**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 - 0351-Mathematics

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| **GOALS** | **Status** | **Previous Years’ Progress or Rationale for No Longer Applicable** | **FY 2019-20 Update** |
| **In cooperation with the Automotive Technology and Computer Assisted Manufacturing departments, the Mathematics Department will streamline the course requirements for some of their programs.** Specifically, there appears to be unnecessary repetition in Math for Technologists (MAT 1110) and Shop Floor Calculations (CAM 1141). | In progress 🞏 Completed XNo longer applicable 🞏 |  | MAT 1110 and CAM 1141, which were largely redundant in learning outcomes, were consolidated into a new version of MAT 1110, and CAM 1141 was eliminated from the CAM degree programs. Both changes went into effect in Fall 2019.  |
| **A new course, Calculus for the Life Sciences is being developed in cooperation with Wright State University.** The course will provide students with a firm foundation in Calculus as well as various applications focusing on modeling living systems. A modification to the articulation agreement for students working towards a Biology BS at Wright State may allow the students to take the course at Sinclair. | In progress X Completed 🞏No longer applicable 🞏 |  | Calculus for the Life Sciences (MAT 2240) was offered for the first time in Spring 2020. Members of the Math Department are participating on a drafting committee that is preparing a set of course outcomes for the Transfer Module Math Panel to review. It is expected that those outcomes will be approved latter this year. Once that is done, any revisions to MAT 2240 that are needed to align with the new standard will be submitted through CMT. |
| **Work is beginning in the Mathematics Department on utilizing more open educational resources.** Specifically, Introductory Statistics (MAT 1450), Calculus and Analytic Geometry I, II, and III (MAT 2270, MAT 2280, and MAT 2290), and Elementary Differential Equations (MAT 2310) will use an open source textbooks for those courses. This will greatly reduce the costs of the courses for the students. | In progress X Completed 🞏No longer applicable 🞏 |  | In addition to the classes already listed, MAT 1470, MAT 1570, and MAT 1580 will all be switching to OERs in AY 20/21. Pilots are also being conducted in MAT 1460 and MAT 2160 to evaluate the feasibility of using OERs in those classes. More on that next year.  |
| **Additional online and hybrid courses are being developed by the department to allow students more flexibility in course scheduling.** Hybrid versions of Business Mathematics (MAT 1120), Mathematics in Health Sciences (MAT 1130), and Introductory Statistics (MAT 1450) are currently scheduled to be developed. Plus, online and hybrid versions of Calculus and Analytic Geometry (MAT 2270) are on Distance Learning’s schedule for future development.  | In progress X Completed 🞏No longer applicable 🞏 |  | As of Spring 2020, all of the online and blended (hybrid) courses listed to the left have been finished and are being offered. An online version of MAT 2570 will begin development in Spring 2021 for a Fall 2021 launch.  |
| **The department will offer a co-requisite booster course, MAT 0460, for Finite Mathematics for Business Analysis (MAT 1460).** This will increase gateway completion in a mathematics course (MAT 1460) by providing students, who do not satisfy the pre-requisite for MATH 1460 but just need additional help, a concurrent course that offers just-in-time remediation. | In progress 🞏 Completed XNo longer applicable 🞏 |  | This booster class has been completed and is now offered every term.  |
| **The department will re-launch the teacher prep math sequence as a two-semester sequence.** After the teacher prep math committee researched education programs at several Ohio Universities, it was discovered that all but one offered the material covered in Sinclair’s Numerical Concepts for Teachers (MAT 1410), Algebra and Data Analysis for Teachers (MAT 1420) and Geometry and Measurement for Teachers (MAT 1430) in two semester courses, instead of three. The new sequence will be MAT 1510 (4 credit hours) and MAT 1520 (5 credit hours). The chair of the teacher prep math committee met with faculty from both WSU and UD, verifying that the new sequence will smoothly transfer to both universities. Phyllis Adams, Asst. Dean, LCS Division and Dept. Chairperson, Education has also been contacted and approves the changes.  | In progress X Completed 🞏No longer applicable 🞏 |  | The new sequence was launched in AY 19/20. ODHE released drafts this spring for Transfer Module course outcomes for a two-course sequence corresponding to these courses. Ohio public colleges and universities were asked to review them and provide feedback. Sinclair’s Math Department has done that. Once final drafts are released by the state, any necessary changes will be submitted to CMT.  |

