

NEW COURSE PROPOSAL

Courses must be submitted by October 15, 2013, and finalized by the end of that fall semester for the next catalog production.

Use YELLOWED areas to enter data.

DATE (*Change if modified and redate file with current date*)

10/7/2013; REV 10.21.13GE; REV 10.22.13; REV 11.13.13

PROGRAM AREA(S)

CHEMISTRY, ENGLISH

1. Course Information. *[Follow accepted catalog format.]*

Prefix(es) (Add additional prefixes if cross-listed) **Course No.** CHEM/ENGL 345

Title: SCIENCE/FICTION **Units:** 3

x Prerequisites junior standing

Corequisites

x Consent of Instructor Required for Enrollment

Catalog Description (Do not use any symbols):

Examines fictional technologies, real-world possibilities, and the relationship between science and the imagination.

Grading Scheme:

x A-F Grades

Credit/No Credit
Optional (Student Choice)

Repeatability:

Repeatable for a maximum of units

Total Completions Allowed

Multiple Enrollment in Same Semester

Course Level Information:

x Undergraduate

Post-Baccalaureate/Credential
Graduate

Mode of Instruction/Components (*Hours per Unit are defaulted*).

	Units	Hours per Unit	Default Section Size	Graded Component	CS & HEGIS # (Filled in by the Provost's Office)
Lecture	3	1	24	X	
Seminar		1			
Laboratory		3			
Activity		2			
Field					
Study					
Indep Study					
Other Blank					

Leave the following hours per week areas blank. The hours per week will be filled out for you.

3 hours lecture per week

hours blank per week

2. Course Attributes:

x **General Education Categories:** All courses with GE category notations (including deletions) must be submitted to the GE website: <http://summit.csuci.edu/geapproval>. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

A (English Language, Communication, Critical Thinking)

A-1 Oral Communication

A-2 English Writing

A-3 Critical Thinking

B (Mathematics, Sciences & Technology)

x B-1 Physical Sciences

B-2 Life Sciences – Biology
B-3 Mathematics – Mathematics and Applications
B-4 Computers and Information Technology

C (Fine Arts, Literature, Languages & Cultures)

C-1 Art

x C-2 Literature Courses

C-3a Language

C-3b Multicultural

D (Social Perspectives)

E (Human Psychological and Physiological Perspectives)

x **UDIGE/INTD Interdisciplinary**

Meets University Writing Requirement (Graduation Writing Assessment Requirement)

Meets University Language Requirement

American Institutions, Title V Section 40404: Government US Constitution US History

Regarding Exec Order 405, for more information: <http://senate.csuci.edu/comm/curriculum/resources.htm>

Service Learning Course (Approval from the Center for Community Engagement must be received before you can request this course attribute).

Online Course (Answer YES if the course is ALWAYS delivered online).

Lab Fee Request – Lab fee requests should be directed to the Student Fee Committee.

3. Justification and Requirements for the Course. (Make a brief statement to justify the need for the course)

A. Justification: “Science/Fiction” will help students see that science is as much an integral part of their lives as the written word, and that they can be or already are scientists. Content will include stories, novels, and nonfiction science readings, movies and other video media. Students will engage in reflective writing assignments, as well as inquiry-driven classroom science projects that support their readings. All these activities are aimed at increasing students’ awareness of science and literature as tools for exploring problems of universal importance: who are we? where do we come from? where are we going? how should we get there? Furthermore, making story the medium places students inside the science; reading naturally makes the unfamiliar home territory. “Science/Fiction” gives students experience with reading, writing, and exploring their own ideas about science and society – all from within the (relatively) comfortable framework of powerful and inventive fiction.

B. Degree Requirement:

Requirement for the Major/Minor
Elective for the Major/Minor
Free Elective

Note: Submit Program Modification if this course changes your program.

4. Student Learning Outcomes. List in numerical order. Please refer to the Curriculum Committee’s “Learning Outcomes” guideline for measurable outcomes that reflect elements of Bloom’s Taxonomy:

<http://senate.csuci.edu/comm/curriculum/resources.htm>. The committee recommends 4 to 8 student learning outcomes, unless governed by an external agency (e.g., Nursing).

Upon completion of the course, the student will be able to:

At the end of this course the student will be able to:

1. Make connections between key concepts (or big ideas) in the natural sciences to describe and explain phenomena in the natural world (GE 5.4)
2. Analyze science fiction literature as both imaginative play and creative engagement with the sciences (GE 6.1)
3. Create original fiction based on scientific principles (GE 4.2)
4. Demonstrate, in written and oral form, an understanding of scientific methodology
5. Articulate key disciplinary differences between literature and science, and how both disciplines address humanity's "big goals," such as understanding the origins and fate of the universe, the nature and evolution of life, the impact of technology on human culture, and the impact of human society on the environment.

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*

Course topics may include, but are not limited to:

- **time travel**
- **black holes**, worm holes, parallel universes
- **dark matter**
- **quantum entanglement**
- **FTL travel: hyperspace, warp, probability**
- **sublight travel - rockets, ramjets. Lasers**
- **origins of life, chemistry of life**
- **evolution**
- **alien life**
- **alien communication**
- **robots**
- **cloaking**
- **weapons and scanners (ray guns, orbital kinetics, etc)**
- **collapse of civilization**
- **cyberspace then and now**
- **telepathy (mental control)**
- **genetic engineering**

Does this course content overlap with a course offered in your academic program? **Yes** ☐ **No** ☒

If YES, what course(s) and provide a justification of the overlap.

Does this course content overlap a course offered in another academic area? **Yes** ☐ **No** ☒

If YES, what course(s) and provide a justification of the overlap.

Overlapping courses require Chairs' signatures.

6. Cross-listed Courses *(Please note each prefix in item No. 1) Beyond three disciplines consult with the Curriculum Committee.*

A. List Cross-listed Courses (Signature of Academic Chair(s) of the other academic area(s) is required).

List each cross-listed prefix for the course: CHEM, ENG

B. Program responsible for staffing: Chemistry, English

7. References. *[Provide 3 - 5 references]*

1. Michio Kaku, Physics of the Impossible: A Scientific Exploration into the World of Phasers, Force Fields, Teleportation, and Time Travel, Anchor 2009
2. Laurence M. Krauss, The Physics of Star Trek, Basic Books 2007.
3. David Brin, "Using Science Fiction to Teach Science" accessed October 2013, <http://www.scoop.it/t/using-science-fiction-to-teach-science>

8. Tenure Track Faculty Qualified to Teach This Course.

Sofia Samatar
Blake Gillespie

9. Requested Effective Date:

First semester offered: Fall 2014

10. New Resources Requested. **Yes** ☐ **No** ☒

If YES, list the resources needed.

A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)
none

B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)
Reserves, streaming media, video hosting

C. Facility/Space/Transportation Needs

none

D. Lab Fee Requested **Yes** ☒ **No** ☐ **x (Lab fee requests should be directed to the Student Fee Committee)**

E. Other

☒

11. Will this new course alter any degree, credential, certificate, or minor in your program? Yes ☒ **No** ☐ **x**

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs: **October 1, 2013** of preceding year.

Priority deadline for Course Proposals and Modifications: **October 15, 2013**, of preceding year.

Last day to submit forms to be considered during the current academic year: **April 15th**.

Blake Gillespie

10/7/2013

Sofia Samatar

GE Committee response to your request have CHEM-ENGL345: Science/Fiction added to UDIGE: Upper Division Interdisciplinary GE

Approved by 2013-2014 Committee:

Janet Rizzoli
Emily Saunders
Geoffrey Buhl
Catherine Burriss
Jose Alamillo
Kathy Musashi
Debra Hoffmann
Rachel Danielson
Dax Jacobson
Sarah Johnson

Request Submitted

Course: CHEM-ENGL345 Science/Fiction
Area: UDIGE Upper Division Interdisciplinary GE
Date Submitted: 10/8/2013 4:35:53 AM
Date Approved: 10/21/2013 2:02:18 PM

1. Emphasize interdisciplinarity by integrating content, ideas, and approaches from two or more disciplines

The course will be co-taught by English and Chemistry faculty. The faculty will work together on creation of content that is not parallel, but interwoven. This objective is supported by the readings themselves, which are literary works with scientific premises or contexts. Moreover, the students will learn that critical analysis is equally important in the two fields.

2. Include substantive written work consisting of in-class writing as well as outside class writing of revised prose. Examples of appropriate written work include: short papers, long papers, term papers, lab reports, documentation, disciplinary-based letters and memos, and essays.

The course will include many different writing assignments that range from reflective, to analytical, to creative (fictional) projects. Some of these will be classroom and in-class writings, others will be long term and completed outside the classroom. Many will include peer editing and revision. Others will involve criticism by peers, either in public readings or as online posts. Students will write short responses to instructors' prompts, reflective and analytical essays on various readings, and at least one short story.

GE Committee response to your request have CHEM-ENGL345: Science/Fiction added to C2: Literature

Approved by 2013-2014 Committee:

Janet Rizzoli Emily Saunders Geoffrey Buhl Catherine Burriss Jose Alamillo Kathy Musashi Debra Hoffmann
Rachel Danielson Dax Jacobson Sarah Johnson

Request Submitted

Course: CHEM-ENGL345 Science/Fiction

Area: C2 Literature

Date Submitted: 10/8/2013 4:25:09 AM

Date Approved: 10/21/2013 2:03:17 PM

1. Develop students' ability to respond subjectively as well as objectively to experience

Reflective writing assignments will encourage the subjective, personal response to the reading assignments. Contextualization of the fictional stories within a real literary and/or scientific framework will support the more objective analysis of the readings. Some assignments may specifically require both kinds of response, as well as the creation of connections between with subjective and objective. For example, when considering the timescales involved in interstellar travel or in evolution of species, students may confront and manipulate inconsistencies between their own belief systems and the scientific models of nature.

2. Cultivate and refine students' affective, cognitive, and physical faculties through studying great works of the human imagination

Some of the greatest (well known and obscure) works of science fiction will be read and analyzed in this class. Reflective writing assignments support and develop student's ability to articulate their perceptions and responses to the readings. These same assignments require students to interpret and contextualize the readings with the frameworks of 1) literary analysis and criticism and 2) of scientific knowledge (and speculation); thus the students will be required to wind their affective responses to readings with a reasoned analysis of the works. The students' physical ability to write clearly and within the boundaries of a defined set of goals will be exercised and developed in the class over through the process of writing and revising several different writing assignments.

3. Increase awareness and appreciation in the tradition humanistic disciplines such as art, dance,drama, literature, and music.

The course will expose students to a wide range of highly regarded science fiction literature. Both instructors and students will contextualize each work within the nomenclature and history of the literary discipline. As such, the readings actually allow for at least the partial reconstruction of the history of literature, through the lens of science fiction. For example, some readings will predate the typewriter, while others only exist in digital form; the significance of this kind of trajectory will be fodder for classroom and personal analysis.

4. Examine the interrelationship between the creative arts, the humanities, and self

Assignments will include reflective writing, which directly accesses how the students places themselves and their responses within the context of the readings and the ideas presented therein. Many of the greatest works of science fiction use a speculative setting to engage the reader with important social problems involving gender, race, class, and power - some of the humanities' most interesting targets. Thus, by requiring the students to write their own creative (fictional) works in the mode of science fiction, the class will engage students in the act of creatively/speculatively exploring human problems.

