**Sinclair Community College**

**Continuous Improvement Annual Update 2019-20**

**Please submit to your Division Assessment Coordinator / Learning Liaison for feedback no later than March 1, 2019**

**Please submit to your Division Dean for feedback no later than April 1, 2019**

**After receiving feedback from your Division Assessment Coordinator and Dean, please revise accordingly and make the final submission to the Provost’s Office no later than May 1, 2019**

**Department:** SME - 0322-Biology

Year of Last Program Review: FY 2018-19

Year of Next Program Review: FY 2023-2024

**Section I: Progress Since the Most Recent Review**

Below are the goals from Section IV part E of your last Program Review Self-Study. Describe progress or changes made toward meeting each goal over the last year. Responses from the previous year’s Annual Update are included, if there have been no changes to report then no changes to the response are necessary.

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| **GOALS** | **Status** | **Previous Years’ Progress or Rationale for No Longer Applicable** | **FY 2019-20 Update** |
| **1. Improve retention and success rates in high enrollment biology courses (BIO 1111, BIO 1141 and BIO 1121).**   * Improve Student Preparedness by including necessary pre-requisite courses for classes such as A&P.  We will explore the practicality and effectiveness of a Science Readiness test that all entering students would take with their English and Math placement tests. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | The following curriculum updates were implemented in BIO 1121 Human A&P I to improve retention and success rates:   * Developed a bank of worksheets and classroom discussion scenarios for each chapter * Begin faculty discussion forums to discuss best practices * Revise select sections of BIO 1121 to align with Universal Design for Learning |
| **2. Revising program and course outcomes/objectives**   * Maintain consistencies in the content within the same course taught by different instructors * Provide detailed information about specific course content and learning outcomes that can be assessed to determine if students are successfully achieving these outcomes | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | **Program Outcomes**  Per Program Review Committee recommendations and feedback from the SME Assessment Coordinator, the program outcomes need to be revised. The current program outcomes are not specific to each program (BIO.S.AS and BTN.S.AAS) offered in our department. Currently, the program outcomes are more reflective of general education outcomes and don’t assess the specific skills and content knowledge for each program.  Course Outcomes:  Course coordinators have been charged with organizing meetings with full-time faculty to develop specific learning outcomes for biology and biotechnology courses. |
| **3. Increase enrollment and graduation rates for Biotechnology AAS and Biology AS degrees.**   * Increase visibility of the program through intensified, targeted marketing efforts. * Expand in-department advising for biology and biotechnology majors. Increased communication with advising and the students would keep students on track for graduation and keep advising informed of program changes. Department liaisons would communicate on regular intervals to reduce the number of incorrect MAPs. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | **BIO A.S. Degree**   * Biology faculty participate in many community outreach events such as on site lab tours, career fairs, and events at Sinclair * Outreach events attended FY19-20   + SME Open House   + Centerville H.S. Career Fair   + STEM Night at Boonshoft   + TechFEst   + Fall and Spring Affair   + Served as judges for HOSA hosted at Sinclair   + SME Engineering and Technologies Day * BIO faculty at SCC met with Assistant Dean at WSU College of Math and Sciences to discuss the current articulation agreements and obtain current contact information of all relevant WSU advisors * The current contact information for appropriate WSU advisors was forwarded to all faculty teaching BIO 1171 and 1272 (general biology for majors) to have on hand when biology students have questions about articulation agreements. * BIO faculty are involved with NIH grant proposal focusing on increasing number of students transferring to WSU’s Neuroscience undergraduate program * BIO faculty are collaborating with Math faculty to write an NSF grant proposal focusing on a project-based learning to improve student retention * BIO students are encouraged to register for Life Sciences Calculus * BIO faculty contact students whom have completed SME Interest Cards   **BTN A.A.S. Degree**   * Biotechnology faculty participate in many community outreach events such as on-site lab tours, career fairs, and events at Sinclair * Events attended FY19-20   + See above list * BTN Program Coordinators consistently meet with BTN students to discuss and update student MAPs if needed. * BTN Program Coordinators regularly meet with Dayton and CVCC Academic Advisors to discuss any updates to the curriculum and/or program * BTN faculty contact students whom have completed SME Interest Cards * Plan to move evening biotechnology courses to the daytime based on current needs of student population * Plan to offer a Spring Semester start for the BTN program at the Mason Campus (starting Spring 2021).   + The BTN program at the Dayton campus will remain a Fall Semester start for new cohorts of students. The shift in starting the BTN program between the two campus provides several advantages:     - Students whom miss or fail to complete a BTN course at Dayton campus and get back on track by taking this course the following semester at CVCC.     - Tech Prep students completing the first semester of BTN courses at their high schools can start the program during their first semester at SCC |
| **4. Offer additional sections of high enrollment courses to reduce/eliminate waiting list that occurs each semester when these classes fill up and close.**   * The department’s goals for expanding and improving student learning is to fully utilize new lab space to open January 2019 to offer additional sections of BIO 1171, BIO 1141 and BIO 1272. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | * Starting Spring Semester 2019, both BIO 1171 and BIO 1272 Principles of Biology I and II, respectively were offered simultaneously. Prior to the construction of these lab each course was only offered once per year. We now offer both courses each semester. We also successfully offered BIO 1171 in the summer but had to cancel BIO 1272 due to low enrollment during summer semester. * We offered more sections of BIO 2225 Ecology Fall semester (increased from 2 to 3 sections compared to previous years) * We offered an additional section of BIO 2235/2236 Genetics Spring Semester 2019 and 2020. * We plan to offer BIO 2235/2236 Genetics with lab for the first time during Fall Semester 2020 (previously offered spring semester only). * Although we have the lab space to offer additional sections of BIO 1121 Human A&P I and BIO 1141 Principles of A&P I we did not need the extra sections due to lower than expected enrollment and in some semesters difficulty finding qualified adjunct faculty to teach the extra sections when we did have the enrollment demand. |
| **5. Reduce textbook cost for students through a combination of curriculum changes which may include developing and/or using existing Open Educational Resources and textbook publisher negotiations for at least 25% of our courses in the next five years.** | In progress 🞏    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | OERs developed and currently in use:   * BIO 1111 General Biology I * BIO 1211 General Biology ll * Lab manual for BIO 1111 and 1211   Publisher Negotiations/Customized editions reducing costs:   * BIO 2205 Microbiology lecture – online access to textbook * BIO 2206 Microbiology Lab – abridged version: removed labs not used in the course * BIO 1141 and 1242 Principles of A&P I and II – customized, abridged version of textbook * BIO 1272 Principles of BIO II – changed to less expensive photo atlas; 50% cost reduction   Future Plans to reduce costs:   * Provide students with free access to lab manuals published by Sinclair for several biology courses by uploading into eLearn. We are currently exploring ways to distribute the lab manual file to all biology faculty. |

