5-Year Plan for Assessment of Program Learning Outcomes

AA/AS Degree

I. Program Information

Division:

Science, Engineering, & Math

Name of Program:

Engineering

Certificates Embedded in Program:

None

Assessment Plan for Following Five Years:

FY 2020 – FY 2024 (July 1, 2019 – June 30, 2024)

Faculty Who Prepared Plan:

Program Chair: Greg Holland Faculty:

Date Submitted by Faculty:

November 16, 2018 – first version submitted for Academic Outcomes Assessment Committee April 19, 2019 – revised version submitted to division dean for review

Division Dean:

Max Simmons

Date Submitted by Dean:

May 3, 2019

II. Institutional Mission or End Statement Reference:

Institutional Mission:

OCCC provides broad access to learning that empowers students to complete a certificate or degree and that enriches the lives of everyone in our community.

ENDS

- Access: Our community has broad access to valuable certificate and degree programs, and non-credit educational opportunities and events.

- Student Success: Our students successfully complete their academic courses, persist in college and earn certificates or degrees at OCCC or another institution.

- Workforce Development: Our graduates earn higher-level degrees or are successful in technical and professional careers.

- Community Development: Our community's quality of life is enriched through our educational, artistic and recreational programs and events.

III. Program Learning Outcomes:

List all program learning outcomes for the program designated above. There should be 5-10 program learning outcomes total.

Under each outcome, list the measures. There should be at least 1 measure per outcome, but there can be up to 3 measures per outcome.

Indicate which outcome(s) will be assessed in each year of this plan. Only 1-3 outcome(s) should be assessed in a particular year.

All learning outcomes for this program will be assessed over the five-year cycle of this plan. Annual reports will evaluate only the outcome(s) designated for that year. The program review (or accreditation process for programs with external accreditation) will report on all program learning outcomes.

Outcome 1 (required):

Students will apply knowledge of calculus.

Measure 1 (required): Selected exam problems in "Electrical Science/Circuits & Sensors" and/or "Strength of Materials" will be evaluated using the Applied Calculus Rubric.	☒Direct ☐Indirect (required)	Anticipated Target (required): 70% of students will score an average of 2 or better (out of 3) on the rubric.
Measure 2:	☐Direct ☐Indirect	Anticipated Target:
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 1 will be assessed (required):

1

Outcome 2 (required):

Students will utilize reference information in graphical or tabulated formats.

Measure 1 (required): Selected exam problems from "Thermodynamics", "Fluid Mechanics", and/or "Materials, Design, & Manufacturing Processes: will be evaluated using the Reference Information Rubric.	☒Direct ☐Indirect (required)	Anticipated Target (required): 70% of students will score an average of 2 or better (out of 3) on the rubric.

Measure 2:	☐Direct ☐Indirect	Anticipated Target:
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 2 will be assessed (required):

2

Outcome 3 (required):

Students will demonstrate the ability to solve engineering problems.

Measure 1 (required): Comprehensive final exams will be given in "Statics/Rigid Body Mechanics", "Thermodynamics", "Digital Design", "Signals & Filters" and/or "Electrical Science/Circuits & Sensors".	☒Direct ☐Indirect (required)	Anticipated Target (required): 70% of students will score a "C" or better on portions of their comprehensive final exams that require them to solve problems.
Measure 2:	☐Direct ☐Indirect	Anticipated Target:

Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 3 will be assessed (required):

3

Outcome 4 (required):

Students will demonstrate the ability to communicate effectively.

Measure 1 (required): Students in "Intro to Engineering" will give presentations as part of a team and will be evaluated using the Public Speaking Rubric.	☒Direct ☐Indirect (required)	Anticipated Target (required): 70% of students will score an average of 2 or better (out of 3) on the rubric.
Measure 2:	☐Direct ☐Indirect	Anticipated Target:
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 4 will be assessed (required):

| 4 |

Outcome 5 (required):

Students will demonstrate the ability to use computational tools necessary for engineering practice.

Measure 1 (required): An "Electrical Science/Circuits & Sensors" and/or "Dynamics" exam/quiz question requiring students to use their scientific/programmable calculator to solve a system of 3 or more equations and unknowns will be evaluated using the Computational Tools Rubric.	☒Direct ☐Indirect (required)	Anticipated Target (required): 70% of students will score an average of 2 or better (out of 3) on the rubric.
Measure 2: An "Electrical Science" exam/quiz question requiring students to use EXCEL to graph circuit parameters will be evaluated using the Computational Tools Rubric.	☒Direct ☐Indirect	Anticipated Target: 70% of students will score an average of 2 or better (out of 3) on the rubric.
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 5 will be assessed (required):

5

(Only 5 outcomes are required. Additional outcomes from 6 through 10 are available if needed.)

Outcome 6:

Students will demonstrate the ability to function on multidisciplinary teams

Measure 1 (required): Students in "Intro to Engineering" will participate in the Sumobot Design Project and will be evaluated by their teammates using the Peer Assessment Rubric	☒Direct ☐Indirect (required)	Anticipated Target (required): 70% of students will score an average of 2 or better (out of 3) on the rubric.
Measure 2:	☐Direct ☐Indirect	Anticipated Target:

Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 6 will be assessed (required):

4

Outcome 7:

Measure 1 (required):	☐Direct ☐Indirect (required)	Anticipated Target (required):
Measure 2:	☐Direct ☐Indirect	Anticipated Target:
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 7 will be assessed (required):

[   ]

Outcome 8:

Measure 1 (required):	☐Direct ☐Indirect (required)	Anticipated Target (required):
Measure 2:	☐Direct ☐Indirect	Anticipated Target:
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 8 will be assessed (required):

[   ]

Outcome 9:

Measure 1 (required):	☐Direct ☐Indirect (required)	Anticipated Target (required):
Measure 2:	☐Direct ☐Indirect	Anticipated Target:
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 9 will be assessed (required):

Outcome 10:

Measure 1 (required):	☐Direct ☐Indirect (required)	Anticipated Target (required):
Measure 2:	☐Direct ☐Indirect	Anticipated Target:
Measure 3:	☐Direct ☐Indirect	Anticipated Target:

Year Outcome 10 will be assessed (required):

IV. Program Learning Outcomes and Courses

Please check the program learning outcome associated with the courses in the program.

All core courses must address at least 1 program learning outcome.

Support courses should address outcomes. Some support courses are required by a university for transfer. Please list and check any support courses applicable to the outcome.

Program Learning Outcomes:	O 1	O 2	O 3	O 4	O 5	O 6
Core Courses:						
ENGR 1113 Introduction to Engineering				X		X
ENGR 2133 Rigid Body Mechanics			X			
ENGR 2143 Strength of Materials	X					
ENGR 2214 Digital Design			X			
ENGR 2243 Statics			X			
ENGR 2303 Materials, Design, & Manufacturing		X				
ENGR 2333 Thermodynamics		X	X			
ENGR 2343 Fluid Mechanics		X				
ENGR 2523 Dynamics					X	
ENGR 2613 Electrical Science	X		X		X	

ENGR 2623 Circuits & Sensors	X		X		X	
ENGR 2713 Signals & Filters			X			
Support Courses:						