22B
88-89

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

LSC Use Only	
Number	LS-9
Action	
Date	

UWUCC Use Only	
Number	~~88-89~~
Action	
Date	

I. TITLE/AUTHOR OF CHANGE
COURSE/PROGRAM TITLE General Astronomy
DEPARTMENT Geoscience
CONTACT PERSON Connie J. Sutton

II. THIS COURSE IS BEING PROPOSED FOR:
___ Course Approval Only
XXX Course Revision and Liberal Studies Approval
___ Liberal Studies Approval only (course previously has been approved by the University Senate)

III. APPROVALS

Connie J. Sutton
Department Curriculum Committee

J W Hall
Department Chairperson

Douglas G Nov
College Curriculum Committee

Diane Dawn Katz
College Dean*

Director of Liberal Studies
(where applicable)

Provost
(where applicable)

*College Dean must consult with Provost before approving curriculum changes. Approval by College Dean indicates that the proposed change is consistent with long range planning documents, that all requests for resources made as part of the proposal can be met, and that the proposal has the support of the university administration.

IV. TIMETABLE

~~Date Submitted~~
to LSC ____
to UWUCC ____

~~Semester/Year to be implemented~~ Fall 89

~~Date to be published~~ in Catalog Fall 89

Revised 5/88

[~~Attach remaining parts of proposal to this form.~~]

APPLICATION FOR LIBERAL STUDIES APPROVAL FOR 1989-90

DEPARTMENT: GEOSCIENCE

COURSE: GS 110 GENERAL ASTRONOMY

LIBERAL STUDIES CATEGORY: NATURAL SCIENCE
NON-LAB OPTION

FACULTY COORDINATOR: CONNIE J. SUTTON, CHAIRPERSON

INTRODUCTION

One of the options given to students in the Liberal Studies Program is, after completing one semester of a laboratory science, to register for two science courses which do not have laboratory requirements. This course will fulfill one of the two science (non-lab) requirements.

Astronomy is a subject about which there is a natural curiosity by many people. The night sky is one of the most beautiful aspects of our natural environment. Additionally, astronomy has many concepts which can be very practical for wide populations of people. The understanding of seasons and time was a goal of the ancients and continues to be important in today's society. The future of our space program lies in the hands of the voting citizens and having them properly informed is critical.

I. BASIC INFORMATION

A. Knowledge Area: Natural Sciences: Non-Laboratory Course
B. Regular Approval
C. Substitution for General Education GS 110

II. MEETING LIBERAL STUDIES GOALS

A. Intellectual skills

1.) Inquiry & critical analysis: class discussions, test questions, and term projects will be used to stimulate analysis of astrometric problems such as the how to study the atmosphere of Venus and to apply that knowledge to our atmosphere. primary

2.) Literacy: reading textbooks and journal articles and listening to lectures and seminars sponsored by the Geoscience Department. secondary

3.) Understanding numerical data: data will be an integral part of the lectures, such as calculation of Astronomical Units in the solar system. secondary

4.) Historical consciousness: in order to understand the breadth and depth of knowledge in astronomy, an understanding of the process of this growth of knowledge is necessary. The revolution of the earth around the sun was accepted as real less than four hundred years ago. primary

5.) Scientific inquiry: all aspects of this course will emphasize application of the scientific method as used in research both by astronomers and students alike. Out of class projects will be required in which students must use the process for completion of the assignment. primary

6.) Values: as involved citizens, these students will be asked to make value judgments through voting about many important astronomical concerns such as space utilization. secondary

B. Acquiring a Body of Knowledge

This is obviously a primary goal of this course. In order for a student to make value judgments, to understand numerical data, to use the scientific method, and to critically analyse information, he/she must first acquire a basic understanding of the concepts involved in the study of astronomy.

D. Certain Collateral Skills:

1. Use of the library: the reading assigments and writing of papers will require utilization of the library facilities. secondary

2. Use of computer teacnology: various computer programs have already been purchased which will be used to help the students learn some of the concepts of motion, the positions of the stars, and the mechanics of space flight. secondary

III. FULFILLMENT OF GENERAL CRITERIA

A. This course will be taught in one section by one professor. GS 110 has been taught in the past (last offering was Fall 1984) as a natural science elective for non science majors. It was a 3 credit course having 2 lecture classes per week and 1 two hour laboratory session per week. It has not recently been offered because of scheduling restraints in the Geoscience Department. Proposed is to change it to a 3 credit course having 3 lecture classes per week and no laboratory. Thus, it would be categorized as a natural science - non laboratory course.

B. Before the middle of the twentieth century, few scientists were female. Many graduate schools refused admittance to women. A few daughters and/or sisters learned at home and contributed to the profession. Many women were employed as laboratory assistants. Henry Draper, a famous astronomer, was said to have a harem working for him. Ethnically, discoveries and understandings emerged from literally every continent. At the beginning of the semester, the student will study the topic of

historical astronomy. The Maya Indian culture of Central America, the Egyptians of North Africa, and the Chinese of Asia will serve as our starting points.

During recent years females have been adding significantly to the body of knowledge of astronomy and their contributions will be included in discussions. Such names as Henrietta Leavitt and Jocelyn Bell appear in all standard astronomy texts. As a female I make a special attempt to gender balance my comments and examples in lectures and also on tests.

