Program Assessment

2021-2022

Engineering, Physical Science & Process Technology

Math & Physical Science – Pre-Engineering Option	
Date	Click or tap to enter a date.
Competency # and Description	1. Use and apply physical data to solve problems
Course	PHYS 2014 – Engineering Physics I PHYS 2114 – Engineering Physics II MATH 2144 – Calculus I MATH 2164 – Calculus III
Activity	PHYS 2014 - Quizzes, exams PHYS 2114 – Quizzes, exams MATH 2144 – Word problems involving derivations MATH 2164 – Word problems involving vectors.
Measurement (attached copy of instrument with point distribution)	PHYS 2014 - Quizzes, exams PHYS 2114 – Quizzes, exams MATH 2144 - Common questions assessed on a quiz MATH 2164 - Common questions assessed on a quiz
Evaluation Criteria	70% pass rate on exam
Fall 2021 Results	PHYS 2014 – 19/23 (83%) PHYS 2114 – 10/20 (50%) MATH 2144 – 26/39 (66.7%) of students met competency MATH 2164 – 12/14 (85.7%) of students met competency
Interpretation of Results for Fall 2021	Note CircleIn was not used due to implementation issues. Challenges were identified with PHYS2114 and newer formats, i.e. laboratory situations were difficult, and students were less engaged overall during the semester. Activities were added during Spring 22 to help support students (PHYS2114 is a fall class), i.e. workshops and providing more real-world problem solving/project based work.
Reflection of Results for Fall 2021	Still seeing the results of changes in delivery formats. Incorporating more outside opportunities.
Actions for Fall 2022 Based on Results	Implement a kick-off workshop to jump start processes, i.e. time management, projects, etc. Continuing to provide more extra-curricular project based learning activities as well as project based assignments in class.
Timeline for Review	Fall data will be collected and reviewed in the spring and instructors from all campuses will determine needed adjustments.
Past Data and Actions	
Past Results	2015-2016 Results PHYS 2014 14 out of 20 – 70.0% PHYS 2114 4 out of 5 – 80.0% MATH 2145 not collected MATH 2155 not collected 2016-2017 Results PHYS 2014 25 out of 25 – 100%

	PHYS 2114 18 out of 20 – 90% MATH 2145 – 7/7 (100%) of students met competency MATH 2155 – 31/35 (88.57%) of students met competency MATH 2145 – 26/35 (74.28%) of students met competency MATH 2155 – 4/7 (57.14%) of students met competency 2017-2018 Results PHYS 2014 19 out of 21 – 90.5% PHYS 2114 15 out of 16 – 93.8% MATH 2145 – 9/12 (75%) of students met competency MATH 2155 – 6/13 (46.15%) of students met competency 2018-2019 Results PHYS 2014 - 15 out 16 – 93 % PHYS 2114 - 13 out 14 – 93% MATH 2145 – 8/16 (50%) of students met competency MATH 2155– 14/16 (87.5%) of students met competency MATH 2145 – 18/27 (66.67%) of students met competency MATH 2155 – 4/6 (66.67%) of students met competency 2019-2020 Results MATH 2145 – 17/23 (73.91%) of students met competency – both semesters combined**spring COVID-19 PHYS 2114 – 15/16 93.75% PHYS 2014 – not assessed due to change of delivery. 2020-2021 Results PHYS 2014 15 out of 21 – 71.4% PHYS 2114 11 out of 15 – 73.3% MATH 2154 – 25/42 (59.5%) of students met competency – both semesters
Summary of changes	2018-2019 No Changes 2019-2020 PHYS - No Changes MATH - Not always meeting benchmark – need to emphasize more in class. Continue to focus on how to analyze word problems. 2020-2021 Incorporation of more virtual laboratory experiences and real world laboratory experiences. 2021-2022 PHYS– Implement student resource incentive program CircleIn to promote group learning. Incorporating more general questions and oral exams. Expanding number of problems that require graphing and data analysis.
Date	Click or tap to enter a date.
Competency # and Description	2. Use logical reasoning to solve problems
Course	PHYS 2014 – Engineering Physics I PHYS 2114 – Engineering Physics II MATH 2144 – Calculus I MATH 2164 – Calculus III

