

**Senate Action on Reciprocity of Old General Education Courses in New General Education**

**Whereas** the new general education program became effective Fall 2014; and

**Whereas** 17 courses in the old general education program are no longer in the new general education program; and

**Whereas** seven of the deleted courses (KIN 310, CHM 160, CHM 161, IDS 397, MTH 285, MTH 340, and THE 210) are allowed for reciprocity into specific areas of the new general education program if completed prior to Fall 2014; and

**Whereas** there are numerous partner institutions, dual credit programs, and transfer equivalency institutions that did not receive clear communication of the courses that are no longer in the general education program; and

**Whereas** this lack of clear communication has led to a situation where students who entered Missouri State University in Fall 2015 had unknowingly taken courses now deleted from our new general education,

**Be it resolved** that the will of Faculty Senate is that the Office of the Provost and the Coordinator for Transfer Credit shall extend the reciprocity of the old general education courses into the new general education program provided that students are enrolled in reciprocal courses no later than the 2015 Fall semester.

**Be it further resolved** that the will of Faculty Senate is that the Office of the Provost and the Coordinator for Transfer Credit shall coordinate to disseminate the appropriate information to partner institutions, dual credit programs, and institutions with high transfer equivalencies from the aforementioned courses so that incoming students are made aware of our recent revisions to the general education program and their transfer equivalencies.

## Petition to Appeal AST 112 (Life in the Universe)

We the undersigned members of the MSU ranked faculty wish to appeal the decision by CGEIP to add the course AST 112 (Life in the Universe) to the General Education Curriculum as an option for satisfying the requirement for a course in the Life Sciences. We believe AST 112 does not meet the objectives of the Life Sciences requirement, as explained below.

1. When the new General Education curriculum was debated and refined in Faculty Senate in 2012-2013, it was clear that a course in the Life Sciences category would be devoted to, or at the very least be focused primarily on, the life sciences. The Life Science category was created specifically to address General Goal (10) for general education, which states: "Students will understand basic concepts of living things, the nature of scientific knowledge, and the relevance of biological knowledge to human affairs." It was not the intent that courses in this area should merely have some life science content. Otherwise, the distinction between courses in the Life Sciences category and the Physical Sciences category would essentially disappear. For example, any introductory course in the biological sciences will cover some basic chemistry, but this does not and should not qualify it as a course in the physical sciences.
2. According to the sample policy statement, lectures in AST 112 will follow the textbook "Life in the Universe" by Bennett and Shostak. This text is not promoted by its publishers as an introduction to the life sciences. The publisher's overview states: "**Life in the Universe** takes non-science majors on a journey through the solar system and beyond, using a rigorous yet accessible introduction to astronomy, biology, and geology to explain natural phenomena and to explore profound scientific questions about astrobiology... Designed for astrobiology courses but *also suitable for introductory astronomy courses*, **Life in the Universe** captures your imagination ..." (italics added).
3. The Bennett/Shostak textbook (third edition, 2012) contains 13 chapters, only two of which address the life sciences. These are chapter 5 (the nature of life on earth) and chapter 6 (the origin and evolution of life on earth). Chapter 5 contains bits and pieces of the material that would fill the entirety of a textbook on the life sciences; middle school science classes in the Springfield Public School system provide more exposure to the life sciences than is provided by this text. Besides the two chapters mentioned above, there is one chapter on the geology of Earth (chapter 4), and ten (!) chapters on astronomy. As indicated by the publisher, this is essentially a textbook on astronomy that uses the possibility of extraterrestrial life as a hook. The sample policy statement indicates that the contents of this course will be delivered in six sections that follow the textbook closely, with the material in chapters 5 and 6 being addressed in only one of these sections.
4. A proposal to include AST 112 as a Life Sciences course in the general education curriculum was denied by CGEIP in 2013. The Department of PAM appealed this decision, forcing the proposal to the floor of the Faculty Senate on May 9, 2013. The Senate denied the appeal (i.e., upheld CGEIP's decision) for the reasons outlined above. Although some of the wording has been changed on the course proposal (e.g., more mention of the Life Science learning outcomes), the actual content of the course has not changed perceptibly.

