Program Review Report
3.7 Academic Program Review

A thorough internal or external program review addressing all criteria in policy should be possible within a comprehensive report of ten or fewer pages. This template is provided to assist institutions in compiling the program review information, **which is to be presented to the institutional governing board prior to submission to the State Regents**. Please provide an executive summary of this review using the Program Review Executive Summary Template.

Institution Name: Oklahoma City Community College

Program Name and State Regents Code: AS BIO, 165

List Program Options: AS Pre-Allied Health (Pre-AH), 399
AS Pre-Baccalaureate Nursing (Pre-BN), 400
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List Embedded Certificates included in this review: Click here to enter text.
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Previous Review

Date (Year) of Last Review 2011

1. Summarize key findings from previous internal and/or external reviews of this program.

The AS Biology program was created in 2012 as the previous AS Science program review was being completed. The Biology program offers the AS Biology degree, which has two specializations: Pre-Baccalaureate Nursing (Pre-BN) and Pre-Allied Health (Pre-AH). Additionally, the Biological Sciences department provides several course offerings (Nutrition, Anatomy & Physiology, Microbiology) that serve our health-professions-aimed students, and in doing so, prepares students for OCCC's professional Health Professions programs. The key findings from our previous review with a plan to address are listed below, and the actual, eventual response and/or result can be found in section 2.

Strengths identified in 2011 review:

1. Quality faculty. The biology faculty have specialized in many fields of the biological sciences, including anatomy, botany, microbiology, paleontology, physiology, and zoology. They represent individuals who come from research, private industry, and private practice, and are able to incorporate these experiences into the classroom setting. Many of the faculty also teach in other departments or other educational institutions, thus enabling them to obtain different perspectives on the education process.

2. Designed curricula. Unlike many institutions where faculty simply teach the textbook, faculty at OCCC have conscientiously designed the courses and curriculum. Courses are developed by first determining what knowledge and skills students are expected to acquire. Competencies or learning

objectives are specified based on content significance, prerequisites for future subjects and courses, and importance to the careers students are pursuing. These objectives are then sequenced, and course materials are developed. Textbooks are selected which most closely match the course design. Finally, assessments are developed which match the specified learning objectives. All sections of each course use the same set of objectives, insuring students in every section receive an equivalent education regardless of teaching methods utilized by individual instructors.

4. Classroom technology. All classrooms at OCCC are equipped with computers and projectors that allow instructors to present multimedia materials and access the Internet in the classroom. The general classroom environment is also very positive. The use of tables rather than individual desks allows students more room to work. The white boards in the classrooms are generally more visible and involve less dust that chalk boards.

5. The laboratory facilities in biology are superb. All of the sciences have access to a well-equipped biotechnology lab. The biology department also provides a student dissection cadaver lab, a fairly unique opportunity for community college students.

6. Schedule and format options. Both basic and more advanced biology courses are offered in the morning, afternoon, and evening. Many of the basic science courses are offered in an 8-week or 16-week format. General Biology is offered as intersession courses. Several biology classes are offered on campus and online. The variety of time offerings and formats for biology courses helps serve students with diverse scheduling needs.

7. Field trips. Local field trips are provided for students to further study the concepts of geology, paleontology, and ecology. Extensive field trips are available to students through special topics courses that focus on the ecology of the Gulf Coast and the ecology of the Greater Yellowstone area. Students are also encouraged to attend local seminars and conferences dealing with the sciences and the health professions. Having faculty willing to take the time for field trips greatly enhances student experiences in the sciences, far beyond what would be possible in a classroom setting.

8. Biology Science Center. The Biological Sciences Center provides extensive services to students. Individually paced labs, free tutoring, testing, and review activities are available.

9. Active Health Professions Club. The Health Professions Club always has a large number of student members and is always among the most active clubs on campus. The Health Professions Club sponsors field trips to the OU Health Sciences Center, brings in speakers, and holds workshops on interviewing for professional schools among many other activities and service projects. The activities of the Health Professions Club greatly enrich the college experience of its members.

10. Opportunities through INBRE. Since Oklahoma City Community College participates in a grant administered through the OU Health Sciences Center (The IDea Network for Biomedical Research Excellence), Oklahoma City Community College students have the opportunity to experience biomedical research at major research institutions. In addition, faculty also have the opportunity for development opportunities through INBRE externships.

11. Faculty advising. A very large number of students taking biology courses have one of the professional medical specialties as a career goal: … nursing, and all of the allied health professions. These academic majors are housed in the Division of Science and Mathematics. While the College employs a number of dedicated general Academic Advisors, these general advisors cannot possibly remain current on employment trends, advanced programs available at transfer institutions, program admission requirements, etc. Consequently, science faculty members have taken on the responsibility of serving as Faculty Advisors for students selecting these majors. Science faculty also remain in contact with faculty and staff at various educational and medical institutions to insure programs offered at OCCC meet the needs of students pursuing careers in the various fields of medicine.

Concerns identified and plans to address from 2011 review:

1.Students participating in Individually Paced labs are not as successful as those students participating in Group labs.

Plan: Eliminate “Individually Paced” labs. Two solutions are suggested. First, divide the lecture section into TWO laboratory sections that will be taught by the lecture professor. And/or second, separate the lecture section from the lab section, giving the student several choices as to the time they participate in lab. Lab personnel would need to be available to answer any last minute questions from the instructor regarding equipment and materials. Therefore, creating an additional Laboratory Supervisor position would help to ensure that a supervisor is available during the day, the evening, and Saturday classes.

