GE CRITERIA APPROVAL FORM

Course Number and Title: PHYS/ASTR 107 The Stars and Beyond

Faculty Member(s) Proposing Course: Geoff Dougherty

Indicate which of the following categories would be satisfied by this course by marking an "X" on the appropriate lines. Courses may be placed in up to two GE categories as appropriate. Upper Division Interdisciplinary GE courses may be placed in two categories plus the UDIGE category.

	A1: Oral Communication
	A2: English Writing
	A3: Critical Thinking
X	B1: Physical Sciences
	B2: Life Sciences
	B3: Mathematics
	B4: Computers and Technology
	C1: Fine Arts
	C2: Literature
	C3: Languages & Cultures
	D: Social Perspectives
	E: Human Psychological & Physiological Perspectives
	Upper Division Interdisciplinary GE

Lab Included? Yes _____ No _X_____

Please provide a brief explanation of how the proposed course meets <u>each</u> of the criteria for the selected General Education categories.

This course is **GE** because of its breadth and applicability: students taking it will acquire the skills, experience and knowledge "appropriate to educated people within our society".

All Category B courses shall:

- Promote the understanding and appreciation of the methodologies of math or science as investigative tools and the limitations of mathematical or scientific endeavors.

→The course will present the scientific principles describing our universe. Basic scientific concepts relating to the formation of planets, stars, galaxies and the universe in general will be examined. The scientific approach to evaluating technical areas will be discussed, particularly regarding theories and evidence of the Universe's beginning and end. Computer simulations and models of the development of galactic objects will be used to validate theories. Uncertainties in current knowledge will be presented.

- Present mathematical or scientific knowledge in a historical perspective and the influences of math or science on the development of world civilizations, both past and present.

→ The historical background of observations and theories in astronomy, and their utility and accuracy, will be addressed from the time of the ancient Greeks up until today. Historical changes in the understanding of how the Universe was

formed will be discussed. Current theories will be examined and compared to earlier historical notions. The course will examine how advances in astronomy are related to sociological changes.

- Apply inductive and deductive reasoning processes and explore fallacies and misconceptions in the mathematical or scientific areas.

→Critical reasoning skills will be used to explore historical misconceptions and to consider what needs to be known in order to clarify thinking about astronomical events. The fallacies in ancient logic, and even in recent logic, used to explain objects, forces and motion in the universe will be examined.

Category B-1 Physical Sciences—Chemistry, Physics, Geology, and Earth Sciences courses shall:

- Present the principles and concepts of the physical sciences and the physical universe.

→ Scientific principles and concepts, and their applications to astronomy, will be discussed. The major conservation laws, such as the conservation of energy and the conservation of angular momentum, will form the basis for understanding how the Universe works. The universality of physics concepts across the Universe will be explored. Physical laws connecting large scale gravity and small scale quanta (string theory) unifying our understanding of the Universe will be discussed.