriculum, and supports and strengthens the STEM infrastructure of the College.

2) Program Learning Outcomes: all program learning outcomes are expected to be assessed within the five-year cycle. Please attach an Assessment Data and Reflection Template for each program learning outcome. Explain how the department used the assessment results to improve teaching, learning, and the curriculum.

List the program learning outcomes:	Method of assessment: list the courses and activities/assignments used to assess the learning outcomes
1. Demonstrate knowledge of the major chemical and biological topics in Life Sciences. 2. Effectively communicate scientific ideas, assumptions, observations and results in oral and written formats. 3. Demonstrate critical thinking and problem-solving skills by applying scientific principles. 4. Use appropriate laboratory procedures to generate and analyze quantitative and qualitative data to form conclusions. 5. Demonstrate the safe and proper use of scientific instrumentation, measuring devices, chemical reagents, media and tools to collect relevant and quality data. 6. Understand the relationship of the Life Sciences to other areas of study and be able to make informed ethical choices.	**Please see the attached assessment plan. We are currently working on updating the data.**

3) Credentials Awarded within the IPEDS year, i.e. July 1-June 30:

Credentials Awarded					
Credential	AY2021	AY2122	AY2223	AY2324	AY2425
AS	3	7	3	7	4

4) Program Graduates Employed:

***No wage data available.

Number of Completers with any Wage Data	--
% of Completers with any Wage Data	--
# of Completers with First Year Earnings	--
Median First Year Earnings	--

5) Partnerships, collaborations, associations and memberships

a) Advisory Meeting Dates and Attendance (past 3 years)

***The program has not established an advisory committee.

Date(s) of Meeting	*# of college attendees*	*# of Non-college attendees*
--	--	--
--	--	--
--	--	--
--	--	--

b) Program external accreditation, associations, and memberships (if applicable):

6) Other Indicators of student success, direct and/or indirect, which may include: Any data?

	AY2021	AY2122	AY2223	AY2324	AY2425
Licensure/certification pass rates (if applicable)	--	--	--	--	--
Program Advisory Committee Member Survey (on scale of 1-5 averaged):	--	--	--	--	--
Program Curriculum	--	--	--	--	--
Technical currency of the program	--	--	--	--	--
Preparation of program graduates for work in the field	--	--	--	--	--
Communication from program administration/faculty	--	--	--	--	--
Overall quality of the program	--	--	--	--	--
Other (please specify):	--	--	--	--	--

* Committee members only surveyed on the years they are assessed.

7) Student demographics:

Admissions					
	AY2021	AY2122	AY2223	AY2324	AY2425
Fall Applications	66	66	49	66	19
% chg in Fall Applicants from PY	--	0%	-26%	35%	-71%
Enrolled (Yield)	17	18	16	18	6
% chg in Enrolled from PY	--	6%	-11%	13%	-67%

Student Enrollment[1]					
	AY2021	AY2122	AY2223	AY2324	AY2425
Unduplicated Headcount Enrolled in Program	37	39	37	35	28
% chg in Headcount from PY	--	5%	-5%	-5%	-20%
Enrolled Credit Hours	360	393	438	374	328
% chg in Credit hours from PY	--	9%	11%	-15%	-12%
FTE	24	26	29	25	22
% chg in FTE from PY	--	9%	11%	-15%	-12%

[1] = students within the program in the fall of the academic year

Student Success					
Cohort Year	AY2021	AY2122	AY2223	AY2324	AY2425
Cohort Enrollment	25	32	28	29	28
Retained to the next semester	40%	63%	39%	45%	36%
Retained to the next year	28%	22%	29%	28%	--
Graduation Rates					
100% of program time	16%	9%	14%	14%	
150% of program time	20%	13%	14%		
200% of program time	20%	13%			
Transfer Rate (non-graduates)[2]	28%	41%			
Transfer Rate (graduates)	16%	3%			
Enrolled in Another Program[2]	4%	0%			
Graduated from Another Program[2]	4%	16%			

[2]. Determined at the maximum graduation point in this table, i.e. 200%

8) Strengths, challenges, and planned steps for continuous improvement: In your summary assessment you should reference sections of this review that informs the plan.

Program Strengths:

- The Life Sciences Program offers a highly flexible curriculum that supports students pursuing a wide range of science career goals, including physical science, medicine, pharmacy, environmental science, biotechnology, animal science, and more. We offer an extensive selection of science courses such as Introduction to Environmental Science, Anatomy and Physiology I and II, Microbiology for Health Sciences, Genetics, Biotechnology, General Chemistry I and II, Organic Chemistry I and II, Physics I and II, and Biology I and II. We are considering adding new courses including Cell and Molecular Biology.
- We offer multiple educational modalities including online, on ground, and hybrid courses. This meets students' needs and provides flexibility to complete required courses. Creating robust and thorough courses in Brightspace for all course types has been a priority in our science classes and we continuously look for ways to improve them.
- The program is supported by knowledgeable faculty with diverse scientific expertise who maintain high academic standards and rigorous coursework. This sets students up for success in their future education and careers. The diversity in areas of science allows faculty to bring knowledge to the classroom and provide individualized advising for Life Sciences students. The advising process was recently updated to match students with advisors aligned with their academic and career goals.
- We continue to incorporate Undergraduate Research Experiences into select labs. This includes collaboration with Tufts University and participation in a Citizen Science project. These projects allow students to participate in scientific research to address real-world problems. In addition, our labs introduce students to important scientific equipment and techniques. Examples of newer equipment include a thermocycler, electrophoresis system, and transilluminator.
- The Life Sciences Seminar (BIO 100) course became a required part of the curriculum beginning in Fall 2023. This class has recently been updated to include important material and experiences needed for student success in both education and future careers. Some important highlights in this course include attending a transfer fair on campus, discussing career opportunities, resume writing, time management skills, and ways to improve self-directed learning. We will continue to update this course according to student needs and expect improvement in retention from our efforts.
- We have a knowledgeable and dedicated Transfer Specialist that understands the importance of transfer opportunities for students. The Life Sciences Program currently has 21 total transfer agreements with four-year institutions. This includes four agreements with The University of Southern Maine, thirteen with the University of New England, and a new partnership with the University of Farmington. The agreements with University of Southern Maine and University of New England need to be updated due to changes in their core curriculum. However, courses are still transferring as intended.
- The Tutoring Center and Writing Center are available for students who need academic assistance and tutoring. Additionally, the Centers provide a paid work opportunity for students who excel in these subject areas, further strengthening those students' connections to the College. We have current and past Life Sciences students working as tutors presently. These opportunities contribute to student success and retention.

Challenges:

- As noted in the strengths section, the program and classes are rigorous in order to set students up for success in their future education and careers. Faculty observe many students are lacking in foundational study habits, required efforts, time management and critical thinking skills. We continue to reflect on and implement ways to improve these skills and student success without lowering any standards. A few examples include more hands-on learning opportunities, critical thinking assignments, incorporating a Learning Assistant into Anatomy and Physiology I, discussing study and test taking techniques in class, and reminding students about the real-world application of lessons and how they will pertain to future careers.
- Artificial intelligence can be an extremely beneficial tool and its appropriate use is discussed in our classes. However, artificial intelligence is also a significant challenge in several courses and assignments that require critical thinking. It has become increasingly difficult to create assignments that support and cultivate problem-solving skills and analytical thinking without students using artificial intelligence inappropriately.
- Successful individualized advising requires early and consistent communication with students beginning with admission. Students may miss or delay email communications which make this process difficult at times. We continue to update a list of Life Sciences advisees, including their career interests and assigned advisors, with hopes to integrate this information into Anthology in the future.
- There had been some confusion with the similarities between Exercise Science, the new Health Sciences Certificate, and the Life Sciences program. Therefore, an advising chart was developed by the Department Chairs and Transfer Services to better advise students in choosing the correct program based on career and transfer goals. Staff in Admissions, Advising, and TRIO were trained in using this chart. The application for admission was also modified to guide program selection. By connecting these degree programs to students' career goals, they will be getting clearer guidance from the application stage through advising.
- We support our program and also support the growing enrollment needs of other larger programs such as Pre-Engineering, Health Sciences, Exercise Science, Education, and many more. The demand to increase course offerings and find instructors to teach them continues to grow.
- There is no wage data available from the Department of Labor for analysis.
- The program has not yet established an Advisory Committee but one will be created.
- The COVID pandemic affected student recruitment, enrollment, retention, and other potential aspects not directly observed.
- As noted in the strengths section, several of the transfer agreements need to be updated.

