**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 - 0359-Physics**

Year of Last Program Review: FY 2017-2018

Year of Next Program Review: FY 2022-2023

**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| **GOALS** | **Status** | **Previous Years’ Progress or Rationale for No Longer Applicable** | **FY 2019-20 Update** |
| The Matlab course (PHY 2210) was not revised when the college moved to semesters and therefore was not offered for several years. However, student demand for the course continued to exist. As a result, we tried to revive the course during the 2015- 2016 academic year but was not successful in getting Wright State University to accept it as a transfer course. We stepped away from this project but student demand for the course kept increasing. In response, we renewed our efforts and Doug Bradley-Hutchison revised the course to align more closely with WSU’s Matlab course. After many, lengthy communications with various faculty members and administrative staff at WSU, we are happy to report that transfer agreement was reached and the course offered for the first time under the semester system during Fall 2017 with an enrollment of 6 students. We are offering the course again in Spring 2018 with a current enrollment of 13 students. We are confident that the course will be offered every semester, henceforth, with robust enrollments. | In progress X    Completed 🞏  No longer applicable 🞏 | PHY 2210 was offered during Spring 2018 and Fall 2018 semesters with enrollments of 12 and 7 respectively. The course was offered Fall 2019 but was canceled due to low enrollment. One of the reasons might be that the Matlab program is used in both Engineering Tech courses and a Math course and students do not want to retake it. | This course was offered in Fall 2019 and 17 students successfully completed the course. Since the enrollment was not high when it was offered both semesters during the last academic year, a decision was made to offer it only once during an academic year. We hope to be able to run it with fairly robust enrollments once a year. |
| After a review of the physics program curriculum, we decided to add a Modern Physics course (PHY 2203) to the program. The rationale for this addition is that once a student completes the program with this course, the student will be able to transfer at the junior level into most physics baccalaureate programs across the nation. Our goal is to graduate 1 -3 students during the next couple academic years and increase that number to about 5 students in the next five years. These numbers may seem quite small but it has to be pointed out that most community colleges do not house separate physics departments let alone prepare and graduate students who can transfer to 4-year institutions at the junior level. So, this will indeed be quite an accomplishment for the department and the college. This is a long term investment in the growth of the department and caliber of the college and requires time, effort and monies. The department has already invested time and effort in this vision. | In progress X    Completed 🞏  No longer applicable 🞏 | PHY 2203 was developed and offered in Spring 2018 with 4 students enrolled in it. It was offered again in Spring 2019 but was canceled it since only one student was enrolled in it. We could not market the course effectively at WSU due to all the issues they were having during Fall 2018 and the subsequent strike in Spring 2019. We hope to be able to market this course more effectively for Spring 2020 offering. | When this course was developed, the intention was to offer it only during the Spring term since Wright State University offers it during their Fall term. The course was offered during Spring 2020 but was cancelled since there was only one student enrolled in it but that student withdrew before the start of the semester. We intend to market the course heavily during the Fall 2020 semester at WSU and hopefully will capture those students who were not able to take it there in Fall 2020. |

