

Program Review: Engineering

Program Description and Scope:

- *Program Review Title:* Engineering
- *Academic year:* 2016/2017
- *Review Type:* Instructional Disciplines
- *Program/Departments:* Engineering (09001)
- *Authority Code:* 44-Dean, Science, Engineering, and Mathematics
- *External Regulations:* No
- *Provide a brief narrative that describes the instructional program/discipline:*
The Engineering Department at Ohlone College under the Science, Engineering, and Mathematics Division offers lower-division engineering or pre-engineering program that allows students to complete their upper-division engineering requirements for a baccalaureate degree program in engineering disciplines such as Industrial, Mechanical, Electrical, Civil, Chemical, Aeronautical, Computer engineering, etc. Ohlone College also offers an Associate of Science (A.S.) degree in engineering as well as a Certificate of Accomplishment.

College Mission:

- *Mission Statement:*
Ohlone College responds to the educational needs of our diverse community and economy by offering high quality instruction supporting basic skills, career development, university transfer, and personal enrichment and by awarding associate degrees and certificates to eligible students in an innovative, multicultural environment where successful learning and achievement are highly valued, supported, and continually assessed.
- *Program Relation to College Mission:*
 - Career Entry (CTE)
 - University Transfer
 - Economic Development
- *State Your Program Mission/Purpose:*
The Engineering Program at Ohlone College offers Associate in Science Degrees. The Associate in Science in Engineering offered by Ohlone College is designed to prepare students for studying engineering at most universities. The core courses required in the Associate in Science in Engineering will fulfill the lower division requirements for most campuses of the UC and CSU systems. This program will enable students to develop a strong foundation in engineering, physics, and mathematics. Furthermore, the theoretical knowledge and laboratory skills acquired by students in this program will also enhance their success with obtaining entry-level jobs that require two years of college-level science and math. Since some curriculum requirements may vary among transfer universities, it is imperative that students entering Ohlone's Associate in Science degree program in Engineering meet with a counselor at the start of their academic work.

Counselors will assist students in preparing a comprehensive Student Education Plan that will prepare them to transfer to the university of their choice.

- o *Briefly Describe Program Accomplishments:*

Requirements for Associate in Science Degree:

- a) Complete Major Field courses with a grade of C or better.
- b) Complete Ohlone College General Education (Plan A), CSU GE (Plan B), or IGETC (Plan C) requirements. These requirements are specified in the Ohlone College catalog.
- c) Complete at least 60 degree-applicable units with a 2.0 grade point average.
- d) Complete at least 12 units at Ohlone College.
- e) Complete at least 50% of the Major Field courses at Ohlone College.
- f) Complete ENGI-120, ENGI-130, and ENGI-140 at Ohlone College.

Achievement and Resource Data Analysis:

Research Questions:

1. Female enrollment in the program is traditionally low. What can be done as a part of the PIO process to increase female enrollment in the program?

Resource Assessment Summary:

1. *Academic Year:* 2013-14
 2. *Activity Center Fund 10 Budget Allocation:* \$152201.00
 3. *FTEs:* Fall: 18 Spring: 20 Summer: 0
 4. *WSCH/FTEF:* Fall: 398 Spring: 403 Summer: 0
 5. *Course Sections Offered:* Fall: 6 Spring: 6 Summer: 0
 6. *Sections Taught FT Faculty:* Fall: 3 Spring: 4 Summer: 0
 7. *Sections Taught PT Faculty:* Fall: 3 Spring: 2 Summer: 0
- **Human Resources:**
 1. *# of FT Faculty:* 1
 2. *# of PT Faculty:* 2
 3. *# of Classified Staff:*
 4. *# of Administrators:*
 5. *% Faculty release/reassigned time:*
 6. *Technology:*
 - Specialized Software
 - Technology Enhanced Instructional Equipment
 - Laptops
 7. *Physical Resources:*
 - General Classrooms
 - Specialized Labs
 - Tutoring/Learning Center

- Program Analysis PSLOs - Student Learning:

(Key: I-Introduced, P-Practiced with Feedback, M-Demonstrated at the Mastery Level)

1. PSLO Matrix:

Course	PSLO-1	PSLO-2	PSLO-3	PSLO-4
ENGI 101	I	M	I	M
ENGI 111	M	P	P	I
ENGI 115	M	P	M	P
ENGI 120	M	I	P	I
ENGI 130	M	P	M	I
ENGI 140	M	I	M	I

2. Please Indicate the PSLO(s) which you are reporting on:

-

Demonstrate critical thinking, effective communication, and teamwork by contributing productively to the success of team-based and engineering projects.