Planned steps for continuous improvement:

- Recruitment and retention will be a priority. The program's flexibility, rigor, and transferability make it easy to promote. We will visit high schools and consider other recruiting opportunities to improve growth. Additionally, we will use the newly created advising chart and modified admission application process to improve recruitment and retention.
- Faculty will continue to reflect on instructional practices and try new things to improve student learning and course success rates. We will also continue to update BIO 100 as needed.
- Ongoing education on artificial intelligence is essential, and the continued creation of assignments that promote authentic critical thinking, without reliance on AI, is needed.
- We will continue to offer multiple educational modalities to meet students' needs and provide flexibility. We must also continue to improve our Brightspace courses and use this platform to collect assessment data.
- Our program will continue the current research experiences and explore additional opportunities to integrate research into the curriculum.
- Individualized advising is important and we will continue to match students with an advisor based on career goals and areas of interest.

- As noted in the challenges section, the need to increase course offerings and find instructors to teach them continues to grow. We will continue to hire experienced adjunct faculty as needed and an additional full-time instructor should be considered.
- An Advisory Committee with diverse backgrounds and experiences will be assembled.
- Efforts will be made to increase transfer agreements with four-year institutions and keep existing agreements updated.

Five-year Assessment Plan for Student Learning Outcomes

Life Sciences — February 2026

Name of Program or General Education Domain — Date

Learning goal:

Student learning outcomes:	Academic year during which assessment will occur	Source(s) and type of assessment artifact(s) that will be collected (e.g.: embedded questioning, capstone assignments, standardized testing, performance observation, portfolio reviews, etc.)	Method(s) to be used for assessing artifact(s)	Assessment Goal (targets/criteria) for direct measure	Assessment Outcome (*Number of Students Achieving an "acceptable" or better*)	Assessment Goal was:		
						Met	Not Met	Pending Review
1. Demonstrate knowledge of the major chemical and biological topics in Life Sciences.	Ongoing each semester	BIO 117/118 BIO 133/134 CHY 123/124 CHY 251/252 Exams/Lab Practical Quizzes Case Studies Observation of skills Discussions Lab Reports	Evaluation and Feedback from Instructor Observation of performance	75% of students will receive a C or higher	43%		✓	

2. Effectively communicate scientific ideas, assumptions, observations and results in oral and written formats.	Ongoing each semester	BIO 110/111 BIO 115/116 BIO 117/118 BIO 131/132 BIO 133/134 BIO 181/182 BIO 211/212 BIO 222/223 CHY 121/122 CHY 123/124 CHY 251/252 Exams/Lab Practical Quizzes Case Studies Discussions Lab Reports Observation of skills	Evaluation and Feedback from Instructor Observation of performance	75% of students will receive a C or higher	36%		✓	
3. Demonstrate critical thinking and problem-solving skills by applying scientific principles.	Ongoing each semester	BIO 110/111 BIO 115/116 BIO 117/118	Evaluation and Feedback from Instructor	75% of students will receive a C or higher	36%		✓	

		BIO 131/132 BIO 133/134 BIO 181/182 BIO 211/212 BIO 222/223 CHY 121/122 CHY 123/124 CHY 251/252 Exams/Lab Practical Quizzes Case Studies Discussions Lab Reports Observation of skills	Observation of performance					
4. Use appropriate laboratory procedures to generate and analyze quantitative and qualitative data to form conclusions.	Ongoing each semester	BIO 111 BIO 116 BIO 118 BIO 132 BIO 134 BIO 182 BIO 212	Evaluation and Feedback from Instructor Observation of performance	75% of students will receive a C or higher	36%		✓	

		BIO 223 CHY 122 CHY 124 CHY 222 CHY 252 Exams/Lab Practical Quizzes Discussions Lab Reports Observation of skills						
5. Demonstrate the safe and proper use of scientific instrumentation, measuring devices, chemical reagents, media and tools to collect relevant and quality data.	Ongoing each semester	BIO 111 BIO 116 BIO 118 BIO 132 BIO 134 BIO 182 BIO 212 BIO 223 CHY 122 CHY 124 CHY 222	Evaluation and Feedback from Instructor Observation of performance	75% of students will receive a C or higher	36%		✓	

		CHY 252 Exams/Lab Practical Quizzes Discussions Lab Reports Observation of skills						
6. Understand the relationship of the Life Sciences to other areas of study and be able to make informed ethical choices.	Ongoing each semester	BIO 100 BIO 110 BIO 133 BIO 211/212 BIO 222/223 CHY 123/124 CHY 251/252 Exams/Lab Practical Quizzes Discussions Lab Reports Observation of skills	Evaluation and Feedback from Instructor Observation of performance	75% of students will receive a C or higher	46%		✓	

Most significant assessment findings? (Pedagogical, instructional, curricular changes). Please report on actions taken and on ongoing assessment plans.

Curriculum mapping work to identify more specific assessment artifact is needed. This work is in progress.