

# 2017-2018 Assessment Cycle COS\_Mathematics PhD

## Mission (due 12/4/17)

### University Mission

**The University of Louisiana at Lafayette offers an exceptional education informed by diverse worldviews grounded in tradition, heritage, and culture. We develop leaders and innovators who advance knowledge, cultivate aesthetic sensibility, and improve the human condition.**

### University Values

**We strive to create a community of leaders and innovators in an environment that fosters a desire to advance and disseminate knowledge. We support the mission of the university by actualizing our core values of equity, integrity, intellectual curiosity, creativity, tradition, transparency, respect, collaboration, pluralism, and sustainability.**

### University Vision

**We strive to be included in the top 25% of our peer institutions by 2020, improving our national and international status and recognition.**

### College / VP and Program / Department Mission

#### Mission of College or VP-area

*Provide the mission for the College or VP-area in the space provided. If none is available, write "None Available in 2017-2018."*

Our mission is to serve our students, the citizens of Louisiana, the nation, and the world, through innovative and stimulating educational experiences and compelling research initiatives that create knowledge, deepen our basic understanding of the world around us, further economic development, and enhance quality of life. In support of our mission, The College of Sciences seeks to:

Develop broad-thinking students into mature, ethical professionals, scientists, and researchers with the necessary creativity, critical thinking, and problem solving skills required to make significant contributions to industry, government, and the academic sector.

Recruit and support top-notch teaching and research faculty engaged in scientific endeavors that are recognized nationally for their relevance and impact.

Enrich scientific research and education through on-campus collaborations, multidisciplinary programs, large-scale multi-institution initiatives, as well as partnerships with government and industry.

Foster scientific literacy within the University, the citizens of Louisiana, and the nation by providing stimulating courses for our students and by partnering with educators at the K-12 and community college level.

Provide leadership in the translation and application of research into practical solutions that will benefit our local community, the state of Louisiana, our natural environment, industries of the Gulf Coast region, and society as a whole.

The Ray P. Authement College of Sciences will emerge as a preeminent college of sciences in the Southeast and Gulf Coast region of the United States. The College will be recognized nationally for its innovative education, scholarly research activities addressing our nation's grand challenges, and for its diverse student body with exemplary academic achievements, leadership abilities, and global perspectives.

### **Mission of Program / Department**

*Provide the program / department mission in the space provided. The mission statement should concisely define the purpose, functions, and key constituents. If none is available, write "None Available in 2017-2018."*

The mission of the graduate program is to educate and prepare students to make original contributions to mathematical sciences and to apply their knowledge to solve the important problems facing society. The goal of the Ph.D. program is to provide the student with a preparation that has general breadth, and depth in a particular topic, that will enable the student to engage in (i) original research in the mathematical sciences; (ii) advanced application of mathematical knowledge and techniques in private industry or professional settings; (iii) teach advanced mathematics at the college and graduate level. In addition, the graduate will have already contributed original research to the corpus of mathematical knowledge.

Our graduate program is committed to the following core values: Excellence in teaching and research; discovery of new knowledge; diversity in our students; professional and personal integrity. Our graduate program has been a central part of the teaching and research mission of our department, and is an important component of our long term planning. Our commitment to graduate education has enhanced our reputation. Our focus on excellent education is consistent with the College and University's focus on facilitating quality teaching and learning. Our focus on students' preparation is consistent with the College and University's focus on serving and preparing our students. Our mission and values are consistent with those for graduate programs in mathematics nationwide.

### **Attachment (optional)**

*Upload any documents which support the program / department assessment process.*

## **Assessment Plan (due 12/4/17)**

### **Assessment Plan (Goals / Objectives, Assessment Measures and Criteria for Success)**

#### **Assessment List**

Goal/Objective	Breadth of knowledge(Imported)		
Legends	SLO - Student Learning Outcome/Objective (academic units);		
Standards/Outcomes			
Assessment Measures	<b>Assessment Measure</b>	<b>Criterion</b>	<b>Attachments</b>
	Direct - Comprehensive	To demonstrate breadth of knowledge, each candidate is required to pass three written	

	Exam (graduate level)	comprehensive examination in a variety of content areas. Each exam is prepared and evaluated by a committee made up of at least three mathematics graduate faculty members who have expertise in that particular field. The committee follows a departmental rubric in evaluating the candidate's performance. Success is defined as at least 75% of students who attempt written comprehensive exams in a calendar year will be given a rating which is at least satisfactory in accordance with the departmental rubrics.	

Goal/Objective	Depth of knowledge(Imported)		
Legends	SLO - Student Learning Outcome/Objective (academic units);		
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Goal/Objective	Presentation of Mathematical Research - Thesis defense(Imported)								
Legends	SLO - Student Learning Outcome/Objective (academic units);								
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Goal/Objective	Ability to conduct original research(Imported)		
Legends	SLO - Student Learning Outcome/Objective (academic units);		
Standards/Outcomes			
Assessment Measures			

	<b>Assessment Measure</b>	<b>Criterion</b>	<b>Attachments</b>
	Direct - Thesis	A doctoral candidate in the degree program will demonstrate the ability to contribute to the overall body of mathematical knowledge by successfully carrying out original research in the area of specialty and incorporating research into a Ph.D. dissertation.	