3. Analyze and summarize your assessment findings? What in the data jumped out?

Data used to analyze this PSLO is mainly from the ENGI-101 course where students have the opportunity to attain Mastery of this particular PSLO.

Summative assessment of these skills by the end of the semester indicate that on the average, about 90% of students achieve mastery of the skills prescribed in PSLO 2.

The percentage of students achieving mastery for each skill are as follows;

- Critical Thinking-95%
- Verbal Communication-90%
- Written Communication-85%
- Team Work-95%

4. Give examples of assessments used for your PSLO analysis:

- Peer Evaluation Team Work
- Technical Oral Presentations
- Written Technical Reports
- Exams

5. Describe input from Program Advisory Committee (if applicable):

6. Comments:

Program Improvement Objectives

1. Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it? Provide modern equipment in the engineering labs to ensure that students have opportunity to develop relevant industry desirable engineering skills using current technologies.

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Program PIO will address the following:

- Student Learning & Achievement

How will you assess the effectiveness of your PIO:

SLO Assessment Data for Subsequent Semesters/Academic Years.

PIO Action Plan:

How will you accomplish this?

Purchase following equipment for the Lab; Furnaces for ENGI140 and ETEC 107- \$15,000 Demo kits for ENGI140/ETEC107, ENGI120 and ENG130- \$15,000 Electric Circuits Analysis Lab Kits- \$30,000 (for ENGI130, PHYS141 and ETEC 106 Courses)

What is your timeline?

Purchase equipment by Spring 2017, so that students enrolled on courses of Fall 2017 can have access to these equipment.

Who is going to do this?

The Dean (Bob Bradshaw) needs to Approve this. The Technician Peter Werner needs to start the purchasing process. The Technician needs to supervise the installation of the equipment.

PIO Status:

- In-Progress

Closing the loop - Describe the results of your PIO implementation or completion:

The Lab Technician- Peter Werner is in the process of getting quotes for the equipment. the intent is to purchase them by the end of Spring 2017 semester.

Conclusion: Complete if PIO has been completed

PIO achieved - worked

Fiscal Resources Status:

- Instructional equipment request - potential funding Instructional Equipment and/or the CTE Enhancement funds FY 2015-16. Laser cutter potential FF&E for Academic Core.

PIO Resources:

- Resource: Instructional Equipment
Description: Furnaces for ENGI140 and ETEC107
Est. Cost: \$15,000.00

- Resource: Instructional Equipment
Description: Electric Circuits Lab Equipment for ETEC 106 and ENGI130
Est. Cost: \$30,000.00
- Resource: Instructional Equipment
Description: Demo kits for ENGI140, ENGI120, ETEC107 and ETEC106
Est. Cost: \$15,000.00

2. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*
Increase the number of female by 3% and students of under-represented ethnic groups by 1% students on the program and also provide support to these identified demographic groups by the end of 2016.

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Program PIO will address the following:

- Student Learning & Achievement
- Equity/Disproportionate Representation

How will you assess the effectiveness of your PIO:

Enrollment and Demographic Data for subsequent Academic Years

PIO Action Plan:

How will you accomplish this?

Create a Society for Women Engineers Collegiate Interest Group (SWE CIG) at the College. This will be a platform to increase outreach activities to increase the number of female students on engineering courses and also a support forum to ensure retention of female students. Continue with the Engineering for Female and Underrepresented Students (EFUS) initiative, which has helped in the retention of female students and students of underserved ethnic groups enrolled in engineering classes. (Funding for Projects needed. Currently funded by the IEEE, but alternative funding sources need to be explored). Start the a Pi Sigma Pi (PSP) minority academic engineering society group for underserved students, this would include students that are members of the National Society for Black Engineers (NSBE) Society for Hispanic Professional Engineers (SHPE) and Pacific Islanders

What is your timeline?

To start the Society for Women Engineers Collegiate Interest Group (SWE CIG) by Fall 2014. To increase females by 3% and ethnic minorities by 1% -December 2016. To start Pi Sigma Pi - Spring 2016.

Who is going to do this?

Engineering Faculty-Rose-Margaret Itua

PIO Status:

- Completed

Closing the loop - Describe the results of your PIO implementation or completion:
SWE CIG was created. A2Pi has been created and launched. Funding has come from Equity funds. This PIO is in progress with good attainment of initial goals set.

Conclusion: Complete if PIO has been completed
PIO achieved - worked

Fiscal Resources Status:

- Funded through 2015-16 Equity Budget \$500.00 tutoring \$500.00
Marketing

PIO Resources:

- Resource: People Time
Description: Faculty Time for Outreach Activities and Advisor
- Resource: People Time
Description: Release time for Coordination of the new Learning Community and relevant activities
FTE: 0.5
Est. Cost: \$500.00
- Resource: Other Budget Related Resources Needed
Description: Marketing Materials and Advertising for Outreach
Est. Cost: \$500.00

3. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*
Design and develop online courses to meet the growing need of students that are unable to engage in onsite delivered courses.

