

Actuarial Science (BS)

 Program-200

Annual Assessment Plan

1

2 **4.1 - Knowledge of key content**

Students will demonstrate the knowledge of key content for actuarial science majors. This will include: • Calculus • Algebra • Mathematics of Finance • Regression and Time Series • Probability Theory • Economics • Corporate Finance

Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

Measures - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

Targets - Percentage of students expected to earn a particular score on the measure.

Timeline - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
Major Field Test – ETS Mathematics Major Field test, taken by all mathematics seniors in the final month of the degree plan	75%ile	This will be evaluated annually at the same times as it is for the MATH/MATT majors. For reference, in each moving 5-year cluster, IMS mathematics' student results will rank in the upper quartile among all institutions participating.
SOA FM Exam, SOA P Exam	80%	Three-year aggregate pass rate will be evaluated annually for both exams. Since the first graduating class is projected for 2021, assessment of this will begin in 2024.

Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	70%	Assessed annually.
"Proficient"-level achievement or better across all "Developing"-level course learning outcomes linked to the PLO.	80%	Assessed annually.
"Proficient"-level achievement or better across all "Mastery"-level course learning outcomes linked to the PLO.	85%	Assessed annually.

4

Results - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. *Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

-Yes for upper-division MATH courses (87%-100%) and borderline for Calc sequence (~70%)

-Lower-level courses (e.g. MATH198, 196) indicate struggle.

-Difficult to parse MATH/ACSC results for upper-level courses



- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

-Reconsider textbook for MATH196 and HW assignments.
-STA links need to be created.
-Adjusting bars

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Appropriately adjust proficiency bar to a lower value than default
2. Develop consistency across Calculus courses with preference for exams
PROGRESS: Still need to do...

3 **4.2 - Scholarly skills**

Students will demonstrate the scholarly skills needed in this field. This will include demonstrating the ability to: • Design computer programs and interfaces • Use Calculus appropriately in modeling and analysis of problems • Understand and develop rigorous proofs in mathematics • Effectively model and solve financial problems including forecasting and risk • Explain the results of their mathematical work plainly in terms appropriate to their audience • Identify key assumptions of their analyses and justify the validity and quality of their models and results • Understand key financial models within corporations

Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

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Measures	Targets	Timeline
SOA FM Exam, SOA P Exam	80%	Three-year aggregate pass rate will be evaluated annually for both exams. Since the first graduating class is projected for 2021, assessment of this will begin in 2024.
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	70%	Assessed annually.
"Proficient"-level achievement or better across all "Developing"-level course learning outcomes linked to the PLO.	80%	Assessed annually.
"Proficient"-level achievement or better across all "Mastery"-level course learning outcomes linked to the PLO.	85%	Assessed annually.

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. *Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

71% success for 7 students for 21/22

Sample size (1-2 students per course) - 20/21

CIS, Accounting, and Finance course links do not exist so courses are not included.

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

-Uncertain if MATH196, 198, 496 were met because data is not available for 21/22 so not able to close loop.

-Communicate with Accounting, CIS, Econ and Finance about linkages.

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

1. Confirm that linking exists and is accurate for PLO2: MATH 496 (M), MATH 196 (I), MATH 198 (I)
2. Should course level objectives for MATH 196 and MATH 198 include a writing component?

PROGRESS: Still need to do

4 **4.3 - Proficiency in specialized skills**

Students will demonstrate proficiency in specialized skills needed in an entry level position in actuarial science: • Modeling economic trends • Developing financial models and understanding how they fit into the larger corporate picture • Use regression and time series analysis to make business projections and decisions • Articulate the probabilistic underpinnings of their work and be able to describe plainly the assumptions and limitations of their work

Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

Measures - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

Targets - Percentage of students expected to earn a particular score on the measure.

Timeline - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
SOA FM Exam, SOA P Exam	80%	Three-year aggregate pass rate will be evaluated annually for both exams. Since the first graduating class is projected for 2021, assessment of this will begin in 2024.
"Proficient"-level achievement or better across all "Introductory" course learning outcomes linked to the PLO.	75%	Assessed annually
"Proficient"-level achievement or better across all "Developing"-level course learning outcomes linked to the PLO.	80%	Assessed annually



Measures	Targets	Timeline
"Proficient"-level achievement or better across all "Mastery-level course learning outcomes linked to the PLO.	85%	Assessed annually

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. *Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

100% proficient (or above); sample size of 2. We question the sample size; we expected more data;

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

-Make linkages in STA 324. We need to determine why some of our links are not recognized.

PROGRESS: still need to do

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

N/A



5 **4.4 - Ability to discuss employment options**

Students will demonstrate an ability to discuss employment options within the actuarial field, as well as in related mathematical disciplines.

Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

Measures - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

Targets - Percentage of students expected to earn a particular score on the measure.

Timeline - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
MATH 196 assignments related to vocational and educational options in mathematics and actuarial science.	75%	Assessed annually
MATH 496 assignments related to vocational and educational options in mathematics and actuarial science.	85%	Assessed annually

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. *Please see the May Development section on the

Assessment of Student Learning website for suggestions about how to process assessment results.

