Core Curriculum Course Submission
Criteria: Science

1. General Information

a. Originating Person	b. Contact Person's E-mail	c. Contact Phone	d. Date
Tony Hall	tahall@ualr.edu	(501)569-8968	4/4/14

e. College/School	f. Department/Program
College of Arts, Letters, & Sciences	Physics & Astronomy

☒ **Submission Statement**

By submitting this form, we acknowledge our understanding that the Core Council has the authority to review approved courses to ensure they continue to meet the established goals and outcomes of that category of the core; that the Council has authority to develop a core assessment program; and that the Council will be developing review and assessment policies by the end of 2014. Further, we agree that if this course is approved, we will participate in the university-wide assessment of the core.

☒ **Chair and Dean Awareness**

Your department chairperson and college dean must be made aware of your submission for core. By submitting this form, you are acknowledging that this has occurred.

2. Course Information

a. Course ID	b. Current Title
ASTR 1301/ ASTR 1101	Introduction to Astronomy and Lab

c. Catalog Description

ASTR1301 Study of the process of science by which knowledge about our place in the cosmos is obtained. Examples of possible observations and the inferences drawn from them. Emphasis on how we obtain our knowledge and the certainty of various parts of it. A core curriculum course. Three credit hours. (ACTS Course Number PHYS 1204)

ASTR 1101 Prerequisite or corequisite: ASTR 1301 or 1311. A laboratory course designed to accompany ASTR 1301. A variety of activities in data acquisition and analysis which tie concepts discussed in the classroom to real-world experiences. Open laboratory, the planetarium, and observatory activities. One credit hour. (ACTS Course Number PHYS 1204)

d. How will your department ensure a level of consistency among sections of this course? Who will be responsible for this?

The Astronomy faculty are charged with overseeing the introductory astronomy courses along with the associated laboratories. A common syllabus is used for all in-class laboratories. Online labs also use a common syllabi. These labs are each designed to ensure learning objectives are meet in each. All instructors (faculty, adjuncts, online instructors, concurrent instructors and graduate teaching assistants) of ASTR 1301 classes are be provided with a syllabus shell outlining minimum expectations to meet the learning objectives and department expectations. Common end of term assessments are administered to all sections of the course.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Knowledge 1 – **Concepts, methodologies, findings, and applications of mathematics and the social and natural sciences, engineering and technology.**	1. understand the theoretical perspective used in one or more science discipline;	**Learning Objectives 1.1** explain, describe, discuss, recognize, and/or apply knowledge and understanding of the history of astronomy, Light/optics, solar system, celestial motions, astrophysical principles, stellar properties and evolution, galaxies, and cosmology.	**Assignments 1.1** In-class activities, quizzes, periodic exams, and laboratory exercises	**Explanation 1.1** Active learning exercises help students develop the knowledge and skills required to apply concepts to answer conceptual questions and find numerical solutions. Quizzes and tests are administered to allow instructors and students to determine the level of mastery of the topics.
	2. understand observational and experimental methods used in one or more of the sciences;	**Learning Objectives 1.2** gather, analyze, and model data and design and carry out an original experiment	**Assignments 1.2** Laboratory assignments, including write a report for each of the laboratories, and performing a pre- and post-laboratory assessments.	**Explanation 1.2** Students experience scientific methods by making measurements and then interpret the data and form models that provide a useful way to think about the physical system.
	3. understand applications and limitations of the sciences;	**Learning Objectives 1.3** recognize, describe, and apply basic astrophysical processes to the world around them and understand how our knowledge (particularly over time) limits our comprehension of the universe.	**Assignments 1.3** In-class activities, Quizzes, Exams, and laboratory activities	**Explanation 1.3** Students will demonstrate their ability to apply their knowledge (including techniques or models, both current and historical) to astrophysical situations and interpret the results