2.Not enough classrooms and labs are available to accommodate students who want to enroll.

Plan: Separation of the laboratory portion of the course from its' lecture portion would allow better utilization of space. This would help to eliminate underutilized laboratory space during periods of the day. Creative scheduling of classrooms to better utilize lecture rooms during the mid-afternoon and Friday's. If the laboratory portion of the course is separated from the lecture portion, new adjunct faculty could be utilized to teach the laboratory portion of the course. This may enable new adjuncts to become accustomed to OCCC's method of competency-based education prior to their teaching in a lecture. It also helps to ensure that the person is capable of teaching.

3.Fifty-two percent of the BIO credit hours are taught by adjunct instructors.

Plan: All potential new adjunct faculty's applications should be made available to the Department Chairperson of the Sciences, for review. Not just the applications that Human Resources determines is acceptable for review.

4.The addition of new full-time biology faculty is not proceeding at the same rate as the increase in students enrolling in Biology courses.

Plan: Hire new full-time biology faculty in proportion with the increase in biological enrollment and credit hour numbers.

5. To cope with the increasing cost of supplies and equipment, instituted lab feeds should be directed to the appropriate programs and not into the general fund.

Plan: No additional steps were planned.

6.Respiratory safety concerns continue as a result of water leakage and mold growth in laboratories and classrooms on the first floor.

Plan: Meetings should be conducted with physical plant personnel to document water leakage and mold growth and discuss solutions. Ventilation hoods and exhaust fans need to be installed in the following laboratories: 2A1, 2A3, and 2B1.

7.Students taking online Biology courses are not as successful in subsequent Biology courses.

Plan: Restructure 100% online courses and designate online courses as “hybrid” courses where a portion of the course must be completed on campus. Tests must be taken on campus or in a testing center that can verify the student's identity. Labs may need to be arranged so that they meet at designated times on campus.

8. OCCC may not be attracting as high of caliber of student as is possible.

Plan: The attraction of the “higher-end” student may be facilitated by performing a market analysis to understand what the potential student and/or their parents want from a local college. Thereby OCCC could possibly develop courses and programs to entice the higher end student. Other options may include scholarship monies available to those students that transfer to OU or UCO after completing a degree at OCCC. Or encouraging concurrent enrollment of high school students on OCCC's campus to encourage the attendance at OCCC once high school is completed.

9.Additional equipment is necessary to ensure the growth of the Biology department for future years.

Plan: Faculty offices would benefit greatly with new computers as the current computers have been in use for at least five years. Laboratory equipment would be necessary if we decide to offer a

laboratory component to BIO 2203, Cell Biology. An overall increase in materials will be needed if student enrollment continues to grow.

2. What developments and actions have taken place since the last review?

1. Students participating in Individually Paced labs are not as successful as those students participating in Group labs.
   Response: Individually Paced courses are no longer offered in the Biology department.

2. Not enough classrooms and labs are available to accommodate students who want to enroll.
   Response: No new additional classrooms or lab spaces have been added at this time; however, new lab space is being considered for spring 2023 in response to high demand for 8-week anatomy and physiology sections and not in response to the prior report. Additionally, some courses still share lab space, which creates difficulties for lab staff and scheduling at times., some ~~There still is need for more lab space because we do have a couple of lab classrooms that are shared and it is sometimes difficult for the lab staff to changeout and setup the lab exercises.~~

3. Fifty-two percent of the BIO credit hours are taught by adjunct instructors.
   Response: Since 2011, two full-time faculty positions have been added to the Biology program (11 total plus the department chair); however, increased course offerings since that time have not changed this ratio much. The Full-time Equivalent value (the sum of BIO course credit hours divided by 30 [Full-time instructor annual course load]) for FY22 for Biology is 34.17, clearly indicating that more full-time faculty members are needed in this area.

4. The addition of new full-time biology faculty is not proceeding at the same rate as the increase in students enrolling in Biology courses.
   Response: In the time since the last review, the Biology program has gained two new full-time faculty members. In the last 5 years, student credit hours in the Biology program have increased by 14%, and the number of full-time faculty members has increased by 20% since 2011. Please note we are comparing 2018 values to 2022 values and have not captured the growth in the department from 2012 to 2022.

5. To cope with the increasing cost of supplies and equipment, instituted lab feeds should be directed to the appropriate programs and not into the general fund.
   Response: While the Biology program recently re-evaluated lab fees per course, there has been no change to fee distribution to departments since the last program review. It is worth noting that in the previous few years', the Biology program has not exceeded its budget, but this is a result of decreased on-campus labs as a result of the pandemic in the FY21 & FY22 years. With more classes back on campus now, orders for lab supplies will increase in quantity can also in cost – many lab supply items are 1.5X to 2X the price they were prior to the pandemic.

6. Respiratory safety concerns continue as a result of water leakage and mold growth in laboratories and classrooms on the first floor.
   Response: There have been no significant efforts to address this issue. Water leakage and mold issues persist in these areas.

7. Students taking online Biology courses are not as successful in subsequent Biology courses.
   Response: Times have changed since 2011, and there is a strong demand for online course offerings in the Biology program. While program faculty still see issues with student success in subsequent courses, we are more concerned about the lack of proctoring in online courses and the impacts that fast-pace, i.e. 8-week terms, have on student retention. At this time, the perceived issues in online student success are anecdotal, but there are plans in place to begin thoroughly reviewing/analyzing online student success rates.