Below are the Recommendations for Action made by the review team. Describe the progress or changes made toward meeting each recommendation over the last year. Responses from the previous year’s Annual Update are included, if there have been no changes to report then no changes to the response are necessary.

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| **RECOMMENDATIONS** | **Status** | **Previous Years’ Progress or Rationale for No Longer Applicable** | **FY 2019-20 Update** |
| In the meeting with the Review Team there was a considerable amount of discussion surrounding the issue of field trips, and the burdensome processes that are required to receive permission for them. It was noted that Geology courses frequently have field trips and may have suggestions regarding tips for streamlining the process for receiving approval. The department should make contact with the Geology Program Coordinator to get suggestions on how to make approval of field trips more efficient. The department is also encouraged to work with the division Dean to see if additional resources for field trips might be available. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | Biology faculty met with members of the Geology Department to gain insight into their process for student field trips. Based on these conversations we learned that Geology developed procedures involving Sinclair’s Legal Dept. However, our needs involving field trips are very different from those in Geology. For example, our field trips are local and students use their own transportation as opposed to rented charters and longer travel distances used by Geology. The next step in this process is to involve the SME Dean and the Sinclair Legal Dept. in developing a procedure that specifically meets our travel needs. |
| While the Biology Department has three new labs that just became available during the current term, there was some discussion that the other labs utilized by the department are in need of being updated. While remodeling all remaining labs simultaneously may not be an option, the department is encouraged to develop a plan for a phased, multi-year strategy for updating the remaining labs with the goal of making them amenable to modern teaching methods. Improving student learning should be the priority in consideration of how these spaces are to be updated. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | The Biology Chairperson met with Jim Fauzey (Construction Management Specialist), December 2019, to review the older lab spaces and develop a plan for renovations and generate estimated construction costs. A FY21 capital budget request for the modification of three older biology labs was submitted January 2020. We are currently waiting to hear if these labs will be funded as part of FY21 Capital Budget. The lab spaces proposed for renovations are:  Room 3042: BIO 1108 Lab for Human Biology  Room 3023: BIO 1117 Lab for General Biology I (non-majors)  Room 3013: BIO 1217 Lab for General Biology II (non-majors) |
| While transfer pathways to Wright State University are clear and well-defined, students may be less clear on how BIO courses transfer to other institutions. The department is encouraged to develop transfer guides that provide information that Academic Advisors can use to help students know which BIO courses will be accepted by which other Ohio institutions. The department is encouraged to work with Academic Advising in the development of these transfer guides. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | * The Biology Department collaborated with Trish Burke-Williams, Advising Manager for STEM Career Community, and Janeil Bernheisel, Provost Office, to develop the Ohio Guaranteed Transfer Pathway for our Biology AS degree. The pathway was recently approved (Feb. 2020) by the ODHE and is currently being finalized. The transfer pathway will be shared with all academic advisors and biology faculty as soon as the pathway becomes publicly available. * The Biology Department and Kimberly Collins met with representatives from University of Dayton to establish a Sinclair to UD Academy Pathway for Biology. Pathway was updated and approved Fall Semester 2019. * The Biology Department will meet with Trish Burke-Williams to develop transfer guides |
| There was some discussion with the Review Team regarding the availability of lab technicians, particularly in the evenings. The department is encouraged to review current scheduling of lab technicians and determine whether existing personnel are sufficient to meet the demand if scheduling is adjusted. If not, the department should develop a one- to two-page document providing evidence of the need for additional lab tech personnel that can be shared with the division Dean. | In progress 🞏    Completed 🞏  No longer applicable X | N/A. This is a new goal established as part of our last Program Review, April 2019 | Biotechnology courses at CVCC will be offered during the day only starting Fall 2020. This decision was based on the declining enrollment in the evening sections of these courses and discussions with current and prospective students requesting daytime BTN courses. The switch to daytime sections should resolve the lab technician availability issues experienced with the evening offerings. |