### **Program / Department Assessment Narrative**

**The primary purpose of assessment is to use data to inform decisions and improve programs (student learning) and departments (operations); this is an on-going process of defining goals and expectations, collecting results, analyzing data, comparing current and past results and initiatives, and making decisions based on these reflections. In the space below, describe the program's or department's overall plan for improving student learning and/or operations (the "assessment plan"). Consider the following:**

- 1) What strategies exist to assess the outcomes?**
- 2) What does the program/department expect to achieve with the goals and objectives identified above?**
- 3) How might prior or current initiatives (improvements) influence the anticipated outcomes this year?**
- 4) What is the plan for using data to improve student learning and/or operations?**
- 5) How will data be shared within the Program/Department (and, where appropriate, the College/VP-area)?**

### **Assessment Process**

For exams, defenses, and comprehensive exams, the outcomes are assessed through feedback from examiners on the performance of the students. By requiring these activities of the students, the Department ensures that the student has retained the knowledge gained through their time in the program, and they are able to synthesize it into a coherent whole.

This preparation will allow the students to teach at an advanced level (high school and undergraduate), an activity that is most successful when the teacher has a deep understanding of the subject matter and is knowledgeable about its connections with other areas; to apply the knowledge to problem-solving in the real world; or to continue through to either research institutions or academia at the Graduate level, which requires the ability to conduct original research.

Prior outcomes have highlighted certain issues, most particularly that there is not always consistency in expected level from year to year in the comprehensive exams. The Department is working to establish solid baselines that can be used (and slowly modified as needed). We expect this data will also inform the content of the basic courses, thus ensuring a more uniform level among graduates. Students are also receiving stronger feedback on their performance and the

expectations the program has of them.

Data on the performance of students is shared with the Dean of the College and with members of the Department during each start-of-the-semester meeting; for those courses which have not enjoyed a stable level of expectations, more active feedback to the professors is already being undertaken and will continue throughout the academic year.

## Results & Improvements (due 9/15/18)

### Results and Improvement Narratives

#### Assessment List Findings for the Assessment Measure level for Breadth of knowledge(Imported)

Goal/Objective	Breadth of knowledge(Imported)													
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		the departmental rubrics. been met yet? Not met			
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**Assessment List Findings for the Assessment Measure level for Depth of knowledge(Imported)**

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		yet? Met			
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**Assessment List Findings for the Assessment Measure level for Presentation of Mathematical Research - Thesis defense(Imported)**

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		have a paper accepted for publication within the same time-frame. been met yet? Met			
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**Assessment List Findings for the Assessment Measure level for Ability to conduct original research(Imported)**

Goal/Objective	Ability to conduct original research(Imported)				
Legends	SLO - Student Learning Outcome/Objective (academic units);				
Standards/Outcomes					
Assessment Measures	<b>Assessment Measure</b>		<b>Criterion</b>		
	Direct - Thesis	A doctoral candidate in the degree program will demonstrate the ability to contribute to the overall body of mathematical knowledge by successfully carrying out original research in the area of specialty and incorporating research into a Ph.D. dissertation.			
Assessment Findings	<b>Assessment Measure</b>	<b>Criterion</b>	<b>Summary</b>	<b>Attachments of the Assessments</b>	<b>Improvement Narratives</b>
	Direct - Thesis	Has the criterion A doctoral candidate in the degree program will demonstrate the ability to contribute to the	All three candidates who completed their work during the cycle had published original research (which became part of		- Assessment Process: Continuous monitoring: Expectation is clear and all faculty engage with students to make sure it is met. We will continue

		overall body of mathematical knowledge by successfully carrying out original research in the area of specialty and incorporating research into a Ph.D. dissertation . been met yet? Met	their dissertation) while conducting the research and prior to completing the program. Two of them had submitted at least two papers (with at least one accepted).		monitoring to ensure continued success in this item.
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## Reflection (Due 9/15/18)

### Reflection

The primary purpose of assessment is to use data to inform decisions and improve programs and operations; this is an on-going process of defining goals and expectations, collecting results, analyzing data, comparing current and past results and initiatives, and making decisions based on these reflections. Recalling this purpose, respond to the questions below.

#### 1) How were assessment results shared in the program / department?

*Please select all that apply. If "other", please use the text box to elaborate.*

Distributed via email (selected)

Presented formally at staff / department / committee meetings (selected)

Discussed informally

Other (explain in text box below)

#### 2) How frequently were assessment results shared?

Frequently (>4 times per cycle)  
 Periodically (2-4 times per cycle) (selected)  
 Once per cycle  
 Results were not shared this cycle

**3) With whom were assessment results shared?**

*Please select all that apply.*

Department Head  
 Dean / Asst. or Assoc. Dean  
 Departmental assessment committee (selected)  
 Other faculty / staff (selected)

**4) Consider the impact of prior applied changes. Specifically, compare current results to previous results to evaluate the impact of a previously reported change. Demonstrate how the use of results improved student learning and/or operations.**

The results on the oral examination have improved overall, as we have tried to create a web of peer support for the exams which students take advantage of. Better coordination with faculty has also helped to clarify expectations and requirements.

The issues with the written comprehensive are more cyclical in nature. Two ill-prepared students in this case were sufficient to tip the results from "met" to "not met". Providing better access to students to prior exams and ensuring that comprehensive committee set reasonable expectations will be a priority for the coming cycle.

**5) Over the past three assessment cycles, what has been the overall impact of "closing the loop"? Provide examples of improvements in student learning, program quality, or department operations that are directly linked to assessment data and follow-up analysis.**

We have improved the results on the Oral Examination, with students generally passing the oral examination on the first try, and attempting the exam at a more uniform point in the program (where previously the variation was much greater).

**Attachments (optional)**

*Upload any documents which support the program / department assessment process.*