Activity	PHYS 2014 - Quizzes, exams PHYS 2114 – Quizzes, exams MATH 2144 – Word problems involving derivations MATH 2164 – Word problems involving vectors.
Measurement (attached copy of instrument with point distribution)	PHYS 2014 - Quizzes, exams PHYS 2114 – Quizzes, exams MATH 2144 - Common questions assessed on a quiz MATH 2164 - Common questions assessed on a quiz
Evaluation Criteria	70% pass rate on exam
Fall 2021 Results	PHYS 2014 – 19/23 (83%) PHYS 2114 – 10/20 (50%) MATH 2144 – 26/39 (66.7%) of students met competency MATH 2164 – 12/14 (85.7%) of students met competency
Interpretation of Results for Fall 2021	Note CircleIn was not used due to implementation issues. Challenges were identified with PHYS2114 and newer formats, i.e. laboratory situations were difficult, and students were less engaged overall during the semester. Activities were added during Spring 22 to help support students (PHYS2114 is a fall class), i.e. workshops and providing more real-world problem solving/project based work.
Reflection of Results for Fall 2021	Still seeing the results of changes in delivery formats. Incorporating more outside opportunities.
Actions for Fall 2022 Based on Results	Implement a kick-off workshop to jump start processes, i.e. time management, projects, etc. Continuing to provide more extra-curricular project based learning activities as well as project based assignments in class.
Timeline for Review	Fall data will be collected and reviewed in the spring and instructors from all campuses will determine needed adjustments.
Past Data and Actions	
Past Results	2015-2016 Results PHYS 2014 14 out of 20 – 70.0% PHYS 2114 4 out of 5 – 80.0% MATH 2145 103 out of 134 – 77% MATH 2155 36 out of 39 – 92% 2016-2017 Results PHYS 2014 25 out of 25 – 100% PHYS 2114 18 out of 20 – 90% MATH 2145 – 7/7 (100%) of students met competency MATH 2155 – 31/35 (88.57%) of students met competency MATH 2145 – 26/35 (74.28%) of students met competency MATH 2155 – 4/7 (57.14%) of students met competency 2017-2018 Results PHYS 2014 19 out of 21 – 90.5% PHYS 2114 15 out of 16 – 93.8% MATH 2145 – 9/12 (75%) of students met competency MATH 2155 – 6/13 (46.15%) of students met competency 2018-2019 Results PHYS 2014 - 15 out 16 – 93 % PHYS 2114 - 13 out 14 – 93% MATH 2145 – 8/16 (50%) of students met competency

	MATH 2155 – 14/16 (87.5%) of students met competency MATH 2145 – 18/27 (66.67%) of students met competency MATH 2155 – 4/6 (66.67%) of students met competency 2019-2020 Results MATH 2145 – 17/23 (73.91%) of students met competency – both semesters combined**spring COVID-19 PHYS 2114 – 15/16 93.75% PHYS 2014 – not assessed due to change of delivery. 2020-2021 Results PHYS 2014 15 out of 21 – 71.4% PHYS 2114 11 out of 15 – 73.3%
Summary of changes	2018-2019 No Change. 2019-2020 PHYS - As the topic is fundamental to this competency, current methods of assessing results seem to be appropriate. (Note did change Text) MATH - Not always meeting benchmark – need to emphasize more in class and see what is different from fall to spring. Continue to focus on how to analyze word problems. 2020-2021 Incorporation of more virtual laboratory experiences and real world laboratory experiences. 2021-2022 PHYS– Implement student resource incentive program CircleIn to promote group learning. Incorporating more general questions and oral exams. Expanding number of problems that require graphing and data analysis.
Date	Click or tap to enter a date.
Competency # and Description	3. Communicate scientific ideas through technical writing
Course	PHYS 2014 – Engineering Physics I PHYS 2114 – Engineering Physics II
Activity	PHYS 2014 – Lab PHYS 2114 - Lab
Measurement (attached copy of instrument with point distribution)	PHYS 2014 – Lab PHYS 2114 - Lab
Evaluation Criteria	Pass rate of 70% on each activity
Fall 2021 Results	PHYS 2014 - no formal assessment completed. PHYS 2114 - no formal assessment completed.
Interpretation of Results for Fall 2021	No formal assessment was completed this year as the students needed a great deal of support in their writing.
Reflection of Results for Fall 2021	Writing is a significant challenge for these students.

Actions for Fall 2022 Based on Results	Incorporating more writing support in the classroom to help the students. Provide more feedback to the students to deal with writing. No changes to the overall assessment, i.e. laboratory memos are required in the laboratory class.
Timeline for Review	Fall data will be collected and reviewed in the spring and instructors from all campuses will determine needed adjustments.
Past Data and Actions	
Past Data	2015-2016 Results PHYS 2014 17 out of 20 – 85.0% PHYS 2114 4 out of 5 – 80.0% 2016-2017 Results PHYS 2014 26 out of 28 – 92.8% PHYS 2114 18 out of 20 – 90% 2017-2018 Results PHYS 2014 18 out of 21 – 85.7% PHYS 2114 14 out of 16 – 87.5% 2018-2019 Results PHYS 2014 - 12 out 17 – 70.5 % PHYS 2114 - 12 out 14 – 85.7% 2019-2020 Results PHYS 2014 - not assessed due to change in format. PHYS 2114 - 15 out 16 – 93.7% 2020-2021 Results PHYS 2014 - 18 out 25 – 72.0 % PHYS 2114 - 14 out 16 – 87.5%
Summary of changes	2018-2019 No changes. 2019-2020 Writing is a critical skill, thus, no changes are required. 2020-2021 No changes. 2021-2022 No Changes
Date	Click or tap to enter a date.
Competency # and Description	4. Recognize connections between physical concepts and engineering applications
Course	PHYS 2014 – Engineering Physics I PHYS 2114 – Engineering Physics II
Activity	PHYS 2014 – Assignments, exam PHYS 2114 – Assignments, exam
Measurement (attached copy of instrument with point distribution)	PHYS 2014 – Assignments, exam PHYS 2114 – Assignments, exam
Evaluation Criteria	Pass rate of 70% on each activity

Fall 2021 Results	PHYS 2014 – 19/23 (83%) PHYS 2114 – 10/20 (50%)
Interpretation of Results for Fall 2021	Note CircleIn was not used due to implementation issues. Challenges were identified with PHYS2114 and newer formats, i.e. laboratory situations were difficult, and students were less engaged overall during the semester. Activities were added during Spring 22 to help support students (PHYS2114 is a fall class), i.e. workshops and providing more real-world problem solving/project based work.
Reflection of Results for Fall 2021	Still seeing the results of changes in delivery formats. Incorporating more outside opportunities.
Actions for Fall 2022 Based on Results	Implement a kick-off workshop to jump start processes, i.e. time management, projects, etc. Continuing to provide more extra-curricular project based learning activities as well as project based assignments in class.
Timeline for Review	Fall data will be collected and reviewed in the spring and instructors from all campuses will determine needed adjustments.
Past Data and Actions	
Past Data	2015-2016 Results PHYS 2014 not collected PHYS 2114 4 out of 5 – 80.0% 2016-2017 Results PHYS 2014 not collected PHYS 2114 18 out of 20 – 90% 2017-2018 Results PHYS 2014 19 out of 21 – 90.5% PHYS 2114 15 out of 16 – 93.8% 2018-2019 Results PHYS 2014 - 15 out 16 – 93 % PHYS 2114 - 13 out 14 – 93% 2019-2020 Results PHYS 2114 – 15/16 93.75% PHYS 2014 – not assessed due to change of delivery. 2020-2021 Results PHYS 2014 15 out of 21 – 71.4% PHYS 2114 11 out of 15 – 73.3%
Summary of changes	2018-2019 No changes. 2019-2020 Current assessments are meeting the needs of the program. 2020-2021 Incorporate more support materials 2021-2022 PHYS– Implement student resource incentive program CircleIn to promote group learning. Incorporating more general questions and oral exams. Expanding number of problems that require graphing and data analysis.

Summary of Program and Divisional Changes	
2016-2017	• Switched semester offerings for ENGR 2433 Thermodynamics and ENGR 2113 Statics to better align with mathematics course offerings. • Incorporated a multidiscipline aspect to ENGR 2111 Engineering Mechanics I.

	• Began offering PHYS 2014 Engineering Physics I to Enid campus via ITV. • Offered a summer section of Phys 2014 (Tonkawa) to support student to degree completion in a timely manner. • Placed 3 engineering interns during the year. • Began offering Physics research opportunities to students.
2017-2018	• Identified recommended electives for specific degree programs. • Incorporating an "Introduction to Engineering Course" into the program.
2018-2019	• Added an Introduction to Engineering Class to help students develop strong skills. First class was held in the Spring Semester
2019-2020	• Changing a few laboratories to better address concepts presented in the course. • Incorporating more computer aided design elements and data analysis problems.
2020-2021	• Adding a peer to peer learning tool. • Incorporating more laboratory experiences • Adding more data/graphing examples.
2021-2022	• Focus on writing skills in the laboratory. • Implementation of a Kick-off workshop. • More extra-curricular research opportunities • More laboratory opportunities.

Recommendations for Program Changes	
2017-2018	• Assess the needs of offering a Basic Circuits course for Engineering students. • Assess the feasibility of offering a CAD course for Engineering students.
2018-2019	• Identified recommended electives for specific degree programs. • Incorporating an "Introduction to Engineering Course" into the program. • No specific changes on the assessment questions or activities.
2019-2020	• Including the Introduction to Engineering Course to Fall Semester. • Added an evening chemistry to help non-traditional students • Added a summer ENGR Dynamics course offering.
2020-2021	• Including a section of General Chemistry for Eng.
2021-2022	• Evaluating course offerings for transfer. • Evaluate the timing of course delivery for transfer.
2022-2023	• Continuing with current implementations. • Providing Data Analytics • Providing more outside – project based activities (high-power rocketry, research projects)

Ag, Science, & Engineering

Program Level Outcomes Timeline

Program Objectives – Pre-Engineering	Course Map	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
1. Use and apply physical data to solve problems	PHYS 2014, PHYS 2114, MATH 2144, MATH 2164	X	X	X	X	X
2. Use logical reasoning to solve problems	PHYS 2014, PHYS 2114, MATH 2144, MATH 2164	X	X	X	X	X
3. Communicate scientific ideas through technical writing	PHYS 2014, PHYS 2114	X	X	X	X	X
4. Recognize connections between physical concepts and engineering applications	CHEM 1414 PHYS 2014, PHYS 2114	X	X	X	X	X