Engineering [BS] [ENGR]

Cycles included in this report:
Jun 1, 2018 to May 31, 2019

Program Name: Engineering [BS] [ENGR]

Reporting Cycle: Jun 1, 2018 to May 31, 2019

1 Is this program offered via Distance Learning?

100% Traditional or less than 50% Distance/Traditional

2 Is this program offered at an off-site location?

No

2.1 If yes to previous, provide addresses for each location where 50% or more of program credits may be earned.

3 Example of Program Improvement

2016-2017:
Implementing SLO assessments using the ABET rubrics. Examples are assessments for selected engineering courses in various concentrations such as CHEN, CIEN, ELEN, ENGR, and MEEN. The College of Engineering & Computer Science developed rubrics to measure Student Learning Outcomes (SLOs) and to evaluate the performance of the program. The capability of the program at delivering SLOs is assessed by a cross-section of program stakeholders. Faculty utilized assessment rubrics to quantify the SLOs. Based on the data collected, faculty identified and implemented adjustments to the delivery of course content.

2017-2018:
 -Improved course assessment processes and surveys.

2018-2019:
-The ABET assessment data and recommendation from faculty resulted in improving the 4-year degree plan to satisfy the requirement of ABET format.

ie: ENGR-110 is now a lab and applied Engineering foundation course.
ie: Added an option for Phil-254 - Professional Ethics to cover one of the ABET requirements.

4 Program Highlights from the Reporting Year

2016-2017:
- Implemented continuous improvement as requested by ABET evaluators.
- Successful Accreditation Board for Engineering and Technology (ABET) accreditation review of BS Engineering program in fall 2015.
- Success in obtaining external funds and awards.
- Commissioned power generator turbines and control switches in power engineering lab.
- Equipped the newly established construction lab.
- Program achieved national ranking in return on investment (ROI) for graduating students.

2017-2018:
- Added Solar synthesizer for smart power grid and control switches in power engineering lab.
- Upgraded Computer Labs with new PCs and software Kirk-123
- Program achieved national ranking in return on investment (ROI) for graduating students.

2018-2019:
- Successful Accreditation for CS program (ABET) accreditation review Fall 2018
- Success in obtaining external funds and awards.
- Upgraded Computer Labs with new PCs and software Kirk-124
- Upgraded Computer Labs with new PCs and software Drew-229
- Program achieved national ranking in return on investment (ROI) for graduating students.

5 Program Mission

The Departments of Civil, Chemical, and Mechanical Engineering and Electrical Engineering and Computer Science provide an education in chemical, civil, electrical, and mechanical engineering

that is professionally focused and practice-oriented within a student friendly environment. The departments prepare our students to practice engineering, focusing on the industrial needs of the region by meeting the needs of traditional and non-traditional students through close contact with the faculty, the staff, and local industrial engineers and managers. The departments maintain an up-to-date curriculum that fosters inter-disciplinary teamwork, scholarly development, cooperation with regional industry, and engineering ethics.

6 Institutional Mission Reference

The program mission supports the University mission by fostering student success, academic excellence, and University-community alliances. In the program mission, student success and academic excellence are promoted by a professionally focused and practice-oriented student friendly environment, and by maintaining an up-to-date curriculum. The University mission is also accomplished by the close cooperation with regional industry.

7 Assessment and Benchmark CHEN 409, CIEN 402, ELEN 341, and MEEN 321 Coursework [Approved]

Assessment: Students' work (tests, homework, quizzes, or projects) taken from CHEN 409, CIEN 402, MEEN 321, and ELEN 341. ABET 3a rubric is used to evaluate SLOs.

Students should have an ability to apply knowledge of mathematics, science, and engineering (ABET 3a)
1. Apply mathematics to obtain analytical or numerical solutions to engineering equations or models.
2. Identify the engineering principles that govern operations of components or systems /processes.
3. Apply the scientific/engineering principles that govern operations of components or systems /processes.

Benchmark: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 3.30/5.00 is the desired achievement level.

Prior to 2017-2018, the benchmark was 3.00/5.00.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN402 [Soil Mechanics (Lec. 3, Cr. 3)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN321 [Dynamics of Machinery (Lec. 3, Cr. 3)]

Outcome Links

3A-PC1 [Program]
Apply mathematics to obtain analytical or numerical solutions to engineering equations or models.