| Problems with facilities and equipment at the Mason location were discussed with the Review Team. These problems should be listed, along with suggested solutions and the cost of those solutions, and shared with the division Dean and leadership at the Mason location. | In progress 🞏    Completed X  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | The lab facility space and equipment issues were addressed with Dr. Ponder and the leadership team at CVCC. Initial plans to reconfigure and expand the existing lab space for biotechnology courses was discussed and proposed construction costs for the FY21 capital request were developed. However, these plans have been postponed to focus on manufacturing program developments at CVCC and to increase recruitment efforts for the BTN program in the Mason/Cincinnati area. |
| Along those same lines, there were reports of other equipment needs. A process should be developed by the department such that these needs can be reported and raised to the appropriate level in the institution for resolution. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | The Biology Chairperson will collaborate with the Biology Lab Technicians to devise a plan to address equipment needs for our department. |
| While the department did some tremendous work on assessment, particularly in assessment of General Education, there may be some opportunities for improvement of program assessment. In addition, the department has set a goal to revise program and course outcomes. The Review Team recommends that department personnel schedule regular meetings with the Division Assessment Coordinator for the purpose of consultation on the development of new program outcomes and implementation of strategies for assessing these outcomes. Revising program outcomes such that they are more distinct between the Biology transfer program and Biotechnology program should be a consideration in these efforts. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | Biology Chairperson met with Cari Giglotti, SME Assessment Coordinator, to develop a reasonable plan to successfully complete this recommendation.  Subcommittees within the Biology Department involving course coordinators and appropriate full-time faculty will meet to develop the course outcomes as well as development of separate and distinct program outcomes for the Biology and BTN programs.  The plan is to first develop 3-5 program outcomes, for each program, followed by the course outcomes. This approach will help guide the department in ensuring that the course outcomes relate to and support the newly developed program outcomes.  Proposed deadline to complete Program Outcomes is December 2020. |
| Biotechnology graduates continue to experience challenges transferring credits to four-year institutions. The department is encouraged to continue to prioritize finding ways to increase transferability of coursework and establishment of articulation agreements with four-year institutions. In making this recommendation, the Review Team wants to be clear that it understands that our four-year partners have not always been as cooperative in these efforts as we would like, and that will likely to continue to be a challenge. While there aren’t many Biotechnology programs across the country, are there any that have found a way to improve transfer opportunities for their students? What other strategies might be developed to help our students transfer more efficiently? | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | Susan Luken is currently serving as the lead faculty expert on the CTAG subcommittee of the ODHE charged with identifying current ODE secondary career field technical content that appropriately align with post-secondary learning outcomes. The goal is to acquire an approved list of secondary career-technical biotechnology courses that will transfer for credit to Ohio public post-secondary institutions with a comparable course. Susan conducted initial research and facilitated faculty panel discussion during the CTAG alignment process. Additionally, the committee is evaluating the possible transferability of biotechnology courses completed at two-year institutions of higher ed to four-year colleges with comparable courses. |
| Recruitment of adjunct faculty is a challenge for many departments. Are there potential sources for adjunct faculty that we could tap to a greater extent? For example, could the College Credit Plus office help identify high school teachers who are either qualified to teach BIO courses, or only need a small number of graduate credits to become qualified?  Finally, the department did exceptional work on its Biotechnology baccalaureate degree proposal, and the fact that it was not approved by the state was completely unrelated to the quality or merit of the proposal. It is not clear whether there will be any more opportunities for two-year colleges to propose baccalaureate degrees in Ohio, but the department should be prepared to re-submit should the opportunity present itself. Sinclair has a strong interest in attempting to gain approval for this program again if we are given the opportunity. | In progress X    Completed 🞏  No longer applicable 🞏 | N/A. This is a new goal established as part of our last Program Review, April 2019 | **Recruitment of Adjuncts**  The department will continue to develop strategies for adjunct recruitment. The following is a list of strategies we are currently using to recruit adjuncts:   * Request sent to HR to advertise the need for BIO and BTN adjuncts in local newspapers and online job recruitment sites * The Biology Department has recently recruited adjuncts from research labs at WPAFB. We will continue to develop our relationship with individuals at this institution. * We advertise the need for qualified adjuncts to our industry partners serving on the Biotechnology Advisory Board.   **Bachelor of Applied Science in Biotechnology**  To date, the Biology Dept. has not received a request to resubmit an application for a bachelor’s degree but will be ready if and when this request occurs. |

