Ph.D. in Astronomy Academic Assessment Plan 2012-2013

College of Liberal Arts and Sciences
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Office of the Provost

University of Florida

Institutional Assessment

Continuous Quality Enhancement

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Academic Assessment Plan for Ph.D. in Astronomy

College of Liberal Arts and Sciences

A. Mission

The overall mission of the PhD program in Astronomy is closely tied to that of the University of Florida and strives to offer a broad education for our students while engaging in leading-edge research and providing service to the citizens of Florida, our county and the world. We aim to uphold the primary mission of the College of Liberal Arts and Sciences through leading the academic quest to understand our place in the Universe, and to help shape our society and environment.

The education of both undergraduate and graduate students is a central cohesive element in the Department of Astronomy and an important part of the mission for the PhD program. Formal education in the classroom setting for our graduate students links our efforts in the areas of research, teaching, instrumentation, and service. Our graduate curriculum focuses on preparing students for careers in astronomical research, instrumentation, and teaching. Graduates are also trained to understand the importance of reaching out and educating our community through public events and school activities that convey the excitement of astronomy to our society. We aim to produce scientists and educators working to address the central questions about the nature of our Universe while advancing the goals of education and service to the community around us.

B. Student Learning Outcomes and Assessment Measures

SLO Type	Student Learning Outcome	Assessment Method	Degree Delivery
Knowledge	#1 Students will identify, define and describe the fundamental astrophysics covered by the core curriculum in our department.	Comprehensive exam	Campus
Skills	#2 Students will conduct original, independent research in astrophysics.	Students will write, present, and successfully defend a Ph.D. dissertation to their committee.	Campus

Professional Behavior	#3 Students will write and publish refereed journal articles based upon their research.	Students will submit papers to refereed journals for publication. The graduate coordinator will track papers written by each student in the program.	Campus
Professional Behavior	#4 Students will communicate their research in oral presentations in a style appropriate for conferences.	Students will make presentations in the core courses and in AST 6936, which will be graded by the faculty. Students will demonstrate in these talks satisfactory ability to make a scientific presentation. Students will make presentations during their second year on guided research projects, demonstrating the ability to clearly convey the results of their research. A committee of faculty members will evaluate the quality of these presentations. Students in their second year and beyond will present their research during the department's annual graduate research symposium. The advisor and a second faculty member will provide evaluations of student talks to both the student and graduate coordinator. Students will demonstrate the ability to give a scientific talk to a large audience.	Campus

C. Research

Students obtaining the degree of PhD are introduced to various research projects during their first semester through our Frontiers in Astronomy class. Professors present their research topics and possible projects for students during this seminar course. By the end of the first semester, students are encouraged to choose a project and begin working on their research topic. This project concludes with a Master's Research talk at the end of their 3rd semester when they submit a paper suitable for publication in an astronomical research journal and present their results during a 30-minute talk. Students assemble a committee of at least three graduate faculty to supervise these projects and assess the results. Students are encouraged to begin their PhD research and assemble a committee of 5 graduate faculty for their dissertation committee. Within a year of completing

their Master's research, they present their thesis topics to the committee. Once approved, students continue with supervised research toward the completion of their dissertation research. This culminates in their written dissertation and defense to obtain the PhD in Astronomy. Throughout their education, students are exposed to prominent researchers from around the world during our weekly Colloquium speaker series. Students also participate in our Journal Club seminar, presenting recent research papers to the department, in addition to weekly research paper discussion groups. Students are also encouraged to write papers, grant proposals, and telescope proposals throughout their graduate education.

D. Assessment Timeline

Program Ph.D. in Astronomy College of Liberal Arts and Sciences

Assessment SLOs	Assessment 1	Assessment 2	Assessment 3
Knowledge			
#1	Comprehensive Exam End of 4th semester		
Skills			
#2	Oral and written dissertation defense End of 5th or 6th year		
Professional Behavior			
#3	Submit papers for publication Assess Annually		
#4	Presentations in classes 1st through 4th semesters	Master's research presentation End of 3rd semester	Present at Graduate Research Symposium Annually in the spring

E. Assessment Cycle

Assessment Cycle for:
Program Ph.D. in Astronomy — College of Liberal Arts and Sciences
Analysis and Interpretation: May - June
Program Modifications: Completed by August 31
Dissemination: Completed by September 30

Year / SLOs	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge						
#1	X	X	X	X	X	X
Skills						
#2	X	X	X	X	X	X
Professional Behavior						
#3	X	X	X	X	X	X
#4	X	X	X	X	X	X

F. Measurement Tools

The measurement tools involve a combination of methods. The knowledge SLO is primarily assessed through demonstrated achievement in the core courses. Students must pass a written comprehensive exam testing their knowledge of the material covered in the core courses, no later than the end of the summer after their second year, to continue in the Ph.D. program. The comprehensive exam is graded by the faculty members who teach the core courses.

The skills SLOs are assessed through the writing, presentation, and successful defense of the Ph.D. dissertation to the student's committee. PhD theses are the culminating result of several years of research conducted by the student under the supervision of graduate faculty in the department.