**Missouri State University  
CURRICULAR PROPOSAL  
NEW COURSE (or new REGULAR SECTION of an existing variable content course)**

Department Physics, Astronomy, and Materials ScienceDate January 22, 2015

Check one: ☒ New COURSE ☐ New REGULAR (i.e. permanent) SECTION of an existing variable content course. If a new regular section of an existing variable topics course, to what existing course is it to be attached? \_\_\_\_\_

Course Code AST Course Number 112 Course Title Life in the Universe**PROPOSED CATALOG DESCRIPTION**

General Education Course. (Breadth of Knowledge—Natural World—Life Sciences). 3(3-0).

An exploration of how life came to be on the planet Earth, prospects for detecting it on other worlds and what that detection, or non-detection, means to humanity. Topics include the origin of elements in the Universe and how they form the building blocks of life, how conditions favorable for life evolve on planets, how life evolves, biodiversity, recent discoveries of exoplanets, and possible effects on society.

**PURPOSE OF COURSE**

With thousands of planets discovered around other stars, the potential of detecting alien life (intelligent or not), and the consequences of those detections or non-detections, is something this generation will have to address. The big question, "Are we alone in the Universe?" will be answered within our students' lifetime, and most likely within the next few decades. This course will inform and educate our students about this timely topic to better prepare them for the amazing discoveries ahead. This course allows students to partially fulfill the Breadth of Knowledge-Natural World requirements in the General Education Program. Also see the attached pages.

**RELATIONSHIP TO OTHER DEPARTMENTS**

The undergraduate course catalog lists an intersession course titled Astrobiology (BMS455) which has not been offered in many years. This course is similar, but more in depth and leans more towards the astronomical impacts on evolution, aliens, and the human experience. Students are now required to take a course under the Life Sciences division of the Breadth of Knowledge-Natural World component of General Education. AST 112 Life in the Universe will be an additional offering in this component with material that is interdisciplinary, exciting, dynamic, and which addresses some of the oldest questions posed by human beings.

**DEPARTMENT:** Route according to ART VI, SEC 3B(1-4) of Bylaws of the Faculty. Attach New Course Resource Information form (FS 00a/05) and forward three typed, originally signed forms to one of the following (please check all that apply and send to first council/committee marked). If the course needs to go through more than one council/committee forward one additional form for each additional council/committee marked.

☒ College Council

(All new course proposals numbered 100-599 must go through College Council first. After approval, College Council will forward appropriate number of copies to the next committee/ council or directly to the Faculty Senate if no further committee approval is needed.)

☐ Professional Education Committee (Considers all new courses affecting BS and MS in Education and Educational Specialist degrees)☒ Committee on General Education and Intercollegiate Programs (Considers all general education and multi-college new course proposals)☐ Graduate Council (Considers all 600-, 700-, and 800-level new courses)

If the course needs to go through more than one council/committee, forward one additional form for each additional council/committee marked.

Signature \_\_\_\_\_

Department Head

Date \_\_\_\_\_

1-27-15

(Routing on Reverse Side)

FS New Course - 4/10/2014

## ROUTING

## 1. COLLEGE COUNCIL (ART VI, SEC 3B)

☒ **APPROVED**After dean review/comment, forward two signed copies of final action to the Secretary of the Faculty for disposition, or forward appropriate number of copies to next committee level for approval.☐ **DISAPPROVED**Return one signed copy of final action to the appropriate Department Head.

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

Chairperson

Date

2-10-15

## 2. DEAN OF THE COLLEGE (ART VI, SEC 5)

☒ **REVIEWED**

Return to College Council Chair within ten days of receipt for disposition.

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

Dean of the College

Date

2/16/15

## 3. PROFESSIONAL EDUCATION COMMITTEE (ART III, SEC 9)

☒ **APPROVED**Forward two signed copies of final action to the Secretary of the Faculty for disposition, or forward three signed copies to next committee level for approval.☐ **DISAPPROVED**Return one signed copy of final action to the appropriate Department Head.