8. OCCC may not be attracting as high of caliber of student as is possible.

Response: OCCC is an open-admission institution. The program has adopted more of a growth mindset for its students since 2011 and is no longer looking to blame poor student performance on admission standards.

9. Additional equipment is necessary to ensure the growth of the Biology department for future years.
   Response: Since 2011, equipment needs have continued to be met, but it should be noted that some of these needs have only been met as a result of grant funding since division and department budgets were not always sufficient to make larger purchases, e.g. autoclaves, water treatment systems, etc.

Current Review

Date (Year) of Current Review 2022-2023

Review Criteria *(Institutions should address each criterion of OSRHE policy 3.7.5 as directed below).*

A. Centrality of the Program to the Institution's Mission:

OCCC's Mission: Student Success. Community Enrichment.

The Biology program focuses on the College's mission by working to ensure that students are successfully prepared for either their transfer or in-house health professional programs. The Biology program also works to provide section offerings that are accessible to a wide-range of students with hybrid, online (where permitted), and on-campus offerings available every semester/term. The Biology program works with outside groups to enhance the community via teacher workshops and participates in other activities related to enhancing STEM in Oklahoma.

The program's objectives (preparing students for transfer and/or acceptance to professional programs – see section B.1. below for objectives) are supported by quality faculty, variability in course offerings (times, formats), the Biological Sciences Center and its staff, excellent classroom technology and lab facilities, and through work with outside agencies to foster STEM development in the state.

In terms of quality faculty, the biology faculty specialize in various fields (anatomy, microbiology, zoology, veterinary medicine, paleontology, ecology, botany, biotechnology, and environmental sciences) and are capable of and flexible in teaching in areas adjacent to their areas of expertise, which fortunately covers the wide range of courses offered by our department. Students in our courses gain valuable knowledge that can go beyond the information offered in the class thanks to the breadth of experience of program faculty.

The Biology program works to offer courses in a wide variety of format and at various times of day. The program provides both 8- and 16-week courses and completely online or hybrid offerings when necessitated by state transfer guidelines when possible. Additionally, we offer Friday-only and Saturday-only options for some courses, along with regular offerings of general education BIO courses during each intersession. Enrollments are monitored regularly and new offerings are added when demand indicates they are needed and instructors can be identified.

Our Biological Sciences Center (BSC) serves hundreds of students each semester/terms, providing tutoring services and the opportunity for review of lab materials. The BSC staff and tutors work to provide these services to students in addition to preparing and supplying the materials necessary for all of the on-campus lab sections. The BSC and its staff further supports the program by offering exam proctoring for instructors in the absence of a campus Testing Center. It should be noted the lab is not an optimal testing facility since it is also an active lab and tutoring center, but regardless, it has supported a great deal of the program's proctoring needs.

Students in our program's courses have access to excellent laboratory resources and their instructors have access to top-of-the-line classroom presentation technology. The department's inventory of models and equipment is extensive and does much to support student learning, but it must be maintained as equipment ages and models become over-used. Also since, the addition of 8-week sections our lab equipment is being spread out to multiple labs, which will soon require the department to purchase new equipment to keep up with the demand of course offerings.

To serve the community, the Biology program works with various outside agencies to support STEM across the state. Over the past several years, the program has facilitated work from OU-Health Science Center's OK-INBRE grant, which includes providing STEM supplies and workshops for K12 teachers, supporting STEM-related College-for-Kids activities, and teaching students lab skills for internships, which are also provided by the OK-INBRE grant. More recently, the program was awarded a local grant from the Oklahoma City Innovation District to specifically target lower-performing schools with STEM workshops and supplies. In addition to the above, program faculty have worked with local Boy Scout groups on badge programs related to environmental science and chemistry.

While the Biology program does much to support the school's mission, there are areas in which the department has opportunities for enhancement. Each of these areas will be addressed in more detail later in the document along with recommendations and timelines on how to address them:

- Demand for our courses is high and difficult to meet with the current number of full-time faculty and classroom and lab space available. More physical space and increased support for faculty positions will go towards addressing this issue, as would modifications to the adjunct recruitment process.
- In light of its important role in supporting all BIO courses, the BSC's budget in terms of supplies and staffing could be enhanced to help the program better serve students.
- Relevant to meeting student demands in regards to course offering and modalities, the Biology program faculty have some concerns regarding the modality and/or time-frame in which some courses are offered may actually have implications for students' future success in subsequent courses based on anecdotal evidence.
- As will be indicated later in this document, low AS BIO graduate survey response rates to makes it difficult to ascertain if the program is meeting its goals of preparing students for transfer to other profession programs and 4-year institutions.

B. Vitality of the Program:

B.1. Program Objectives and Goals:

1. The department strives to provide high-quality experiences for our AS Biology students so that they can successfully move onto and graduate from Biology or related programs at 4-year institutions.

2. The department strives to serve Health Professions programs by working to provide quality instruction to meet the needs of these students as they move through their professional schools.

B.2. Quality Indicators (including Higher Learning Commission criteria and requirements):

~~The Biology pro~~

1. For majors in the Biology program, our aim is for AS Biology students to successfully move onto and graduate from Biology or related programs at 4-year institutions. In the case of AS Pre-AH and AS Pre-BN majors, we aim for those students to successfully gain entry to and to complete their respective professional programs. While we can obtain institutional-level data

on acceptance of OCCC students to different schools, we cannot drill down to the level of our specific majors who have been accepted at these schools. Since students in our majors and also in AS Diversified Studies could potentially enter area professional programs for which we are preparing students, we cannot base OCCC alumni acceptance numbers into these programs as a readout of the Biology program's success in terms of AS Pre-BN and AS Pre-AH majors. It will be helpful in the future if this data were available for analysis if possible.