3A-PC2 [Program]
Identify the engineering principles that govern operations of components or systems/processes.

3A-PC3 [Program]
Apply the scientific/engineering principles that govern operations of components or systems/processes.

ABET EAC [External]

A

an ability to apply knowledge of mathematics, science, and engineering

7.1 Data

3(a) PC1: Apply mathematics to obtain analytical or numerical solutions to engineering equations or models.

Academic Year	Average score on PC1

2013-2014	2.47/3.00 (4.12/5.00*)
2014-2015	2.39/3.00 (3.98/5.00*)
2015-2016	3.48/5.00
2016-2017	3.34/5.00
2017-2018	3.70/5.00
2018-2019	3.47/5.00
2019-2020	

*Converted.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN402 [Soil Mechanics (Lec. 3, Cr. 3)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN321 [Dynamics of Machinery (Lec. 3, Cr. 3)]

Outcome Links

3A-PC1 [Program]
Apply mathematics to obtain analytical or numerical solutions to engineering equations or models.

7.1.1 Analysis of Data and Plan for Continuous Improvement

2016-2017:
Data indicated the benchmark was met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC1 from SLO 3.1 (a).

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN402 [Soil Mechanics (Lec. 3, Cr. 3)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN321 [Dynamics of Machinery (Lec. 3, Cr. 3)]

7.2 Data

3(a)-PC2: Identify the engineering principles that govern operations of components or systems /processes.

Academic Year	Average score on PC2
2013-2014	2.44/3.00 (4.07/5.00*)
2014-2015	2.49/3.00 (4.15/5.00*)
2015-2016	3.66/5.00
2016-2017	3.47/5.00

2017-2018	3.76/5.00
2018-2019	3.90/5.00
2019-2020	

*Converted.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN402 [Soil Mechanics (Lec. 3, Cr. 3)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN321 [Dynamics of Machinery (Lec. 3, Cr. 3)]

7.2.1 **Analysis of Data and Plan for Continuous Improvement** [Approved]

2016-2017:
Data indicated the benchmark was met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC2 from SLO 3.1 (a)

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN402 [Soil Mechanics (Lec. 3, Cr. 3)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN321 [Dynamics of Machinery (Lec. 3, Cr. 3)]

7.3 **Data**

3.(a) PC3: Apply the scientific/engineering principles that govern operations of components or systems/processes.

Academic Year	Average score on PC3
2013-2014	2.16/3.00 (3.60/5.00*)
2014-2015	2.32/3.00 (3.86/5.00*)
2015-2016	3.29/5.00
2016-2017	3.57/5.00
2017-2018	3.76/5.00
2018-2019	3.75/5.00
2019-2020	

*Converted.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN402 [Soil Mechanics (Lec. 3, Cr. 3)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN321 [Dynamics of Machinery (Lec. 3, Cr. 3)]

7.3.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark was met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC3 from SLO 3.1 (a).

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN402 [Soil Mechanics (Lec. 3, Cr. 3)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN321 [Dynamics of Machinery (Lec. 3, Cr. 3)]

8 Assessment and Benchmark CHEN 411, CIEN 403, ELEN 341L, and MEEN 415 Coursework

Assessment: Students work (tests, homework, quizzes, or projects) taken from CHEN 411, CIEN 403, MEEN 415, and ELEN 341L. ABET 3b rubric is used to evaluate SLOs.

Students should have an ability to design and conduct experiments, as well as to analyze and interpret data (ABET 3b)
1. Demonstrate knowledge of safety considerations and run the experiment in a safe manner.
2. Apply measurement techniques to the experiment.
3. Analyze the data using the experimental and engineering tools and/or methods.
4. Interpret how results relate to or are different from theory, appropriate models, or previous results.

Benchmark: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 3.30/5.00 is the desired achievement level.

Prior to 2017-2018, the benchmark was 3.00/5.00.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

Outcome Links

3B-PC1 [Program]
Demonstrate knowledge of safety considerations and run the experiment in a safe manner.

3B-PC2 [Program]
Apply measurement techniques to the experiment.

3B-PC3 [Program]
Analyze the data using the experimental and engineering tools and/or methods.

