**Sinclair Community College**

**Continuous Improvement Annual Update 2012-13**

**Please submit to your dean and the Provost’s Office no later than Oct. 1, 2012**

**Department:** 0575 – Industrial Engineering, 0576 – Operations Technology

Year of Last Program Review: FY 2011-2012

Year of Next Program Review: FY 2016-2017

**Section I: Department Trend Data, Interpretation, and Analysis**

**Degree and Certificate Completion Trend Data – OVERALL SUMMARY**

Please provide an interpretation and analysis of the Degree and Certificate Completion Trend Data (Raw Data is located in Appendix A*): i.e. What trends do you see in the above data? Are there internal or external factors that account for these trends? What are the implications for the department? What actions have the department taken that have influenced these trends? What strategies will the department implement as a result of this data?*

*Enrollment data since 2008*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2008 | 2009 | 2010 | 2011 | 2012 |
| 185 | 153 | 164 | 108 | 130 |

The graduation numbers for both degrees and certificates have been:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 07-08 | 08-09 | 09-10 | 10-11 | 11-12 |
| Degrees | 25 | 8 | 16 | 21 | 21 |
| Certificates |  | 25 | 18 | 27 | 16 |
| Total degrees/Certificates | **25** | **33** | **34** | **48** | **37** |

From the above data (which do not agree with the Chart provided, but were gathered from the DAWN Portal), you can see that the completion rate tends to be stable , except for 2010-11 where we had a spike. This shows we are holding our own in a declining economy, and seem to be well positioned to take advantage of an upturn. The spike was largely due to the large number of Displaced Workers that came through our program and succeeded, due to funding limitations and the need to find employment. These reasons, based upon exit interviews and informal talks, provided great incentive to complete degrees or certificates. The completion trend follows the enrollment trend and though there was a dip in 2010-11, it has increased in 2011-12. The disturbing part of this trend is that we are not enrolling recent high school graduates into the program, but are relying upon older adults who have some work experience and are trying to upgrade their skills for a new career. We, as a department, have offered more Independent Study classes to allow the Displaced Workers a chance to complete their degrees or certificates before their funding ran out. This is not the way the system is designed, since most of our courses require hands-on activities in a Team environment. The faculty took a large lead and provided virtually the same amount of face to face contact in most classes offered as Independent study (due to low enrollment) as they would in normally run classes, for less compensation than normal. This leads us as we enter semesters, to try to gain enough enrollment to offer classes only in the normal mode. We are working closely with the people that service displaced workers and welcome these workers into our program.

We also recognize the need to attract younger, recent high school graduates into the career field (along with more minorities and women). We are targeting specific high schools with our Advisory Committee and their plan (generated through our “Compression Planning Session”) to “adopt a high school” in which an Advisory member, a faculty member, and a recent graduate (preferably from the school being visited) to visit the school and make a sales pitch to students in the engineering or related programs. We are also talking to students in DEV classes that are not sure about their majors, along with trying to work with other Engineering Technology Programs to encourage them to have some OPT classes on their curriculum. We are working with Admissions whenever possible to participate in High School career days and working with the Tech Prep office to generate an OPT Pathway for Tech Prep students. We were working with the DRMA (Dayton Region Manufacturers Association) using their BOTS program as a way to get to students, but DRMA is dropping BOTS this October. We will be looking to reinstitute the old OPT manufacturing contest. The BOTS may be a part of that program.

We have surveyed our current students to see how they were attracted to the Program. The vast majority (70+%) said it was through word of mouth referral from friends or family. Some said it was from the website and some mentioned Career Services/Advising. As a group (faculty, students, Advisory Committee) we are working these areas.

**Course Success Trend Data – OVERALL SUMMARY**

Please provide an interpretation and analysis of the Course Success Trend Data (Raw Data is located in Appendix A). Looking at the success rate data provided in the Appendix for each course, please discuss trends for high enrollment courses, courses used extensively by other departments, and courses where there have been substantial changes in success.

As can be seen from the Graph above, the success rates for OPT classes hovers in the high 80% range. This is due to the fact that the OPT faculty spend large amounts of time outside of class working with students, not only on technical content, but helping them update resumes and practicing interviewing skills. The Adjuncts we use are of the highest caliber, many of whom are still working in industry. They bring a wide variety of practical experience and know-how to the class. The fact that many of our students have worked in industry is a great help as they are already familiar with many of the concepts we teach.