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

Chairperson

Date \_\_\_\_\_

## 4. COMMITTEE ON GENERAL EDUCATION AND INTERCOLLEGIATE PROGRAMS (ART IV, SEC 2)

☒ **APPROVED**Forward two signed copies of final action to the Secretary of the Faculty for disposition, or forward three signed copies to next committee level for approval.☐ **DISAPPROVED**Return one signed copy of final action to the appropriate Department Head.

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

Chairperson

Date

4-8-15

## 5. GRADUATE COUNCIL (ART V, SEC 3, OR ART VI, SEC 3B)

☒ **APPROVED**Forward two signed copies of final action to the Secretary of the Faculty for disposition.☐ **DISAPPROVED**Return one signed copy of final action to the appropriate Department Head.

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

Chairperson

Date \_\_\_\_\_

## 6. FACULTY SENATE (ART VI, SEC 9)

☒ **APPROVED**☐ **DISAPPROVED**

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

Chairperson

Date \_\_\_\_\_

## 7. PROVOST (ART I, SEC 6; ART VI, SEC 9)

☒ **RECOMMENDED TO PRESIDENT**☐ **NOT RECOMMENDED TO PRESIDENT**

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

Provost

Date \_\_\_\_\_

## 8. PRESIDENT

☒ **APPROVED**☐ **DISAPPROVED**

Comment (s) \_\_\_\_\_

Signature \_\_\_\_\_

President

Date \_\_\_\_\_

***NEW COURSE RESOURCE INFORMATION***Department Physics, Astronomy, and Materials ScienceDate January 20, 2015Course Number and Title AST 112 Life in the UniverseAnticipated Average Enrollment 100Maximum Enrollment Limit 130Faculty Load Assignment 3 Equated Hours1 Is another course being deleted? No If so, give course number and title.

2 What will this course require in the way of:

Additional library holdings? None.Additional computer resources? None. Access to current computer labs is sufficient.Additional or remodeled facilities? None.Additional equipment or supplies? None, this is not a lab course.Additional travel funds? None.Additional faculty--general vs specialized? None.Other additional expenses? None.

3 If additional faculty are not required, how will faculty be made available to teach this course?

The Physics, Astronomy, and Materials Science Department is adjusting its astronomy course offerings in response to the revised General Education Program. Condensing the current offerings allows for the inclusion of this new course.

List names of current faculty qualified to teach this course:

Becky Baker, Bob Patterson (taught a shorter version as a special course), Peter Plavchan (taught a version at UCLA), and Mike Reed.

4 What is the anticipated source of students for this course? (If from within the department, will students be taking this course in addition to or in place of other courses? If from outside the department, which courses in other departments would most likely be affected?)

This is a General Education course. The source of students is the same as for current introductory astronomy courses, namely, the entire student body.

5 Other comments:

Proposal Review - Course Proposal - Missouri State University

<https://mis.missouristate.edu/Student/cprop/proposalReview/316>**Course Proposal**[Home](#) [View Proposals](#) [New Proposal](#)[Missouri State](#) > [Computer Services](#) > [MIS](#) > [Course Proposal](#) > [Proposal Review](#)**Application Form for Proposed Courses**  
**Revised General Education Program Curriculum**[Download as PDF](#)**Approvals and Statements:**

**Department Head:** [Cornellison, David M \(M01292018\)](#)  
**Approval Status:** Approved  
**Statement:** made changes at behest of committee  
**Date:** 2015-03-31 09:04:56.0  
**Dean:** [Jahnke, Tamara S \(M00096156\)](#)  
**Reviewed:** Yes  
**Date:** 2015-04-01 09:33:52.0  
**CGEIP Chair:** [Swearingen, Rebecca \(M00061856\)](#)  
**Approval Status:** Approved  
**Date:** 2015-05-27 10:30:08.0

