ASSESSMENT PLAN ASTRONOMY Ph.D.

(Program of Study / Major / Degree Level, etc.)

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Program Goals: The Department of Astronomy PhD program educates graduate students toward achieving an advanced-level understanding of modern astronomical concepts, applying technology in the field, performing original thesis research, and communicating research results to the professional astronomical community.

Relevance of goals to the mission statements and/or strategic plans of the University, College, or Program as applicable:

These goals are aligned with the strategic plans of the Program and College to offer tracks within the program to reflect modern developments in science, to provide opportunities to work on cutting edge research, and to provide our graduates with the skills of modern technology.

Student Learning Outcomes (list the three-to-five most important)	**Assessment Measures and Criteria** (describe one or more measures for each outcome and criteria for success)	**Assessment Schedule** (initial year, and subsequent cycle)
1. Demonstrate advanced-level knowledge of astronomy.	The Qualifier exam is given after students complete two years of course work. Performance on the Qualifier exam is evaluated as excellent, very good, good, adequate, and not adequate. The Graduate Education Committee reviews syllabi for required courses on which the Qualifier is based and the pass/fail results	The Graduate Education Committee will review syllabi from courses on which the Qualifier is based and results from the Qualifier and make

	on the Qualifier to assess whether course work adequately prepares students for the Qualifier. Eighty percent of students should receive a pass score on the Qualifier.	recommendations to the Chair once every three years beginning in 2006.
2. Design a scientific project, complete the research, and communicate the results in an oral presentation and a scholarly work.	It is required that students design and complete a research project that includes an oral presentation and written document during their second year of graduate school. A faculty committee (selected by student and faculty mentor) evaluates the overall research project as excellent, very good, good, adequate, barely adequate, or not adequate. Each student is sent a second year project review letter, which describes the strengths and weaknesses of the work. Eighty percent of students should receive an evaluation of good or better. The Graduate Education Committee periodically will compare the quality of second year projects to those of previous years to assure that departmental standards are maintained. Second year project review letters and project abstracts will be used in this evaluation.	The Graduate Education Committee will compare the quality of second year projects over a three year period and make recommendations to the Chair once every three years beginning in 2006.
3. Develop expertise in an area of modern astronomy.	Students complete course requirements from one of these Streams: Theory, Computation, Observation, or Instrumentation. Advanced astronomy courses are combined with supporting courses from other departments to	The Astronomy Department Assessment Committee (ADAC) will review stream course syllabi

	provide expertise. Responses to selected final exam questions from stream courses offered by the astronomy department will be collected. Student responses to these selected questions will be scored according to the following rubric: Outstanding (argument/mathematics is presented in a clear, concise, and logical manner that effectively identifies, supports, and demonstrates mastery of the concepts) Strong (argument/mathematics is presented in an understandable and rational manner that successfully identifies, supports and demonstrates good control of the concepts) Adequate (argument/mathematics is presented in a satisfactorily way that includes some of the main points but doesn't complete the necessary connections between concepts) Inadequate (argument/mathematics is presented in a disorganized manner with very limited application of concepts and evidence of misunderstanding) Eighty percent of students in the Stream should achieve outstanding or strong on their responses to these selected final exam questions.	and the responses to the selected questions from final exams, and make recommendations to the Chair once every three years beginning in 2007.
4. Make original contributions to the field of astronomy at the international level.	Students propose, design, complete, and successfully defend before a faculty committee original thesis research. By the end of their program, ninety percent of	The ADAC will review publication and conference presentation records of students completing the Ph.D.,

	PhD graduates will submit at least one refereed journal article for publication or make at least one presentation at a professional conference.	and make recommendations to the Chair once every three years beginning in 2007.