Looking at the individual data, it can be seen that OPT 101 (now OPT 1101) is in the mid 70% range. This is due to the fact that statistics were introduced to the course and the use of Excel spreadsheets was required. Many older students were not prepared and unfamiliar with Excel. This required a lot of faculty work outside of class tutoring the students in Excel. For OPT 1101, we created an entire class session for review and instruction of Excel. We will measure the results off this effort and if this doesn’t increase success, there exists the possibility of making OPT 1198 (Excel) a prerequisite for OPT 1101.

The other course we had problems with was OPT 201- Statistical Process Control. We have now moved that into the 80% range due to the work being done in OPT 101on statistics as preparatory to OPT 201. We feel students that now enter 201are better prepared and the numbers seem to indicate this.

The only other class of concern is OPT 251 which is a Logistics course done in conjunction with Management Department. We offer this face to face and on the Web. We are looking to see if the web based offering is the best mode for delivery of this course, or is face to face better, or is there no difference. We would like to continue with the on-line course, but not at the expense of student learning.

The courses used by other departments (besides OPT 251) are OPT 211 (Industrial Risk Management) a safety course and OPT 205 (Manufacturing Processes), OPT 206 (Value Analysis) and OPT 130 (Lean Operations) all have high success rates and generally positive feedback about content and instructors. We plan no substantial changes there.

Being a small department with dedicated experienced faculty, we take the time to get to know our students, help them through difficulties and generally provide a feeling of “family”. That is why we maintain such a high degree of contact with our graduates, but we will be using the services and surveys conducted by RAR to support and enhance the informal data we have and are gathering.

Please provide any additional data and analysis that illustrates what is going on in the department (examples might include accreditation data, program data, benchmark data from national exams, course sequence completion, retention, demographic data, data on placement of graduates, graduate survey data, etc.)

Please see Accreditation information under “Improvement Efforts”. At the end of this report.

**Section II: 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.

|  |  |  |
| --- | --- | --- |
| **GOALS** | **Status** | **Progress or Rationale for No Longer Applicable** |
| Transition to Semesters  To do this, we analyzed every degree program, certificate program and course offering. We have eliminated courses which had little activity the past few years. We combined others in line with recommendations from our advisory committee to ensure that the program outcomes meet the needs of the community. We added content to certain courses to enhance our industry partners’ needs, and we created a course in quality control (OPT 1112 -World Class Quality Systems and Procedures) to ensure that students get a basic understanding of the quality process and procedures needed in today’s business environment. The higher level quality courses (OPT 2221, 2225, 2267) that provide more in-depth exploration of a topic have been kept as electives and are part of our Quality Control certificate, which will help with enrollment. See pages 23 and 24 for more information on these courses. | In progress  Completed  No longer applicable | We are currently running these classes under semesters and are evaluating the results. |
| Revamped the OPT Advisory Committee  Due to the changes in focus, we have added more non-manufacturing representatives on this committee. We have also added recent graduates of the OPT program. They bring valuable information about how well our programs prepare them for the workplace. | In progress  Completed  No longer applicable | We have an Advisory Committee meeting scheduled for October 19th. We are evaluating members who are not showing up and will send them letters asking if they would like to be removed from the committee. The addition of students and recent graduates has added a new dimension and energy to the committee. One in particular, a nursing graduate who has come to Sinclair to get an OPT degree to help broaden her skills outside of , but related to, Nursing, has been a great addition to the Committee. She has made several presentations to students on tours of our OPT facilities, placed the department in contact with community agencies who work with the underserved population, and has volunteered to talk to guidance counselors as part of Admissions “Bus tour”. We are looking to add more minority and women members. |
| Certificates  We will offer under semesters those certificates we offer under quarters and will use this as a strategy to recruit more adult students into the program. And hopefully this will encourage more companies to send employees for additional or continuing education. | In progress  Completed  No longer applicable | This is in conjunction with our Advisory Committee. Whenever we visit a company, even if it is for recruiting CAM students, we make the pitch for the OPT degrees and certificates. With the addition of a graduate nurse to the committee (who is seeking an OPT degree) we are trying to expand into other non-manufacturing enterprises, such as hospitals and health care facilities. |
| Learning Centers  We are pursuing the opportunities of offering OPT classes at two of Sinclair’s Learning Centers, particularly Courseview and Preble County. They offer potential for growth of the program. In particular, we will address this issue with our OPT Advisory Committee members who are from Warren County. | In progress  Completed  No longer applicable | There has been a lot of focus on Preble County and using those recruiting efforts for machinists (CAM program) to also go after potential OPT students, whether for degrees, certificates, or just body of knowledge. We are also focusing again on CourseView in Warren County, hoping to offer some OPT courses. |
| Additional Articulation Agreements  We currently have an agreement with UD on the OPTIO program that will continue. We also have an agreement for the base OPT program with Purdue University-Richmond in their Organization and Leadership Program. We have made initial contact with Ohio University and are actively pursuing that opportunity. We will continue to seek other partners. | In progress  Completed  No longer applicable | We have reviewed the revised OPTIO option with University of Dayton Industrial Engineering Technology Program and discovered we now only are able to transfer 48 credit hours from our Program to theirs. We are looking at getting this closer to the 60 we used to have. To do this we are in the process of reevaluating our Program as being offered under semesters to see if we can shorten requirements (time to graduate) but still meet more of UD's requirements. |
| More Minority Students and Women into the Program  Appendix F illustrates that the vast majority of OPT students are white males. We will continue to work with with local high schools, particularly the Ponitz Career Technology Center, to attract more minorities and will continue to work with WISTEM to attract more women into the programs. | In progress  Completed  No longer applicable | We visit Ponitz Academy at least twice per year recruiting, and continue work with WISTEM and Society of Manufacturing Engineers (SME). |
| More involvement with DRMA and their Extreme BOTS competition.  We are a member of the DRMA (Dayton Region Manufacturers Association) and are involved with their Extreme Bots competition.This competition is designed to interest students in careers in manufacturing. In addition to being a “fun” activity, the participants see a connection to a career, particularly in the Industrial Engineering Technology/Quality field. | In progress  Completed  No longer applicable | DRMA is eliminating their involvement with BOTS effective this October. We are considering restarting the old Industrial Engineering manufacturing contest. We are also considering if we could somehow integrate BOTS into this approach. |

