**Sinclair Community College**

**Continuous Improvement Annual Update 2017-18**

**Please submit to your Division Assessment Coordinator / Learning Liaison for feedback no later than March 1, 2018**

**After receiving feedback from your Division Assessment Coordinator, please revise accordingly and make the final submission to your dean and the Provost’s Office no later than May 1, 2018**

**Department:** **SME - 0570-Computer Aided Manufacturing**

Year of Last Program Review: FY 2015-2016

Year of Next Program Review: FY 2020-2021

**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| **GOALS** | **Status** | **Progress or Rationale for No Longer Applicable** |
| **Distance Learning:** The CAM Department will continue to implement and evaluate distance learning elements for some of its manufacturing courses, including the development and implementation of hybrid, competency-based courses through the AccelerateMFG program as funded by the Ohio TechNet grant. | In progress  Completed  No longer applicable | The CAM Department has continued to implement and evaluate the competency-based education (CBE) modality. In 2017/18, we added CAM 1141 and 1214 to the list of courses be offered as CBE, joining CAM 1107, 1109, 1116, 1141, MET 1131, and OPT 1100. The department will continue these efforts beyond the Ohio TechNet grant which concluded in March of 2018. Our initial evaluation shows that CBE is a better fit for courses with less intensive labs (like CAM 1141, 1142, 1107, 1214, OPT 1100, and MET 1131). |
| **Warren County:** The CAM Department will pursue opportunities to establish a presence in Warren County, to better address the education needs of a region filled with advanced manufacturing companies. | In progress  Completed  No longer applicable | The CAM Department has established a Machining Lab in Warren County, as part of the Mechatronics Apprenticeship program being offered jointly by Sinclair and Festo Didactic. The equipment is in place (at Festo in Mason) and the first class (CAM 1109) was held there in SU/2017.  Eventually we would like to see that machining lab located in a facility owned or rented by Sinclair. We would also like to have CNC machining capability in that lab. |
| **Retention and Completion:** The CAM Department will improve processes and procedures to improve retention and completion of students in CAM programs, with an emphasis on the STEP II certificate program. | In progress  Completed  No longer applicable | Taking a suggestion from the 2015/16 Program Review, the CAM Department implemented a series of summer orientations (beginning in SU/2016) for incoming CAM students to help prepare them for their programs of study and to make sure they understand what they are getting into. In doing so, we hope to improve program retention and completion. We’ve seen encouraging results after the first summer of orientations – early attrition (no-shows and first week drops) went from 12.5% in FA/2015 to 6.9% in FA/2016  We also added a DEV 0020 prerequisite to CAM 1161, which is the initial STEP II course, effective FA/2017. This was done as a result of department analysis of student success and completion data. |

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** | **Progress or Rationale for No Longer Applicable** |
| In the discussion with the Review Team, a great deal of time was devoted to discussion of the retention rates in the STEP II cohorts. This is problematic because empty seats in the cohort due to dropouts impact enrollment in subsequent courses in the program. Several possible solutions were suggested in the meeting with the Review Team, and the department is strongly encouraged to explore the best of these suggestions and pilot an approach within the next two years. One suggestion was to have a delayed start course in the Step II program that begins on a the 12 week schedule, which would allow for an additional small cohort to provide replacements for students who have dropped out, allowing the cohort to continue in the second semester with a full contingent. | In progress  Completed  No longer applicable | To address retention in the STEP II cohorts, the CAM Department implemented a series of summer orientations for incoming CAM students to help prepare them for their programs of study and to make sure they understand what they are getting into. In doing so, we hope to improve program retention and completion.  We also added a DEV 0020 prerequisite to CAM 1161, which is the initial STEP II course, effective FA/2017. This was done as a result of department analysis of student success and completion data. |
| The department is in the unusual position of having too many employer needs and too few students to meet them. The faculty already go above and beyond in their involvement in recruitment activities, so what else can be done to attract more students to the department’s programs? How can we better align the number of students we are providing with the needs of employers? Given the current marketing situation at Sinclair, what innovative approaches could be adopted to make students aware of the abundant opportunities for high-paying jobs that are presented by these programs? Could Competency-Based education and/or more flexibility in scheduling labs allow the department to increase the capacity in these programs of study? Would adopting the schedule that AUT uses where students spend 8 weeks in class then 8 weeks in internships every term perhaps increase the capacity of these programs? There are strong and clear indications that there will be unmet need in local industry unless we can attract and support more students in the programs that the department currently produces. | In progress  Completed  No longer applicable | We were able to take advantage of the Ohio TechNet grant for CBE course development and leverage some grant resources for the purpose of marketing our programs. By marketing the grant-funded CBE program in Basic Machining Skills, we are also marketing the full range of CAM programs. The grant hired a marketing firm to develop and implement an innovative strategy including social media, webinars, and connections with “influencer” groups. The new marketing strategy was in place since November of 2016, but we have not seen a positive impact on enrollment.  In early 2018 we have begun to work with the new Apprenticeship Grant. We expect to attract more students and employers with the apprenticeship model of education. |
| Given the close working relationship and valuable feedback that the department receives from its Advisory Committee, the department is encouraged to share this Commendations and Recommendations document with its Advisory Committee for their validation and input. | In progress  Completed  No longer applicable | We shared the Commendations and Recommendations document with our Advisory Committee during our meeting on 4/29/16, and dedicated a part of the meeting to discussion in order to get their validation and input. |
| With the wide open opportunities in this field of study, it is inevitable that other educational providers will begin offering programs in this area. One nearby community college already has. The department is strongly encouraged to monitor both existing and emerging competitors, and develop strategies – particularly in regards to marketing – to protect and perhaps enhance Sinclair’s market share. We should not assume that students will not select one of our competitors, even if their programs are less rigorous and do an inferior job of preparing students for the workplace. | In progress  Completed  No longer applicable | We are monitoring our competitors by collecting marketing literature, visiting websites, and observing news media. We also speak to Sinclair students who had initially attended our competitors but then decided to switch to Sinclair. Those students have been able to tell us about the content of their labs and the quality of their courses.  Clark State has a portable coordinate measuring arm to be used for precision measurement of manufactured parts. Independently, we had already requested a portable coordinate measuring arm in the 2017/18 capital budget. The device was installed in our Metrology Lab in late 2017 and is being incorporated into our classes. |
| The Review Team wondered whether a program in 3D Printing would be appropriate. The department has done a phenomenal job of incorporating this relatively new technology into its existing course offerings, but should carefully consider whether at some point a separate program for 3D Printing would be needed to prepare students for specific high-tech jobs in the area. | In progress  Completed  No longer applicable | The field of 3D printing has been rapidly changing over the past several years. We are monitoring its use by local manufacturers and have incorporated aspects of 3D printing into CAM 2225 and CAM 2780. We will continue to monitor this technology and incorporate it in our programs as appropriate.  As for a stand-alone program dedicated to 3D printing, that would probably fit best in the Mechanical Engineering Technology department at this point. |