**Course Information:**

**Submitting User:** [Patterson, Robert S \(M00052246\)](#)  
**Submitting Date:** 2015-03-19 16:22:29.0  
**Department Code:** AST  
**Course Number:** 112  
**Course Title:** Life in the Universe  
**Credit Hours:** 3  
**Prerequisites:** None

**How the course aligns with the GLG's:** One major focus of NASA is to determine whether or not life exists beyond Earth. This class addresses that search and uses it to explore the larger context of life, its requirements, influences, and humanity's place within the larger setting of life throughout the Universe. AST 112 will familiarize students with many aspects of life including: currently expected chemical and geological requirements for life and how the Universe produces them (SLGs 1, 2, 6); cellular requirements for life (SLGs 1, 2); evolution, including environmental and external influences (SLGs 1, 2, 4, 6); and the possibilities of and search for life on other worlds (SLGs 2, 4, 6). Specifically, students will consider the requirements of (cellular) life and how the Universe came to possess these conditions; and how life evolves and adapts (basic concepts in living things). They will learn how life (particularly human) interacts with and affects its environment, including investigating terraforming and alien (largely microbial) impact on our ecosystem (relevance of biological knowledge to human affairs). Scientific inquiry will be used to discriminate amongst many possibilities, including adding recent discoveries (extremophilic life and extrasolar planets) to our knowledge base (the nature of scientific knowledge). This course teaches life, evolution, and living systems from a multidisciplinary perspective by drawing extensively from astronomy, physics, chemistry, biology, and geology. It is timely, as only during the last few years could astronomers begin to estimate the numbers and conditions of extrasolar planets, and exploration within our solar system has revealed other likely places for life.

**Syllabus Attachment:** Failed to save attachment

**Curricular Area, General Learning Goals, & Specific Learning Outcomes:**

Proposal Review - Course Proposal - Missouri State University

<https://mis.missouristate.edu/Student/cprop/proposalReview/316>**Course Area:** Breadth of Knowledge**Course Type:** Knowledge of the Natural World - Life Sciences

**General Goal (10):** Students will understand basic concepts of living things, the nature of scientific knowledge, and relevance of biological knowledge to human affairs.

• **SLO10.1 - Understand living systems by describing their nature, organization, and evolution.**

Tool(s) used to assess this specific learning outcome:

- Focus group
- Pre-test/post-test(internally developed)
- Questionnaire
- Specific item on an exam
- Other: Specific homework questions

Assessment data instructors will track and report:

- Number of items correct
- Percent of items correct
- Score on common rubric

• **SLO10.2 - Understand and use the processes by which scientific knowledge of living things is generated.**

Tool(s) used to assess this specific learning outcome:

- Focus group
- Pre-test/post-test(internally developed)
- Questionnaire
- Specific item on an exam
- Other: Specific homework questions

Assessment data instructors will track and report:

- Number of items correct
- Percent of items correct
- Score on common rubric

• **SLO10.3 - Develop knowledge of living things through hypothesis testing and gain the ability to draw defensible conclusions regarding living things.**

Tool(s) used to assess this specific learning outcome:

- Focus group
- Pre-test/post-test(internally developed)
- Questionnaire
- Specific item on an exam
- Other: Specific homework questions

Assessment data instructors will track and report:

- Number of items correct
- Percent of items correct
- Score on common rubric

• **SLO10.4 - Make logical connections between key concepts in the life sciences and describe the interaction between human lives and other living things.**

Tool(s) used to assess this specific learning outcome:

- Focus group
- Pre-test/post-test(internally developed)
- Questionnaire
- Specific item on an exam
- Other: Specific homework questions

Assessment data instructors will track and report:

- Number of items correct
- Percent of items correct
- Score on common rubric

Proposal Review - Course Proposal - Missouri State University

<https://mis.missouristate.edu/Student/cprop/proposalReview/316>

- **SLO10.6 - Understand the ways the environment impacts humanity and how human actions affect the environment.**

Tools used to assess this specific learning outcome:

- Focus group
- Pre-test/post-test(internally developed)
- Questionnaire
- Specific item on an exam
- Other: Specific homework questions

