Powersports Performance and Repair
Canino School of Engineering Technology
2017Assessment Report

- Curriculum Coordinator: Christopher Mayville
- Date of Presentation: January 17, 2018

SUNY CANTON

What was assessed? Student learning outcomes list:

- *PSLO 1 – Diagnose and Repair*
  - *Test the ability to diagnose and repair electronic management problems related to Powersport vehicles*
- *PSLO 2 – Mathematical and Analytical Thinking Skills*
  - *Develop mathematical and analytical thinking skills necessary to perform both electrical and engine measurement calculations*

What was assessed? Student learning outcomes list:

- *PSLO 4 - Technical Skills*
  - *Create opportunity to master techniques, skills, and modern tools used in the Powersport industry.*

Where were outcomes assessed?

- *PSLO 1 – Diagnose and Repair*

  MSPT 112 Powersports Electrical Systems

  Outcomes: MSPT 112.3 and MSPT 112.4

  MSPT 122 Powersports Electrical Systems Laboratory

  Outcomes: MSPT 122.2 and MSPT 122.4

- *PSLO 2 – Mathematical and Analytical Thinking Skills*

  MSPT 101 Motorsports Service

  Outcomes: MSPT 101.1 and MSPT 101.3

  MSPT 112 Powersports Electrical Systems

  Outcomes: MSPT 112.1 and MSPT 112.2

  MSPT 122 Powersports Electrical Systems Laboratory

  Outcomes: MSPT 122.1 and MSPT 122.2

Where were outcomes assessed?

- *PSLO 4 - Technical Skills*

  MSPT 112 Powersports Electrical Systems

  Outcomes: MSPT 112.4

  MSPT 122 Powersports Electrical Systems Laboratory

  Outcomes: MSPT 122.2 and MSPT 122.3

  MSPT 130 Marine Propulsion Systems

  Outcomes: MSPT 130.1, MSPT 130.2, and MSPT 130.3

How was the assessment accomplished?

- Student work assessed:
  - Quizzes
  - Homework
  - Lab activity worksheets
- Measurement strategy:
  - % of questions answered correctly
  - Rubric for wiring diagram grading and student guidance
- Sample size:
  - All students are included in the assessment
  - Class size is 6 to 8 students

Assessment results: What have the data told us?

- *PSLO 1 – Diagnose and Repair*
  - *Multiple course SLOs and measures were used to assess this Program Outcome. Out of a total of 7 measures, 4 met the standard.*
  - *Improvement is needed in the following areas*
    - *Charging system knowledge and skills*
    - *Isolating circuits in a wiring diagram and drawing a simplified version*

Assessment results: What have the data told us?

- *PSLO 2 – Mathematical and Analytical Thinking Skills*
  - *Multiple course SLOs and measures were used to assess this Program Outcome. Out of a total of 8 measures, 6 met the standard.*
  - *Improvement is needed in the following areas*
    - *Series-parallel circuit calculations*

Assessment results: What have the data told us?

- *PSLO 4 - Technical Skills*
  - *Multiple course SLOs and measures were used to assess this Program Outcome. Out of a total of 6 measures, 5 met the standard.*
  - *Improvement is needed in the following areas*
    - *Isolating circuits in a wiring diagram and drawing a simplified version*

Data-driven decisions: How the program has or plans to “close the loop” based on these results.

- More work needs to be done on teaching the students how to read a wiring diagram and isolate circuits for the purpose of diagnosing circuit faults. Create examples as a guide.
- Remedial work needs to be done with Series-parallel calculations to improve student achievement in this area.
- Remedial work needs to be done on charging system operation and diagnosis to improve student achievement in this area.

Data-driven decisions: How the program has or plans to “close the loop” based on these results.

- One of the students choose not to complete a wiring diagram that was 50 percent of the grade. This was the reason the class did not meet the standard for one of the measures
- One of the students consistently failed to hand in assignments. This was a factor in one of the outcomes that were not met.
- Students are given the opportunity to make corrections on the majority of their assignments to receive extra points. Many of the students do not take advantage of this.

What resources were used or have been requested to close the loop?