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

For the FY 2016-17 Annual Update, departments are asked to provide assessment results for **Information Literacy**.

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| **General Education Outcomes** | Year assessed or to be assessed. | Course identified by the department where this outcome could be assessed | Assessment Methods  Used | What were the assessment results?  (Please provide brief summary data) |
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| Computer Literacy | **2017-2018** | MET 1131 | Computer Literacy Gen Ed Outcome Rubric | 2017 SP, SU, & FA – 76% of CAM students met or exceeded the expectations of the Computer Literacy Gen Ed Outcome Rubric. |
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| Information Literacy | **2016-2017** | CAM2700 – CAM Internship | Supervisor Final Assessment | UPDATED 2017 SP - 100% of students were rated as excellent or competent by the internship employers for the observation “Collects and analyzes information relevant to completing a task.” Looking to get a better measure in the future, perhaps from one of the gen-ed courses in the program. |
| **NEXT YEAR:** | | | | |
| Computer Literacy | **2017-2018** | MET 1131 |  |  |

**AVAILABLE GENERAL EDUCATION RUBRIC DATA FOR STUDENTS IN YOUR DEPARTMENT’S PROGRAMS:**

The Program Outcomes for the degrees are listed below. Responses from previous years are provided 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**.

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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 manufacturing engineering problems (general and technical) and make appropriate decisions. | CAM 1107, 2145, 2204, 2212, 2700, OPT 1100, MET 1131, OPT 2240 | 2017-18  (previously 2012-13) | Employer Feedback – CAM 2700 Internship Supervisor Survey Results | SP/2017: Internship Supervisor Performance Appraisal Results: Including four questions on problem solving and critical thinking skills, 100% of responses rated students as “excellent” or “competent.” Data included 13 students and 8 employers. |
| Demonstrate applied competencies in the areas of machining applications, drafting techniques, and blueprint interpretation. | CAM 1107, 1109, 1161, 1162, 2114, 2212, 2225, OPT 1113 | 2016-17 | Locally Developed Exams – Using the CAM 2225 tests, questions relevant to machining applications, drafting techniques, and blueprint reading. | In FA/2016, students correctly answered 86% of the relevant questions on the CAM 2225 tests. |
| Demonstrate mathematical skills required for occupation. | CAM 1116, 1141,1142,  MAT 1110 | 2019-20 (previously 2014-15) | Locally Developed Exams – Using the CAM 1141 tests. Since the courses are Shop Floor Calculations I and II, all test questions are related to mathematical skills. | In FA/2014, 70% of CAM students scored “C” or better on the tests in CAM 1141 and 1142. This is lower than we would like to see, and the department is looking into it. On the other hand, 84% of CAM 1141 and 1142 students received a course grade of “C” or better.  FA/2015 Update: 79% of CAM students scored a “C” or better on the tests in CAM 1141. Also, a new data point shows CAM students scoring an average of 95% on applied math questions on the CAM 1116 midterm and final. |
| Demonstrate technical engineering skills appropriate to program requirements. | CAM 1109, 1116,2145, 2204,2212, 2214,2780 | 2018-19  (previously 2012-13) | Employer Feedback – CAM 2700 Internship Supervisor Survey Results | SP/2015 Update: Internship Supervisor Survey Results: Including three topics on technical skills, 100% of supervisor responses rated students as “excellent” or “competent.” |
| Identify new changes in career field and build personal skills to maintain state-of-the-art competencies. | CAM 1107, 1109, 1161, 1162, 2212, 2700, 2780, 2781 | 2020-21  (previously 2015-16) | Graduate Exit Interviews | In SP/2016, Graduate Exit Interviews showed that 100% of students were able to identify new changes in the career field and determine strategies to maintain competence. |

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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.