**Section II: Assessment of General Education & Degree Program Outcomes**

As many of you know, in FY 2017-18 the Computer Literacy General Education Outcome was discontinued. However, it is still expected that computer skills instruction will occur for the specific needs of a program. For the FY 2018-19 year, as part of the Annual Update each department is asked to describe how the computer skills education required for your graduates to be successful in their chosen field is addressed and assessed at the program level.

The following questions and request for information will be separately addressed for the BIO.S.AS and BTN.S.AAS degrees within the Biology Department.

**With respect to the BIO.S.AS Degree:**

What computer skills will your students need to possess in order to be successful after graduation? Please provide answers to the questions in the 3 sections located below.

1. Do your program students need to be competent or proficient in word processing, spreadsheets, and/or presentation software (e.g. Office Suite-style programs such as Word, Excel, PowerPoint)?

Yes  No  (**If no, please proceed to question # 2**).

If Yes:

Program(s) contain BIS 1120 or MET 1131 where these skills will be acquired and assessed.  
 Program(s) do not contain BIS 1120 or MET 1131. These skills will be assessed in the following manner:

Course(s): Click here to enter text.

Assessment Method / Assignment(s) (Please be specific): Click here to enter text.

1. Upon graduation, all Sinclair students must be competent or proficient in Information Literacy (gathering, analyzing, and synthesizing information, which can often be digital in nature, and using that information effectively and ethically).

Program(s) contain ENG 1201 or PSY 1100 or ALH 1101 where these skills will be acquired and assessed.

Program(s) do not contain ENG 1201 or PSY 1100 or ALH 1101. These skills will be acquired and assessed in the following manner:

Course(s): Click here to enter text.

Assessment Method / Assignment(s) (Please be specific): Click here to enter text.

1. In order to be successful after graduation, our program students will need to be competent or proficient in computer skills beyond those listed above.

Yes  No  (If no, section is complete).

Please list additional computer skills program students will need to be successful after graduation: Click here to enter text.

In which course(s) will these additional computer skills be assessed?

Click here to enter text.

Assessment Methods / Assignment(s) (Please be specific):

Click here to enter text.

**With respect to the BTN.S.AAS Degree:**

What computer skills will your students need to possess in order to be successful after graduation? Please provide answers to the questions in the 3 sections located below.

1. Do your program students need to be competent or proficient in word processing, spreadsheets, and/or presentation software (e.g. Office Suite-style programs such as Word, Excel, PowerPoint)?

Yes  No  (**If no, please proceed to question # 2**).

If Yes:

Program(s) contain BIS 1120 or MET 1131 where these skills will be acquired and assessed.  
 Program(s) do not contain BIS 1120 or MET 1131. These skills will be assessed in the following manner:

Course(s): Click here to enter text.