Assessment data instructors will track and report:

- Number of items correct
- Percent of items correct
- Score on common rubric

**Enrollment:**

	Fall	Spring	Summer	Interessions
Number of Sections:	1	1	0	0
Enrollment Per Section:	100	100	0	0
<b>Total Annual Enrollment:</b>	<b>200</b>			

**Other Considerations:**

**Modalities**

- Traditional

**High Impact Education Experiences**

- Discussions
- Interdisciplinary Elements
- Other

Peer instruction, clickers, group projects

**Instruction:**

**Instructor type(s):** Full-time faculty

**Instructor Qualifying Criteria:** Advanced degree and suitable teaching experience

**Instructional methods that support student success:** Will use small (focus) group discussions, peer instruction, clickers, and group projects

**Assessment:**

**Primary individual(s) that will review and analyze the assessment data across sections:**

- Course coordinator

**How results will be shared with those that teach the course:**

- Written Report

**When results will be shared with those that teach the course:**

- Each semester

**Coordinator:** Mike Reed

**Completed GEA Training:** Yes

**Comments**

Swearingen, CGEIP 2015-05-27 Thanks for all your work on this proposal.  
Rebecca null Chair 10:30:08.0



Proposal Review - Course Proposal - Missouri State University

<https://mis.missouristate.edu/Student/cprop/proposalReview/316>

<b>Biagioni, Richard N</b>	CGEIP	2015-04-02 16:16:54.0	AST 112, Life in the Universe, should be accepted as a Breadth of Knowledge / Life Sciences (GG10) class. It fulfills expectations for that category from the astrobiology viewpoint rather than from the traditional biology-based life-science viewpoint. This perspective is both legitimate and relevant, and should be available in the MSU general education curriculum. The syllabus discusses 5 SLOs for GG10, and provides detailed information about how they will be addressed by specific course topics. While these are not specifically integrated into the statement of the class's general goals, they probably do more to inform students about correlation of course topics to general education goals than do many of the syllabi for approved general education courses. A number of points about assessment methodologies, pedagogy for promoting student success, and HIEEs are fairly vague and generic, but that is also true about other general education class proposals that I have read.
<b>Llewellyn, John E</b>	CGEIP	2015-03-24 09:17:51.0	The syllabus does list separate course goals now, which is an improvement over the version submitted earlier this spring. The syllabus also explains how the course will address gen ed Specific Learning Outcomes. However, those explanations don't appear to have been written with the course goals in mind. This could use revision to specifically relate gen ed SLOs to course goals, as CGEIP has required in the past. The online proposal does relate course goals to gen ed SLOs, but they do not match up exactly with the course goals in the syllabus, and CGEIP's requirement in the past is that this must be in the syllabus. The syllabus has subordinated physical sciences content to life sciences content in a way that was not as clear in the earlier version. This brings it closer to being appropriate for a life sciences course. However, I still recommend rejection until a little more work is done to correlate gen ed SLOs with course goals in the syllabus.

New Comment:



Last Modified: 11/21/2014  
Student Version 1.0.18  
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**AST 112 COURSE POLICY STATEMENT****Department of Physics, Astronomy, & Materials Science****AST 112: Life in the Universe**

Section: 1      Time TBD  
                    Location: TBD

**Dr. Peter Plavchan**

Office: Kemper 103N  
Phone: 836-5131  
email: PeterPlavchan@missouristate.edu

**Office Hours:** TBD

Fall 2015

**CATALOG DESCRIPTION:****AST 112 Life in the Universe. 3 (3-0) F, S**

General Education Course (Natural World- Life Sciences). An exploration of how life came to be on the planet Earth, prospects for detecting it on other worlds and what that detection, or non-detection, means to humanity. Topics include the origin of elements in the Universe and how they form the building blocks of life, how conditions favorable for life evolve on planets, how life evolves, biodiversity, recent discoveries of exoplanets, and possible effects on society.