C. Students will be required to read selections from magazines (such as Sky & Telescope, Astronomy, and Planetary Report) which are available in both the geoscience library (Walsh 104) and in Stabley Library. Newspaper articles which describe national, international, and cosmic issues will be posted in the astronomy classroom and will be required reading. In cases where a book which is not a text book exists which enhances the content of the course, it will be assigned as additional reading. One book I am considering is The Nemesis Affair by David M. Raup.

D. General Astronomy is intended as an introductory course and is for the general student audience. It will not be available to the science major. Two astronomy courses are offered for the science major - GS 342 Solar System and GS 342 Stellar Astronomy. These are laboratory courses and have prerequisites of physics and calculus. The goal of General Astronomy is to produce citizens who can make well informed decisions on astronomical issues which they may confront in the twenty-first century.

E. General Astronomy will contribute to students' abilities in ways 1,2,3,5, and 6.

1.) Students will confront major ethical issues in astronomy by their exposure to the funding and activities of the space program as well as those of philosophic and religious connections.

2.) Problems are the basis of science. We will analysize historic as well as current concepts and look at how choices were made in the past and the impact of future choices.

3.) The requirement of readings and papers will provide the students the opportunities of communication outside the classroom in addition to those opportunities in the classroom which are provided through class discussions and examination questions.

5.) Astronomy topics appear almost weekly in newspapers and magazines. The background obtained in this course should enable the students to be better able to assimulate the information than the non-informed citizen.

6.) It is literally impossible to separate the concepts which will be taught from what the students will encounter in the environment around them. The ancients began to study astronomy because of their quest for understanding time, the seasons, the appearance of the night sky, and their position in the universe. Current happenings in the sky will be described and observed, whenever possible. Although no laboratory is scheduled, night observations will be required during the semester.

IV. FULFILLMENT OF NATURAL SCIENCE CRITERIA

GS 110 GENERAL ASTRONOMY

Prof: Mrs. C. J. Sutton
Office: 136 Weyandt Hall
Phone: 5626
Office Hours: posted

I. Textbook: Dynamic Astronomy, 4th edition, by Robert Dixon
Additional Readings: The Nemesis Affair, by David Raup
Stars, by Zim, Baker, Chartrand
journal articles as assigned

II. Schedule:
A. Historical Astronomy - prehistoric to 1600's, viewing the sky, pp. 2-49, 2 weeks
B. Earth - characteristics, time, motion, seasons, pp. 110-144, 1 week
C. Tools of the Astronomer - radiation, telescopes, pp. 50-107, 1 week
D. Moon - motion, phases, tides, eclipses, surface, history, pp. 146-177, 1 week
E. Space Travel - unmanned, manned, future, benefits, 1 week
F. Solar System - planets, moons, asteroids, comets, meteors, pp. 180-284, 2 weeks
G. Sun - characteristics, sunspots, flares, solar energy, pp. 286-318, 1 week
H. Stars - characteristics, types, life cycle, pp. 320-437, 2 weeks
I. Galaxies - Milky Way, types, quasars, cosmology, pp. 438-493, 1 week
J. SETI - search for planets, life, UFO's, pp. 506-515, 1 week

III. Examinations:
Two tests and a final examination will be administered. Each test will have 100 points; questions wil be both short answer (multiple choice, true/false, matching, completion) and essay. Tests will cover lecture notes, assigned pages of the text, outside readings, and assigned seminars when available. Tests will be closed book, closed door.

IV. Grading:
Final grades will be determined from test scores and any other assigned activities, such as reports from outside readings and/or seminars, observations, or library research. Grading will be on the scale of 90 - 100 = A, 80 - 89 = B, 70 - 79 = C, 60 - 69 = D, and 0 - 59 = F.

V. Assignments:
In addition to reading the text book and books listed above, students will be required to make observations of the night sky both in groups with the professor and individually. Written drawings/reports will be collected after the observations. A library research paper will also be required. The paper must be at least 5 pages long, cite references, and must include a suggestion for future research potentials of the topic.

VI. Objectives:
1. TSSBAT* grasp the concepts of the historical growth of astronomy.

2. TSSBAT understand and apply the astronomical basis for time keeping and seasonal variations.

3. TSSBAT describe the process of energy formation, the characteristics of the types of energy, and the procedures used to study energy.

4. TSSBAT understand the phases of the moon and how they can be used to tell time, the characteristics of the moon's composition and origin, and the potential use of the moon by mankind.

5. TSSBAT compare and contrast the characteristics of the planets with those of the earth.

6. TSSBAT understand the process of energy formation in the sun, its past and future changes, and the process of solar energy usage by humans.

7. TSSBAT describe the similarities and differences of stellar characteristics, the life cycle of stars, and the positions and distances of the stars.

8. TSSBAT begin to formulate an understanding of our position in the universe, both physically and philosophically.

*TSSBAT - The Student Will Be Able To

Revised Catalog Description: GS 110 General Astronomy

GS 110 GENERAL ASTRONOMY 3c-01-3sh

Specifically designed to introduce students to the discipline of astronomy; emphasis placed on study of time and the seasons, planets, moon, sun, space flight, and constellations. Two night observations will be scheduled, weather permitting.