Discipline	Course Number	Title
Mechatronics	201	MEC 201 12/11/2018-Mechanisms
Division	Department	Faculty Preparer
Advanced Technologies and Public Service Careers	Industrial Technology	Jeffrey Donahey
Date of Last Filed Assessment Report		

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

    No

2. Briefly describe the results of previous assessment report(s).

    3.

4. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

    5.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify the six classic machines.

- Assessment Plan

    o Assessment Tool: Written Test

    o Assessment Date: Fall 2015

    o Course section(s)/other population: All

    o Number students to be assessed: All

    o How the assessment will be scored: Department rubric

    o Standard of success to be used for this assessment: 75% of students will achieve 75% or higher.

o   Who will score and analyze the data: Departmental Faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2016, 2015, 2017		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
29	27

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the assessment test were included in the assessment report.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All courses are taught on campus in a face-to-face format.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

In this matching test, students had to pick the six different machines from 12 possible pictures.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes						
MEC 201	F15	F16	F17			
1 test of 6	77	83	75		per cent above 75%	

In fall 2015 semester 77% or the eleven students scored 75% or higher. In fall 2016 83% of the twelve students scored 75% or higher. In fall 2017 75% of the four students scored 75% or higher. Overall students met the standard of success

for this test and were able to correctly identify 5 (average of 4.5) of the six machines. Summary data is shown above and is not attached to this report.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students were able to recognize correctly the six classic machines, the lever, the screw, the ramp, the pulley, the wedge and the wheel/axel. These machines are all the basic mechanisms that are used to build simple and complex machines.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

While students did not score 100% on the test, there wasn't a pattern or specific machine that was not recognized more than others were.

Outcome 2: Analyze models of mechanisms.

- Assessment Plan

    o Assessment Tool: Written Test

    o Assessment Date: Fall 2015

    o Course section(s)/other population: All

    o Number students to be assessed: All

    o How the assessment will be scored: Department rubric

    o Standard of success to be used for this assessment: 75% of students will achieve 75% or higher.

    o Who will score and analyze the data: Departmental Faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2017, 2016, 2015		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
29	27

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the test were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All sections of this course are taught in a face-to-face mode on campus.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

This 10-question test asked students to perform calculation to determine force, torque, speed and RPM on various machines. Students' answers were scored using an answer key.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No

This 10-question test asked students to perform calculation to determine force, torque, speed and RPM on various machines. In fall 2015 and fall 2017 77% and 75% of the students scored 75% or higher. In fall 2016, only 50% of the students scored 75% or higher. Across semesters 63% of students scored 75% or higher on the outcome-related questions.

MEC 201	F15	F16	F17			
2 test	77	50	75		per cent above 75%	

Summary data is shown above and is not attached to this report.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students in fall 2015 and fall 2017 scored well on the test questions. They were able to determine the correct formulas and calculate the correct values. Students were able to correctly answer eight of ten questions to meet the standard that 75% of the students would score 75% or higher.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

> Students in fall 2016 struggled with math throughout the semester. They were unable to perform math related to factions, algebra and triangle math. These skills are required to correctly calculate force, torque, speed, RPM and distances. In the process of reviewing this information, we determined that the math level prerequisite for the course was not at a sufficiently high level. More students in fall 2016 were at a lower level than they needed to be at, thus leading to a poorer performance.

Outcome 3: Select a suitable product for a specific force/motion application.

- Assessment Plan

    o Assessment Tool: Capstone Project

    o Assessment Date: Fall 2015

    o Course section(s)/other population: All

    o Number students to be assessed: All

    o How the assessment will be scored: Department rubric

    o Standard of success to be used for this assessment: 75% of students will achieve 75% or higher.

    o Who will score and analyze the data: Departmental Faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2017, 2016, 2015		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
29	27

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

> All students who completed the capstone project were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All sections are taught on campus in a face-to-face format.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

For this project, students had to take a machine, analyze it and collect data for different speeds and loads. They then graphed their data and explained the relationship between the project variables. The capstone project was scored with a rubric.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: <u>Yes</u>

Overall, 75% of the students scored 75% or higher on the capstone project. In fall 2015, 100% of the students met or exceeded the standard of success. In fall 2016 and fall 2017, 75% of the students met or exceeded the standard of success.

MEC 201	F15	F16	F17			
3 cap stone	100	75	75			per cent above 75%

Summary data is shown above and is not attached to this report.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Overall student did very well on their capstone project with just minor mistakes on data or calculations. They showed that they were able to perform the tasks as taught. The students who had done poorly on outcome number 2 had learned the formulas and how to do the calculations throughout the semester. In addition, the calculations did not include the dreaded triangle (trigonometry) math.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Overall, students did well across the board with no areas where they consistently had difficulty.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

   > 2.

3. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

   > This course is one of the last courses in the program and seems to meet the needs of students. The discovery that the prerequisite math level was too low was a surprise. I believe this course is too theoretical without practical application. This would allow us to keep the math level lower and use this course to establish a foundation that could be used in other courses, rather than having it be at the end of program course.

4. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

   > This assessment report will be shared with departmental faculty via email.

5.

   Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Pre-requisite	Discuss with department the purpose of the course and either make it a more practical course or raise the math level so that students will be successful.	The current format of the course requires an increase to academic math level 4 or higher in order for students to be successful.	2019

6. Is there anything that you would like to mention that was not already captured?

   > 7.

III. Attached Files

Faculty/Preparer: Jeffrey Donahey **Date:** 12/11/2018
Department Chair: Thomas Penird **Date:** 01/08/2019
Dean: Brandon Tucker **Date:** 01/16/2019
Assessment Committee Chair: Shawn Deron **Date:** 03/12/2019