**Required Textbook:**

Bennett and Shostak, Life in the Universe 3<sup>rd</sup> Edition, Addison-Wesley, ISBN 978-0321687678

*This is the only text you will need for this course. However, this is a very dynamic and evolving area of science and so lecture notes, useful links, and other material will be posted on the web. You will also need a University-sanctioned clicker for this course, which is available in the Bookstore.*

**Course Objectives:**

This is a general education life science course covering the evolution of life on Earth, its metabolic requirements, and the prospects for life and its detection elsewhere in the Universe. It includes how humankind has impacted the evolution of life on Earth, and the potential impacts of extraterrestrial life on humankind. At the end of this course, students should have an understanding for how the Universe makes both the elements necessary for life and environments hospitable for life; how life developed, evolved, and survived on the Earth; how intelligent species may impact their world and terraform others; and reflect on our place in the Universe given our current scientific knowledge on the possibility of extraterrestrial life.

## **GENERAL EDUCATION LEARNING GOALS AND RATIONALES**

AST 112 is a General Education course sanctioned by the Committee on General Education and Intercollegiate Programs (CGEIP). Following the General Education structure, AST 112 is a *Breadth of Knowledge* course. This is a *Knowledge of the Natural World* course, with a focus on *Life Science*.

### **CGEIP – Knowledge of the Natural World – General Learning Goals for AST 112**

**General Goal 10:** *Students will understand basic concepts of living things, the nature of scientific knowledge, and relevance of biological knowledge to human affairs.*

**Rationale:** With the recent estimation that there are tens of billions of Earth-like planets in our own Galaxy, the potential of detecting alien life (intelligent or not), and the consequences of those detections or non-detections, is something this generation can and will address. The big question, “Are we alone in the Universe?” will be answered within our students' lifetimes. The first searches for biosignatures in the atmospheres of exoplanets will take place at the end of this decade after the launch of the James Webb Space Telescope, with future life-seeking missions planned within our solar system and beyond. This course will inform and educate our students about this timely topic to better prepare them for the amazing discoveries ahead. AST 112 is an interdisciplinary course which will inform students about conditions which brought about life on Earth as we know it; how that life evolved and survived; consider alternative models of evolution; current solar system and exoplanet investigations including the search for extraterrestrial life; human impact on the planet and terraforming; and how the discovery, or non-discovery of extraterrestrial life impacts society and individual humans.

### **CGEIP - Knowledge of the Natural World – Specific Learning Goals (SLG) for AST 112**

#### **General Education Specific Learning Goals 1, 2, 3, 4, and 6 (Life Science) are met by AST 112**

**SLG 1)** *Understand living systems by describing their nature, organization and evolution.* AST 112 will consider evolution of the Universe, which provided the chemistry for life to begin on Earth. AST 112 will cover cellular life, its metabolic requirements and detectable signatures, evolution of life on the Earth, including the roles of astronomical factors (mass extinctions) in evolution and discoveries of extremophilic life forms.

**SLG 2)** *Understand and use the processes by which scientific knowledge of living things is generated.* AST 112 will use the scientific method to interpret observations into coherent theories.

**SLG 3)** *Develop knowledge of living things through hypothesis testing and gain the ability to draw defensible conclusions regarding living things.* AST 112 will discuss the tools used to I) verify evolution (radioactive dating); II) interpret astronomical events in Earth's past which impacted evolution (chemical signatures); and III) detect and characterize extrasolar planets (astronomical methods). Several topics (terraforming, chemistry of the Universe, etc.) will be examined philosophically to infer their part in the existence of Life in the Universe. AST 112 will also consider hypothetical environments and evolutionary processes which affect life's evolution and interpret the outcomes.

**SLG 4)** *Make logical connections between key concepts in the life sciences and describe the interaction between human lives and other living things.* AST 112 will examine human impact on our environment (warming/cooling patterns, atmospheric/soil content, radiation, etc.) and investigate impacts of terraforming (are there microbial Martians? How realistic an undertaking would this

be?). This course will also correlate the chemistry required for life on Earth with astronomy (elemental production, enrichment, and recycling) to examine where life is both possible and probable. Key concepts in the life sciences for this course include humankind's emergence and impact on environments and other life forms; the chemistry of life and the distribution of biological material; how evolution was, and could be, altered by non-terrestrial events.