Assessment Method / Assignment(s) (Please be specific): Click here to enter text.

1. Upon graduation, all Sinclair students must be competent or proficient in Information Literacy (gathering, analyzing, and synthesizing information, which can often be digital in nature, and using that information effectively and ethically).

Program(s) contain ENG 1201 or PSY 1100 or ALH 1101 where these skills will be acquired and assessed.

Program(s) do not contain ENG 1201 or PSY 1100 or ALH 1101. These skills will be acquired and assessed in the following manner:

Course(s): BTN 1110 and BTN 2210/2211

Assessment Method / Assignment(s) (Please be specific): **BTN 1110 online discussion forums**/ students are assigned a bioethical prompt which they must research and form a viewpoint. They are required to write a short essay about their viewpoint including supportive arguments from credible resources in an online discussion forum. Afterwards they must respond critically and respectfully to the viewpoints of other classmates bringing in outside sources. The next day of class the forum is discussed, selected excerpts are read anonymously, and the discussion is continued briefly. **BTN 2210/2211:Bioinformatics assignments and test**/ The students are taught the background of bioinformatics as a field and how it applies to protein data. They are taught to use various bioinformatics databases (such as NCBI, PDB, EBI, and others) and complete a number of labs by using those databases. Throughout the course they will choose a genetic condition that they will explore and will create a report summarizing their data and findings. They will also take their data from the lab-bench portion of the class and will use their newfound knowledge to analyze their class data and choose the best representation of their experiment for a report.

1. In order to be successful after graduation, our program students will need to be competent or proficient in computer skills beyond those listed above.

Yes  No  (If no, section is complete).

Please list additional computer skills program students will need to be successful after graduation: Click here to enter text.

In which course(s) will these additional computer skills be assessed?

Click here to enter text.

Assessment Methods / Assignment(s) (Please be specific):

Click here to enter text.

The Program Outcomes for the degrees are listed below. **All program outcomes must be assessed at least once during the 5 year Program Review cycle, and assessment of program outcomes must occur each year**. Assessment results from previous years are in red font – if you assess those outcomes again this year, please add the additional assessment data in black font.

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| **Program Outcomes** | To which course(s) is this program outcome related? | Year assessed or to be assessed. | Assessment Methods  Used | What were the assessment results?  (Please provide brief summary data) |
| Communicate effectively in a variety of ways with varied audiences through: writing skills, oral communication skills, listening skills, reading skills and computer literacy.  (BIOE.S.AS, BTN.S.AAS) |  |  |  | No data to report  Reason: per Program Review Committee recommendations and feedback from the SME Assessment Coordinator, the program outcomes need to undergo a revision. The current program outcomes are not specific to each program (BIO.S.AS and BTN.S.AAS) offered in our department. Currently, the program outcomes are more reflective of general education outcomes and don’t assess the specific skills and content knowledge for each program.  Subcommittees within the Biology Department involving course coordinators and appropriate full-time faculty will meet to develop the course outcomes as well as development of separate and distinct program outcomes for the Biology and BTN programs.  The plan is to first develop 3-5 program outcomes, for each program, followed by the course outcomes. This approach will help guide the department in ensuring that the course outcomes relate to and support the newly developed program outcomes.  Goal for completing program specific outcomes is December 2020. |
| Demonstrate a strong foundation in the natural sciences and the reasoning skills needed for successfully executing laboratory protocols. (BIOE.S.AS, BTN.S.AAS) |  |  |  |  |
| Demonstrate knowledge of various experimental systems, including bacterial cultures, mammalian cell cultures and recombinant DNA technology. (BTN.S.AAS) |  |  |  |  |
| Demonstrate the ability to think logically and demonstrate problem solving using analysis, synthesis and evaluation. (BIOE.S.AS, BTN.S.AAS) | BIO-1171  BIO-1272  BIO 1111  BIO 1211  All BTN Courses |  |  |  |
| Recognize and articulate an understanding of the increasing interdependence of world cultures and their consequences. (BTN.S.AAS) | BIO 1272  BIO 1211 |  |  |  |

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| **Are changes planned as a result of the assessment of program outcomes? If so, what are those changes?** | N/A |
| **How will you determine whether those changes had an impact?** | N/A |

**OPTIONAL:**

Please use the space below to keep track of any annual data that your department wishes to maintain. This section is completely optional and will not be reviewed by the Division Assessment Coordinators.