

Mechanical Engineering - Master of Science - Mid-Cycle Review & SLOA Year

Current Compliance Year: 2022-2023

Mid-Cycle review

Recent Recommendations

Feedback will include recommendations from the last Expedited Review or from your most recent review by your school or college. You may not see any feedback or recommendations until you have completed your first full or mid-cycle review.

Response to Previous Recommendations (if any):

N/A

Student Learning Outcomes

The previous Student Learning Outcomes Assessment has been submitted as its own report. Going forward you will use the following prompts to discuss the success of your most recent SLOA plan and address your assessment activities since your last SLOA report (typically the past two years or since your last program review).

Learning outcomes feedback from last review:

Feedback will be provided once you have completed a full or mid-cycle review.

Discuss your SLOA findings, changes you are making and what you hope to see as a result:

The primary faculty research advisor for each graduating student submits a survey with 4 major questions regarding (1) student academic (course) abilities, (2) independent research capabilities, (3) oral communication skills, and (4) written communication skills. Item 1 relies heavily on student course work success. Item 2 relies on the research advisor's professional judgement. Item 3 uses the student's comprehensive oral exam and thesis project defense. Item 4 uses conference abstract and peer-reviewed journal articles.

Discuss the curricular changes made based on assessing your SLO. If you haven't made any curricular changes, please explain why not and address what you did notice in the review, including strengths of your curriculum through the assessment of your outcomes:

The one significant curricular change last year is regarding the specific courses required for the degree. Previously, the 24 credits of course work was comprised of five specific 600-level Mechanical Engineering courses (e.g. Advanced Heat Transfer, Advanced Materials Science, etc.) and three advisor approved electives. Student exit surveys indicated that many students found this restrictive in that most of the required courses were irrelevant to both their research and their career interests. Faculty discussion concluded that the field of Mechanical Engineering has evolved such that many of those traditional areas (e.g. heat transfer, materials) did not cover many of these new emerging research areas. Therefore, the curriculum was changed to 24-credits of advisor-approved courses. This change

has allowed for flexibility in those cases, although many students still choose to take the traditional advanced classes anyway.

Are communication outcomes embedded in the SLOA Plan?

As of 2017 all Baccalaureate programs were required to embed the communication outcomes within their SLOA Plans, this is optional for non-Baccalaureate programs.

Embedded

Student Success

To access the Student Success Dashboard please sign into a UA computer with VPN connection (if not on campus). You will need your UA credentials and it is best accessed with the most updated version of Chrome, Edge, Firefox or Safari browsers; Internet Explorer is not supported. You will need to filter the data to see your programs. If you need assistance in finding the data for your programs, please contact your data liaison or [Julia Manfredini](#) in the PAIR office.

Data Liaisons

Each school or college has a team of Data Liaisons to help you analyze the data provided in the portal and may be able to help you see your data in multiple contexts. You can find a list of data liaisons on the resources page for Program Review.

The college or school level committee will also have access to this data with the goal that by providing these visualizations data availability will be increased.

Data supplied within the dashboard linked below is intended for Academic Program Review and not for any other purpose.

Student Success Data Dashboard

Previous Feedback

Feedback will be provided once you have completed a full or mid-cycle review.

Student Success Data Trends:

No change in majors, Decline in SCH, No change in pass rates, No change in persistence

If equity gaps were found in any of your disaggregated student success data, please explain how you plan to address those gaps. Please contact your data liaison or make an appointment with [Julia Manfredini](#) to learn more about analyzing your data.

No equity gaps were identifiable in the relatively low number of graduate students in the program. Although the gender ratio in the graduate program is reflective of that in the undergraduate program, there may be a slightly better ratio. However, the numbers are too small to reach a definitive conclusion. There was a slight decline in SCH in the last few years. We believe that is due to a confluence of two factors: reduced faculty number allows for less graduate courses to be offered combined with a greater availability of on-line courses available from UAA. The latter point commenced during the recent pandemic closures, and appears to remain afterwards.

Optional Data Explanation

Feel free to share more of your thoughts on the data provided.

Nothing more significant.

High Impact Practices

According to the AAC&U, High-Impact Educational Practices “have been widely tested and have been shown to be beneficial to college students from many backgrounds.” UAF is particularly interested in Undergraduate Research and/or Scholarly Activity because it is one of our mission fulfillment indicators, but all of these researched High-Impact Educational Practices should be reflected in your program’s student learning outcomes and curriculum.