**SLG 6)** *Understand the ways the environment impacts humanity and how human actions affect the environment.* AST 112 will explore extraterrestrial events which have shaped Earth's evolution, and may effect humankind in the future (asteroid impacts, an aging Sun, microbial transportation and infestations). It will also examine humankind's impact on our environment (warming/cooling patterns, atmospheric/soil content, radiation, etc.); investigate impacts of terraforming; and extrasolar planets as habitats.

### **COURSE REQUIREMENTS AND EVALUATIONS**

Evaluation of your progress in this course will be done as follows:

- 1. Tests: During the semester you will be given 3 tests, each worth 20% of your final grade. Tests are composed of Multiple Choice and Short Answer questions.
- 2. Homework: There will be approximately six homework assignments during the semester. These homeworks accumulatively will account for 20% of your grade.
- 3. Group Projects: There will be one group project during the semester which will account for 10% of your grade.
- 4. Quizzes: There will be about 20 in-class one-question quizzes using clickers. These will account for 10% of your grade.

### **GRADING SYSTEM**

Letter grades will be based on the following percentages for the full term work:

A = 89.5% to 100%      B = 79.5% to 89.4%    C = 69.5% to 79.4%, D = 59.5% to 69.4%,  
F = 0.0% to 59.4%

### **COURSE ASSESSMENT – CGEIP**

**Methods: Assessment Surveys, Pre-/Post-tests, Specific Test Questions, Focus Group Discussions, and Specific Homework Questions.**

Like every General Education course, AST 112 will be assessed regularly to determine how well it is meeting the goals listed above.

Toward this end, you will be required to take a **Pre-Test** during the first week of the semester and a **Post-Test** during the last week of the semester. Also during the last week, you will be required to complete an **Assessment Survey**. Under no circumstances will your performance on any of these assessment instruments have a negative effect on your grade in this course.

In addition to these assessment tools, I will use specific test questions, focus group discussions, and specific homework questions to assess how well this course addresses the Specific Learning Goals

professors and Disability Services. If you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible.

For additional information students should contact the Disability Resource Center, 836-4192 (PSU405), or Larry Combs, Interim Assistant Director of Public Safety and Transportation at 836-6576.

For further information on Missouri State University's Emergency Response Plan, please refer to the following web site: <http://www.missouristate.edu/safetran/erp.htm>

### **TENTATIVE COURSE OUTLINE**

**Section 1: Life in the Universe.** (Chapters 1 – 4) The origin of the Universe and how it made the chemistry for life. “We are all made of star stuff” was a common quote from the famed astronomer Carl Sagan and this section will describe what that means. The early Universe consisted of a hot proton plasma, and only through stellar processes have elements other than H and He come to exist. 96% of the human body is made of the 4 elements oxygen, carbon, nitrogen, and hydrogen- 3 of which are only produced in stars. It took the Universe some time to produce the chemistry and environments for life, which in turn limits when life could have begun.

**Section 2: Life in the Solar System.** (Portions of Chapters 3 - 4 and additional material) The formation of the solar system and evolution of planets in terms of habitable locations. Life exists on the Earth because it is an environmentally friendly location with the proper mix of complex chemistry that life uses for energy. This section describes how that came about in the general context of the formation of planetary systems and the delivery of water and biological material.

**Section 3: Earth-based life.** (Chapters 4 – 6) Its genesis, chemistry, cell structure, and evolution in tandem with Earth's evolution. Properties of life (order, reproduction, growth and development, energy utilization, response to the environment, and evolutionary adaptation) will be explored, as well as microscopic life (cells, complex molecules, nucleic acids, DNA, and RNA), and biodiversity including; the 3 domains of life (bacteria, archaea, eukarya), the 4 metabolic classifications (photoautotrophs, chemoautotrophs, photoheterotrophs, and chemoheterotrophs), and extremophiles. This section also explores water's role on Earth and how a habitability zone is defined.

