



SACRAMENTO
STATE

Course Change Proposal Form A



Academic Group (College): Natural Science and Mathematics	Academic Organization (Department): Physics and Astronomy	Date: 11/01/08
Type of Course Proposal: New <input checked="" type="checkbox"/> Change <input type="checkbox"/> Deletion <input type="checkbox"/>	Department Chair: Gary Shoemaker	Submitted by: Chris Taylor
Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	For Catalog Copy: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> CCE (Extension): Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Semester Effective: Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> , 2009

This course replaces experimental course Subject Area (prefix) and Catalog Nbr (course number):

Change from:

Subject Area (prefix) & Catalog Nbr (course no.): NONE -- new course	Title:	Units:
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Change to:

Subject Area (prefix) & Catalog Nbr (course no.): ASTR 4C	Title: Introduction to Astrobiology	Units: 3
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JUSTIFICATION:

Astrobiology is a new multidisciplinary subfield in Astronomy. The search for locations suitable for life, in our Solar System and around other stars, is an important facet of NASA's Origins program, its current paradigm for astronomical research. Northern CA plays an important role in this field, with the SETI Institute and NASA's Ames Research Center both in the Bay Area. This course will put many famous discoveries into context, e.g., that water was plentiful on Mars, or that Saturn's moon Titan is potentially hospitable to life. Planetary habitability leads to topics like the greenhouse effect and climate change. Astrobiology is a perfect platform for discussing the scientific method, the nature of scientific theories, and what distinguishes good and bad science. The course will be taught from a physical science perspective, and will be an Area B1 GE course. It is not intended be a life science course.

NEW COURSE DESCRIPTION: (Not to exceed 80 words, and language should conform to catalog copy. See <http://www.csus.edu/acaf/univmanual/crspsl.htm> - Guidelines for Catalog Course Description)

ASTR 4C. Introduction to Astrobiology. Nature and history of scientific inquiry into life outside the Earth. Definitions of life. Habitability of planets and moons in our Solar System and of extrasolar planets. Likelihood of intelligent life outside Earth and rationale for the Search for Extra-Terrestrial Intelligence (SETI). **Prerequisite:** One year of high school geometry or instructor permission. **Graded:** Graded Student. **Units:** 3.0.

Note:

Prerequisite: High school geometry
Enforced at Registration: Yes No

Corequisite: None
Enforced at Registration: Yes No

CAN (California Articulation Number): N/A

Graded: Letter Credit/No Credit **Instructor Approval Required?** Yes No

Course Classification (e.g., lecture, lab, seminar, discussion):
lecture C - 01 **Title for CMS (not more than 30 characters)**
Introduction to Astrobiology

Cross Listed? Yes No **If yes, do they meet together and fulfill the same requirement, and what is the other course.**

How Many Times Can This Course be Taken for Credit? 1

Can the course be taken for Credit more than once during the same term? Yes No

FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc." See the example at <http://www.csus.edu/acaf/example.htm>

Students will be able to:

- 1) Understand the place of life in the Universe.
- 2) Explain how scientists use knowledge of physics, chemistry and biology to evaluate the likelihood of life evolving in locations outside the Earth.
- 3) Describe how the physical conditions of locations in our Solar System make these locations either suitable or unsuitable for life.
- 4) Describe how the physical conditions of extra solar planets make them either suitable or unsuitable for life.
- 5) Use scientific inquiry and the scientific method to evaluate controversial ideas, e.g. the Search for Extraterrestrial Intelligence, the Drake Equation, the Fermi Paradox.

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

Examinations using factual, conceptual and practical questions.
 Homework based on assigned readings.
 Daily mini-quizzes in class using electronic clickers.

For whom is this course being developed?

Majors in the Dept ___ Majors of other Depts ___ Minors in the Dept x General Education x Other ___

Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes X No ___

If yes, identify program(s): Minor in Astronomy

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes ___ No x

If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). Department of Physics and Astronomy

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures:

Date

Department Chair: <i>Mary N. Shoemaker</i>	12/9/08
College Dean or Associate Dean: <i>Laura J. Hoffman</i>	12/9/08
CPSP (for school personnel courses ONLY)	
Associate Vice President and Dean for Academic Programs	

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.