5. Include an exposure to world cultures

The reading list includes many authors that are women, people of color, and/or from nations and cultures beyond the U.S. Many of the readings, such as "The Calcutta Chromosome", address other world cultures directly, while others explore the *notion* of cultural interplay directly, albeit from the displaced perspective of the fictional/speculative (e.g., Ursula K. LeGuin's "The Dispossessed").

6. Involve the student with literary works

Students will read 10-15 important science fiction short stories and novels, engaging in discussion and reflective writing on all of them.

7. Promote students' ability to effectively analyze and respond to works of human imagination

Writing assignments will provide the structural and theoretical basis for students to carry out their own interpretation of the literary works covered in the class.

8. Require substantive analytical/critical thinking

Assignments will go beyond either affective responses to the readings or creation of students' own fictional works. In either case, one objective will always be is the contextualization and interpretation of the work (one's own or of others) within a defined framework - that framework might be literary or science/concept-based. In this way, the class structure (readings, discussion, assignments) builds the students' skills in interpretation and synthesis.

GE Committee response to your request have CHEM-ENGL345: Science/Fiction added to B1: Physical Sciences -- Chemistry, Physics, Geology, and Earth Sciences

Approved by 2013-2014 Committee:

Janet Rizzoli
Emily Saunders
Geoffrey Buhl
Catherine Burriss
Jose Alamillo
Kathy Musashi
Debra Hoffmann
Rachel Danielson
Dax Jacobson
Sarah Johnson

Request Submitted

Course: CHEM-ENGL345 Science/Fiction
Area: B1 Physical Sciences -- Chemistry, Physics, Geology, and Earth Sciences
Date Submitted: 10/8/2013 4:25:05 AM
Date Approved: 10/21/2013 2:04:59 PM

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

This course will engage students in hands-on projects in which they will investigate various phenomena (spectroscopy, evolution, laser construction). As well, science fiction directly explores the boundaries and limits on scientific understanding of nature; students will evaluate these boundaries directly through analysis of fiction (e.g., the im/possibility of faster than light travel).

2. 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

Readings will reach as far back as selections from Jules Verne, H. G. Wells, and Albert Einstein. Course discussions and projects will examine how the science has moved forward based on new knowledge, and will compare this change to societies expectations of science. Readings that contrast the 20th century conceptualization of cyberspace with the 21st century realization of cyberspace while looking forward to society's current expectations exemplify how the course contextualizes change in science and scientific perspectives.

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

Arthur Conan Doyle "Sherlock Holmes" stories are an example of stories that cross the boundaries of mystery, science, and science fiction, and that allow examination of both inductive and deductive reasoning in science. The author was neither a logician or a scientist, and his work supports an analysis of the practical interpretation/application of scientific reasoning. nicely Other authors, as well as popular media such as "The X-Files", allow for a similar examination of the limits/difficulties with science, and perceptions of science. Furthermore, by presenting fictional stories that intentionally (subtly or blatantly) take a scientific premise beyond its logical, practical, or current limitations, the course allows for a discourse on the interplay between conception, misconception, and speculation.

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

The class interweaves reading/discussion of science with fictional explorations of science. As such, presentation of the principles and concepts of the physical science and the physical universe is at the core of the course's premise. As an example, the class begins with an exploration of the nature of spacetime, and the limitations our current model of the universe places on space travel; the class moves on to consideration of concepts and models that might allow faster than light travel, such as dark matter providing the energy requisite for warping spacetime.

Approval Sheet

Program/Course: CHEM 345 ENGL

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

The CI program review process includes a report from the respective department/program on its progress toward accessibility requirement compliance. By signing below, I acknowledge the importance of incorporating accessibility in course design.

Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
General Education Chair		
	Signature	Date
Center for International Affairs Director		
	Signature	Date
Center for Integrative Studies Director		
	Signature	Date
Center for Multicultural Engagement Director		
	Signature	Date
Center for Civic Engagement Director		
	Signature	Date
Curriculum Chair		
	Signature	Date
AVP		
	Signature	Date