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.

|  |  |  |
| --- | --- | --- |
| **RECOMMENDATIONS** | **Status** | **Progress or Rationale for No Longer Applicable** |
| Currently the semester curriculum in programs in this department are at the maximum of 73 credit hours and well above the 60 credit hours that would constitute a two-year, full-time program. The department should consider scaling back the program requirements where appropriate to facilitate completion of the degree program by students. This work, of course, should take into careful consideration how to offer a strong program without compromising quality of student learning and their professional preparedness. | In progress  Completed  No longer applicable | As mentioned above, we are looking at our degrees and certificates to see where or if changes could be made to shorten the time needed to complete without lessening quality of education, or skill sets of our graduates. We are working this through with our Advisory Committee. |
| The department is encouraged to enhance its assessment of program outcomes. The department has considerable professional expertise in continuous quality improvement and thus could serve as a model for other departments on the collection of data on student learning outcomes, the analysis of this data, and the use of results to further improve the quality of student learning. While anecdotal information from students is a valued qualitative source of information about students’ experience in OPT, there is a need for a much more focused and systematic approach to evidence of student learning outcomes, an issue also cited in the TAC/ABET review. | In progress  Completed  No longer applicable | We recognize the need for hard data both from the program review and from the ABET accreditation review. We have developed rubrics and data collection sheets to capture hard data to plot trends so we can make good decisions. We are using data from selected courses, especially the capstone, which includes feedback from employers. Also we are using student reflection surveys to get student input about their learning experiences. We will continue to refine this under semesters.(see Assessment of Program Outcomes), especially providing linkages and data to General Education outcomes. |
| The department is encouraged to explore options to allow students the ability to maintain employment while working to complete their degree programs. Flexibility in scheduling may be called for to make this a reality for some of our students in these programs who also work full-time. | In progress  Completed  No longer applicable | This has always occurred in our Program as we try to offer classes that make it easier for students to enroll in classes while maintaining full or Part-time employment. We have discovered by surveying students that we not only need to provide day and evening classes, but also consider students who work second shift and need to be through by 1:00 PM. This is having us offer more morning classes. We have run some Saturday classes to broaden our reach to students, but these have not proven popular. |
| The department has recognized the need to educate students on the opportunities in the field and to combat the misperceptions that there are no jobs in manufacturing. The department is encouraged to explore the use of institutional resources in getting this message out, which may include Marketing, Career Services, and other areas in the institution. It may be a good idea to develop talking points about the program that could be shared in different venues as a means of attracting students to the OPT programs. | In progress  Completed  No longer applicable | We are working with Admissions and Marketing to get out the word about the Program. The displaced worker group, especially Chad Bridgman, send many potential students our way. We have developed a presentation (PowerPoint) coupled with some web sites that show Industrial Engineering Technology type activities. We continue to visit high School college days and make presentations to DEV 084 students. We used to have the CAM Outreach Coordinator also pass out information about OPT, but unfortunately lost that position. We have identified opportunities using our Advisory Committee and current students or recent graduates to partner on an "Adopt a High School" program, where the members of the committee and faculty and graduates go and talk to prospective students. We work hard with Admissions giving tours to students as young as 5th grade, trying to interest them in careers in manufacturing, particularly Operations Technology. Unfortunately, we will have to wait several years to see if these efforts bear fruit. |
| Similarly, the department should work to increase its profile on campus. The department’s expertise in continuous quality improvement could be applied to a number of campus processes, and such opportunities could provide students with practical experience and also raise the department’s profile on campus. | In progress  Completed  No longer applicable | We are encouraging faculty to make presentations on Continuous improvement activities as part of Faculty learning days and working with CTL to see if we could offer sessions through them. In our Capstone project, we have placed student projects in various campus departments, using the skills they learned in OPT to improve operations and we will continue to do so. |
| The high success rates in OPT courses indicate that the department is doing some things that are extremely effective – how can these things be shared and replicated in other departments? The department is encouraged to explore approaches to sharing the techniques that are working so well for them with other departments, perhaps through workshops or Fall Faculty Professional Development Day. | In progress  Completed  No longer applicable | The biggest reason for our success is our small department which makes students feel like family, and dedicated faculty, who go above and beyond what is expected. We have also spent many hours tutoring individuals who are having trouble. I believe many other programs/departments do the same, without the same results. For example, our own CAM program works with OPT faculty and uses many of the same techniques and dedication, yet cannot match the success rates. |
| The self-study submitted for this review focused on TAC/ABET general education outcomes. Accreditation requirements are crucial, and the department needs to be able to demonstrate it is meeting the TAC/ABET general education assessment requirements, but Sinclair’s General Education outcomes also must be met. The department is encouraged to explicitly map out the relationships between TAC/ABET and Sinclair general education outcomes and ensure that they are addressing both in their assessment efforts. | In progress  Completed  No longer applicable | We are modifying our TAC/ABET Matrix to show connections with program outcomes and TAC/ABET outcomes. Many TAC/ABET outcomes are closely related to Sinclair's general educational outcomes. We are explicitly mapping how these relate down to the course and assessment method. For TAC/ABET we mapped it to specific exam questions or rubric criteria. |
| The department’s mission statement should be revised to be more crisp, concise, and focused. Communicating more clearly the purpose and expertise of the department can be valuable in promoting wider understanding on campus and off of the expertise and programs of the department. | In progress  Completed  No longer applicable | A new Mission statement has been written, but not yet reviewed with the Advisory Committee. Once this is done we will formally revise. |
| The department is encouraged to work with RAR to increase the data it has on graduates and industry trends. Ohio Department of Jobs and Family Services data can provide information on graduate employment and earnings, and Career Coach data can provide information on industry trends. RAR is an excellent resource in accessing both of these sources of data. | In progress  Completed  No longer applicable | We are setting up a procedure to use the resources available to increase the data we have on graduates and include that with the data we receive from our graduates on a continual basis. |
| The department is benefitting from its work with its Advisory Committee, and it is encouraged to keep the committee fresh, replacing inactive members as the need arises. | In progress  Completed  No longer applicable | As mentioned above, we are constantly monitoring the make-up of the committee and updating as the need arises. We feel we are getting tremendous response from our Advisory Committee and a lot of hands-on involvement. |
| Finally, the department is encouraged to increase the diversity of faculty and students. | In progress  Completed  No longer applicable | We are striving to increase the diversity of our student base and are starting to see more racial diversity and gender diversity in our classes. It is nowhere near where we want it to be, but it is getting better. |

