

UNDERGRADUATE/ FIRST PROFESSIONAL DEGREE/GRADUATE PROGRAM
ASSESSMENT OF STUDENT LEARNING OUTCOMES - INVENTORY OF EDUCATIONAL EFFECTIVENESS INDICATORS

SECTION I: ASSESSMENT REPORT

Assessment of programmatic student learning outcome(s)

Program and degree(s) offered: Mathematics B.A. and B.S.	Curriculum map attached: YES Yes; please note any changes in outcomes since the last report: _____ No; please explain:
Program assessed in <i>this</i> report: Mathematics B.A. and B.S.	
Department Chair: Prof. James Baglama	
Form completed by: Prof. Orlando Merino and Prof. Michael Barrus	
Reporting Year: 2018	
URL for published learning outcomes (please complete URL): http://www.math.uri.edu/undergraduate-program-assessments/	

Outcome(s) Examined	Data/Evidence	Evaluation Process	Results & Reflection	Recommendations & Planning
<p>Which program <u>student learning outcome(s)</u> was assessed during <i>this</i> reporting period? <u>Provide:</u></p> <ul style="list-style-type: none"> the question about student learning being asked with regard to this outcome 	<p>For each outcome, indicate what <u>data/evidence*</u> (other than grades) were used to determine the impact of the change? (Direct evidence is required; indirect evidence is optional.) <u>Provide:</u></p> <ul style="list-style-type: none"> type of artifact/evidence of student learning* sample (include # of students sampled; sample size relative to the population; which semesters; where in curriculum the outcome was assessed (in course(s), section(s) or a program requirement)) 	<p>What method(s) or process(es) were used to <u>evaluate</u> student work? <u>Provide:</u></p> <ul style="list-style-type: none"> evaluation tool or instrument used to assess student work (attach)** expected level of student achievement of the outcome who applied the evaluation tool and how was it used*** who interpreted the results of the evaluation process**** 	<p>What were the <u>results</u> of the analysis of the assessment data? <u>Provide:</u></p> <ul style="list-style-type: none"> quantitative results, include a comparison of expected level of student achievement to actual level of student achievement qualitative results if/when appropriate analysis of the results including the identification of patterns of weakness or strength reflection and conclusions about results 	<p>Are there <u>recommendations</u> for change based on the results? <u>If yes:</u> <u>Provide:</u></p> <ul style="list-style-type: none"> recommendation(s) for change(s) planned timeline for program to implement the change(s) timeline for program to assess the impact of the change(s) <p><u>If no</u>, program expectations met: <u>Indicate:</u> N/A</p>
We assessed Outcome 1	Selected questions in Final Exams of two courses MTH451 (3 sections) and MTH452 (1 section), over 2 semesters F17 and S18.	Rubric is attached for outcome 1. Expected 80% of students would meet expectations with score 2 or 3, and 60% would exceed expectations with score of 3. Data from 3 sections of MTH451 and 1 section of MTH452 was gathered (respectively, 10, 10, 9 and 7 students). The evaluated Outcome 1 includes both calculus and linear algebra, but only Calculus was evaluated. For this purpose,	Overall, expectations for Outcome 1 (Calculus part) were met at the 73% level (80% expected), with 60% exceeding expectations (60% expected). If the data is divided according to topic (differential, integral and multivariable calculus), then the expectations were met for Differential Calculus (33/41 = 85.3%) and Multivariable Calculus (44/53 = 83%), and were not met for Integral Calculus (7/10	<p>Recommendations:</p> <ol style="list-style-type: none"> Use additional instruments other than questions in the final exam, such as projects or assignments. Target separately BA and BS for outcome evaluation

* For example: embedded questions in assignments or exams, presentations, thesis proposals, comprehensive exams, performances, capstone course, portfolio review, research paper, etc.

**For example: rubric, juried form, external evaluation

***For example: # of participating faculty, assessment committee, major professor, research/practicum supervisor (*best practice is multiple participants*)

****For example: # of participating faculty, assessment committee, chair, program director (*best practice is multiple participants*)

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		<p>the outcome was subdivided into three items, namely differential calculus, integral calculus, and multivariable calculus. Each of the selected exam questions was assigned to exactly one of these categories.</p> <p>M. Barrus and O. Merino applied to tool to exams, but scoring was independent of marks given by instructor to each student. Interpretation was done by M. Barrus and O. Merino.</p>	= 70%.	<p>3. Start a discussion in the undergraduate committee on the role of Linear Algebra in the major.</p> <p>4. Evaluate other outcomes, namely Outcomes 3,5,6</p> <p>Timeline: We will have an undergraduate committee discussion in Fall '18 to discuss outcomes list, review the Curriculum Map, select courses and instruments for outcome evaluation, and to discuss role of Liner Algebra in the major(s). Any agreed plan will be implemented immediately after the meeting.</p>
<i>(add more lines as needed)</i>				

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Rubric for Outcome 1 and expected level of achievement

Outcome 1 Graduates demonstrate a command of fundamental concepts of calculus and linear algebra to acquire a solid foundation for advanced courses and applications

	1	2	3
	Unsatisfactory	Satisfactory	Exemplary
Differential calculus	Makes major mistakes or omissions when finding a derivative	Evaluates a derivative correctly except for minor mistakes or omissions	Correctly applies appropriate rules to evaluate a derivative
Integral calculus	Makes major mistakes or omissions when determining the convergence or divergence or sum of a series.	Makes minor mistakes or omissions in determining the convergence or divergence or sum of a series.	Correctly applies appropriate rules to establish convergence or divergence, or evaluate, a given series.
Multivariable calculus	Makes major mistakes or omissions when setting up and/or evaluating a multiple integral.	Makes minor mistakes or omissions in setting up and/or evaluating a multiple integral.	Correctly sets up and evaluates a multiple integral.

Expectation: It is expected that 80% of students will score 2 or 3, and 60% will score 3.

Mathematics Undergraduate Programs Outcomes Assessment - May 2018

	Score 1 Unsatisfactory	Score 2 Satisfactory	Score 3 Exemplary	Total
Differential Calculus	6	6	29	41
Integral Calculus	3	6	1	10
Multivariable Calculus	9	12	32	53
Total	18	24	62	104
%	17%	23%	60%	100%

MTH 451-01 Fall 2017

Student	Q8b	Q9A	Q9B	Q11A
2996	2	2	3	3
1175	2	1	2	3
3282	1	1	1	3
1413	2	2	3	3
9096	3	3	3	3
7895	3	2	2	3
2967	3	2	1	3
4762	2	2	1	1
2530	2	1	1	1
7295	2	2	3	3

MTH451-02 Fall 2017

Student	Q6a	Q6b	Q6c
4635	3	3	2
2912	3	1	2
4410	3	3	2
4604	3	3	3
833	3	1	2
6670	3	2	3
4363	3	2	3
0186	3	1	2
0864	3	2	2

MTH451-01 Spring 18

Student	Q6a	Q6b	Q6c
4434	3	3	2
6128	3	3	3
6658	3	3	3
1160	3	2	3
2931	3	3	3
8899	3	3	3
3467	3	2	3
5490	3	2	3
5439	1	1	1

MTH452-01 Spring 18

Student	Q1	Q2	6a or 10
1289	0	3	2
9095	3	0	3
0833	0	3	3
4762	0	1	2
1128	3	2	3
2530	3	3	2
2704	1	3	3