Previous Feedback

Feedback will be provided once you have completed a full or mid-cycle review.

High-Impact Practices Used in this Program

Please use the following fields to discuss how your program is using the high-impact practices, successes and known issues and solutions, or ways you are considering incorporating them in the future. If you are not using any of the high-impact practices listed, please use the “Other or None of These,” field to share what your program is doing to help students be successful.

High Impact Practices that currently apply to your program:

None of these

Other or None of these (explain)

Submission

Submitter & Collaborator Names

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College or School Review Committee

The college or school committees set the tone for helping each program feel seen during this process. We have provided you with strength-based feedback tags to attach to this program review. Please select as many as applicable.

Overall Recommendations

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Explanation of Recommendations

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Student Learning Outcomes Assessment Feedback (tags)

Missing a direct measure, Strong alignment with SLOA plan

Student Learning Outcomes Assessment Feedback (narrative)

The committee thanks the program for having a relatively updated SLOA plan. While the program has clearly considered how the courses contribute to student outcomes, GPA, and annual progress reports for admitted students are generally considered sufficient as direct evidence of student learning. The MS Mechanical Engineering SLOA plan would be enhanced with the inclusion of an explanation of how assessments are used to evaluate students consistently, such as use of rubrics or other assessment tools in your full program review report.
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Profile Feedback

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Financial Feedback

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Student Success & Equity Feedback

The program provides reflective discussion regarding the slight changes in SCH, reduced faculty at UAF, in combination with more online course offerings from UAA, and the COVID 19 pandemic. It will be interesting to watch these trends and see if there is an upward trend in majors, student persistence, and degrees.

High-Impact Practices Feedback

Though few of the tags listed in the report template may not directly relate to the MS in Mechanical Engineering, it is important to note that Thesis/Graduate Research project is one important high-impact practice. In addition, there are many activities that can be considered as High Impact Practices. While the AAC&U's high-impact practices are intended for undergraduate programs, it is useful to consider whether there are equivalent practices that would foster graduate student engagement and success, such as cohort or community building, active mentorship, or professional development opportunities.

UNIVERSITY OF ALASKA FAIRBANKS
Student Learning Outcomes Assessment Plan
MS – Mechanical Engineering
College of Engineering and Mines (CEM)
May 7, 2021

Expanded Statement of Institutional Purpose	Intended Objectives/Outcomes	Assessment Criteria and Procedures	Implementation (what, when, who)
MISSION STATEMENT: To offer the highest quality, contemporary education at the undergraduate and graduate levels and to perform research appropriate to the technical needs of the State of Alaska, the nation and the world.	<i>Students will maintain adequate progress toward their degree objectives and acquire sufficient knowledge and skills to engage in successful research projects.</i>	1) Student GPA 2) Annual progress reports	Yearly review of student performance in graduate coursework as indicated by semester and cumulative graduate GPA by Graduate Advisory Committee (GAC) chair.
	<i>Students will be able to apply knowledge of mathematics, science, and engineering to the solution of engineering problems.</i>	1) Evaluation of thesis/project by the 3 (or more) members of the thesis advisory committee	1) GAC evaluation at time of thesis defense. 2) Post-defense student assessment by GAC chair.
GOAL STATEMENT: 1. To offer a mechanical engineering program designed to prepare for its graduates for careers at the professional level; 2. To provide continuing educational opportunities for graduate engineers; 3. To serve as a resource of technical knowledge for the state as well as the nation.	<i>Students will develop an ability to use modern engineering tools in the pursuit of their research and career objectives.</i>	1) Evaluation of thesis/project by the 3 (or more) members of the thesis advisory committee	1) GAC evaluation at time of thesis defense. 2) Post-defense student assessment by GAC chair.
	<i>Students will develop good oral and written communication skills.</i>	1) Evaluation of written thesis/project by the 3 (or more) members of the thesis advisory committee 2) Evaluation of oral thesis/project defense by the 3 (or more) members of the thesis advisory committee	1) Comprehensive and oral exams by the GAC. 2) Record of publication and presentation collected by GAC chair.

Submitted by: