

Student Learning Summary Form AY2015-16

Due to your dean by June 1

Due from dean to assessment office by June 15

Degree Program Name: MS in Mathematics Contact Name and Email Henjin Chi, Henjin.Chi@indstate.edu

Before you complete the form below, review your outcomes library and curriculum map to ensure that they are accurate and up to date. If not, you may submit a new version along with this summary.

Part One

<p>a. What learning outcomes did you assess this year?</p> <p>If this is a graduate program, indicate the Graduate Student Learning Outcome* each outcome aligns with.</p>	<p>b. (1) What method(s) did you use to determine how well your students attained the outcome? (2) In what course or other required experience did the assessment occur?</p>	<p>c. What expectations did you establish for achievement of the outcome?</p>	<p>d. What were the actual results?</p>	<p>e. (1) Who was responsible for collecting and analyzing the results? (2) How were they shared with the program's faculty?</p>
<p>Objective 1: Students will learn to use and construct mathematical proofs. Outcome 1.1: Students will construct direct proofs. G4, G5</p>	<p>Measure: problems on Homework or Quiz or Exam Course: Math 526, 530, 531, 612, 615, 640, 646</p>	<p>Target: 80% of the students completing and passing the course will be assessed by the committee as meeting or exceeding expectations</p>	<p>More than 80% of the work by students are correct</p>	<p>Spring 2015, Dr. Hutchingson, Math 531, Dr. Hopkins, Math 590, Dr. Chi, Math 650. Fall 2015, Dr. Oberste-Vorth, Math 530, Dr. Frost, Math 512, Dr. Zhao. Spring 2016, Dr. Hopkins. Math 650</p>
<p>Objective 1: Students will learn to use and construct mathematical proofs. Outcome 1.2: Students will construct proofs by contradiction. G4, G5</p>	<p>Measure: problems on Homework or Quiz or Exam Course: Math 526, 530, 531, 612, 615, 640, 646</p>	<p>Target: 80% of the students completing and passing the course will be assessed by the committee as meeting or exceeding expectations</p>	<p>More than 80% of the work by students are correct</p>	<p>Spring 2015, Dr. Hutchingson, Math 531, Dr. Hopkins, Math 590, Dr. Chi, Math 650. Fall 2015, Dr. Oberste-Vorth, Math 530, Dr. Frost, Math 512, Dr. Zhao. Spring 2016, Dr. Hopkins. Math 650</p>
<p>Objective 1: Students will learn to use and construct mathematical proofs. Outcome 1.3: Students will construct proofs by induction. G4, G5</p>	<p>Measure: problems on Homework or Quiz or Exam Course: Math 526, 530, 531, 612, 615, 640, 646</p>	<p>Target: 80% of the students completing and passing the course will be assessed by the committee as meeting or exceeding expectations.</p>	<p>More than 80% of the work by students are correct</p>	<p>Spring 2015, Dr. Hutchingson, Math 531, Dr. Hopkins, Math 590, Dr. Chi, Math 650. Fall 2015, Dr. Oberste-Vorth, Math 530, Dr. Frost, Math 512, Dr. Zhao. Spring 2016, Dr. Hopkins. Math 650</p>

<p>Objective 1: Students will learn to use and construct mathematical proofs. Outcome 1.4: Students will construct examples and counterexamples. G4, G5</p>	<p>Measure: problems on Homework or Quiz or Exam Course: Math 526, 530, 531, 612, 615, 640, 646</p>	<p>Target: 80% of the students completing and passing the course will be assessed by the committee as meeting or exceeding expectations.</p>	<p>More than 80% of the work by students are correct</p>	<p>Spring 2015, Dr. Hutchingson, Math 531, Dr. Hopkins, Math 590, Dr. Chi, Math 650. Fall 2015, Dr. Oberste-Vorth, Math 530, Dr. Frost, Math 512, Dr. Zhao. Spring 2016, Dr. Hopkins. Math 650</p>
<p>Objective 2: Students will communicate mathematics effectively. Outcome 2.1: Students will state mathematical results accurately for a research problem. G4, G5 Outcome 2.2: Students will conduct an independent investigation of their own problems. G4, G5 Outcome 2.3: Students will make an oral presentation of their own research report that is accessible to their peers. G1 Outcome 2.4: Students will make a detailed written report of their research. G1, G2</p>	<p>Measure: Student interview with course professor. Courses: Math 695</p>	<p>Target: 80% of the students completing and passing the course will be assessed by the committee as meeting or exceeding expectations.</p>	<p>The students in the math 695 class are working on their research paper.</p>	<p>Spring 2015, Dr. . Oberste-Vorth Fall 2015, Dr. Chi Spring 2016, Dr. Chi</p>
<p>Objective 3: Students will demonstrate that they are ready to use their mathematical skills in a post-master's position. Outcome 3.1: Students will be polled after graduation to determine whether they planned to pursue further studies, had an offer of employment, etc. G1, G2</p>	<p>Measure: Students will be interviewed by the department chair or the chair's representative.</p>	<p>Target: 80% of the students completing and seminar will meet expectations (be happy with their placement) or exceed expectation (be very happy with their placement)</p>	<p>There are one graduate student graduating in Spring 2016.</p>	<p>Spring 2016, Dr. Brown</p>

<p>Objective 3: Students will demonstrate that they are ready to use their mathematical skills in a post-master's position.</p> <p>Outcome 3.2: Students will demonstrate mastery of mathematics and related content that will allow them to pursue careers utilizing their knowledge. G1, G2</p>	<p>Measure: grade point average in mathematics and related coursework</p>	<p>Target: 80% of the graduating students will meet expectations (at least 3.25 but less than 3.75) or exceed expectation (at least 3.75)</p>	<p>The graduating student is exceed expectation</p>	
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* See <https://www2.indstate.edu/graduate/forms/review.pdf>.

If you would like to report on more than three outcomes, place the cursor in the last cell on the right and hit "tab" to add a new row.

Notes

- a. Use your outcomes library as a reference.
- b. Each outcome must be assessed by at least one direct measure (project, practica, exam, performance, etc.). If students are required to pass an examination to practice in the field, this exam must be included as one of the measures. At least one of the outcomes must use an indirect measure (exit interview, focus group, survey, etc.). Use your curriculum map to correlate outcomes to courses.
- c. Identify the score or rating required to demonstrate proficiency (e.g., Students must attain a score of "3" to be deemed proficient; at least 80% of students in the program will attain this benchmark."
- d. Note what the aggregate level of proficiency actually was and the number of students included in the cohort or sample (e.g., "85% of the 25 students whose portfolios were reviewed met the established benchmark).
- e. This may be a specific individual, a position (e.g., assessment coordinator), or a group such as the department assessment committee. Minutes should reflect that results are shared with members of the department at least annually.

Part Two

In no more than one page, summarize 1) the discoveries assessment has enabled you to make about your students' learning, the curriculum, departmental processes, and/or the assessment plan itself; 2) the changes and improvements you have made or will make in response to these discoveries and/or the coordinator's feedback on the previous summary; and 3) what your assessment plan will focus on in the coming year.

If you would like to reference any supporting materials (departmental meeting minutes, detailed assessment results, etc.), please provide the URL at which they can be found.

The Mathematics faculty finalized major changes to the master's program in mathematics. These changes should facilitate a growth in our enrollments by making the program more modern and more flexible. In addition, the graduate courses will be offered synchronously online and on campus with the use of "smart classrooms." The faculty hope that this change will also increase our enrollments in the program.

Student Learning Summary Report Rubric :: Office of Assessment & Accreditation :: Indiana State University

Degree Program: MS in Mathematics Date: 8.24.16

	Level 0 – Undeveloped	Level 1 – Developing	Level 2 – Mature	Level 3 – Exemplary
1. Student Learning Outcomes	<input type="checkbox"/> No outcomes are identified. <input type="checkbox"/> No Curriculum Map was provided.	<input type="checkbox"/> Outcomes were identified. <input type="checkbox"/> Some of the outcomes are specific, measurable, student-centered, program-level outcomes. <input type="checkbox"/> A Curriculum Map was provided.	<input checked="" type="checkbox"/> Outcomes are specific, measurable, student-centered, program-level outcomes. <input type="checkbox"/> Outcomes at least indirectly support Foundational Studies Learning Outcomes or the Graduate Learning Goals. <input type="checkbox"/> The Curriculum Map identifies where/to what extent each outcome is addressed. <input type="checkbox"/> At least one outcome was assessed in this cycle.	<input type="checkbox"/> Outcomes are specific, measurable, student-centered program-level outcomes that span multiple learning domains. <input checked="" type="checkbox"/> Outcomes directly integrate with Foundational Studies Learning Outcomes or the Graduate Learning Goals. <input type="checkbox"/> Outcomes reflect the most important results of program completion (as established by an accreditor or other professional organization). <input type="checkbox"/> Learning outcomes are consistent across different modes of delivery (face-to-face and online.) <input type="checkbox"/> Outcomes are regularly reviewed (and revised, if necessary) by the faculty and other stakeholders. <input checked="" type="checkbox"/> The Curriculum Map identifies where/to what extent each outcome is addressed and offers evidence that students have sufficient opportunity to master the associated learning outcomes. <input checked="" type="checkbox"/> Two or more outcomes were

				assessed in this cycle.
<p>2. Measures & Performance Goals</p>	<input type="checkbox"/> No measures are provided. <input type="checkbox"/> No goals for student performance are identified.	<input type="checkbox"/> Measures are provided, but some are vague and/or do not clearly assess the associated outcomes. <input type="checkbox"/> Measures are primarily indirect. <input type="checkbox"/> Measures include course and/or assignment grades, but there is no evidence that grades are calibrated to the outcomes. <input type="checkbox"/> Performance goals are identified, but they are unclear or inappropriate.	<input checked="" type="checkbox"/> At least one direct measure was provided for each outcome. <input checked="" type="checkbox"/> Some information is provided to suggest that measures are appropriate to the outcomes being assessed. <input type="checkbox"/> Measures include course and/or assignment grades, and general information is provided to indicate that grades are calibrated to the outcomes. <input checked="" type="checkbox"/> Clear and appropriate standards for performance are identified. <input type="checkbox"/> Mechanisms (rubrics, checklists, criterion-referenced exams, etc.) were provided.	<input type="checkbox"/> Multiple measures were provided, and a majority are direct. <input type="checkbox"/> Detailed information is provided to show that measures are appropriate to the outcomes being assessed. <input type="checkbox"/> Measures include course and/or assignment grades, and specific evidence is provided to demonstrate that grades are calibrated to the outcomes. <input type="checkbox"/> Clear and appropriate standards for performance are identified and justified. <input type="checkbox"/> If students are required to pass a certification or licensure exam to practice in the field, this was included as a measure. <input type="checkbox"/> Measures assess some high impact practices (internships, capstone course projects, undergraduate research, etc.) <input type="checkbox"/> Some measures allow performance to be gauged over time, not just in a single course. <input type="checkbox"/> Mechanisms (rubrics, checklists, criterion-referenced exams, etc.) were provided that demonstrate that the measure provides clear evidence of what students know/can do.

				<input type="checkbox"/> If a measure is used to assess more than one outcome, a clear explanation is offered to substantiate how this is effective.
3. Results	<input type="checkbox"/> No data are being collected. <input type="checkbox"/> No information is provided about the data collection process. <input type="checkbox"/> No results are provided. <input type="checkbox"/> Students are meeting few of the performance standards set for them.	<input checked="" type="checkbox"/> Some data are being collected and analyzed. <input checked="" type="checkbox"/> Some results are provided. <input checked="" type="checkbox"/> Insufficient information is offered to demonstrate that data collection, analysis, and interpretation processes are valid. <input checked="" type="checkbox"/> Students are achieving some of the performance standards expected of them.	<input type="checkbox"/> Data are being collected and analyzed. <input type="checkbox"/> Results are provided. <input type="checkbox"/> Some information is offered to demonstrate that data collection, analysis, and interpretation processes are valid and meaningful. <input type="checkbox"/> Students generally are achieving the performance standards expected of them.	<input type="checkbox"/> Clear, specific, and complete details about data collection, analysis, and interpretation of results are provided to demonstrate the validity and usefulness of the assessment process. <input type="checkbox"/> Students generally are achieving the performance standards expected of them and demonstrate continuous improvement on standards they have yet to achieve/achieve less well. <input type="checkbox"/> If students are required to pass a certification or licensure exam to practice in the field, the pass rate meets the established benchmark.
4. Engagement & Improvement	<input type="checkbox"/> No one is assigned responsibility for assessing individual measures. <input type="checkbox"/> Assessment primarily is the responsibility of the program chair. <input checked="" type="checkbox"/> No improvements (planned or actual) are identified. <input checked="" type="checkbox"/> No reflection is offered about previous results or	<input type="checkbox"/> The same faculty member is responsible for collecting and analyzing most/all assessment results. <input checked="" type="checkbox"/> It is not clear that results are shared with the faculty as a whole on a regular basis. <input type="checkbox"/> Plans for improvement are provided, but they are not specific and/or do not clearly connect to the results.	<input checked="" type="checkbox"/> Multiple faculty members are engaged in collecting and analyzing results. <input type="checkbox"/> Results regularly are shared with the faculty. <input type="checkbox"/> The faculty regularly engages in meaningful discussions about the results of assessment. <input type="checkbox"/> These discussions lead to the development of specific, relevant plans for improvement.	<input type="checkbox"/> All program faculty members are engaged in collecting and analyzing results. <input type="checkbox"/> Faculty regularly and specifically reflect on students' recent achievement of performance standards and implement plans to adjust activities, performance goals, outcomes, etc. according to established timelines. <input type="checkbox"/> Faculty and other important

	plans.	<input type="checkbox"/> Little reflection is offered about previous results or plans.	<input type="checkbox"/> Improvements in student learning have occurred as the result of assessment.	<p>stakeholders reflect on the history and impact of previous plans, actions, and results, and participate in the development of recommendations for improvement.</p> <input type="checkbox"/> Continuous improvement in student learning occurs as the result of assessment.	<input type="checkbox"/> Outcomes and results are easily accessible to stakeholders on/from the program website.	<input type="checkbox"/> Assessment is integrated with teaching and learning.
Overall Rating	<input type="checkbox"/> Level 0 – Undeveloped	<input checked="" type="checkbox"/> Level 1 - Developing	<input type="checkbox"/> Level 2 – Mature	<input type="checkbox"/> Level 3 – Exemplary		

COMMENTS

Strengths, Concerns, Recommendations for Improvement

1. Learning Outcomes

As is the case with the undergraduate program, this program's outcomes are too narrow to be program-level outcomes. Their overarching objectives, however, may be suitable outcomes (if you believe they represent the most important categories of knowledge and skills graduates should possess). If you use the objectives as your outcomes, the items labeled "outcomes" can be moved to column b and used to describe the assessment methods. For example:

Outcome 1: Construct and use mathematical proofs.

Method of Assessment #1: Students construct direct proofs in Math 526, 530....

2. Measures & Performance Goals

The program uses a variety of measures to ascertain students' mastery of the outcomes, including problems, tests, a written report and presentation, and also an exit interview. In conjunction with column a, b provides sufficient evidence that the measures are appropriate to their related outcomes. The expectations for achievement (80% will meet or exceed standards) appear to be appropriate. However, I would like to know more about how you determine whether or not students meet expectations, particularly on the research paper and presentation. As you know, your assessment plan now must include an indirect measure. You already have one in place with the exit interview.

3. Results

The report offers the same broad summary about student performance (More than 80% of the work is correct) for each outcome. Please provide more detail as evidence that results really were calculated.

4. Engagement & Improvement

Multiple faculty members collect assessment results, but they do not appear to have been shared or discussed with the larger faculty recently. Again, I appreciate that you are trying to get back up to speed with your assessment program, but you need to provide more detail and analysis of student learning and plans for improvement in next year's report.

Thanks!