Since this data might not ever become available, program faculty have begun considering their approach to encouraging students to respond to Graduate Surveys. Program faculty will be asked to make concerted efforts to encourage responses for these Graduate Surveys in their 2000-level courses.

2. The Biology program serves the Health Professions division at OCCC. With a fair percentage of required credit hours in some OCCC Health Profession degree programs being provided by the Biology program (e.g. 22% of credit hours in Nursing, 14% of the credit hours in PTA), the Biology program aims to continue to serve these Health Professions programs by working to provide enough quality sections to meet the demand generated by these students. To measure quality of these sections, we analyze the number of students successfully completing BIO1314 & BIO1414, the Human Anatomy & Physiology sequence at OCCC, who also successfully complete the terminal classes in Health Profession majors, i.e. Nursing Process IV (NUR 2549), Fieldwork II B (OTA 2263), Practicum II (PTA 2134), Fundamentals III (ANES 2125), and Paramedic Care V (EMS 2064) and respond accordingly with modifications to curriculum if it appears fewer students successfully completing the Human Anatomy & Physiology sequence are successfully completing these OCCC Health Professions programs.

Percentage of Successful BIO1314/BIO1414 Students Who Also Succeeded in Terminal HP Program Courses

Course	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
ANES-2125			100.0	100.0	100.0
EMS-2064		100.0	95.8	95.2	100
NUR-2549	94.7	96.8	98.5	92.9	95.8
OTA-2263	100.0	96.6	100.0	93.3	93.3
PTA-2134	100.0	100.0	100.0	100.0	90.9

As can be seen in the above table, pass rates for students who successfully completed BIO1314/BIO1414 in the Biology program trend in the 90%+ range. This will be monitored annually to gauge if these courses are having their desired impact. If pass rates start to fall, program faculty will respond by modifying course curricula. In future years, this data will be tracked for students completing BIO1023 and BIO2125, two courses in the Biology program that serve a great number of Health Profession majors.

3. The Biology

a. Minimum Productivity Indicators:

Time Frame (e.g.: 5-year span)	Enrollment	Graduates

AS Biology (5 Year span)	1401	25.2
AS PRE-AH (5 Year span)	693	20
AS PRE-BN (5 Year span)	232	8
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b. Other Quantitative Measures:

i. Number and enrollment of courses taught exclusively for the major for each of the last five years:
List or attach list of courses

Number of Courses Taught

Courses	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
1000-level	104	113	111	103	129
2000-level	43	45	44	39	59
All Courses	147	158	155	142	188

Average Class Size

Courses	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
1000-level	25.9	26.1	24.7	40.7	22.5
2000-level	22	24	22	36	20
All Courses	25	25	24	39	22

Total Enrolled

Courses	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
1000-level	2,692	2,949	2,744	4,190	2,900
2000-level	953	1,072	973	1,411	1,206
All Courses	3,645	4,021	3,717	5,601	4,106

Courses:
BIO1023 – Introductory Nutrition
BIO1124 – General Biology I (Majors)
BIO1134 – General Biology II (Majors)
BIO1204 – History of Life on Earth
BIO1314 – Human Anatomy and Physiology I
BIO1414 – Human Anatomy and Physiology II
BIO2102 – Clinical Anatomy
BIO2114 – General Botany

BIO2125 – Microbiology
BIO2203 – Cell Biology
BIO2215 – General Zoology
BIO2234 – Human Physiology
BIO2255 – Human Anatomy
BIO2343 – Genetics and Man
BIO2404 – Ecology and Environmental Issues

ii. Student credit hours by course level (i.e. 1000, 2000) generated in all major courses in the degree program for five years:

Courses	Degree	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
1000-level	AS	10,587	11,649	10,787	16,604	11,450
2000-level	AS	4,411	4,986	4,543	6,803	5,738
All Courses	AS	14,998	16,635	15,330	23,407	17,188

iii. Direct instructional costs for the program during the review period:

In 2021 and 2022, our Information Technology Services department installed Zoom room technology in multiple classrooms across campus with an end goal of 70+ rooms. This hybrid/Hy-Flex technology helps us offer different course modalities and allows us to meet student and employee needs by providing the opportunity for courses and meetings to be held in-person and online simultaneously. This endeavor was achieved at a total cost of $2,393,437.41. In addition, all teaching station computers, monitors and display adapters were replaced at a total cost of $107,167.16.

The Center for Learning and Teaching developed training for this technology that began in Dec. 2021. This training is ongoing and focuses on both how to operate the technology as well as how to engage students with it in the classroom using innovative teaching strategies. We have trained 160+ faculty and staff members to date and anticipate training more in the upcoming fiscal year.