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

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**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **General Education Outcomes** | To which degree(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) |
| Oral Communication | | All programs | **2011-2012** | Written Survey – Using the OPT 2278 Capstone Reflection Survey.  External Examiner –  Portfolio/Project Appraisal. | 80% of students rated question #4 as a 3 or 4  Using the OPT 278 Employer Assessment of Capstone Student Performance, at least 80% of the students met or exceeded requirements on items 18 and 19.  Using the OPT 278 Project Rubric, at least 80% of teams scored a 4 or 5 on items A, B, C. |
| Written Communication | | All programs | **2011-2012** | Written Survey – Using the OPT 2278 Capstone Reflection Survey.  External Examiner.  Portfolio/Project Appraisal . | 80% of students rated question #3 as a 3 or 4  Using the OPT 278 Employer Assessment of Capstone Student Performance, at least 80% of the students met or exceeded requirements on items 14-17.  Portfolio/Project Appraisal – Using the OPT 278 Project Rubric, at least 80% of teams scored a 4 or 5 on items A, D and E. |
| Critical Thinking/Problem Solving | | All programs | **2012-2013** |  |  |
| Values/Citizenship/Community | | All programs | **2013-2014** |  |  |
| Computer Literacy | | All programs | **2014-2015** |  |  |
| Information Literacy | | All programs | **2015-2016** |  |  |
|  | |  |  |  |  |
| **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) |
| Demonstrate appropriate technical communication skills (written, verbal and drawing). | | OPT 1126,2216,2780, ENG 1101, MET 1221 | 2012-13 | Written Survey – Using the OPT 2278 Capstone Reflection Survey, at least 80% of students rated question #3 as a 3 or 4  External Examiner – Using the OPT 2278 Employer Assessment of Capstone Student Performance, at least 80% of the students met or exceeded requirements on items 14-17.  Locally Developed Exams – Using the OPT 1126 Mid-Term Exam, at least 80% of the students scored 80% or better on the questions related to technical communications: #’s 13-20.  Portfolio/Project Appraisal – Using the OPT 2278 Project Rubric, at least 80% of teams scored a 4 or 5 on items A, B, C, D, E, F, G  Portfolio/Project Appraisal – Using the OPT 1126 Project Rubric, at least 80% of teams scored a 4 or 5 on items A, B, C, D, E, F, G  Portfolio/Project Appraisal – Using the OPT 2216 Project Rubric, at least 80% of teams scored a 4 or 5 on items A, B, C, D, E, F, G | We are collecting the data for assessment shown in the column to the left. Since the last two years were spent getting TAC/ABET accreditation and doing the OPT Program review coupled with the switch to semesters, data from the quarter courses was analyzed and used in the transition to semesters and in the reviews and accreditation mentioned. We are working on collection methods and are looking at updating some of the rubrics and other assessment means to measure the effectiveness of the Program outcomes and how well the students are meeting them. |
| Use continuous improvement techniques to reduce operational waste, improve cost efficiency and increase system productivity. | | OPT 1101,1130,2207,2240,2780 | 2012-13 | Written Survey – Using the OPT 2278 Capstone Reflection Survey, at least 80% of students rated questions #1, 4 and 5 as a 3 or 4  Archival Records – At least 80% of OPT 240 students earned their Six Sigma Green Belt Certificate upon completion of the course  Portfolio/Project Appraisal – Using the OPT 2278 Project Rubric, at least 80% of teams scored a 4 or 5 on items C and G  Portfolio/Project Appraisal – Using the OPT 1130 Project Rubric, at least 80% of teams scored a 4 or 5 on items C and G | We are collecting the data for assessment shown in the column to the left. Since the last two years were spent getting TAC/ABET accreditation and doing the OPT Program review coupled with the switch to semesters, data from the quarter courses was analyzed and used in the transition to semesters and in the reviews and accreditation mentioned. We are working on collection methods and are looking at updating some of the rubrics and other assessment means to measure the effectiveness of the Program outcomes and how well the students are meeting them. |