Professional behavior SLOs can be monitored through several methods. Students are encouraged to write and submit papers to refereed journals for publication and the graduate coordinator keeps track of papers written by each student in the program. Students also make presentations in the core courses and in AST 6936 (Journal Club), which are graded by the faculty and assessed by the other graduate students in the program (see Appendix A). Members of the graduate faculty look for students to demonstrate in these talks satisfactory ability to make a scientific presentation.

Students make research presentations during their second year on guided research projects (Master's project), demonstrating the ability to clearly convey the results of their research. A committee of faculty members evaluates the quality of these presentations. In addition, all students in their second year and beyond present their research during the department's annual graduate research symposium. The advisor and a second faculty member provide evaluations of student talks to both the student and graduate coordinator. In this way, students demonstrate the ability to give a scientific talk to a large audience.

G. Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
Vicki Sarajedini	Graduate Coordinator	vicki@astro.ufl.edu	
Jonathan Tan	Graduate Curriculum Committee	jt@astro.ufl.edu	
Elizabeth Lada	Graduate Curriculum Committee	lada@astro.ufl.edu	

Figure 1. University of Florida Graduate/Professional Program Assessment Plan Review Rubric

Related resources are found at http://www.aa.assessment.edu

Program: PhD in Astronomy Year: 2013

Component	Criterion	Rating			Comments
		Met	**Partially Met**	**Not Met**	
Mission Statement	Mission statement is articulated clearly.	X			
	The program mission clearly supports the College and University missions, and includes specific statements describing how it supports these missions.	X			
Student Learning Outcomes (SLOs) and Assessment Measures	SLOs are stated clearly.	X			
	SLOs focus on demonstration of student learning.	X			
	SLOs are measurable.				
	Measurements are appropriate for the SLO.	X			
Research	Research expectations for the program are clear, concise, and appropriate for the discipline.	X			
Assessment Map	The Assessment Map indicates the times in the program where the SLOs are assessed and measured.	X			
	The Assessment Map identifies the assessments used for each SLO.	X			
Assessment Cycle	The assessment cycle is clear.	X			
	All student learning outcomes are measured.	X			
	Data is collected at least once in the cycle.	X			
	The cycle includes a date or time period for data analysis and interpretation.	X			
	The cycle includes a date for planning improvement actions based on the data analysis.	X			
	The cycle includes a date for dissemination of results to the appropriate stakeholders.	X			

University of Florida Graduate/Professional Program Assessment Plan Review Rubric, continued

Component	Criterion	Rating			Comments
		Met	Partially Met	Not Met	
Measurement Tools	Measurement tools are described clearly and concisely.	X			
	Measurements are appropriate for the SLOs.	X			
	Methods and procedures reflect an appropriate balance of direct and indirect methods.	X			
	The report presents examples of at least one measurement tool.	X			We include the assessment and feedback form used to assess Journal Club presentations (AST6936). Students must achieve an average ranking of "3" to receive a grade of "satisfactory".
Assessment Oversight	Appropriate personnel (coordinator, committee, etc.) charged with assessment responsibilities are identified	X			

Appendix A. Scientific presentation assessment and feedback form (AST6936: Journal Club)

UF Astro JC Presenter:_____ Reviewer:_____ Date:_____

Journal Club Feedback Form

Summary of the paper's goal and conclusion:

Part 1: Major Components of Talk

Introduction/Motivation/Background: **Comments**	Rating: 1 (poor) - 5 (excellent)
Gave audience a reason to listen (catches interest)	
Appropriate length	
Organized and logical in flow	
Provided information needed to understand the rest of talk, given audience	
Starts with big picture and "zooms in" to the project	

Methods: **Comments**	Rating: 1 (poor) - 5 (excellent)
Provide information to understand methods, without getting lost in details	

Results: **Comments**	Rating: 1 (poor) - 5 (excellent)
Provide enough information to understand & evaluate results, without getting lost in details	

Conclusions/Discussion/Implications: **Comments**	Rating: 1 (poor) - 5 (excellent)
Explains clearly the implications, identifies open questions and the next steps	
Answers audience questions clearly & concisely	

Part 2: Delivery and Visuals/Graphics/Slides

Timing **Comments**	Rating: 1 (poor) - 5 (excellent)
Total length of presentation (<=15 min)	
Amount of number of slides & time spent on each slide	

Slides/Figures/Graphics **Comments**	Rating: 1 (poor) - 5 (excellent)
Amount of information per slide (not too busy/not too much text)	
Easily readable text (fonts, size, colors)	
Figures understandable & adequately explained	
Figure axes labeled; labels & tick mark labels legible	
Figures large enough, points & lines legible (thickness, color)	
No spelling or grammatical errors in text	
Other	

Rapport with Audience **Comments**	Rating: 1 (poor) - 5 (excellent)
Eye contact with audience	
Converyed enthusiasm	

Voice **Comments**	Rating: 1 (poor) - 5 (excellent)
Spoke clearly	
Volume of voice	
Rate of speaking (not too fast, not too slow)	
Minimal vocalized non-words (um, uh)	

Physical Presence **Comments**	Rating: 1 (poor) - 5 (excellent)
Body language & posture	
Avoided nervous mannerisms (fidgeting, etc)	
Effective use of pointer (not used too much or wiggling)	

Other **Comments**	Rating: 1 (poor) - 5 (excellent)

General Comments (reference slide #):