At this point, all course sections now use our Learning Management System (LMS), Moodle, and we have several third-party tools available to faculty and students that foster online engagement, including: Turnitin, Ally, Poll Everywhere, and VoiceThread. These recurring costs add up to approximately $338,000 per fiscal year. Faculty are trained in these resources, and the Center for Learning and Teaching (CLT) continues to work with faculty to make sure they understand best practices for how to use and implement these resources. Turnitin aids with grading and academic integrity, Ally with ensuring faculty have the tools to make their course materials Section 508 complaint, Poll Everywhere with student engagement, and VoiceThread with creating quality audio presentations and feedback for our students. Additionally, the Center for Learning and

Teaching is working toward developing augmented and virtual reality resources for OCCC faculty to potentially integrate into their courses to better engage students through real-world experiences offered in a virtual environment.

iv. The number of credits and credit hours generated in the program that support the general education component and other degree programs including certificates:

There are 22 General Education credit hours in the Biology program degrees, and 9,861 general education credit hours were earned in FY2022 by students enrolled in Biology program courses.

Program faculty are routinely encouraged to submit artifacts for the assessment of general education outcomes in the various general education areas. Artifact submission has significantly decreased from the Biology department commensurate with the COVID19 Pandemic; however, artifact submission is slowly increasing and as we transition out of the pandemic and is anticipated to continue along this trend.

v. A roster of faculty members, faculty credentials and faculty credential institution(s). Also include the number of full-time equivalent faculty in the specialized courses within the curriculum:

Faculty	**Credential (i.e. MFA, PhD)**	**Institution that granted degree**
Sherri Arthur	MS Biology	Dauphin Island Sea Lab
Morgan Ashworth	PhD Reproductive Technology	Oklahoma State University
Michelle Cole	DVM	Oklahoma State University
Travis Draud	MS Ecology, Evolution and Organismal Biology	Eastern Michigan University
Julian Hilliard	MS Zoology (Paleontology)	University of Oklahoma
Stephen Kash	MS Biology	Eastern New Mexico University
Kimberly Kyker	MS Biochemistry/Molecular Biology	University of Oklahoma – Health Sciences Center
Alexander Matveev	MD	Altai State Medical University, Barnaul, Russia
John McMurray	PhD Integrative Biology	UC-Berkeley
Kimberly Park	Masters in Environmental Sciences	University of Oklahoma
Raul Ramirez	MS Biological Sciences	Southern Illinois University - Edwardsville
George Risinger	PhD Cell Biology	University of Oklahoma – Health Sciences Center
Robyn Senter	MS Biology	Baylor University

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vi. If available, information about employment or advanced studies of graduates of the program over the past five years:

Not enough graduating students from the Biology program responded to graduate surveys over the past 5 years to address this question.

vii. If available, information about the success of students from this program who transferred to other institutions:

Not enough graduating students from the Biology program responded to graduate surveys over the past 5 years to address this question. While we do have access to transferring students from OCCC to area 4-year schools, we have no mechanism for determining which of those students were from the Biology program.

c. Duplication and Demand:

In cases where program titles imply duplication, programs should be carefully compared to determine the extent of the duplication and the extent to which that duplication is unnecessary. An assessment of the demand for a program takes into account the aspirations and expectations of students, faculty, administration, and the various constituents served by the program. Demand reflects the desire of people for what the program has to offer and the needs of individuals and society to be served by the program.

Address Duplication:
Rose State – Biological Science Degree:
The only other area community college with a Biology or Biological Sciences degree is Rose State College. Even in light of this other metro-area school having this degree, OCCC's AS BIO majors have not declined and have in fact increased over the past years. This would indicate that while there are two similar degrees in the Oklahoma City metro area, there is enough demand for at least the program at OCCC to continue to grow and work to meet those demands.

Address Demand:
Our demand remains well above minimum productivity levels.

a. Describe demand from students, taking into account the profiles of applicants, enrollment, completion data, and occupational data:

Degrees Conferred:

Program	Degree Type	FY 18	FY 19	FY 20	FY 21	FY 22	FY 18-22 Total	Avg (5yr)	# Beyond minimum
Biology - Biology	AS.BIO AS.BIOLOGY	23	20	24	28	31	126	25.2	20.2
Biology - Pre-Baccalaureate in Allied Health	AS.PRE-AH	14	25	19	22	20	100	20	15

Biology - Pre-Baccalaureate Nursing	AS.PRE-BN AS.PRE-BACNURSING	11	12	3	7	7	40	8	3

Majors in Program:

Program	Degree Type	FY18	FY19	FY20	FY21	FY22	FY18 - FY22 total	Avg (5yr)	# Beyond Minimum
Biology - Biology	AS.BIO AS.BIOLOGY	326	272	285	253	265	1401	280.2	255.2
Biology - Pre-Baccalaureate in Allied Health	AS.PRE-AH AS.PRE-ALLIEDHEALTH	196	160	139	120	78	693	138.6	113.6
Biology - Pre-Baccalaureate Nursing	AS.PRE-BN AS.PRE-BACNURSING	51	63	32	40	46	232	46.4	21.4

While these numbers are good in terms of going beyond minimum productivity levels, Biology program faculty realize that many students who "major in biology" are actually diversified studies majors who are picking and choosing courses to meet professional program pre-requisites. The AS Pre-BN and AS Pre-AH degrees offer pathways for many of our students in the Biology program to achieve their goals, and there is concern some students might not realize this and have opted for the AS DS path instead of AS BIO and related pathways. Program faculty will plan to work with the Advising Office staff to direct AS DS students to AS BIO degrees where and when appropriate.

Registration demands are monitored during active enrollment periods and section offerings are made to match demand where possible. Initial schedule offerings include the usual two-day-per-week courses offered morning, afternoon and evening, one day-per week courses, 16-week courses, 8-week courses, weekend courses, online, traditional and hybrid. As student demand increases for particular courses and/or modalities, course offerings are adjusted as much as possible to accommodate demand.

The general profile of students taking courses in the Biology program are Biology program majors or those students interested in Health Professions programs, so many course offering decisions are actually driven by non-BIO majors in this program.

b. Describe demand for students produced by the program, taking into account employer demands, demands for skills of graduates, and job placement data:

Top 100 Critical Jobs in OK that the AS BIO program at OCCC can help prepare students for:

- Dental hygienists
- Radiologic technologists
- Registered Nurses

- Medical and Health Services Managers
- Clinical Laboratory Technologists and Technicians
- Teachers and Instructors
- Physical Therapists
- Veterinarians
- Sales Representatives, Services
- Water and Wastewater Treatment Plant and Systems Operators
- Speech-Language Pathologists
- Nurse Practitioners
- Physician Assistants
- Medical Assistant
- Dental Assistant
- Firefighters
- EMTs & Paramedics
- Medical Records and Health Information Technicians
- Phlebotomists

We realize not all AS BIO majors are heading towards these careers, but the courses offered by the Biology program, and particularly those related to human health, help support students on the various career paths listed above.

We lack job placement data for Biology program majors due to low graduate survey participation; however, there are relatively few, if any, job opportunities for an AS BIO student. Our students are more directed to professional schools or 4-year schools as opposed to career-seeking with their Associate's degree. The Biology program therefore focuses on meeting transfer institution demands as opposed to those of any particular set of area employers.

c. Describe demand for services or intellectual property of the program, including demands in the form of grants, contracts, or consulting:

The Biology program serves a grant from of the University of Oklahoma – Health Sciences Center titled the Oklahoma-IDeA Network for Biomedical Research Excellence. Faculty experts work to deliver STEM-related workshops for K12 teachers from throughout the state. Additionally, laboratory supplies and other related resources are distributed to these teachers and to summer program elementary students as part of this grant program as well. The Biology program has also recently begun working with the Oklahoma Innovation District via a grant to provide STEM-related workshops to teachers at specific, underserved schools in the OKC metropolitan area. Additionally, the program has recently received a grant to help establish and maintain a travel abroad program at the institution.

d. Describe indirect demands in the form of faculty and student contributions to the cultural life and well-being of the community:

In addition to the grant programs listed above, Biology program faculty also work with area Boy Scout troops to earn biology- and environmental science-related merit badges. Program faculty members sponsor the Health Professions club, which aims to bring experienced health professionals to campus to share their paths and experiences with students, particular in our AS Pre-BN and Pre-AH programs, in addition to those students in OCCC's Health Profession programs.

e. The process of program review should address meeting demands for the program through alternative forms of delivery. Describe how the program has met these demands:

The Biology program offers online, hybrid and on-campus sections each term. Hybrid and on-campus sections are offered at all times of day (morning, afternoon, evening) to meet student demands. Currently, the program is working under the constraint of state guidelines, with which faculty are in accord, which require at least 75% of lab instruction for most BIO courses to occur in the face-to-face/traditional setting as opposed to online. This prohibits the offering of some courses in a completely online format, so hybrid alternatives are used wherein students complete the "lecture" aspect of the course asynchronously while coming to campus for lab exercise completion. Courses will not be offered that exceed this 75% threshold until state guidelines change or more directed guidance is provided by the state regarding which lab components of a course can be delivered online vs. in-person. This will be the aim of several state-wide meetings in the coming years. This 75% rule has the biggest impact on our majors and Health Professions-serving courses (namely BIO1314, BIO1414 and BIO2125), but the major BIO general education course, BIO1114, is not subject to this state-wide rule.

d. Effective Use of Resources:

(Resources include financial support (state funds, grants and contracts, private funds, student financial aid); library collections; facilities including laboratory and computer equipment; support services, appropriate use of technology in the instructional design and delivery processes, and the human resources of faculty and staff).

The Biology Program has a chair, ten full-time faculty, and one faculty member with duties split between Chemistry and Biology. The Chair of the Biology program and several of the Program faculty have doctorate degrees in their respective disciplines. The faculty have a wide variety of experience, ranging from purely academic backgrounds to those with years of industry experience in addition to their academic credentials. Additional personnel in the Biology Program include the supervisor of the Biological Science Center and five (only three are currently staffed) biology lab assistants.

In Fall 2022 65% of biology sections were taught by full-time faculty. The remaining 35% were taught by adjunct faculty. This may not be a clear representation of the full-time/part-time ratio of instructors in the program. During Fall 2022, an unprecedented number of adjunct faculty members opted not to return to the classroom (i.e. on campus labs), resulting in requests for substantial overloads for all full-time faculty in the program. Recruitment of new adjunct faculty will be a key focus of future departmental endeavors in addition to another full-time faculty member for the program.

Fortunately, just this past January, higher administration authorized the hiring of a temporary full-time instructor for the Spring 2023 semester. This has relieved some of the stress to fill sections with adjunct instruction, and the department is hopeful this position will be re-funded in future years.

The Biological Sciences Center (BSC) serves as a tutoring center for students in the Biology program in addition to providing a space for make-up labs and to study lab materials, e.g. models, slides, etc. The BSC houses several computers which can facilitate learning of lab materials as well as serve as a computer lab for all OCCC students who may need the use of a computer. The BSC staff provides tutoring services and prepares and sets up lab materials for lab courses in the program.

The BSC staff continually served students, including during the pandemic shutdown where they worked virtually to assist students. Over the past two years, a minimum of 2400 students have been served by the BSC (539 in FY21 and 1861 in FY22). This actually may be an underrepresentation of the data as students coming for assistance do not always check in using the tracking system, and the tracking system itself has had issues with not working at times, so many undocumented visits to the BSC occur on occasion. Additionally, due to being short-staffed, the BSC has had to minimize their hours of operation, so as time moves on from the pandemic, we anticipate BSC usage will increase as hours of operation do.

Over the past two years, the BSC was severely short-staffed with only three employees working to serve the great majority of these students while still setting and preparing labs. While the open positions were posted, the pay rate was well-below a living wage and applications were not received. While we expect the low wage was the main reason that there were no applicants, we will plan to start performing exit interviews with lab staff when they resign to gain a clearer understanding of their desire to leave. Additionally, some work with HR has resulted in large enough wage increases that three new lab assistants have been hired during the Fall 2022 semester. While these wage increases are much appreciated, there are still equity questions regarding compensation for lab assistants in the SEM division vs. those in the Health Professions division, which do not, to our knowledge, require any special trainings or certifications. *Salary.com* (as of 09/29/2022) reports that biologists in OK with bachelor's degrees earn between $46,000 and $54,000. Our current pay range for these positions pays $33,000 at the competitive rate.

In 2020 OCCC moved to an 8-week model for course delivery then backed off to a degree, resulting in a new expectation from students that almost all courses will be offered in both 16- and 8-week formats. The Biology program has worked to offer as many of these sections as is possible, but is limited by lab space, or rather lack of additional/new lab space. It is not feasible to have 8- and 16-week labs share a lab space since the lab exercise changeouts would have to occur multiple times a week, if not multiple times a day. This has resulted in an inability to offer some sections when there has been high demand for those sections. Several full-time faculty members took on special contracts to set up labs, which, in addition to the expense, took time away from their ability to work with students outside of class. Increased lab space options and considerations of expanding the Biological Sciences Center staff and compensation will help meet these needs.

In regards to the supply budget for the program, almost all needs are currently being met by annual budget allocations, with larger, less-frequent purchases being funded by the division or a variety of grant funds. However, as we create more lab space to meet demand, we are hopeful that budget lines will increase proportionately to adequately supply those lab spaces. For example, any new lab will require a set of at least 12 microscopes, which cost ~$2,000 apiece, in addition to costly models and/or other materials.

Biology Program-related Library Resources:

Instruction and Reference

Reference librarians (4.5 FTE) provide instruction and reference assistance to students. Students should receive an introduction to the library's resources as well as instruction on selecting and evaluating sources in the required Success in College and Life course. Additional instruction is provided to individual classes, usually with a focus on the appropriate resources for that discipline.

Librarians are available by online chat approximately 56 hours per week. Also, librarians are available in the library for in person assistance Monday-Thursday 8 AM to 9 PM and Friday 8 AM to 5 PM. Additionally, students may contact librarians via email or the library website for research assistance. Video tutorials and online LibGuides on the library's website supplement instruction by providing guidance for students who are off campus.

Print and Electronic Resources

The Science Engineering and Mathematics librarian selects and purchases science and biological related materials. Items are evaluated for content and to ensure they are appropriate for college freshman and sophomores. Most book purchases are based on reviews in *Choice*, and related scholarly journal reviews. Recommendations by faculty are also encouraged. The collection is weeded periodically to maintain currency. Ebooks are purchased. The pandemic caused a shift in ebook usage, prior to the pandemic ebooks were not heavily used by students.

Although course textbooks are available at the library Circulation Desk for in-library use most students use the Day One access to their textbooks. Even so, there are students still using the Reserve collection.

Print periodicals for biology have been eliminated in favor of electronic access. The *Masterfile Premier*, *Academic Search Premier* and other databases available via *EBSCOhost* are a substantial source of relevant mass market periodicals and full text, peer-reviewed scholarly biology journals.

Academic Video Online, PBS, and *Films on Demand*, collections of academic and scholarly videos, are utilized by faculty teaching online courses as well as in the on-campus classrooms. Almost 1,300 videos related to the field biology are available in *Academic Video Online*. *PBS* has over 100 videos related to biology, and *Films on Demand* has over 2,000 videos related to the science of biology.

The library also strives to support the professional development of faculty. The circulating book collection is updated with books on teaching, learning, technology in the classroom and curriculum development. The library has the *Education Source* database (available via *EBSCOhost*) to provide faculty access to periodical literature on teaching and andragogy.

During the pandemic closure and subsequent reduction in hours, library staff worked to ensure access to resources and services by mailing books to students, extending due dates, providing curbside book pickup, increasing online chat coverage, creating additional instructional videos, providing online access to course reserves and additional electronic databases, offering Zoom reference meetings with students, and laptop and webcam checkout. A wireless hotspot checkout service was added in Fall 2021.

Facility

The library offers public computers, group study rooms, digital scanners, free printing (100 pages per semester, per student), huddle stations, mobile white boards, laptop and hotspot checkout, and a designated/monitored quiet study area.

In Fall 2022, the library installed individual use cubicles (Study Cubbies) in the designated quiet study area. Study Cubbies are reservable by all OCCC students, faculty, and staff.

In summary, the library supports this program and the faculty comprehensively and appropriately.