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Program PIO will address the following:

- Student Learning & Achievement
- Increase Program Enrollments

How will you assess the effectiveness of your PIO:

Enrollment/Retention and Success Data for the new Online Statics Course

PIO Action Plan:

How will you accomplish this?

Engineering Faculty will start the process to ensure the Statics course is offered as an online course. Get approval from the Distance Education Committee and the Curriculum Committee.

What is your timeline?

Complete paper work and get approval from Distance Education and Curriculum Committee by Spring 2017. Offer Course by Spring 2018.

Who is going to do this?

Engineering Faculty-Rose-Margaret Itua

PIO Status:

- In-Progress

Closing the loop - Describe the results of your PIO implementation or completion:
Not Applicable as this is the PIO is in progress.

Conclusion: Complete if PIO has been completed

PIO achieved - worked

Fiscal Resources Status:

- No fiscal resources requested.

PIO Resources:

- Resource: People Time
Description: Faculty Course Development Time
- Resource: Other Non-Budget Related Resources Needed
Description: Support from e-campus and distance education committee to launch course as online onCanvas

4. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*
Increase the course offerings of the Engineering Program with the initial design and development of the Dynamics course to be offered in Spring 2018.

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Program PIO will address the following:

- Student Learning & Achievement
- Increase Program Enrollments

How will you assess the effectiveness of your PIO:

Enrollment/Retention and Success Data for the new Dynamics Course

PIO Action Plan:

How will you accomplish this?

Engineering Faculty will start the process to ensure the Dynamics course is offered a by Spring 2018. Complete paper work and get approval from the Curriculum Committee by Spring 2017. Get course Articulated with relevant UCs and CSUs by Spring 2015.

What is your timeline?

Paper work for new Course to be completed by Spring 2017. Course offered to students by Spring 2018.

Who is going to do this?

Engineering Faculty -Rose-Margaret Itua

PIO Status:

- In-Progress

Closing the loop - Describe the results of your PIO implementation or completion:

Not Applicable as this is a PIO in Progress

Conclusion: Complete if PIO has been completed

PIO achieved - worked

Fiscal Resources Status:

- No fiscal resources requested.

PIO Resources:

- Resource: People Time
Description: Faculty Course Development Time
- Resource: Other Non-Budget Related Resources Needed
Description: Support from Articulation team to get course UC articulated

5. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*
Increase CTE course and program offerings to meet the need of local industries, especially in the Bioengineering and Sustainable Manufacturing industries.

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Program PIO will address the following:

- Increase Program Enrollments
- Increase Degrees/Certifications
- Equity/Disproportionate Representation

- Service Impacts

How will you assess the effectiveness of your PIO:

Evaluation feedback from local feeder companies and Enrollment/Retention/Success Data for the new CTE courses/programs.

PIO Action Plan:

How will you accomplish this?

Engineering Faculty-Rose-Margaret Itua in collaboration with the BioTech Laurie Issel-Tarver Faculty have worked together with Dean Mike Holtzclaw to ensure the AS degree in Bioengineering will be offered as scheduled. Engineering Faculty will also start the process of curriculum development to ensure that the CTE Program in Manufacturing is developed and offered as scheduled. Get approval from the Curriculum Committee and Engineering Industry Advisory Board.

What is your timeline?

Paper work for new Program in Sustainable Manufacturing to be started and completed by Spring 2015. Program to be offered to students by Spring Spring 2016

Who is going to do this?

Engineering Faculty-Rose-Margaret Itua

PIO Status:

- Completed

Closing the loop - Describe the results of your PIO implementation or completion:

Designed the Bioengineering AS degree Completed major revisions for the Electronic/Manufacturing Technician Certificate of Accomplishment Purchased Amatrol Materials Lab Equipment Purchased LN Equipment for Electric Circuit Class.

Conclusion: Complete if PIO has been completed

PIO achieved - worked

Fiscal Resources Status:

- Request for Instructional Equipment - potential funding source
Instructional Equipment and/or CTE Enhancement Funds 2015-16.

PIO Resources:

- Resource: People Time
Description: Faculty Course Development Time
- Resource: Instructional Equipment
Description: Amatrol Manufacturing Lab Kit
Est. Cost: \$40,000.00

6. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*
Program Professional Development is needed in the Engineering and Engineering Technology Program Areas due to accelerated change of technology in Engineering. In order for the Program Area to remain compliant with industry standards and the State Engineering Education mandates, participation in certain Professional Development activities is required.

