

# Mechanical Engineering Technology, AAS Canino School of Engineering Technology 2018 Assessment Report

- Curriculum Coordinator: D. Miller
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## Mission

The Canino School of Engineering Technology (CSOET) at SUNY Canton is committed to providing an educational experience that prepares students for a career in a technologically oriented society. The curricula are focused on providing career skills reviewed by industry partners and accreditation agencies. Our programs provide opportunities for every student to find a suitable starting point for their academic endeavor. Graduates have the ability to work in teams, think critically, utilize the tools of their trade or industry, and communicate effectively.



# What was assessed?

Student learning outcomes list:

- *ISLO #3 Foundational Skills*
  - *Quantitative Reasoning*
    - *ABET (c) - An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes*
  - *Information Management*
    - *ABET (c) - An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes*
    - *ABET (h) - An understanding of the need for and an ability to engage in self-directed continuing professional development*



# What was assessed?

Student learning outcomes list:

- *ISLO #4 Social Responsibility*
  - *Ethical Reasoning*
    - *ABET (i) - An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity*
  - *Teamwork*
    - *ABET (e) - An ability to function effectively as a member or leader on a technical team*
    - *ABET (k) - A commitment to quality, timeliness, and continuous improvement*



# Where were outcomes assessed?

- *ISLO #3 Foundational Skills*

- *Quantitative Reasoning*

- *ABET (c)* - *An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes*
    - *MECH 242 & MECH 220*

- *Information Management*

- *ABET (c)* - *An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes*
    - *MECH 242 & MECH 220*
    - *ABET (h)* - *An understanding of the need for and an ability to engage in self-directed continuing professional development*
    - *OSHA 10 hour certificate*



# Where were outcomes assessed?

- *ISLO #4 Social Responsibility*

- *Ethical Reasoning*

- *ABET (i)* - *An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity*

- *MECH 232*

- *Teamwork*

- *ABET (e)* -*An ability to function effectively as a member or leader on a technical team*

- *MECH 242*

- *ABET (k)* -*A commitment to quality, timeliness, and continuous improvement*

- *MECH 232*



# How was the assessment accomplished?

- Student work assessed:
  - Quizzes
  - Midterm and final exams
  - Oral presentations
  - Group projects
  - Term papers
- Measurement strategy:
  - Applicable rubrics used for oral presentations, term papers and group projects
  - % of questions answered correctly on quizzes and midterm/final exams
- Sample size:
  - All students who take the designated assessed courses, see attachment for N for each course



# Assessment results:

## What have the data told us?

- *ISLO #3 Foundational Skills*
  - *Quantitative Reasoning*
    - *ABET (c) - An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes (MECH 242)*

**Measure:** Pneumatic Test Stand\_ISLO#3 - AACU Information Literacy and #4Team Work  
*Direct - Student Artifact*

Details/Description:	Students will work in teams of 4-5 to conduct an experiment and collect data. The data will be analyzed and a technical report written to industrial accepted standards by each student. The AACU Rubric will be used to evaluate.
Target:	70% of students will achieve 2 or higher on the AACU Rubrics.
Implementation Plan	Fall 2018

### Findings for Pneumatic Test Stand\_ISLO#3 - AACU Information Literacy and #4Team Work

Summary of Findings:	22 of 26 students met or exceeded the the value rubric criteria
Results :	Target Achievement: Met





# Assessment results:

## What have the data told us?

- *ISLO #3 Foundational Skills*
  - *Quantitative Reasoning*
    - *ABET (c) - An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes (MECH 220)*

**Measure:** Testing Procedures

Direct - Other

**Details/Description:**

Students demonstrate an understanding of standard testing procedures by measuring, collecting, and interpreting laboratory data such that it can be made useful in laboratory reports.

**Target:**

70% of students demonstrate 70% competence

**Implementation Plan (timeline):**

This will be evaluated based on student's preparation of the lab 4 / lab 5 data and subsequent submission.

Findings for Testing Procedures

**Summary of Findings:**

Lab 5 was used to evaluate students ability to measure, collect, and interpret laboratory data.  
16 of 18 students (89%) demonstrated 70% or greater competence in this area.

**Results :**

Target Achievement: Met



# Assessment results:

## What have the data told us?

- *ISLO #3 Foundational Skills*
  - *Information Management*
    - *ABET (c) - An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes (MECH 242)*

**Measure:** Hydraulic Test Stand Experiment

*Direct - Student Artifact*

Details/Description:	Students will conduct an experiment on the hydraulic test stand, collect data and calculate the horsepower and efficiency of the pump.
Target:	70% of the students will correctly calculate the pump horsepower and efficiency from the data.
Implementation Plan	Fall 2018

### Findings for Hydraulic Test Stand Experiment

Summary of Findings:	19 of 26 (73%) achieved greater than 70%
Results :	Target Achievement: Met
Recommendations:	Continue to do this experiment after midterm but before break.
Reflections/Notes:	Students struggled with understanding power and efficiency and needed coaching along the way.