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** |
| The Review Team was extremely impressed by the integrated lecture/lab approach that has been adopted by the department based on previous research. The department is encouraged to document the impact that this change has had on student success in Physics courses. Moreover, opportunities to share the department’s work with integrated lecture/lab should be shared with other departments in Fall Faculty Professional Development Day, the Center for Teaching and Learning, and other appropriate venues. | In progress X    Completed 🞏  No longer applicable 🞏 | In line with the recommendations of the review team, we put in a proposal with the CTL to offer a session during FFPD but were turned down. We will try again in the future and maybe propose a workshop sometime during the academic year as opposed to FFPD since the next one is going to be dedicated to Diversity awareness. | We will submit another proposal for the upcoming FFPD (Aug. 2020) and present our findings. |
| The department is strongly encouraged to continue its outreach to Dayton Public Schools. This highly commendable work should be maintained, and the department should pursue finding a new representative from Dayton Public Schools to serve on its Advisory Committee. | In progress X    Completed 🞏  No longer applicable 🞏 | We are currently working with Wright Brothers Middle School to have their students engage in Physics activities to get them interested in STEM fields on April 12, 2019.  The Academic Science Coordinator for Dayton Public Schools has agreed to serve on our Advisory Board.  Jessica Hendricks judged science fairs at Thurgood Marshall STEM schools and Rushmore Elementary school. Doug Bradley-Hutchison worked with teachers and students from Wogamon Middle School to help prepare them for their science fair.  Lori Cutright and Marlon Aldridge presented information to students at the Fall Affair at Sinclair Community College. Marlon, Lori and Jessica all engaged students in hands-on activities at the BOONSHOFT Museum during their Science Festival.  Shan Huang led activities for area high school female students as part of the WiSTEM program at the Courseview campus. Lalitha Locker did the same at our Dayton campus. Shan also volunteered for Engineer’s Day which impacts approximately 300 students this year. | 12 students from Wright Brothers Middle School visited and participated in Physics activities for 1.5 hours on April 12, 2019.  Lori Cutright and Marlon Aldridge presented information to students at the Fall Affair at Sinclair Community College. Students engaged in fun Physics demonstrations. It was well attended, approximately 250 students were registered to attend the event.  Marlon and Lori also engaged students in hands-on activities at the BOONSHOFT Museum during their Science Festival.  Lori Cutright served on the WiSTEM planning committee in 2019. The theme was Crime Scene Investigation and she led an activity on analyzing tire tracks at the scene of an accident. Shan Huang presented about “Why take Physics?” and about careers in physics. |
| The department is also strongly encouraged to continue its work expanding the use of OERs as planned with the AST 1111 course, and with any other courses as appropriate. | In progress    Completed X  No longer applicable 🞏 | OERs, specifically OpenStax is being used in all face-to-face sections of AST 1111 and AST 1112 and the online version of AST 1111. The online AST 1112 is being revised and the conversion to OpenStax is being made now and the project will be completed in August. This will go live in Fall 2019. All sections of PHY 220X are using OpenStax also. We expect to use it in PHY 114X courses in 2020. | OpenStax was piloted and is subsequently in use in all sections of AST 1111, both in face-to-face sections and in online sections.  OpenStax was piloted in PHY 1141 during Fall 2019 and is being piloted in PHY 1142 currently (Spring 2020). Shan Huang surveyed her PHY 1141 students about switching to OpenStax and the overall student response has been positive.  To date, the only courses where OERs are not used are PHY 1106 and PHY1100. There are not any good OERs for conceptual physics courses, at least not any that have satisfied our requirements.  The online versions of AST 1111 and AST 1112 were revised by Lalitha Locker. These were extensive revisions since these courses had not been revised since 2009 due to lack of resources in the eLearning division.  The AST 1117 and AST 1118 (associated labs with AST 1111 and AST 1112) were revised by Shan Huang. These, again were extensive revisions due to the reason stated above. |
| It has been noted that there are a relatively small number of students in the Physics program – that being the case, the department is encouraged to explore one-on-one faculty advising with students who are enrolled in the program. | In progress X    Completed 🞏  No longer applicable 🞏 | All the students currently enrolled (3 active) have been contacted and only one student has expressed real interest and had questions. Another student wants us to offer all courses for the program at Courseview which is not feasible. We have also contacted all students on the Degree Audit list for PHYE.S. AS program with no success. | Currently there are 7 students who have declared Physics as their major. None of them are taking any physics classes now and only one is even enrolled in the college. Attempts to contact these students have failed. They either do not respond or the contact information is not current. The chairperson, Lalitha Locker, initiated these contacts in the hope of being able to advise these students individually. |
| The challenges for finding adjunct faculty in Summer term were discussed at length in the meeting with the Review Team – the department is encouraged to develop a proposal for allowing full-time faculty to use part of their load for the year in Summer, freeing adjuncts up for Fall and Spring term. The department should explore approaches for how this might be accomplished, gather data to support their recommendations, and submit a proposal to the Provost’s Office. | In progress 🞏    Completed X  No longer applicable 🞏 | Unfortunately, this Summer half of our full time faculty have opted not to teach with one long term faculty retiring at the end of this academic year. We hope to revisit this idea for Summer 2021 and will report on progress. In the meantime, we have a couple of promising applicants for adjunct positions whom we expect to be able to use for Summer 2019.  However, due to the integrated lecture-lab courses we offer, and the actual contact hours that these require, a better idea maybe to go to 3 full terms of 15 weeks per term. This will require us to be offering classes an extra week during an academic year but if full time faculty have the option of picking the two semesters that they work full time, there may not be much opposition to working the extra week. Then maybe we will have the option of utilizing adjuncts more during Fall and Winter semesters and not have the problem of finding qualified adjuncts to teach during summer term. But this plan requires a systemic change and cannot be confined to our department alone, even during the trial process. | We were fortunate in being able to find two adjuncts last Summer (2019) who have agreed to come back and teach again for us this Summer (2020). We also have hired a third adjunct this Spring term who has expressed interest in teaching during Summer 2020. This adjunct is looking for a FT position and therefore it is uncertain as to how long he will stay with us.  Upon further consideration, the idea of FT faculty teaching any two terms can be implemented only if the college moves to three semesters of 15 weeks per semester. Otherwise, there is not enough time during summer 12-week terms to fulfill the 15-payload hours requirement for FT faculty. |
| The excellent work with the STEM Training and Retention of Students (CC Stars) grant was impressive – how can a similar effort be funded to continue to offer students research based awards and scholarship awards? Funds from Sinclair will be available for initiatives such as this in Fall 2018, information will be provided at that time to the division deans on how to apply for these funds – the department is strongly encouraged to consider this as a source of funding for this effort. | In progress X    Completed 🞏  No longer applicable 🞏 | At this time, no funds are available for such opportunities. Again, with our senior faculty retiring and with the revision of the online astronomy courses, we have not had the time to pursue any grants. We hope to take up this endeavor once the online revisions are complete and/or if we are able to have the position filled with an experienced faculty member. | We investigated the possibility of writing an NSF proposal, Bridges to Baccalaureate’s program. This was to be an inter-disciplinary program but was not viable at that time.  We are in discussion and collaboration with the Math Dept. to submit another NSF proposal, “Improving Undergraduate STEM Education (IUSE) Program. |
| It was noted in the conversation with the Review Team that students in the Engineering University Parallel Transfer program can take a few more courses and also earn the Physics degree – the department should explore ways of encouraging students to do this. Can Academic Advising assist in this effort? | In progress X    Completed 🞏  No longer applicable 🞏 | Emails have been sent to some students who are in the EUT program and the similarities in requirements for both programs have been highlighted in our PHY220X courses. But more work needs to be done in this area to attract those students. Faculty have been quite occupied with online revisions of astronomy courses and revisions of online physics labs. Once these big projects are completed, we hope to turn our attention back to this area. | We will identify these students again this year and reach out to them via email. The students will be identified over Spring Break and faculty will contact them upon their return from Spring Break. |
| The Provost’s Office has suggested that funding may be available for the department to engage consultants to perform a review to identify ways the department can make improvements, similar to an accreditation site visit. The department is encouraged to consider taking advantage of this, in consultation with the Provost’s Office. | In progress X    Completed 🞏  No longer applicable 🞏 | We had approached WSU since we have articulation agreements with them with regards to our program. But this effort is at a standstill for obvious reasons. | We will resume conversations with Wright State University regarding this initiative and also explore options from WPAFB, particularly AFRL since we have adjuncts from that area teaching for us. |