The target was met in the first-year mathematics seminar (math 196), but we had no data from the senior seminar (math 496)

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

We need to determine why there is no data from math 496

- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

Courses were mapped to PLOs in revised program maps.

6 **4.5 - Faith**

Students will demonstrate a growing ability to meaningfully discuss the relationship between their faith and their chosen field.

Outcome(s)

- 1 Choose one or more accreditor outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 2 Choose one or more Institution outcome that aligns with your Program Learning Outcome.

There is no selected outcome.

- 3 **Please Enter The Following Information Below:**

Measures - Need to name specific course/ required experience plus exact exam items, assignments, rubric lines, etc. used for the analysis of performance on the PLO.

Targets - Percentage of students expected to earn a particular score on the measure.

Timeline - The frequency with which the department will analyze and report student performance on the PLO.

Measures	Targets	Timeline
MATH 195 assignments related to faith and vocation in actuarial science	75%	Assessed alternating years
MATH 496 assignments related to faith and vocation in actuarial science	85%	Assessed annually
MATH 350 assignments related to faith and vocation in actuarial science	75%	Assessed alternating years

- 4 **Results** - Please enter numeric results, indicating the number and percentage of student performance meeting the target. Record faculty discussion about the strengths and weaknesses in student performance. *Please see the May Development section on the Assessment of Student Learning website for suggestions about how to process assessment results.

The target was met for math 196 (4 data points), but there were no data points for math 496.

- 5 **Action Plans** - If student performance did not meet the target, identify specific improvement strategies to enact in the upcoming academic year. For example, add instruction on the topic, change an assignment, revise course requirements, revise objectives, identify additional support/resources for students.

We need to determine why there is no data for math 496



- 6 **Closing the Loop** - If you entered action plans for the PLO last year, they will appear in the box below. Please explain what you did to accomplish the action plan this year, re-examine student performance, and determine the success of your action plan.

Maps for MATH 196, MATH 496 have been completed and data linkages will be included next year.

PROGRESS: we have data for math 196 but not math 496

- 2 Holistic program improvement goals: Programs are expected to have at least one action plan to improve student learning annually. If you have not yet identified an action plan associated with this year's assessment results, or if the department has identified additional issues that require action plans, describe the specific, measurable action plan and its relation to evidence of student performance.

We are not able to parse out any specific action plan that would help improve student learning. The students that make it through the program do very well on the exams.

But what we need to work on is:

1. set up AEFIS lining properly
2. Try to improve recruiting and retention in the program

Assessment Rubric

- 1 **Process**

	1	2	3	4

	1	2	3	4
Is the plan being implemented faithfully and revised as needed?	<input type="radio"/> Assessment plan is not implemented.	<input checked="" type="radio"/> Most aspects of plan are being implemented or all aspects are implemented to some degree.	<input type="radio"/> Assessment plan is fully implemented.	<input type="radio"/> Plan is faithfully executed and modified/evaluated as needed.

2 Explanations:

Assessment plan is probably good, but assignment linking needs to be improved.

3 Engagement

	1	2	3	4
Are all relevant parties are meaningfully involved in the creation/revision, implementation, analysis, interpretation and learning improvement process?	<input type="radio"/> Limited involvement beyond chair/director	<input type="radio"/> All educators contributing to the curriculum are aware of process and results	<input checked="" type="radio"/> All educators contributing to the curriculum participate in conversations regarding the use of assessment data to improve student learning	<input type="radio"/> All relevant stakeholders (students, employers, alumni) are meaningfully involved in the creation/revision, implementation, analysis, interpretation, and/or improvement processes associated with this assessment plan.

4 Explanations:

Engagement from the department members is good.

5

Program Learning Objectives

	1	2	3	4
<p>Are the program learning objectives clear, measurable, aligned with ULOs/GLOs, and representative of the range of learning for that major/program?</p>	<p><input type="radio"/></p> <p>PLOs are problematic (vague, abstract, not aligned with ULOs/GLOs) or missing.</p>	<p><input type="radio"/></p> <p>PLOs are clear, mostly measurable, partially aligned with ULOs/GLOs.</p>	<p><input checked="" type="radio"/></p> <p>PLOs are clear, measurable, aligned with ULOs/GLOs, and represent a summary of the knowledge, skills, beliefs, and values that a graduate of this major/program should attain by completing the required curriculum, accounting for variations in learning outcomes due to tracks/concentrations</p>	<p><input type="radio"/></p> <p>PLOs are clear, measurable, aligned with ULOs/GLOs, and representative of the range of learning students achieve through completion of the program. The learning objectives provide a comprehensive view of the knowledge, skills, beliefs, and values that are important for a graduate of this major/program and account for variations in learning outcomes due to tracks/concentrations.</p>

6 Explanations:

PLOs are good. Assignment linking still needs work...