– Individual faculty time revising within a course

Attachments: 2017 SLO Findings

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Course	Outcome	Target	Finding
MSPT 112	MSPT 112.3	70% of students will achieve 70% or better	Met 2/3 of measures
	MSPT 112.4	70% of students will achieve 70% or better	Not Met
MSPT 122	MSPT 122.2	70% of students will achieve 70% or better	Met
	MSPT 122.4	70% of students will achieve 70% or better	Met 1/2 of measures

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Outcome: MSPT 112.3
Write and recite battery, starting, and charging systems theory of operation

Measure: Battery Quiz
Direct - Exam

Details/Description:	The students will complete a quiz about battery function and maintenance.
Target:	70 % of the students will achieve a score of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Battery Quiz

Summary of Findings:	100 percent or the students achieved a score of 70 percent of higher on their quiz
Results:	Target Achievement: Exceeded
Recommendations :	None
Reflections/Notes :	None

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Outcome: MSPT 112.3
Write and recite battery, starting, and charging systems theory of operation

Measure: Charging System Quiz
Direct - Exam

Details/Description:	The students will complete a quiz about charging system operation and testing.
Target:	70 % of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Charging System Quiz

Summary of Findings:	67 percent of the students achieved a score of 70 percent or higher on this quiz
Results:	Target Achievement: Not Met
Recommendations :	None
Reflections/Notes :	Two of the students in a class of 6 did not get a high enough score to meet the standard. However, they did pass the quiz. I do offer the students a chance to correct their mistakes and earn back points but that only seems to motivate a small percentage of the class. I am not sure how I could have improved these results other than spending more time on the subject or giving remedial work.

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Outcome: MSPT 112.3
Write and recite battery, starting, and charging systems theory of operation

Measure: Starting System Quiz
Direct - Exam

Details/Description:	The students will complete a quiz about starting system operation and testing.
Target:	70 % of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Starting System Quiz

Summary of Findings:	83 percent of the students achieved a score of 70 percent or higher on the quiz
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Outcome: MSPT 112.4
Evaluate wiring diagrams to produce a simplified version to show understanding of the above.

Measure: Charging System Wiring Diagram
Direct - Student Artifact

Details/Description:	The students will draw a simplified diagram of the charging system from a powersports machine.
Target:	70% of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Charging System Wiring Diagram

Summary of Findings:	67 percent of the students achieved a grade of 70 percent or higher on this assignment
Results:	Target Achievement: Not Met
Recommendations :	Move the lesson about wiring diagrams earlier into the semester and talk more about creating break-out diagrams. Create high quality examples for the students.
Reflections/Notes :	This is my first semester teaching this class and I struggled getting the students to accurately read wiring diagrams and draw their own representation of the circuit to a high quality. I plan to work on this in other classes in the Spring 2018 semester but will make the required changes to this course for the future.

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Outcome: MSPT 122.2
Interpret DVOM readings to diagnose electrical circuits.

▼ **Measure:** Snap-on multimeter certification
Direct - Other

Details/Description:	The students will take the Snap-on 504 meter training and then complete the online certification exam.
Target:	70% of the students will achieve and grade of 70% or higher on the exam.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Snap-on multimeter certification

Summary of Findings:	83 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Outcome: MSPT 122.4
Diagnose and service the charging, starting, and accessory systems.

Measure: Charging system lab activity
Direct - Other

Details/Description:	The students will complete a lab activity where they test powersports charging system components.
Target:	70% of the students will achieve a grade of 70% or higher.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Charging system lab activity

Summary of Findings:	100 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Exceeded
Recommendations :	None
Reflections/Notes :	None

PSLO 1 – *Diagnose and Repair*
Assessment Findings Data

Outcome: MSPT 122.4
Diagnose and service the charging, starting, and accessory systems.

Measure: Starting system lab activity
Direct - Other

Details/Description:	The students will complete a lab activity where they test powersports starting system components.
Target:	70% of the students will achieve a grade of 70% or higher.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Starting system lab activity

Summary of Findings:	67 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Not Met
Recommendations :	None
Reflections/Notes :	One of the students chose not to complete the wiring diagram that is 50 percent of the grade for the assignment. If he had made an acceptable diagram he and the class as a whole would have met the standard. I am not sure how to motivate a student who is willing to make a decision like that.

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Course	Outcome	Target	Finding
MSPT 101	MSPT 101.1	70% of students will achieve 70% or better	Met
	MSPT 101.3	70% of students will achieve 70% or better	Met
MSPT 112	MSPT 112.1	70% of students will achieve 70% or better	Met 2/3 of measures
	MSPT 112.2	70% of students will achieve 70% or better	Not Met
MSPT 122	MSPT 122.1	70% of students will achieve 70% or better	Met
	MSPT 122.2	70% of students will achieve 70% or better	Met

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Outcome: MSPT 101.1
Perform routine maintenance procedures associated with powersports vehicles.

