**Sinclair Community College - Continuous Improvement Annual Update 2011-12**

**Program:** Environmental Engineering Technology

**Section I: Trend Data**

* 1. **Program Trend Data– Please include the three most recent years of data in each area so that trends may be examined.**
     1. **Course Success Rates – Please report the course success rates for:**
        + - **Highest enrollment courses**
          - **Any courses that deviate - high and low - from the typical success rate for your department**
     2. **Degree and certificate completion (where applicable)**
     3. **Any additional data that illustrates what is going on in the program (examples might include course sequence completion, retention, demographic data, data on placement of graduates, graduate survey data, etc.)**
  2. **Interpretation and Analysis of Trend Data Included in the Section Above *Suggestions of questions that might be addressed in this section:***  *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 program or department? What actions have the department taken that have influenced these trends? What strategies will the department implement as a result of this data?*

Course success rate seems to be trending up over the past three years, but given the small class sizes it would be statistically inappropriate to herald this as a noteworthy trend. Minor variations in course success rate could be due to the change in part-time and full-time faculty associated with the program.

Degrees awarded hit a low of 3 in academic calendar year 09-10, but jumped to 6 in academic calendar year 10-11. It seems that our program alternates between high graduation years and low graduation years. This may be related to the fact that many of our students work full time and take courses part time, and that many engineering courses are only offered once a year. These two factors tend to stall, and then clump students into groups as they are able to finish their final course work.

Enrollment is trending up again, which is probably due to an increased effort to coordinate with the Tech Prep programs, including the redevelopment of two courses for Tech Prep use. Increased enrollment may also be due to the restructuring of the Advisory Board to better represent the local area needs, and an increased national interest in green and environmental jobs.

As usual, this program has the highest percentage of women of all the ETD programs, but low enrollment by minorities. Additional partnerships with high-minority population high schools, ideally through the Tech Prep program, should increase minority enrollment and success.

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

1. What was the fiscal year of the most recent Program Review for this program? (The most recent Program Review self-study can be found at <http://www.sinclair.edu/about/administrative/vpi/pdreview/> ).

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1. Briefly summarize the goals that were listed in Section IV part E of the most recent Program Review Self-Study (this section of the Self-Study asks “What are the department’s/program’s goals and rationale for expanding and improving student learning, including new courses, programs, delivery formats and locations”)?

Expand Tech Prep linkages with high schools.

Develop environmental courses for web delivery.

Expand articulation agreements with four-year schools

1. What Recommendations for Action were made by the review team to the most recent Program Review?
2. Seek out partnerships and collaboration to result in additional articulation agreements with four-year schools.
3. Promote student awareness of the value of the degree and not just short-term course work.
4. Address disconnect between student perceptions of environmental employment opportunities and actual opportunities in this region.
5. Have the goals in your self-study changed since your last Program Review Self-Study as a result of the Review Team recommendations or for any other reason?  If so, please describe the changes.

Maintain high school linkages and develop stronger relationships with those programs.

Work to update and increase articulation agreements with transitions to semesters.

Evaluate the demand for Environmental courses at the Courseview campus.

1. What progress has been made toward meeting any of the goals listed in the sections above (b, c, and d) in the past year?

Expand Tech Prep linkages with high schools. – Faculty have redeveloped ETD-150 and ETD-198, and provided it to Tech Prep instructors to use. The department and the Tech Prep office are currently seeking to partner with more schools since we have curriculum ready to be implemented.

Develop environmental course for web delivery. - ETD-150 is ready to be put online, but lacks funding support to do so.

Expand articulation agreements with four-year schools. – Stalled due to loss of faculty member in 2010, and again in 2012.

Seek out partnerships and collaboration to result in additional articulation agreements with four-year schools. – See comment above.

Promote student awareness of the value of the degree and not just short-term course work. - The inclusion of the environmental students in the integrated capstone project has showed them not only how all the environmental courses tie together, but also how the environmental field relates to and is codependent with other engineering and science fields.

Address disconnect between student perceptions of environmental employment opportunities and actual opportunities in this region. – Frontline efforts in this area are primarily focused on the Tech Prep instructors and curriculum as they attract many of our high school students. Additional efforts include the proposal of a short term water and wastewater treatment certificate that will prepare students to take the OIT exam, coop opportunities for students, and on-site tours in various classes that showcase jobs that students can get in the environmental engineering field.

Maintain high school linkages and develop stronger relationships with those programs. – See first comment. In addition, the tenure track faculty member meets quarterly with the Tech Prep instructors to review curriculum, take suggestions, and address concerns.

Work to update and increase articulation agreements with transitions to semesters. – See comment on item 3.

Evaluate the demand for Environmental courses at the Courseview campus. – Stalled due to loss of faculty member in 2010, and again in 2012.

**Section III: Assessment of Outcomes**

The Program Outcomes for this program are listed below. **At least one-third of your program outcomes must be assessed as part of this Annual Update, and across the next three years all of these program outcomes must be assessed at least once**.

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| --- | --- | --- | --- |
| **Environmental Engineering Technology**  Program Outcomes | In which courses are these program outcomes addressed? | Which of these program outcomes were assessed during the last fiscal year? | Assessment Methods  Used |
| **1)** Understand and apply the principals of water and waste water treatment systems and solid waste treatment and disposal systems to the operation and maintenance of those systems. | ETD 150  ETD 155 |  | ETD278 Capstone  Team Exercises: Oral presentations  Team Exercises: Written assignments  Locally Developed Exams |
| **2)** Develop skills and knowledge of safety procedures to protect themselves, other persons and the environment. | ETD 150  ETD 155  ETD 255  OPT 105 | ASSESSED IN  FY 09-10 | ETD278 Capstone  Team Exercises: Oral presentations  Team Exercises: Written assignments  Locally Developed Exams |
| **3)** Understand, follow and apply protocols for environmental site assessments. Detect the conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum, petroleum products and controlled substances by records review or actual testing. Identify potential environmental liabilities associated with properties considered for transfer. | CAT 245  ETD 150  ETD 251  ETD 261 |  | ETD278 Capstone  Simulation Team Exercises:  Conduct Site Assessment  Team Exercises: Oral presentations  Team Exercises: Written assignments  Locally Developed Exams |
| **4)** Develop skills and knowledge to identify, analyze and process hazardous substances and wastes. | ETD 251  ETD 255  ETD 270 |  | Team Exercise: Hazardous Waste Operations  Locally Developed Exams |
| **5)** Apply knowledge of environmental laws and regulations in performing compliance assessment audits and pollution prevention surveys. | ETD 150  ETD 155  ETD 255  ETD 270  ETD 278  COM 211  OPT 105 | ASSESSED IN  FY 09-10 | ETD278 Capstone  Simulation Team Exercises:  Conduct Site Assessment  Team Exercises: Oral presentations  Team Exercises: Written assignments  Locally Developed Exams |
| **6)** Develop skills and knowledge to monitor and analyze contamination distribution in surface water and ground water. | ETD 150  ETD 155  HVA 286  CHE 121  CHE 151  CHE 152  CHE 153  CHE 157  CHE 158  CHE 159 |  | ETD 278 Capstone  Simulation Team Exercise  Performance Appraisals: Equipment demonstrations  Locally Developed Exams |
| **7)** Demonstrate environmental techniques and principals by performing remedial investigation, feasibility studies and by assisting in designing, constructing and maintaining remediation systems. | ETD 255  ETD 270 |  | ETD278 Capstone  Team Exercises: Written assignments  Locally Developed Exams |

1. For the assessment methods listed in the table above, what were the results?

Program Outcome 3: Students in the capstone project were required to conduct a site assessment, and then provide their team with a written and oral report of the assessment. Half of the capstone students demonstrated excellence in this area, while the other half did poorly. Based on classroom observations, this was because the group size was too large for one team.

Program Outcome 6: Capstone students were required to prepare a Stormwater Pollution Prevention Plan for their project site. All students struggled severely with this assignment, but 5 out of the 6 students were able to successfully complete it, with help from the instructor. The one student who was not able to complete the Stormwater Pollution Prevention Plan was due to individual communication issues between the team members.

1. Were changes planned as a result of the data? If so, what were those changes?

Program Outcome 3: Students will ideally be put in groups of 2 and in groups absolutely no larger than 3 to ensure that all students are involved and accountable for participation in the Phase One Site Assessment.

Program Outcome 6: As a result of this data a new course in hydrology is being developed to be implemented in semesters. This course will give students a thorough knowledge of stormwater management, and will allow the water and wastewater treatment class to go into more depth on treatment techniques.

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

Program Outcome 3: Classroom observations and peer surveys will be able to determine if group members are more equally sharing the load of the Phase One Site Assessment.

Program Outcome 6: Student success rates in the new Hydrology course will give the first indication of improvement in student knowledge of stormwater management techniques. When students who have been through the hydrology course finally reach capstone their ability to independently create the Stormwater Pollution Prevention Plan will show success in this area.

c) Starting with next year’s Annual Update, this section will ask about assessment of general education outcomes. For FY 2012-13, you will be asked how the department is assessing Oral Communication and Written Communication in your courses, and in addition you will be asked to share the results of those assessments. Please be prepared to address this in next year’s Annual Update.

d) Does your department have courses where there are common assignments or exams across all sections of the course? If so, please list those courses, and indicate whether you are currently examining results across all sections of those courses.

Historically there has only been one section of the environmental specific classes, due to the small enrollment numbers of the program.

**Section IV: Improvement Efforts for the Fiscal Year**

1. **FY 10-11:** What other improvement efforts did the department make in FY 10-11?  How successful were these efforts?  What further efforts need to be made? If your department didn’t make improvement efforts during the fiscal year, discuss the strengths and weaknesses of the department over the last year and how the department plans to address them in the coming year.

The tenure track faculty member associated with this program was hired in the spring quarter, so the extent of her efforts in FY 10-11 were limited to her observations from the capstone project.

1. **FY 11-12:** What improvement efforts does the department have planned for FY 11-12? How will you know whether you have been successful?

Current plans include the integration of additional hands on experiences for students in the ETD-150 class. Ideas for immediate implementation include tours of local facilities to show environmental technicians and equipment in action. Ideally, the delivery method of the course would be changed from a traditional classroom environment to a hybrid class, were lectures and worksheets would be done online, and then students would come in on weekends to attend labs where they would be able to practice using equipment and standard sampling methods in the field. This seems to be the ideal solution based on the high percentage of our students who work full time, and therefore require online, night, or weekend courses. Impediments include lack of funding for the creation of a hybrid course and potentially outdated equipment when the course is finally implemented.

Additionally, a new Water/Wastewater Operator certificate is being developed to meet the needs brought to our attention by both the Advisory Board and the Dayton Water Conference. This will be a short term certificate program that will prepare students to take the Operator In Training (OIT) exam offered by the state. Students who successfully complete this certificate and exam will be sought after by municipal water and wastewater facilities and industrial waste water facilities, who are expecting high retirement rates in the next few years.

Questions regarding completion of the Annual Update? Please contact the Director of Curriculum and Assessment at 512-2789 to schedule a time to review the template and ask any questions.