**Section 4: External and domestic pathways to change.** (End of Chapter 6 and Chapters 7 - 10, and additional material) Astronomical events which changed evolution, human effect on the environment, and terraforming. This section will explore where Earth's water came from (likely external), extinction events (several of which are astronomical) and their influence on evolution, the ability of a civilization to influence their environment (nuclear holocaust, global warming, weather manipulation), and to produce suitable environments on other worlds (terraforming).

**Section 5: Habitable worlds outside our own Solar System.** (Chapter 11 and additional material) Detection methods of extrasolar planets, planets which may be habitable and alternate definitions of habitability. Carl Sagan once proposed that life could exist on gas planets in a similar fashion to how fish use buoyancy in Earth's oceans. This section

outlined above. These tools will be determined prior to each semester and some portions will be part of your regularly graded work.

### **STUDENT SUCCESS**

The mission of Missouri State University is to develop educated persons. In this class, we will use the following instructional methods which support student learning and success: 1) small (focus) group discussions; 2) peer instruction; 3) clickers; and 4) group projects.

### **ACADEMIC POLICIES**

*Attendance Policy:* Attendance is required at all lectures, as not all material can be obtained from the text alone. If you need to miss a test, you will need to take it beforehand, if you cannot attend when homework is due, you will need to turn it in beforehand. You do not need to e-mail me if you will not be in class: Homework and tests can only be made up with a note- so when you return, bring a note. However, if you will be gone for an extended period, please let me know.

*Attendance/Absentee policy:* The University's attendance policy can be found in a link on the course web page, or in the Undergraduate Catalog at [www.missouristate.edu/attendan.html](http://www.missouristate.edu/attendan.html). While attendance will not count as a portion of your grade, absences during quizzes and focus group discussions may affect your grade. This topic is a very new and evolving topic and material may be presented in class which will not be available elsewhere. You should plan to attend every class period.

#### ***Statement of Academic Integrity:***

Missouri State University is a community of scholars committed to developing educated persons who accept the responsibility to practice personal and academic integrity. You are responsible for knowing and following the university's *Student Academic Integrity Policies and Procedures*, available at [www.missouristate.edu/policy/academicintegritystudents.htm](http://www.missouristate.edu/policy/academicintegritystudents.htm). You are also responsible for understanding and following any additional academic integrity policies specific to this class (as outlined by the instructor). Any student participating in any form of academic dishonesty will be subject to sanctions as described in this policy. If you are accused of violating this policy and are in the appeals process, you should continue participating in the class.

#### ***Statement of Cell Phone/Pager Policy:***

As a member of the learning community, each student has a responsibility to other students who are members of the community. When cell phones or pagers ring and students respond in class or leave class to respond, it disrupts the class. Therefore, the Office of the Provost prohibits the use by students of cell phones, pagers, PDAs, or similar communication devices during scheduled classes. All such devices must be turned off or put in a silent (vibrate) mode and ordinarily should not be taken out during class. Given the fact that these same communication devices are an integral part of the University's emergency notification system, an exception to this policy would occur when numerous devices activate simultaneously. When this occurs, students may consult their devices to determine if a university emergency exists. If that is not the case, the devices should be immediately returned to silent mode and put away. Other exceptions to this policy may be granted at the discretion of the instructor.

**Please make sure your cell phone does not create a distraction during class.**

**Keep it put away during class.**

#### ***Emergency Response Assistance:***

Students who require assistance during an emergency evacuation must discuss their needs with their

will explore how habitable environments for life are defined and other possibilities for life. Under what conditions could the ingredients for life bear fruit?

**Section 6: Alien Life.** (Chapters 12 – 13 and Epilogue) The search and consequences. Topics include passive and active methods for detecting extraterrestrial life; life and intelligence; and discussions about what it means to humans if there are 10 billion other worlds with life, or conversely, what if there are none? These questions will be answered within your lifetime!

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