| Document, monitor, evaluate and improve product and process quality through the use of a variety of quality tools and techniques. | | OPT 1100,1101,1112,1113,1125,2201,2240,2780 | 2014 | Written Survey – Using the OPT 2278 Capstone Reflection Survey, at least 80% of students rated question #4 as a 3 or 4  Archival Records – At least 80% of OPT 2240 students earned their Six Sigma Green Belt Certificate upon completion of the course  Locally Developed Exams – Using the OPT 1125 Final Exam, at least 80% of the students scored 80% or better on the questions related to Quality: #’s 3 and 6.  Locally Developed Exams – Using the OPT 2201 Final Exam, at least 80% of the students scored 80% or better on the questions related to Quality: all questions. | We are collecting the data for assessment shown in the column to the left. Since the last two years were spent getting TAC/ABET accreditation and doing the OPT Program review coupled with the switch to semesters, data from the quarter courses was analyzed and used in the transition to semesters and in the reviews and accreditation mentioned. We are working on collection methods and are looking at updating some of the rubrics and other assessment means to measure the effectiveness of the Program outcomes and how well the students are meeting them. |
| Analyze the cost, performance and value of operations. | | OPT 1198,2206,2207,2780, MAT 1280,1290, PHY 1141 | 2014 | The exams for OPT 1198 which uses Excel spreadsheets for performance and cost evaluations of operations, the rubric for OPT 2206 along with the Project portfolio/Project appraisal. We expect at least 80% of the students to score 4 or higher on the rubric , 80% of the students to score 80% on the simulation project and make at least a 50% cost improvement.. There will be a written survey from the students on the OPT 22780 Capstone Reflection Survey and 80% of the students should score question #5 a 3 or higher. The External Examiner for this Capstone (usually the employer) should rate 80% of the students as having met or exceeded the requirements on items 4,5,11,12,13,20,21,22. In addition, the Capstone Portfolio/Project Appraisal should see at least 80% of the teams score a 4 or higher on items C and G. | We are collecting the data for assessment shown in the column to the left. Since the last two years were spent getting TAC/ABET accreditation and doing the OPT Program review coupled with the switch to semesters, data from the quarter courses was analyzed and used in the transition to semesters and in the reviews and accreditation mentioned. We are working on collection methods and are looking at updating some of the rubrics and other assessment means to measure the effectiveness of the Program outcomes and how well the students are meeting them. |
| Demonstrate principles of human integration into technical operations through ergonomics, workplace safety and supervision. | | OPT 1101,1110,1125,1126,2205,2216,2780,COM 2206/2211, MET 2711,OTM SOC, OTM HUM | 2015 | Written Survey – Using the OPT 2278 Capstone Reflection Survey, at least 80% of students rated questions 3,6, 7, 8 as a 3 or 4  External Examiner – Using the OPT 2278 Employer Assessment of Capstone Student Performance, at least 80% of the students met or exceeded requirements on items 3, 8, 10, 18, 19.  Archival Records – At least 80% of OPT 2205 students earned their OSHA 10 Hour Card upon completion of the course  Locally Developed Exams – Using the OPT 1126 Final Exam, at least 80% of the students scored 80% or better on the questions related to human interaction: all questions.  Portfolio/Project Appraisal – Using the OPT 1126 Project Rubric, at least 80% of teams scored a 4 or 5 on items A, B, C, E, and G. | We are collecting the data for assessment shown in the column to the left. Since the last two years were spent getting TAC/ABET accreditation and doing the OPT Program review coupled with the switch to semesters, data from the quarter courses was analyzed and used in the transition to semesters and in the reviews and accreditation mentioned. We are working on collection methods and are looking at updating some of the rubrics and other assessment means to measure the effectiveness of the Program outcomes and how well the students are meeting them. |
| Demonstrate the math and science skills required for Industrial Engineering Technology functions. | | MAT 1280,1290 PHY 1141,1142 OPT 2201,2208 | 2016 | Locally Developed Exams – Using the OPT 2208 Final Exam, at least 80% of the students scored 80% or better on the questions related to Engineering Economics calculations:  Locally Developed Exams – Using the OPT 2201 Final Exam, at least 80% of the students scored 80% or better on the questions related to Quality calculations:  Locally Developed Exams – Using the MAT 1290 Final Exam, at least 80% of the students scored 80% or better. | We are collecting the data for assessment shown in the column to the left. Since the last two years were spent getting TAC/ABET accreditation and doing the OPT Program review coupled with the switch to semesters, data from the quarter courses was analyzed and used in the transition to semesters and in the reviews and accreditation mentioned. We are working on collection methods and are looking at updating some of the rubrics and other assessment means to measure the effectiveness of the Program outcomes and how well the students are meeting them. |

**General Education Outcomes**

1. Are changes planned as a result of the assessment of general education outcomes? If so, what are those changes?

No. We use a team approach in nearly every class we teach in OPT. This requires use of various research modes and the creation of a written and oral presentation. We make extensive use of the hear-see-do, so by its nature we force students to interact with other students on a regular basis.

Many of the projects require communication with the OPT lab technician to explain what improvements they would like to make to a project. This communication is verbal, written and may include sketches or prints.

Looking at many of the courses, math plays an integral role in the career of an Operation Technology graduate. Students who do not master these math concepts do not succeed, since our success rate is very high, we feel this validates proficiency in this area.

The TAC/ABET general criteria recognizes the importance of general education competencies within Engineering Technology programs. The following list describes the TAC/ABET criteria and is included in Form B in Appendix D. The data we have collectedhave shown that our students are meeting these criteria. Feedback from TAC/ABET stated we need to be more specific when assigning courses to goals. We have attempted to do that in the manner stated on the Assessment Matrix.

The TAC/ABET Criteria are:

1. Mastery of discipline (knowledge, techniques, skills, and modern   
    tools)
2. Apply current knowledge and adapt to emerging applications
3. Conduct, analyze ,interpret, apply experimental results to   
    improve processes
4. Apply creativity
5. Function effectively on teams
6. Identify, analyze and solve technical problems
7. Communicate effectively
8. Lifelong learning
9. Understand professional, ethical and social responsibilities
10. Diversity, knowledge of contemporary professional, societal,   
     and global issues
11. Commitment to quality, timeliness and continuous improvement.

Based on the data collected and analyzed, our students are proficient in the above criteria, and feedback from students and employers verifies this as illustrated in Employer Assessment of Capstone .

1. How will you determine whether those changes had an impact?

We will continue to survey graduates and employers to see if our graduates possess these skills at a satisfactory level in the workforce and for those who chose continuing education, proficiency at the bachelor degree level. Our largest source of feedback comes from the UD IET Program which gives us feedback on the performance of our graduates who attend UD.

**Program Outcomes**

1. Are changes planned as a result of the assessment of program outcomes? If so, what are those changes?

As part of our conversion to semesters, each course master syllabus must identify which General Education competencies are mastered in the course and at what level, thus giving us a better understanding of our students’ progress.

We have made and are continuing to make extensive use of our Advisory Committee and the results of our accreditation and Program review to monitor our Program outcomes. We have received full accreditation from TAC/ABET for the base OPT and the OPT-Industrial Engineering Technology Option. They were based on the outcomes listed above.

1. How will you determine whether those changes had an impact?

As long as these goals are met, we feel we are validating our program outcomes, and have no plans to update or change at this time, but we will continue to monitor.

**Improvement Efforts**

1. What were the results of changes that were planned in the last Annual Update? Are further changes needed based on these results?

The results of the last Annual Program/Department review were discussed above and our efforts to incorporate them into the program are noted. We are in the process of implementing many of those suggestions and will have a better feel for our success as the year progresses.

1. Are there any other improvement efforts that have not been discussed in this Annual Update submission?

We want to reiterate that we have received full TAC/ABET accreditation and received what we interpreted as a satisfactory Program review last year. Our efforts now are focused on the semester switch and implementing the recommendations of both TAC/ABET and the program review committee.

The major source of feedback in this category is from the two venues mentioned above. We received the highest level of accreditation for engineering technology programs awarded by TAC/ABET. Sinclair is one of only 12 institutions nationally that received TAC/ABET accreditation for their IET related Programs. Others include the University of Dayton, Purdue, Indiana University-Purdue University Fort Wayne, Northwestern State University of Louisiana, Purdue University Calumet, South Carolina State University, Southern Polytechnic State University (Formerly Southern College of Technology), State University of New York Institute of Technology at Utica/Rome, Purdue University North Central, and University of Puerto Rico at Baymon. We are the only community college nationally and in Ohio that has an accredited IET related program and one of only five schools nationally that has a two year program accredited.

There are seven other Community Colleges in Ohio that have programs similar to ours - Cincinnati State, Clark State, Columbus State, Cuyahoga, Edison, Lorrain, and Owens – and none of those have TAC/ABET Accreditation.

Sinclair students from other programs enroll in OPT courses and we receive feedback from these students through formal course evaluations and anecdotal data from the students and other department chairs.

The recommendations from the Program review are being addressed as noted above.

**APPENDIX – PROGRAM COMPLETION AND SUCCESS RATE DATA**

**Degree and Certificate Completion**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Department | Department Name | Program | FY 07-08 | FY 08-09 | FY 09-10 | FY 10-11 |
| 0575 | Industrial Engineering | IET.AAS | 5 | 2 | 2 | . |
| 0575 | Industrial Engineering | IETMO.AAS | 6 | 2 | . | 1 |
| 0575 | Industrial Engineering | IETMOTP.AAS | 1 | 2 | . | 1 |
| 0575 | Industrial Engineering | IETP.AAS | 3 | 3 | 1 | 2 |
| 0575 | Industrial Engineering | OPT.AAS | 2 | 3 | 4 | 6 |
| 0575 | Industrial Engineering | PCET.AAS | 1 | . | . | . |
| 0575 | Industrial Engineering | QASO.AAS | 1 | 1 | . | . |
| 0575 | Industrial Engineering | QCT.CRT | . | 1 | 3 | 2 |
| 0575 | Industrial Engineering | QET.AAS | 3 | 1 | . | 1 |
| 0575 | Industrial Engineering | SET.AAS | . | 1 | . | . |
| 0575 | Industrial Engineering | SRM.AAS | . | 1 | . | . |
| 0576 | Operations Technology | CTIM.STC | 1 | 3 | 4 | 23 |
| 0576 | Operations Technology | MM.STC | 2 | 1 | 4 | 5 |
| 0576 | Operations Technology | MTCAL.STC | . | 1 | 2 | 2 |
| 0576 | Operations Technology | OPTIO.AAS | . | 2 | 8 | 9 |
| 0576 | Operations Technology | OPTMO.AAS | . | 1 | 6 | 4 |