3B-PC4 [Program]
Interpret how results relate to or are different from theory, appropriate models, or previous results.

ABET EAC [External]

B

an ability to design and conduct experiments, as well as to analyze and interpret data

8.1 Data

3(b)-PC1: Demonstrate knowledge of safety considerations and run the experiment in a safe manner.

Academic Year	Average score on PC1
2013-2014	2.43/3.00 (4.05/5.00*)
2014-2015	2.57/3.00 (4.28/5.00*)
2015-2016	3.89/5.00
2016-2017	3.45/5.00
2017-2018	3.36/5.00
2018-2019	3.74/5.00
2019-2020	

*Converted.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

8.1.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark was met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC1 from SLO 3.2.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

8.2 Data

3(b) PC2: Apply measurement techniques to the experiment.

Academic Year	Average score on PC2
2013-2014	2.71/3.00 (4.52/5.00*)
2014-2015	2.48/3.00 (4.73/5.00*)
2015-2016	4.03/5.00

2016-2017	4.18/5.00
2017-2018	3.79/5.00
2018-2019	3.99/5.00
2019-2020	

*Converted.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

8.2.1 Analysis of Data and Plan for Continuous Improvement

2016-2017:
Data indicated the benchmark was met or exceeded. Data will be monitored for adjusting the benchmark in next cycle. The benchmark will be raised in 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark was met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC2 from SLO 3.2.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

8.3 Data

3(b) PC3: Analyze the data using the experimental and engineering tools and/or methods.

Academic Year	Average score on PC3
2013-2014	2.52/3.00 (4.20/5.00*)
2014-2015	2.51/3.00 (4.18/5.00*)
2015-2016	3.34/5.00
2016-2017	4.15/5.00
2017-2018	3.44/5.00
2018-2019	4.18/5.00
2019-2020	

*Converted.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

8.3.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The current benchmark will be monitored for one more year. The benchmark will be raised for 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC3 from SLO 3.2.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

8.4 Data [Approved]

3(b)PC4: Interpret how results relate to or are different from theory, appropriate models, or previous results.
 New 3.6-PC4

Academic Year	Average score on PC4
2013-2014	2.29/3.00 (3.82/5.00*)
2014-2015	2.50/3.00 (4.17/5.00*)
2015-2016	3.53/5.00
2016-2017	4.10/5.00
2017-2018	3.82/5.00
2018-2019	4.24/5.00

*Converted.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

8.4.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC4 from SLO 3.6.

Course Links

CHEN411 [Chemical Engineering Laboratory I (Lab. 3, Cr. 1)]

CIEN403 [Foundation Engineering (Lec. 3, Lab. 3, Cr. 4)]

ELEN341 [Linear Electronics (Lec. 2, Lab. 3, Cr. 3)]

MEEN415 [Heat Flow Laboratory (Lab. 3, Cr. 1)]

9 Assessment and Benchmark ENGR 491 Project and Team Survey

Assessment: Students work (Project and Team Survey) taken from ENGR 491. ABET 3d rubric is used to evaluate SLOs.
 * New SLO 3.5 PC1-3 for 2019-20
Students should have an ability to function on multi-disciplinary teams (ABET 3d)
   1. Contribute to team objectives through active participation in team activities.
   2. Contribute to team objectives through performance of individual assigned tasks.
   3. Contribute to team objectives through productive interdisciplinary activities.

Benchmark for PC1: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 3.50/5.00 is the desired achievement level.

Benchmark for PC2: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 4.00/5.00 is the desired achievement level.

Benchmark for PC3: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 3.50/5.00 is the desired achievement level.

Prior to 2017-2018, the benchmarks were 3.00/5.00.

Course Links

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

Outcome Links

3D-PC1 [Program]
Contribute to team objectives through active participation in team activities.

3D-PC2 [Program]
Contribute to team objectives through performance of individual assigned tasks.

3D-PC3 [Program]
Contribute to team objectives through productive interdisciplinary activities.

ABET EAC [External]

   D

   an ability to function on multidisciplinary teams

9.1 Data

3(d) PC1: Contribute to team objectives through active participation in team activities.

Academic Year	Average score on PC1
2013-2014	2.71/3.00 (4.52/5.00*)
2014-2015	2.87/3.00 (4.78/5.00*)
2015-2016	3.97/5.00
2016-2017	4.58/5.00

2017-2018	4.69/5.00
2018-2019	4.61/5.00

*Converted.