Measure: Lab Activity
Direct - Other

Details/Description:	Students will perform periodic maintenance on powersports vehicles.
Target:	70% of students will achieve a grade of 70% or better on lab activities.
Implementation Plan (timeline):	Fall 2016
Instructor:	Christopher Mayville
CRN:	10150, 10151

Findings for Lab Activity

Summary of Findings:	100 percent of the students achieved a grade of 70 percent or higher on their lab activity grade average
Results:	Target Achievement: Exceeded
Recommendations :	None
Reflections/Notes :	This semester went very well for the lab portion.

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Outcome: MSPT 101.3
Diagnose and repair powertrain assembly problems

Measure: Two stroke engine lab activity
Direct - Other

Details/Description:	The students will disassemble, inspect, and reassemble a two stroke engine top end.
Target:	70% of students will receive a grade of 70% or better on their lab activities.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	10150, 10151

Findings for Two stroke engine lab activity

Summary of Findings:	88 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

SLO 2 – *Mathematical and Analytical Thinking Skills* Assessment Findings Data

Outcome: MSPT 112.1
Construct series, parallel, and series-parallel circuits demonstrating fundamentals of electricity.

Measure: Parallel Circuit Homework
Direct - Student Artifact

Details/Description:	The students will complete a worksheet that requires them to use the rules of parallel circuits and calculate missing circuit values.
Target:	70 % of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Parallel Circuit Homework

Summary of Findings:	67 percent of the students achieved an average score of 70 percent or higher on their parallel circuit homework average
Results:	Target Achievement: Not Met
Recommendations :	None
Reflections/Notes :	One of the students did not turn in his assignment and this dropped his average significantly. Another student did not do well in general. These are the only two students who did not meet the standard, but with a class of six students they make up a high enough percentage that the standard was not met.

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Outcome: MSPT 112.1
Construct series, parallel, and series-parallel circuits demonstrating fundamentals of electricity.

Measure: Series Circuit Homework
Direct - Student Artifact

Details/Description:	The students will complete a worksheet that requires them to use the rules of series circuits and calculate missing circuit values.
Target:	70 % of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Series Circuit Homework

Summary of Findings:	83 percent of the students achieved a score of 70 percent or higher on their series circuit homework grade average
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Outcome: MSPT 112.1
Construct series, parallel, and series-parallel circuits demonstrating fundamentals of electricity.

Measure: Series Parallel Circuit Homework
Direct - Student Artifact

Details/Description:	The students will complete a worksheet that requires them to use the rules of series and parallel circuits and calculate missing circuit values.
Target:	70 % of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Series Parallel Circuit Homework

Summary of Findings:	33 percent of the students achieved a score of 70 percent or higher on the series parallel homework
Results:	Target Achievement: Not Met
Recommendations :	Spend more time on series parallel calculations and possible give another review assignment.
Reflections/Notes :	If the goal had been to have 70 percent of the students exceed a grade of 60 percent then we would have met the standard. I am not sure if we should lower the standard or work to achieve the existing standard. Series-parallel circuits are more difficult to analyze than a series or parallel by it's self so it is to be expected that the students will struggle more on this. Series circuits seem to be the easiest to understand, then parallel would be harder than series, and series parallel would be the most difficult. The students scores seem to show this.

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Outcome: MSPT 112.2
Calculate circuit elements of voltage, resistance, and current using Ohm's Law

Measure: Series Parallel Circuit Homework
Direct - Student Artifact

Details/Description:	The students will complete a worksheet that requires them to use the rules of series and parallel circuits and calculate missing circuit values.
Target:	70 % of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Series Parallel Circuit Homework

Summary of Findings:	33 percent of the students achieved a score of 70 percent or higher
Results:	Target Achievement: Not Met
Recommendations :	Give more practice work and remedial lessons to the students until they are better at the activity.
Reflections/Notes :	Series-parallel circuits to seem to be the most difficult for the students to understand. This is my first semester teaching this course so in the future I will develop more practice work and make time for remedial lessons.

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Outcome: MSPT 122.1
Demonstrate knowledge of basic electrical and electronic theories.

▼ **Measure:** Series and Parallel Circuit Lab Sheets
Direct - Other

Details/Description:	The students will perform calculations of series and parallel circuits and build the circuits on a breadboard and compare their calculations to actual tests done on a working circuit.
Target:	70% of the students will achieve and grade of 70% or higher.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Series and Parallel Circuit Lab Sheets

Summary of Findings:	83 percent of the students achieved an average score of 70 percent or higher on the these activities
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

SLO 2 – *Mathematical and Analytical Thinking Skills*
Assessment Findings Data

Outcome: MSPT 122.2
Interpret DVOM readings to diagnose electrical circuits.

