I. Call to Order
Roll
( ) Suzanne Forster UAB/CAS Written Communication
( ) Oliver Hedgepeth UAB/CBPP
( ) Utpal Dutta UAB/SOE
( ) Kevin Keating UAB/Library
( ) Deborah Fox UAB/Mat-Su
( ) Kenrick Mock UAB/CAS
( ) Len Smiley CAS Quantitative Skills
( ) Marcia Stratton CAS Oral Communication
( ) Walter Olivares CAS Fine Arts
( ) Patricia Fagan CAS Humanities
( ) Beverly Barker CHSW Natural and Physical Sciences
( ) Catherine Sullivan CHSW
( ) Robert Capuozzo COE
( ) Sandra Pence CTC
( ) Vacant Social Sciences
( ) Hilary Davies UAB Ex officio/UAB Chair
( ) Bart Quimby UAB Ex officio/OAA
( ) Vacant Student

II. Approval of Agenda (pg. 1)

III. Approval of Summary (pg. 2)

IV. Report from Associate Vice Provost Bart Quimby

V. Chair’s Report
   A. Election of Chair

VI. Course Action Requests

Add BIOL A365 Astrobiology (3 cr) (3+0) (cross listed w/ASTR A365) (pg. 3-8)

Add ASTR A365 Astrobiology (3 cr) (3+0) (cross listed w/BIOL A365) (pg. 9-15)

VII. Old Business
   A. Revisit the nine GER Outcomes as posted in catalog.
      How do these fit with outcomes in category descriptors, capstone outcomes, and the ILOs? Do we need to revise or streamline outcomes in light of recent work that has been done?

VIII. New Business
   A. Review composition and election of GERC members

   B. Clarify role and charge of GERC in terms of GER program assessment

   C. Goals for AY 2010

IX. Informational Items and Adjournment
I. Call to Order
Roll
(x) Erik Hirschman Mat-Su/UAB Social Sciences
(x) Mari Ippolito CAS/UAB Social Sciences
(x) Patricia Fagan CAS Humanities
(x) Robert Capuozzo COE
(x) Jack Pauli CBPP
(x) Jeane Breinig CAS Written Communication
(x) Len Smiley CAS Quantitative Skills
(e) Suzanne Forster CAS/UAB Quantitative Skills
(e) Robin Wahto CTC/UAB
() Walter Olivares CAS Fine Arts
(e) Bart Quimby OAA/UAB Fine Arts
( ) Catherine Sullivan CHSW/UAB Oral Communication
(x) Doug Parry/ Shawnalee Whitney CAS Oral Communication
( ) Jeff Miller SOE
( ) Karl Wing USUAA
(e) Hilary Davies UAB Chair

II. Approval of Agenda (pg. 1)
Approved

III. Approval of Summary (pg. 2)
Approved

IV. Report from Associate Vice Provost Bart Quimby
Unable to attend

V. Chair’s Report
Suzanne Forster unable to attend; Erik Hirschman chaired.

VI. Course Action Requests

Chg PS A331 Political Philosophy (3 cr) (3+0) (pg. 3-8)
Approved

Chg PS A332 History of Political Philosophy I: Classical (3 cr) (3+0) (pg. 9-13)
Approved

Chg PS A333 History of Political Philosophy II: Modern (3 cr) (3+0) (pg. 14-19)
Approved

Chg ECON A210 Environmental Economics and Policy (3 cr) (3+0) (pg. 20-26)
Approved

VII. Old Business

VIII. New Business
A. GER Catalog Copy

IX. Informational Items and Adjournment
## Curriculum Action Request
### University of Alaska Anchorage

Proposal to Initiate, Add, Change, or Delete a Course or Program of Study

<table>
<thead>
<tr>
<th>1a. School or College</th>
<th>1b. Division</th>
<th>1c. Department</th>
</tr>
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<td>AS CAS</td>
<td>AMSC Division of Math Science</td>
<td>Biological Sciences</td>
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<th>2. Course Prefix</th>
<th>3. Course Number</th>
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<th>5b. Contact Hours (Lecture + Lab)</th>
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<td>BIOL</td>
<td>A365</td>
<td></td>
<td>3</td>
<td>(3+0)</td>
</tr>
</tbody>
</table>

6. Complete Course/Program Title

Astrobiology

Abbreviated Title for Transcript (30 character)

7. Type of Course

- [ ] Academic
- [ ] Non-credit
- [ ] CEU
- [ ] Professional Development

8. Type of Action

- [x] Course
- [ ] Program

9. Repeat Status No

- [ ] # of Repeats
- [ ] Max Credits

10. Grading Basis

- [x] A-F
- [ ] P/NP
- [ ] NG

11. Implementation Date

- From: Spring/2010
- To: /9999

12. [x] Cross Listed with ASTR A365

13. List any programs or college requirements that require this course

Elective capstone course for BA-Biological Sciences, BS-Biological Sciences majors, Biology minors, BS-Geology or BS-Natural Science majors.

14. Coordinate with Affected Units:

- UAA Faculty ListServ, UAA Deans & Directors.

Initiator Signature

Date

15. General Education Requirement

- [x] Oral Communication
- [ ] Written Communication
- [ ] Quantitative Skills
- [ ] Humanities
- [ ] Fine Arts
- [ ] Social Sciences
- [ ] Natural Sciences
- [x] Integrative Capstone

16. Course Description

A comprehensive examination of the possibility of the existence of life (microbial and advanced) outside of the Earth, the probability of discovery of extraterrestrial life (methods of planet detection, chemical signatures of microbial life, and contact with advanced life), and the scientific and cultural implications of such a discovery. This includes the study of star and planet formation rates, habitability zones, origin of life, evolution, and formation of intelligence.

17a. Course Prerequisite(s) (list prefix and number)

BIOL A115 and (PHYS A123 or PHYS A211)

17b. Test Score(s)

n/a.

17c. Co-requisite(s) (concurrent enrollment required)

n/a.

17d. Other Restriction(s)

- [ ] College
- [ ] Major
- [ ] Class
- [ ] Level

17e. Registration Restriction(s) (non-codable)

Junior standing; completion of all GER Tier 1 courses.

18. Mark if course has fees

19. Justification for Action

New UAA GER Integrative Capstone course. The advanced approach to understanding of extraterrestrial life requires an integration of critical concepts of astrophysics, physics, geology, atmospheric science, origin of life, molecular biology, and evolutionary biology. Students will emerge with an understanding of how life originates and evolves, what conditions are necessary for life to exist elsewhere, how we may discover it, and what it would mean to humankind.
UNIVERSITY OF ALASKA ANCHORAGE
COURSE CONTENT GUIDE

I. Implementation Date: Spring 2010

II. Course Information
A. College: College of Arts and Sciences
B. Course Subject/Number: BIOL A365
C. Course Title: Astrobiology
D. Course Description: A comprehensive examination of the possibility of the existence of life (microbial and advanced) outside of the Earth, the probability of discovery of extraterrestrial life (methods of planet detection, chemical signatures of microbial life, and contact with advanced life), and the scientific and cultural implications of such a discovery. This includes the study of star and planet formation rates, habitability zones, origin of life, evolution, and formation of intelligence.
E. Credit Hours: 3.0
F. Contact Hours: 3 + 0
G. Grading Basis: A-F
H. Status of Course Relative to Degree Program: Elective capstone course for BA-Biological Sciences, BS-Biological Sciences majors, Biology minors, BS-Geology or BS-Natural Science majors.
I. Course Fees (Yes/No): Yes
J. Lab Fees (Yes/No): No
K. Coordination: UAA Faculty Listserv, UAA Deans and Directors
L. Crosslisting: ASTR A365
M. Prerequisites/Corequisite: Prerequisites: BIOL A115 and PHYS A123.
N. Registration Restrictions: Junior standing; completion of all GER Tier 1 courses (basic college-level skills) is required for GER Tier 3 credit.
O. Course Attributes: UAA GER Integrative Capstone

III. Course Activities:
This is primarily a lecture course; however it will use the visualization tools and immersive video environment of the planetarium. Students are required to read, research and synthesize information from the primary literature and other resources to cover a topic of their choice related to the likelihood of life on another planet, the chances of discovery of extraterrestrial life, or the impact that such a discovery would have on society. This research will be presented by the students to the class.

IV. Evaluation:
Course grading is A-F. The evaluation methods, while at the discretion of the faculty member teaching the course, may include written lecture exams, worksheets and other homework assignments, reading and interpreting selected primary literature and a research project with an associated paper in scientific format.
V. Course Level Justification:  
Students are required to learn and integrate information from a variety of scientific disciplines as it relates to astrobiology, to read, understand, and apply ideas conveyed by primary scientific literature, to synthesize astrophysical, chemical, geological and biological knowledge and social considerations; and to apply course materials to this topic.

GER Integrative Capstone Justification: Justifications for designating BIOL A365 Astrobiology as a GER Integrative Capstone course include its emphases on:

1. Knowledge Integration / Interrelationships and synergy among GER disciplines: Astrobiology’s relationship to the other natural and social sciences is an overall theme of the course. This course focuses on the interfaces between physical sciences (astronomy, chemistry, physics, geology), biological sciences (molecular biology, origins of life, evolutionary biology), and the social sciences, particularly as they relate to the implications of the discovery of extraterrestrial life.

2. Effective communication skills: Student success demands effective communication through essay examinations, individual classroom presentations, brief reports (oral and written) on hot topics from the local media, and a final research paper.

3. Critical Thinking: Students will succeed in this class if they are able to integrate information across disciplines, and critically evaluate the reliability of data and positions presented in lecture, texts, scientific, and popular viewpoints. Students' ability to critically evaluate diverse materials will be determined based on writing assignments, class presentations, and exams.

4. Information literacy: Students are expected to achieve and demonstrate computer and Internet skills for acquiring information relevant to current topics in astrobiology. This will involve both research in the primary scientific literature (via library and internet resources) and the collection of information from more 'public' sources such as TV, Web, popular press magazines and newspapers, and advocacy organizations. Students must show that they can critically and appropriately evaluate scientific content in 'public' sources based on knowledge gleaned from 'scientific' sources.

5. Quantitative Perspectives: A critical understanding of astrobiology requires that students grasp quantitative concepts such as how a star's mass affects the size and longevity of a habitability zone, and how cell size affects metabolic and reproductive rates. In addition, students must be able to read and interpret scientific graphs (quantitative data, graphically displayed), and to generate graphs showing the relationship between different properties (such as the temperature and luminosity of a star). Exams will specifically test on these skills.

6. Evolving realities of the 21st Century: The growing knowledge that understanding the possibility and probability of life on another planet is to understand how life originated on ours. It creates a special perspective on the uniqueness of life on Earth, and its fragility. This is particularly relevant in the context that humans are having large and potentially irreversible impacts on the habitability of the Earth for many forms of life, which has been a recent focus of scientific and political discussions.
VI. **Course Outline**

1.0 An Introduction to Life in the Universe  
  1.1 The Possibilities of Life Beyond Earth  
  1.2 The Scientific Context of the Search  
  1.3 The New Science of Astrobiology  

2.0 The Habitability of the Earth  
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  5.1 The Inner Solar System  
  5.2 The Outer Solar System  
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6.0 Mars  
  6.1 Fantasies of Martian Civilization  
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  6.3 The Climate History of Mars  
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10.0 The Search for Extraterrestrial Intelligence  
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11.0 Interstellar Travel  
  11.1 The Challenge of Interstellar Travel  
  11.2 Building a Spaceship for Interstellar Travel  
  11.3 Fermi's Paradox
VII. Instructional Goals and Student Outcomes:

A. The instructor will:

The instructor will:

- Provide a basic description of the physical, chemical, and geological properties necessary for the origin and sustainability of life on Earth.
- Build on this conceptual framework to describe how other moon, planet and star systems have zones of habitability in which life can exist.
- Discuss the physical features of other worlds within our Solar System and beyond which may allow life to develop.
- Describe how life evolves in tandem with its changing environment. Provide detailed examples of how the physiological traits of organisms are uniquely linked to their habitat, and of how changes in that habitat may influence species diversity and abundance through impacts on physiological properties.
- Discuss the techniques used to search for extraterrestrial planets on which life could exist. Explore future missions and technologies that will search for the chemical signatures of simple life forms on these worlds.
- Discuss the role of intelligence in the evolution of life, and its implications for the likelihood of advanced extraterrestrial life forms capable of communicating with us.
- Examine the techniques used to search for advanced life in the Universe, and explore the scientific and cultural implications of such a discovery.
- Teach students how to evaluate and integrate information from a variety of different sources and perspectives.

B. Student Outcomes:

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<th>Students will be able to:</th>
<th>Assessment Method</th>
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<td>Exams and written assignments</td>
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<td>Critically integrate information read from scientific articles provided in lecture and textbook assignments, and apply this information to evaluate the scientific accuracy of popular press (TV, newspaper, magazine, web) reports related to astrobiology.</td>
<td>Exams, written assignments and in-class reports</td>
</tr>
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<td>Describe the likelihood of &quot;contact&quot; with an advanced civilization, and discuss the scientific and cultural impacts of such a discovery.</td>
<td>In-class presentations, exams, and writing assignments</td>
</tr>
<tr>
<td>Assess the long-term prospects for the habitability for life of the Earth. In particular, explore the nature of human impacts on ecosystems through in depth study of current 'hot topics' such as global warming.</td>
<td>In-class presentations, exams, and written assignments</td>
</tr>
</tbody>
</table>

VIII. Suggested Text(s):

IX. **Bibliography:**

In addition to textbook assignments, an extensive reference list of current literature from scientific journals is utilized for this course and assigned and / or suggested to the students (all provided on blackboard); please contact Travis Rector, aftar, or 6-1242.


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</tr>
<tr>
<td>7. Type of Course</td>
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</tr>
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<td>Course</td>
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<td>9. Repeat Status No</td>
<td># of Repeats 0</td>
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<tr>
<td>12. Cross Listed with BIOL A365</td>
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<td>15. General Education Requirement</td>
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F. Contact Hours: 3 + 0
G. Grading Basis: A-F
H. Status of Course Relative to Degree Program: Elective capstone course for BA-Biological Sciences, BS-Biological Sciences majors, Biology minors, BS-Geology or BS-Natural Science majors.
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O. Course Attributes: UAA GER Integrative Capstone

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IV. Evaluation:
Course grading is A-F. The evaluation methods, while at the discretion of the faculty member teaching the course, may include written lecture exams, worksheets and other homework assignments, reading and interpreting selected primary literature and a research project with an associated paper in scientific format.
V. **Course Level Justification:**
Students are required to learn and integrate information from a variety of scientific disciplines as it relates to astrobiology, to read, understand, and apply ideas conveyed by primary scientific literature, to synthesize astrophysical, chemical, geological and biological knowledge and social considerations; and to apply course materials to this topic.

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   11.3 Fermi's Paradox
VII. Instructional Goals and Student Outcomes:

A. The instructor will:

The instructor will:

- Provide a basic description of the physical, chemical, and geological properties necessary for the origin and sustainability of life on Earth.
- Build on this conceptual framework to describe how other moon, planet and star systems have zones of habitability in which life can exist.
- Discuss the physical features of other worlds within our Solar System and beyond which may allow life to develop.
- Describe how life evolves in tandem with its changing environment. Provide detailed examples of how the physiological traits of organisms are uniquely linked to their habitat, and of how changes in that habitat may influence species diversity and abundance through impacts on physiological properties.
- Discuss the techniques used to search for extraterrestrial planets on which life could exist. Explore future missions and technologies that will search for the chemical signatures of simple life forms on these worlds.
- Discuss the role of intelligence in the evolution of life, and its implications for the likelihood of advanced extraterrestrial life forms capable of communicating with us.
- Examine the techniques used to search for advanced life in the Universe, and explore the scientific and cultural implications of such a discovery.
- Teach students how to evaluate and integrate information from a variety of different sources and perspectives.

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</table>

VIII. Suggested Text(s):

IX. **Bibliography:**
In addition to textbook assignments, an extensive reference list of current literature from scientific journals is utilized for this course and assigned and / or suggested to the students (all provided on blackboard); please contact Travis Rector, aftar, or 6-1242.