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Skills 1 – Communication	1. develop an understanding of how to communicate scientific procedures, results from the inquiry and conclusions resulting from applying the scientific method;	**Learning Objectives 1.1** gather, organize, and present data and interpretations presented in written, equation and graphical/pictorial formats	**Assignments 1.1** Class activities, laboratory exercises and reports	**Explanation 1.1** Weekly laboratory sessions, in addition to in class exercises, will model the scientific method starting with hypothesis and ending with interpretation of results. Assignments require a clearly demonstrated procedure, with results and conclusions.
Educational Goals	**Learning Outcomes students will...**	**Learning Objectives: At the end of the course students will be able to...**	**Assignments**	**Explanation**
Skills 2 – Critical Thinking, Quantitative Reasoning, and Solving Problems Individually and Collaboratively	1. develop basic skills from the scientific method including inquiry, data collection, analysis, and interpretation in order to explore a scientific problem from hypothesis testing to formulating a conclusion based on the inquiry;	**Learning Objectives 2.1** hypothesize a problem; collect, analyze, and interpret data; and present evidence to support conclusions.	**Assignments 2.1** Laboratory exercises and reports.	**Explanation 2.1** Laboratory exercises will model the scientific process, including observation, data collection, analysis, and conclusions.
	2. learn about the world through observation and experimentation, through modeling and interpretation, and through analysis and evaluation;	**Learning Objectives 2.2** conduct scientific experiments and use mathematical modeling and analysis of data to solve real world problems.	**Assignments 2.2** Laboratory activities and class exercises, which model the scientific process of observation, experimentation, and analysis	**Explanation 2.2** Assignments will require students to apply the scientific process of gathering, analyzing and presenting data. Students will master this process through multiple class and laboratory activities and reports.

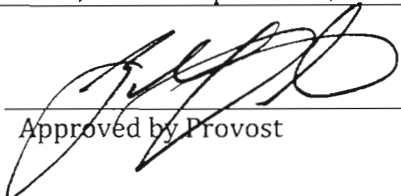| Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Skills 3 – Information Technology	1. develop and apply technological tools for inquiry, analysis, and presentation of scientific information and data;	**Learning Objectives 3.1** use word processing and spreadsheet programs, calculators, and electronic laboratory interfaces and instrumentation for data collection, modeling, and analysis.	**Assignments 3.1** class exercises, laboratory activities, and reports, in addition to exams and quizzes	**Explanation 3.1** The use of computers, calculators, and laboratory instrumentation allows students to become proficient with their use. Programs that aid all aspects of the scientific process, especially data gathering, manipulation , and analysis and presentation will be a part of both the lecture and the laboratory experience
Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Values 1 – Personal Responsibility and Ethical Behavior	1. take responsibility for completing assignments in an ethical manner, working on one's own when required and acknowledging resources when used;	**Learning Objectives 1.1** understand and comply with UALR's code of student conduct.	**Assignments 1.1** Students will sign course expectation form provided with syllabus, outlining academic dishonesty and classroom behavior expectations. On each exam, students will sign a statement that no help was provided to or by another person. All assignments must use proper citation practices, where applicable.	**Explanation 1.1** By signing the course expectation form students will be reminded of the ethical standards which govern our society and verify they understand class expectations. Students are expected to work individually to show their understanding of key concepts. Students are expected to identify and acknowledge work done by others.

	2. develop an understanding of the ethical obligations in conducting research, and of being precise and accurate with data, including how this obligation applies to communication of information;	**Learning Objectives 1.2** understand the necessity of accurately represented data and its impact on conclusions that can be drawn from that data.	**Assignments 1.2** Laboratory exercises and reports, discussions, class activities	**Explanation 1.2** In laboratory activities students must collect analyze and interpret data to draw supported conclusions. Class activities require students to evaluate, interpret and communicate their findings.

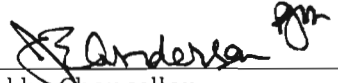| Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Values 2 – Civic Responsibility	1. develop an understanding of the ethical issues that may result when applying scientific knowledge that is incomplete.	**Learning Objectives 2.1** demonstrate how knowledge (particularly how it is gained over time) impacts and limits our comprehension of the universe and influence ethical and political issues.	**Assignments 2.1** class assignments, discussions	**Explanation 2.1** Class assignments and discussions will require students to address implications of our scientific progress and compare competing models using available facts

Additional Comments:

Classroom assignments consist of a variety of formats including quizzes, lecture tutorials, data interpretation, and writing assignments.

Belinda Blevins-Knabe   5-14-14

Approved by Core Curriculum Committee   Date

[signature]   5/23/2014

Approved by Provost   Date

[signature] Anderson   5/28/14

Approved by Chancellor   Date