7

Measures

	1	2	3	4
<p>Are the instruments used to assess learning relevant to the objective? Do measures yield information/data you can use to drive improvement?</p>	<p><input checked="" type="radio"/></p> <p>Not all objectives have a measure identified. OR Measures do not directly connect to the objectives.</p>	<p><input type="radio"/></p> <p>All objectives have at least one direct measure. Measures connect to learning objectives superficially or tangentially and/or include learning other than stated objectives. Relies almost exclusively on the same form of assessment (survey, exam, project). Relies almost exclusively on data from a single source (course, program, activity).</p>	<p><input type="radio"/></p> <p>All objectives have at least one direct measure. Some objectives have multiple measures. Measures clearly connect to learning objectives. And two of the following four criteria: Objective measures more than one point in time (formative). Indirect measure are used strategically. Plan Incorporates different forms of assessment (survey, exam, project). Plan incorporates from a variety of sources (course, program, activity).</p>	<p><input type="radio"/></p> <p>Measures meet all of the following criteria: All objectives have at least one direct measure. Some objectives have multiple measures. Measures clearly connect to learning objectives. Objectives measured more than one point in time (formative). Indirect measures are used strategically. Plan incorporates different forms of assessment (survey, exam, project). Plan incorporates data from a variety of sources (course, program, activity).</p>





8

Explanations:

We are not getting enough meaningful data.

9

Targets

	1	2	3	4
<p>Are the targets based on professional standards and/or analysis of past student work? Are targets challenging and achievable?</p>	<p style="text-align: center;"></p> <p>Some targets are missing.</p>	<p style="text-align: center;"></p> <p>Targets are arbitrarily chosen or reflect minimal expectations.</p>	<p style="text-align: center;"></p> <p>Targets are challenging and achievable based on prior student performance, and reflect an appropriate level of performance.</p>	<p style="text-align: center;"></p> <p>Targets are challenging and achievable. Targets are based on professional standards and/or prior student performance. Targets are set at a level to inspire program improvement.</p>

10 Explanations:

We need to make sure we get the right data before we can set proper targets

11 Timeline

	1	2	3	4





	1	2	3	4
<p>Is the timeline for data collection manageable with sufficient data points to effectively inform decision making and program review?</p>	<p><input type="radio"/></p> <p>Not identified clearly for all measures.</p>	<p><input type="radio"/></p> <p>Clearly states semester/year for each objective/measure. Data analysis delayed from data collection. Time between collection points may not facilitate informed decision making.</p>	<p><input type="radio"/></p> <p>Clearly stated and manageable schedule. At least two data points for each objective per review cycle.</p>	<p><input checked="" type="radio"/></p> <p>Timeline for data collection is manageable and allows for continuous improvement with timely and meaningful decision making even before program review.</p>

12 Explanations:

No issues with timelines

13 **Action Plan**

	1	2	3	4

	1	2	3	4
<p>Is the department effectively examining and using assessment data to revise curriculum and pedagogy to support student learning?</p>	<p style="text-align: center;"></p> <p>Assessment data not collected/analyzed/used for decisions and/or results not documented in AEFIS.</p>	<p style="text-align: center;"></p> <p>Data collected, documented and discussed by department. Department reviewed confidence in measures and data as sufficient indicators of student performance. If data indicated changes were needed, action plans were developed in consultation with dean (e.g. improving outcomes, measures, targets, curriculum or pedagogy).</p>	<p style="text-align: center;"></p> <p>Data collected, documented and discussed by department. Department and dean confirmed confidence in measures and data as sufficient indicators of student performance. Action plans (e.g. improving outcomes, measures, targets, curriculum or pedagogy) developed in consultation with dean. If prior year data warranted action plans, the department implemented the changes.</p>	<p style="text-align: center;"></p> <p>Department collected and discussed follow-up data after the implementation of action plans in order to determine whether changes resulted in improvement or whether additional action is necessary. Data confirms effective curriculum and pedagogy for learning outcomes. Score of 4 should be assigned only if objectives, measures, targets and timeline all score a 4.</p>

14 Explanations:

We are using the data we have. Just need to ensure we need more reliable data.

15 **Dissemination**

	1	2	3	4

	1	2	3	4
<p>Is the department communicating learning objectives, results and improvements related to student learning to a wide audience?</p>	<p><input checked="" type="radio"/></p> <p>No record of assessment results and changes made as a result of assessment findings.</p>	<p><input type="radio"/></p> <p>The department/program retains records of assessment results and positive changes made as a result of assessment findings, and results are entered in assessment software system.</p>	<p><input type="radio"/></p> <p>The department/program retains records of assessment results and changes made as a result of assessment findings, results are entered in assessment software system, and assessment results and improvements are publicly posted.</p>	<p><input type="radio"/></p> <p>The department/program retains records of assessment results and changes made as a result of assessment findings, and results are entered in assessment software system. Assessment results and improvements are publicly posted and shared proactively with faculty, prospective students, employers and alumni in ways that facilitate their discussion.</p>

16 Explanations:

What "wide audience" are we supposed to communicate to?

Additional Feedback

1 Please enter any additional feedback for changes that should be made:

Niklas mentions some Acct, Econ, & Finance courses that are missing links for Outcome 4.2. But in the assessment plan for this major, I don't see any courses outside of {CIS, MATH, PHYS, STAT} in the curriculum map.

Other comments included in the dept annual review template

CLOSE AND EXIT