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Program PIO will address the following:

- Career Technical Education (CTE) Related
- Student Learning & Achievement
- Persistence
- Increase Program Enrollments
- Increase Degrees/Certifications
- Equity/Disproportionate Representation
- Access to high quality courses - community needs

How will you assess the effectiveness of your PIO:

A post Conference/Meeting Report/Presentation to the Division Dean

PIO Action Plan:

How will you accomplish this?

Complete necessary Professional Development Paper work and get relevant approval from the Dean.

What is your timeline?

With the AY2015/2016. Conference dates vary, so an accurate time line cannot be provided at this point in time. However all Program Professional Development Activities will be completed by the end of the 2015/2016 Academic Year.

Who is going to do this?

Rose-Margaret Itua and the Dean Dr. Mike Holtzclaw

PIO Status:

- In-Progress

Closing the loop - Describe the results of your PIO implementation or completion:

A clear and increased budget has been created for Professional Development for Engineering Instructors. Professional Development is ongoing with evidences like presentations, seminars and improved curriculum.

Conclusion: Complete if PIO has been completed

PIO achieved - worked

Fiscal Resources Status:

- Engineering Liaison Council(ELC) Meetings-\$800/AY American Society for Engineering Education(ASEE) Conferences- both Regional and National-\$4000 SWE Conference -both Regional and National-\$3200

PIO Resources:

- Resource: Professional Development
Description: Program Related Conference/Workshops
Est. Cost: \$8,500.00

7. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*
The Engineering Program currently shares a part-time Lab Technician with Physics. Physics and Engineering Program have grown significantly in the last 4 years. With increase in Lab sections, the two Departments now need a fulltime Technician with the relevant background in Engineering/Physics

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Resources Needed; Hire a fulltime lab technician for the Engineering/Physics lab Hire sufficient full-time and adjunct faculty to teach all the sections Improve the organization of the lab schedule to accommodate an increased number of sections.

Program PIO will address the following:

- Student Learning & Achievement

How will you assess the effectiveness of your PIO:

Dean's evaluation of Lab Technician after hire.

PIO Action Plan:

How will you accomplish this?

Hire a fulltime lab technician for the Engineering/Physics lab Hire sufficient full-time and adjunct faculty to teach all the sections Improve the organization of the lab schedule

What is your timeline?

Fall 2017- fulltime Lab Technician should be hired.

Who is going to do this?

Dean Bob Bradshaw with Luc Desmedt and Rose-Margaret Itua

PIO Status:

- New

Closing the loop - Describe the results of your PIO implementation or completion:

Not Applicable as this is a new PIO

Conclusion: Complete if PIO has been completed

Fiscal Resources Status:

PIO Resources:

- Resource: Staff/Administrative Position
Position Title: FT Lab Tech
FTE: .50
Est. Cost: \$50,000.00

8. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*

The Engineering Department will work towards increasing the number of female students by 3% in the next year and number of students of ethnic minorities by 2% within the next year.

Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

Research Question regarding the low numbers of female students and students of ethnic minorities in engineering.

Program PIO will address the following:

- Success Rates
- Equity/Disproportionate Representation

How will you assess the effectiveness of your PIO:

Analysis of annual student enrollment and success data from the Research Office.

PIO Action Plan:

How will you accomplish this?

The Engineering Department will work towards increasing the number of female students by 3% in the next year and number of students of ethnic minorities by 2% within the next year. A2Pi and SWE will be instrumental in the accomplishment of this PIO.

What is your timeline?

Fall 2017

Who is going to do this?

Rose-Margaret Itua with the support of the Research Office

PIO Status:

- New

Closing the loop - Describe the results of your PIO implementation or completion:

Not Applicable as this is a new PIO

Conclusion: Complete if PIO has been completed

Fiscal Resources Status:

PIO Resources:

- Resource: People Time
Description: Coordination of new initiatives
- Resource: Data from Research and Planning Office
Description: Enrollment and Success Data for underrepresented students in Engineering
- Resource: Staff/Administrative Position
Position Title: Student Support Specialist
FTE: 0.4
- Resource: Other Budget Related Resources Needed
Description: Outreach and Marketing
Est. Cost: \$9,000.00
- Resource: Other Budget Related Resources Needed
Description: Student Enrichment Activities
Est. Cost: \$8,000.00
- Resource: Other Budget Related Resources Needed
Description: Books and relevant program supplies for students
Est. Cost: \$5,000.00

Attached Files:

- [current PR Engineering 13-14 \(2\).docx](#)
- [ENGINEERING ASSESSMENT1.xls](#)
- [ENGINEERING ASSESSMENT.xls](#)
- [Data for Engineering.pdf](#)
- [PR Engineering 13-14.docx](#)