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

9.1.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.50 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.50 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.50 on a 5-point scale. This PC will be replaced with new PC1 from SLO 3.5.

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

9.2 Data

3(d) PC2: Contribute to team objectives through performance of individual assigned tasks.

Academic Year	Average score on PC2
2013-2014	2.67/3.00 (4.45/5.00*)
2014-2015	2.85/3.00 (4.75/5.00*)
2015-2016	4.09/5.00
2016-2017	4.58/5.00
2017-2018	4.50/5.00
2018-2019	4.62/5.00
2019-2020	—

*Converted.

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

9.2.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 4.00 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 4.00 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 4.00 on a 5-point scale. This PC will be replaced with new PC2 from SLO 3.5.

Course Links

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

9.3 Data

3(d) PC3: Contribute to team objectives through productive interdisciplinary activities.

Academic Year	Average score on PC3
2013-2014	2.68/3.00 (4.67/5.00*)
2014-2015	2.88/3.00 (4.80/5.00*)
2015-2016	3.93/5.00
2016-2017	4.72/5.00
2017-2018	4.56/5.00
2018-2019	4.64/5.00
2019-2020	

*Converted.

Course Links

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

9.3.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.50 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.50 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.50 on a 5-point scale. This PC will be replaced with new PC3 from SLO 3.5.

Course Links

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

10 Assessment and Benchmark CHEN 409, CIEN 416, ENGR 430, and MEEN 409 Coursework [Approved]

Assessment: Students work (tests, homework, quizzes, or projects) taken from CHEN 409, CIEN 416, MEEN 409, and ENGR 430. ABET 3e rubric is used to evaluate SLOs.

Student should have an ability to identify, formulate, and solve engineering problems (ABET 3e)
1. Recognize nature of and determine steps to the solution of engineering problems.
2. Solve engineering problems requiring the use of "external" tables, charts, data, or models.

Benchmark for PC1: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 3.50/5.00 is the desired achievement level.

Benchmark for PC2: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 3.30/5.00 is the desired achievement level.

Prior to 2017-2018, the benchmarks were 3.00/5.00.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN416 [Design of Reinforced Concrete (Lec. 3, Cr. 3)]

ENGR430 [Systems and Control (Lec. 3, Cr. 3)]

MEEN409 [Advanced Thermodynamics (Lec. 3, Cr. 3)]

Outcome Links

3E-PC1 [Program]
Recognize nature of and determine steps to the solution of engineering problems.

3E-PC2 [Program]
Solve engineering problems requiring the use of "external" tables, charts, data, or models.

ABET EAC [External]

  E

   an ability to identify, formulate, and solve engineering problems

10.1 Data

3(e) PC1: Recognize nature of and determine steps to the solution of engineering problems.
**New 3.1e PC1 & PC2

Academic Year	Average score on PC1
2013-2014	2.18/3.00 (3.63/5.00*)
2014-2015	2.35/3.00 (3.92/5.00*)
2015-2016	4.01/5.00
2016-2017	4.00/5.00
2017-2018	4.05/5.00
2018-2019	4.09/5.00
2019-2020	—

*Converted.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN416 [Design of Reinforced Concrete (Lec. 3, Cr. 3)]

ENGR430 [Systems and Control (Lec. 3, Cr. 3)]

MEEN409 [Advanced Thermodynamics (Lec. 3, Cr. 3)]

10.1.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.50 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.50 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.50 on a 5-point scale. This PC will be replaced with new PC1 from SLO 3.1e.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN416 [Design of Reinforced Concrete (Lec. 3, Cr. 3)]

ENGR430 [Systems and Control (Lec. 3, Cr. 3)]

MEEN409 [Advanced Thermodynamics (Lec. 3, Cr. 3)]

10.2 Data

3(e) PC2: Solve engineering problems requiring the use of "external" tables, charts, data, or models.