**Course Success Rates**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Department | Department Name | Course | FY 07-08 | FY 08-09 | FY 09-10 | FY 10-11 | FY 11-12 (excludes Spring) |
| 576 | Operations Technology | OPT-100 | 78.2% | 83.7% | 84.5% | 71.7% | 79.1% |
| 576 | Operations Technology | OPT-101 | 84.0% | 85.3% | 72.7% | 80.2% | 75.9% |
| 576 | Operations Technology | OPT-105 | . | 100.0% | 92.4% | 93.1% | 100.0% |
| 576 | Operations Technology | OPT-107 | 80.0% | 100.0% | . | . | . |
| 576 | Operations Technology | OPT-110 | 95.5% | 92.6% | 95.7% | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-111 | 100.0% | 100.0% | 85.7% | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-112 | 100.0% | 100.0% | 97.5% | 94.4% | 80.8% |
| 576 | Operations Technology | OPT-113 | . | 100.0% | 100.0% | 92.9% | . |
| 576 | Operations Technology | OPT-117 | 100.0% | . | . | . | . |
| 576 | Operations Technology | OPT-125 | 93.6% | 76.5% | 92.6% | 93.8% | 82.1% |
| 576 | Operations Technology | OPT-126 | 90.2% | 78.8% | 92.6% | 90.0% | 88.9% |
| 576 | Operations Technology | OPT-128 | 85.4% | 82.5% | 100.0% | . | . |
| 576 | Operations Technology | OPT-130 | 97.3% | 96.2% | 95.7% | 89.1% | 100.0% |
| 576 | Operations Technology | OPT-132 | 82.8% | 96.7% | . | . | . |
| 576 | Operations Technology | OPT-133 | 92.9% | 100.0% | 100.0% | . | . |
| 576 | Operations Technology | OPT-136 | 100.0% | . | . | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-161 | 90.9% | 71.4% | 70.0% | . | . |
| 576 | Operations Technology | OPT-162 | 100.0% | 71.4% | 70.0% | . | . |
| 576 | Operations Technology | OPT-163 | 100.0% | 100.0% | . | . | . |
| 576 | Operations Technology | OPT-190 | 100.0% | . | 100.0% | . | . |
| 576 | Operations Technology | OPT-198 | 84.2% | 92.1% | 79.3% | 97.1% | 66.7% |
| 576 | Operations Technology | OPT-201 | 71.4% | 60.3% | 60.4% | 77.4% | 83.3% |
| 576 | Operations Technology | OPT-202 | 85.7% | 100.0% | . | . | . |
| 576 | Operations Technology | OPT-204 | 100.0% | 92.3% | . | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-205 | 96.3% | 95.2% | 91.8% | 95.2% | 83.3% |
| 576 | Operations Technology | OPT-206 | 100.0% | 92.3% | 100.0% | 90.6% | 100.0% |
| 576 | Operations Technology | OPT-207 | 84.6% | 67.6% | 80.8% | 100.0% | 88.9% |
| 576 | Operations Technology | OPT-208 | 84.2% | 87.5% | 85.7% | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-209 | 85.2% | 81.8% | 100.0% | 100.0% | 85.7% |
| 576 | Operations Technology | OPT-211 | . | 77.9% | 83.6% | 83.6% | 96.2% |
| 576 | Operations Technology | OPT-212 | 100.0% | 100.0% | 95.7% | 92.9% | 100.0% |
| 576 | Operations Technology | OPT-216 | 87.5% | 100.0% | 100.0% | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-217 | 100.0% | . | . | 100.0% | . |
| 576 | Operations Technology | OPT-221 | 88.9% | . | . | 100.0% | . |
| 576 | Operations Technology | OPT-223 | 85.7% | 72.2% | 78.9% | 93.1% | 100.0% |
| 576 | Operations Technology | OPT-225 | 100.0% | 100.0% | . | 88.5% | . |
| 576 | Operations Technology | OPT-240 | 91.1% | 96.6% | 94.0% | 94.1% | 91.4% |
| 576 | Operations Technology | OPT-251 | . | . | 66.7% | 100.0% | 71.4% |
| 576 | Operations Technology | OPT-261 | 100.0% | . | . | . | . |
| 576 | Operations Technology | OPT-265 | 90.9% | 50.0% | . | . | . |
| 576 | Operations Technology | OPT-266 | 66.7% | 100.0% | 87.5% | 84.6% | 100.0% |
| 576 | Operations Technology | OPT-267 | . | . | . | 50.0% | 100.0% |
| 576 | Operations Technology | OPT-270 | 66.7% | 100.0% | 100.0% | . | 100.0% |
| 576 | Operations Technology | OPT-277 | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-278 | 100.0% | 92.3% | 100.0% | 100.0% | 100.0% |
| 576 | Operations Technology | OPT-297 | 98.9% | 98.6% | 100.0% | 97.5% | 100.0% |