**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.

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.

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) |
| Analyze a wide variety of physical phenomena and systems by constructing mathematical models, make appropriate approximations, formulate a solution using multiple representations when appropriate and evaluate the solution for accuracy and consistency. (PHYE.S.AS) |  |  |  |  |
| Be able to assess information on a topic from a wide variety of sources and be able to learn new things on one’s own. Demonstrate the ability to work in diverse teams toward a common goal. (PHYE.S.AS) |  |  |  |  |
| Create a common understanding through the use of verbal and nonverbal messages in a variety of contexts. (PHYE.S.AS) |  |  |  |  |
| Create understanding through composition and synthesis of the written word. (PHYE.S.AS) |  |  |  |  |
| Describe the fundamental principles and concepts of physics appropriate to introductory level physics and recognize patterns in nature. (PHYE.S.AS) | PHY 2201 | 2019 | Developed in house | This assessment was administered to PHY 2201 students. The average score was 52%. This topic that was assessed is one (Work and Energy) that lots of students have difficulty understanding. |
| Design and execute a scientific investigation: develop and evaluate cause and effect scenarios, isolate Express technical and scientific ideas in clear, concise language avoiding unnecessary jargon, without sacrificing precision. (PHYE.S.AS) |  |  |  |  |
| Design and execute a scientific investigation: develop and evaluate cause and effect scenarios, isolate variables, design and execute controlled experiments accounting for uncertainties, outliers and other statistical variants, develop empirical relationships between key variables. (PHYE.S.AS) |  |  |  |  |

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

**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.