Academic Year	Average score on PC2
2013-2014	2.53/3.00 (4.22/5.00*)
2014-2015	2.69/3.00 (4.48/5.00*)
2015-2016	3.41/5.00
2016-2017	3.67/5.00
2017-2018	4.00/5.00
2018-2019	4.01/5.00
2019-2020	—

*Converted.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN416 [Design of Reinforced Concrete (Lec. 3, Cr. 3)]

ENGR430 [Systems and Control (Lec. 3, Cr. 3)]

MEEN409 [Advanced Thermodynamics (Lec. 3, Cr. 3)]

10.2.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.30 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.30 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.30 on a 5-point scale. This PC will be replaced with new PC2 from SLO 3.1e.

Course Links

CHEN409 [Chemical Process Control (Lec. 2, Lab. 3, Cr. 3)]

CIEN416 [Design of Reinforced Concrete (Lec. 3, Cr. 3)]

ENGR430 [Systems and Control (Lec. 3, Cr. 3)]

MEEN409 [Advanced Thermodynamics (Lec. 3, Cr. 3)]

11 Assessment and Benchmark ENGR 491 Project and Monthly Reports

Assessment: Students work (Project and Monthly reports) taken from ENGR 491. ABET 3g rubric is used to evaluate SLOs.
 **New 3w PC1-3
Students should have an ability to communicate effectively (ABET 3g)
   1. Demonstrate proper English composition, grammar, and spelling.

2. Demonstrate logical organization and document formatting.
3. Demonstrate originality of content as well as effective integration of secondary sources.

Benchmark: Data will be evaluated on a 5-tier scale with 1.00 being low achievement and 5.00 being high. An average score of 3.50/5.00 is the desired achievement level.

Prior to 2017-2018, the benchmark was 3.00/5.00.

Course Links

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

Outcome Links

3G-PC1 [Program]
Demonstrate proper English composition, grammar, and spelling.

3G-PC2 [Program]
Demonstrate logical organization and document formatting.

3G-PC3 [Program]
Demonstrate originality of content as well as effective integration of secondary courses.

ABET EAC [External]

  G

   an ability to communicate effectively

11.1 Data

3(g) PC1: Demonstrate proper English composition, grammar, and spelling.
 **New 3.3w PC1

Academic Year	Average score on PC1
2013-2014	2.56/3.00 (4.27/5.00*)
2014-2015	2.54/3.00 (4.23/5.00*)
2015-2016	3.39/5.00
2016-2017	4.06/5.00
2017-2018	3.93/5.00
2018-2019	4.10/5.00
2019-2020	—

*Converted.

Course Links

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

11.1.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.5 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.50 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.50 on a 5-point scale. This PC will be replaced with new PC1 from SLO 3.3w.

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

11.2 Data

3(g) PC2: Demonstrate logical organization and document formatting.
 **3.3w PC2

Academic Year	Average score on PC2
2013-2014	2.53/3.00 (4.22/5.00*)
2014-2015	2.52/3.00 (4.20/5.00*)
2015-2016	3.87/5.00
2016-2017	3.97/5.00
2017-2018	4.22/5.00
2018-2019	4.03/5.00
2019-2020	—

*Converted.

Course Links

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

11.2.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.50 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.50 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.50 on a 5-point scale. This PC will be replaced with new PC2 from SLO 3.3w.

Course Links

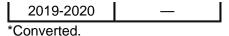**ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]**

11.3 Data

3(g) PC3: Demonstrate originality of content as well as effective integration of secondary sources.
 **New 3.3w PC3

Academic Year	Average score on PC3
2013-2014	2.39/3.00 (3.98/5.00*)
2014-2015	2.39/3.00 (3.98/5.00*)
2015-2016	3.68/5.00
2016-2017	3.93/5.00
2017-2018	4.07/5.00
2018-2019	4.12/5.00

2019-2020	—

*Converted.

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

11.3.1 Analysis of Data and Plan for Continuous Improvement [Approved]

2016-2017:
Data indicated the benchmark is met or exceeded. No action needed. The benchmark will be raised in 2017-2018 to 3.50 on a 5-point scale.

2017-2018:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2018-2019 at 3.50 on a 5-point scale.

2018-2019:
Data indicated the benchmark is met or exceeded. The benchmark remains the same in 2019-2020 at 3.50 on a 5-point scale. This PC will be replaced with new PC3 from SLO 3.3w.

ENGR491 [Senior Design Project II (Lec. 1, Lab. 6, Cr. 3)]

End of report