▼ **Measure:** Snap-on multimeter certification
Direct - Other

Details/Description:	The students will take the Snap-on 504 meter training and then complete the online certification exam.
Target:	70% of the students will achieve and grade of 70% or higher on the exam.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Snap-on multimeter certification

Summary of Findings:	83 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

SLO 4 - *Technical Skills*
Assessment Findings Data

Course	Outcome	Target	Finding
MSPT 112	MSPT 112.4	70% of students will achieve 70% or better	Not Met
MSPT 122	MSPT 122.2	70% of students will achieve 70% or better	Met
	MSPT 122.3	70% of students will achieve 70% or better	Met
MSPT 130	MSPT 130.1	70% of students will achieve 70% or better	Met
	MSPT 130.2	70% of students will achieve 70% or better	Met
	MSPT 130.3	70% of students will achieve 70% or better	Met

SLO 4 - *Technical Skills*
Assessment Findings Data

Outcome: MSPT 112.4
Evaluate wiring diagrams to produce a simplified version to show understanding of the above.

Measure: Charging System Wiring Diagram
Direct - Student Artifact

Details/Description:	The students will draw a simplified diagram of the charging system from a powersports machine.
Target:	70% of the students will achieve a grade of 70% or higher
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Charging System Wiring Diagram

Summary of Findings:	67 percent of the students achieved a grade of 70 percent or higher on this assignment
Results:	Target Achievement: Not Met
Recommendations :	Move the lesson about wiring diagrams earlier into the semester and talk more about creating break-out diagrams. Create high quality examples for the students.
Reflections/Notes :	This is my first semester teaching this class and I struggled getting the students to accurately read wiring diagrams and draw their own representation of the circuit to a high quality. I plan to work on this in other classes in the Spring 2018 semester but will make the required changes to this course for the future.

SLO 4 - *Technical Skills*
Assessment Findings Data

Outcome: MSPT 122.2
Interpret DVOM readings to diagnose electrical circuits.

Measure: Snap-on multimeter certification
Direct - Other

Details/Description:	The students will take the Snap-on 504 meter training and then complete the online certification exam.
Target:	70% of the students will achieve and grade of 70% or higher on the exam.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Snap-on multimeter certification

Summary of Findings:	83 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

SLO 4 - *Technical Skills*
Assessment Findings Data

Measure: Wiring Diagram Lab Activity
Direct - Other

Details/Description:	The students will complete a lab activity where they read and identify parts in a wiring diagram.
Target:	70% of the students will achieve a grade of 70% or higher.
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	

Findings for Wiring Diagram Lab Activity

Summary of Findings:	83 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Met
Recommendations :	None
Reflections/Notes :	None

SLO 4 - *Technical Skills*
Assessment Findings Data

Outcome: MSPT 130.1
Perform routine maintenance procedures associated with marine propulsion drives

Measure: Marine Lab Activities
Direct - Other

Details/Description:	This will be the overall grade the students achieved from lab worksheets.
Target:	70% of students will achieve an average grade of 70% or better on their lab activities
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	10148, 10149

Findings for Marine Lab Activities

Summary of Findings:	100 percent of the students achieved a score of 70 percent or higher
Results:	Target Achievement: Exceeded
Recommendations :	None
Reflections/Notes :	None

SLO 4 - *Technical Skills*
Assessment Findings Data

Outcome: MSPT 130.2
Diagnose and repair marine propulsion performance problems

Measure: Test
Direct - Exam

Details/Description:	The students will complete a test of their knowledge of marine propulsion systems.
Target:	70% of students will achieve a grade of 70% or better on the test
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	10148, 10149

Findings for Test

Summary of Findings:	100 percent of the students achieved a score of 70 percent or higher on their Final exam.
Results:	Target Achievement: Exceeded
Recommendations :	None
Reflections/Notes :	None

SLO 4 - *Technical Skills*
Assessment Findings Data

Outcome: MSPT 130.3
Disassemble, inspect and reassemble marine propulsion systems

Measure: Marine Drive Unit Lab Activity
Direct - Other

Details/Description:	The students will disassemble, inspect and reassemble a marine drive lower gearcase and complete a worksheet on their activity.
Target:	70% of the students will achieve a grade of 70% or better on their activity
Implementation Plan (timeline):	Fall 2017
Instructor:	Christopher Mayville
CRN:	10148, 10149

Findings for Marine Drive Unit Lab Activity

Summary of Findings:	100 percent of the students achieved a score of 70 percent or higher on this activity
Results:	Target Achievement: Exceeded
Recommendations :	None
Reflections/Notes :	None