# Assessment results:

## What have the data told us?

- *ISLO #3 Foundational Skills*
  - *Information Management*
    - *ABET (c) - An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes (MECH 220)*

▼ <b>Measure:</b> Testing Procedures Direct - Other	
Details/Description:	Students demonstrate an understanding of standard testing procedures by measuring, collecting, and interpreting laboratory data such that it can be made useful in laboratory reports.
Target:	70% of students demonstrate 70% competence
Implementation Plan (timeline):	This will be evaluated based on student's preparation of the lab 4 / lab 5 data and subsequent submission.
Instructor:	Cullen Haskins
CRN:	
Findings for Testing Procedures	
Summary of Findings:	Lab 5 was used to evaluate students ability to measure, collect, and interpret laboratory data. 16 of 18 students (89%) demonstrated 70% or greater competence in this area.
Results :	Target Achievement: Met



# Assessment results:

## What have the data told us?

- *ISLO #3 Foundational Skills*
  - *Information Management*
    - *ABET (h) - An understanding of the need for and an ability to engage in self-directed continuing professional development (OSHA 10 hour certificate)*

**Measure:** 10 Hour Certification Attained  
*Direct - Student Artifact*

**Details/Description:** Students will complete the On-Line certification for the 10-Hour OSHA General Industry Certification and retain an approved 10-Hr OSHA Safety Card

**Target:** 100% of the students will retain this certification

### Findings for 10 Hour Certification Attained

**Summary of Findings:** The 10 Hour OSHA Final Assessment was used to evaluate this measure.  
35 of 38 students (92%) demonstrated 70% or greater competence in this area.

**Results :** Target Achievement: Exceeded



# Assessment results:

## What have the data told us?

- *ISLO #4 Social Responsibility*
  - *Ethical Reasoning*
    - *ABET (i) - An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity (MECH 232)*

**Measure:** Team Design Project  
Direct - Student Artifact

Details/Description:	Assessed AACU Value Rubric for Ethical Reasoning
Target:	70% of the students will score higher than 10 out of 20 on the AACU value rubric for Ethical Reasoning
Implementation Plan	Spring 2018

### Findings for Team Design Project

Summary of Findings:	20 out of 25 (80%) students exceeded 70%
Results :	Target Achievement: Met



# Assessment results: What have the data told us?

- *ISLO #4 Social Responsibility*
  - *Teamwork*
    - *ABET (e) -An ability to function effectively as a member or leader on a technical team (MECH 242)*

**Measure:** Team Design Project - AACU Teamwork  
*Direct - Student Artifact*

Details/Description:	Group sizes of 2-4 students will collectively design and select components required for a hydraulic zero turn lawn mower.
Target:	70% of the students will score 2 or higher on the AACU Rubric for Teamwork.
Implementation Plan (timeline):	Fall 2018
Instructor:	D. Miller

## Findings for Team Design Project - AACU Teamwork

Summary of Findings:	81% achieved 70% or higher on this project.
Results:	Target Achievement: Met
Recommendations:	Zero Turn mower project was exciting because most could relate to the machine. Continue select projects that are recognizable by the students.
Reflections/Notes:	The project is presented at end of term and students tend to rush to do what ever it takes to just complete the project. However, I observed the majority of the class research and do a bang up job on the project this year.



# Assessment results:

## What have the data told us?

- *ISLO #4 Social Responsibility*
  - *Teamwork*
    - *ABET (k) -A commitment to quality, timeliness, and continuous improvement (MECH 232)*

**Measure:** Gear Drive System Design Project  
*Direct - Student Artifact*

Details/Description:	Assessed AACU Value Rubric for Teamwork
Target:	70% of the students will score higher than 10 out of 20 on the AACU value rubric for teamwork
Implementation Plan (timeline):	Spring 2018

### Findings for Team Design Project

Summary of Findings:	20 out of 25 (80%) students exceeded 70%
Results :	Target Achievement: Met



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

- Continue to revise the course curriculum to better align with the program’s objectives according to the SLO outcomes
- Remap outcomes to match revised ABET 2019 outcomes
- Continue to revise the related courses to better align with the student learning outcomes
- Advise students in the program to seek for additional instructional support when needed (e.g. tutoring) , and be active members on one of our clubs (engineering, bridge etc)





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

- Need a full time instructional support (ISA) to serve the machine tools lab (NS106) and ARES lab (NS111)
- Need to hire full time instructor with machining skills to replace retiring faculty member
- Program needs \$5K for machine shop tooling and supplies



# Attachments: 2018 SLO Findings



# SLO # - Assessment Findings Data

(Insert your data here in as many charts as necessary)