Recommendation(s)

A. Recommendation for the Program (3.7.7.A.4):

- ☒ Maintain the program at the current level.
- ☐ Continue the program with modifications as noted below and detailed in the comment section below.
  - ☐ Expand the program
  - ☐ Reduce program in size or scope
  - ☐ Merge or consolidate program
  - ☐ Reorganize program/curricular modifications*
- ☐ Suspend program to allow an opportunity to consider recommendations detailed in the section below*
- ☐ Delete program*

**Requires a Request for Degree Program Modification and governing board approval.*

B. Specific comments regarding recommendations:

(Provide detailed recommendations for the program as a result of this thorough review and how these recommendations will be implemented, as well as the timeline for key elements. Recommendations to suspend or modify the program should include measurable goals and a timeline for monitoring the program in one-, two-, three-, or four-year increments)

Recommendations	Implementation Plan	Target Date
1. More lab & classroom space is needed. Currently, some lab courses are being held in makeshift classrooms/lab spaces and some lecture sections are held in non-SEM areas of campus. More lab and classroom space will be needed to continue to meet current program demands.	A. Investigate the availability of funds from various school budgets or grant budgets to convert SEM 1B5 to a fully functional lab space. B. Work closely with other SEM division departments and/or nearby departments/divisions to evaluate classroom assignments/distribution.	A. Ongoing until budget and funds are identified. B. By the end of the 2022 – 2023 academic year.
2. Additional full-time instructors are needed in the program. Currently, there is greater demand for courses than can be staffed by current the full-time instructor pool, and limitations on part-time instructor workloads make it difficult to staff high-demand courses. Increasing the current full-time faculty positions by one or by adding full-time lecturer positions.	A. In the absence of an official mechanism for requesting a new faculty member at OCCC, the program chair and faculty will simply be vigilant in their efforts to advocate for the addition of a full-time faculty member whenever given the opportunity. For example, if new funding lines are directed towards the department with our wishes for their expenditure taken into account, we will advocate for those funds to be used to fund a new faculty member. B. In regards to a full-time lecturer position, during the preparation of this report, a temporary full-time position was authorized by higher administration for Spring 2023. A request for a full-time biology position (permanent) has been requested beginning in Fall 2023. While the final outcome depends on funding this is a highly-ranked initiative.	A. Until accomplished. With school budgets modulating every year, it will be unclear if/when funds will be available to add a full-time faculty position. B. A full-time lecturer position might be a reality by the 2023 – 2024 academic year.
3. Adjunct recruitment needs enhancement. Applications for adjunct instructor positions from local, in-state positions have significantly decreased over the past several years. This,	The department chair will work with the Dean and HR to modify the current advertisement plan for Biology Adjunct positions.	By the end of the 2022 – 2023 academic year.

coupled with limits on adjunct faculty workloads has made adjunct recruitment a new priority for the department.		
4. Graduate survey response rates should be higher. In light of the inability to retrieve acceptance data regarding OCCC AS BIO program students transitioning to 4-year and professional programs, program faculty will need to enhance their efforts in encouraging students to respond to these surveys after they leave OCCC.	Program faculty will work with the Graduation & Records office to tailor survey questions to our AS BIO, AS Pre-AH and AS Pre-BN majors that focus on our departmental goals. Additionally, program faculty will begin making concerted efforts to "advertise" for and encourage students to complete the survey in all 2000-level BIO courses and in BIO1134. (Idea: foundation scholarship opportunity for those completing grad surveys)	Anticipate first updated surveys to be sent to graduates starting in the 2023 – 2024 academic year.
5. The Biological Science Center staff compensation needs enhancement. The national average salary for someone with a bachelor's degree in biology is ~$57,000, and both of the bachelor's-requiring positions in the BSC are at least $10,000 below this. There are similar, lower pay rates for non-bachelor's requiring positions in the BSC.	Similar to efforts in regards to a new full-time faculty member, as funds are directed towards the department, enhancement of BSC staff compensation will be advocated for by the program chair and faculty. Since it is anticipated this might take some time, in the meantime, it will be important to be working to collect relevant information as appropriate to justify the pay increases to higher administration. We are fortunate in that the College is currently working with an outside group to perform a comprehensive compensation study that will hopefully address some of these compensation concerns.	Justification can be completed by the end of the 2022 – 2023 academic year, and the pay increase goal will be ongoing until funds are identified.
6. Self-study of online/hybrid instruction vs. on-campus (traditional) and 8-week vs. 16-week offerings. Program faculty are struggling to meet demands placed on the program in regards to variability in course offering modality/time-frame. Student demand for specific modalities/ time-frames is in juxtaposition to creating an effective learning	A committee comprised of program faculty members will be established to develop the self-study questions to analyze differences in success rates in online/hybrid environments vs. traditional, on-campus environments. Additionally, the committee will investigate student success rates in 8-week vs. 16-week BIO courses. The committee will also be charged with creating a survey to deliver to students to gauge their understanding of the expectations of students in online/hybrid vs. traditional and 8-week vs. 16-week delivery.	This subcommittee will begin working in the second half of the 2022 – 2023 academic year and will continue to work until they have completed their study, anticipated by the end of 2025.

situation based on information anecdotally provided by students to faculty and by faculty themselves.		

Add additional rows as necessary

Department/
Program Head _____ Date: Click here to enter a date.
(Signature)

Dean _____ Date: Click here to enter a date.
(Signature)

Chief
Academic
Officer _____Date: Click here to enter a date.
(Signature)

President _____ Date: Click here to enter a date.
(Signature)