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** |
| One of the most intriguing suggestions to come out of the meeting with the Review Team came from a member of the team who is external to Sinclair, whose institution allows students during the first week to study in an emporium model setting, retake the placement test, and if they score high enough, enroll in a section of the next highest course that begins in the second week of the term. The department expressed a great deal of interest in this practice, and the Review Team strongly encourages the department to explore adoption of a similar practice whereby students testing below college level math would have a week to prepare in the Math Academy to retake the placement test, and potentially move up to the next math course. | In progress X Completed 🞏No longer applicable 🞏 |  | In Fall 2020, the platform used in the Math Academy for remedial algebra students will switch from MyMathLab to ALEKS, which is the same product used for placement testing. This will facilitate the implementation of retesting during the first week. Students who improve their placement level will not only have the opportunity to move to a higher class, and also to move further along within whatever course they wind up in. This should decrease the average time to complete a first course in the Math Academy, and hopefully increase the proportion of students who complete two courses in one semester.  |
| The department has been wise to move slowly and cautiously in the adoption of OERs, attempting to ensure that students would receive the same level of support for learning. The Review Team strongly encourages the department to move forward with the development of OERs, continuing to use a cautious, measured approach without becoming stagnant in this effort. | In progress X Completed 🞏No longer applicable 🞏 |  | In line with the recommendation of a measured approach, OpenStax textbooks were piloted in select sections of MAT 1470, MAT 1570, and MAT 1580 in Fall 2019 before a decision was made to move all sections of these courses to OpenStax in AY 20/21. Currently, OER materials are being piloted in MAT 2160 this spring to determine whether they might be suitable for adoption in all sections of the MAT 1460/MAT 2160 sequence in the future.  |
| During the meeting with the Review Team, there was some discussion of identifying students who are close to graduation and encouraging them to complete their degrees prior to transfer. It appears that the chairperson has done some work in this regard in the past. The department is encouraged to continue identifying students who are close to completion, utilizing degree audit tools and soliciting help from Research, Analytics, and Reporting (RAR) and Academic Advising as necessary. Efforts should also be made to collect information from students who transfer prior to graduation to determine what steps might be taken to encourage them to complete their programs of study prior to transfer. | In progress X Completed 🞏No longer applicable 🞏 |  | Each term, the department chair conducts exit interviews with math majors who are nearing graduation, and helping them navigate completion and transfer is a large part of those meetings (in addition to collecting feedback from the students).  |
| Sinclair will soon begin development of a backfill strategy. There has been a considerable amount of discussion regarding redeploying Building 1 as a “Math Building” The department should develop specific plans for this possibility, suggesting new learning supports that could be developed with additional space and resources. When work on the backfill strategy develops in earnest, the department should be ready to communicate its vision for a “Math Building” and the resources that would be required. Plans for computer classrooms and labs, an adjunct faculty work area, a student lounge, and other supports should be enumerated and described in sufficient detail to allow them to become part of the backfill strategy if approved. In addition, the suggestion was made for development of a Science, Mathematics, and Engineering (SME) lab that would allow for interdepartmental utilization and collaboration – a proposal for this resource should be developed for possible inclusion in backfill. | In progress X Completed 🞏No longer applicable 🞏 |  | For Fiscal Year 2021, the department has again submitted a capital proposal for an adjunct work room in a former HS lab that is currently being used only for storage.  |
| Credit hours for specific courses in comparison to similar courses at other institutions was discussed briefly in the self-study – the department should continue to review the number of credit hours associated with math courses in comparison with other institutions and make adjustments where necessary to better ensure seamless transfer. | In progress X Completed 🞏No longer applicable 🞏 |  | When MAT 1410, MAT 1420, and MAT 1430 were replaced with MAT 1510 and MAT 1520 in the current academic year, it reduced the total credit hours for the sequence from 12 to 9, which is the same amount of credit hours as the Wright State Sequence we were trying to better align with. As new Transfer Module course standards are released by ODHE over the couple of years, we will continue to evaluate the appropriateness of the number of credit hours in the affected courses.  |
| As it moves forward with the development of new program outcomes and strategies for assessing those outcomes, the department should involve the Division Assessment Coordinator where necessary to develop assessment approaches and specific strategies for improvement of student performance on those outcomes. | In progress X Completed 🞏No longer applicable 🞏 |  | This year the Math Department worked with the SME Division Assessment Coordinator to develop and pilot a new “Mathematical Reasoning and Problem Solving” general education outcome.  |

**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 [x]  (**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.

[x]  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): N/A

Assessment Method / Assignment(s) (Please be specific): We do not have a plan for this at this time. We will meet with the SME Division Assessment Coordinator to formulate a plan.

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 [x]  No [ ]  (If no, section is complete).

Please list additional computer skills program students will need to be successful after graduation: Students need to be able to use software to graph mathematical curves and surfaces, and use those graphs to solve applied problems.

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

MAT 2290

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

Students complete a graded assignment. This assignment was launched in all sections of MAT 2290 in Fall 2019, and 79% of students were found to be Proficient or Competent.

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 MethodsUsed | What were the assessment results? (Please provide brief summary data) |
| Demonstrate critical thinking and problem solving by using calculus to solve application problems. (MATE.S.AS) | MAT 2280 and MAT 2290 | 2019 | Data collected from standardized exam problems with standardized rubrics. | **This outcome is first assessed in MAT 2280 and then assessed again in MAT 2290. In calendar year 2019, 50% of students were found to be proficient in MAT 2280, and 83% of students were found to be proficient in MAT 2290.**  |
| Effectively communicate mathematical concepts using correct terminology and notation. (MATE.S.AS) | MAT 2270  | 2020 |  |  |
| Effectively construct a mathematical proof. (MATE.S.AS) | MAT 2270 and MAT 2280 | 2019 | Data collected from standardized exam problems with standardized rubrics. | **This outcome is first assessed in MAT 2270 and then assessed again in MAT 2280. In calendar year 2019, 38% of students were found to be proficient in MAT 2270, and 54% of students were found to be proficient in MAT 2280.**  |

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| **Are changes planned as a result of the assessment of program outcomes? If so, what are those changes?**  | Our most urgent issue at the moment seems to be the need to help a greater number of students learn how to “Effectively construct a mathematical proof.” We have professional development sessions as part of each our department meetings, each on a different teaching topic. We will devote at least one of those sessions to this topic in Fall 2020.  |
| **How will you determine whether those changes had an impact?**  | We collect this data every year.  |

**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.