

**California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST**

• AREA B2: Life Science – No Lab Component

See GE Handbook for information on each section of this form

ABSTRACT

Course Abbreviation and Number: GES 103	Course Title: The Life and Environmental Sciences Around Us	
Number of Units: 3 _____		
College or Program: <input type="checkbox"/> CHABSS <input checked="" type="checkbox"/> CSM <input type="checkbox"/> CEHHS <input type="checkbox"/> COBA <input type="checkbox"/> Other _____	Desired term of implementation: <input checked="" type="checkbox"/> Fall <input type="checkbox"/> Spring <input type="checkbox"/> Summer Year: _____	Mode of Delivery: <input checked="" type="checkbox"/> face to face <input type="checkbox"/> hybrid <input type="checkbox"/> fully on-line
Course Proposer (please print):	Email:	Submission Date:



1. Course Catalog Description:

Introduces some of the basic concepts and ideas of life and environmental sciences and demonstrates how they are applicable to the world around us. Fundamental ideas to be introduced include evolution, biological molecules, genetics, physiology, and ecology. The scientific principles will be covered from a conceptual viewpoint at a level suitable for non-science majors. Enrollment restricted to students who have completed the Entry-Level Mathematics (ELM) requirement

2. GE Syllabus Checklist: The syllabi for all courses certified for GE credit must contain the following:

<input checked="" type="checkbox"/>	Course description, course title and course number
<input checked="" type="checkbox"/>	Student learning outcomes for General Education Area and student learning objectives specific to your course, linked to how students will meet these objectives through course activities/experiences
<input checked="" type="checkbox"/>	Topics or subjects covered in the course
<input type="checkbox"/>	Registration conditions
<input checked="" type="checkbox"/>	Specifics relating to how assignments meet the writing requirement
<input checked="" type="checkbox"/>	Tentative course schedule including readings
<input checked="" type="checkbox"/>	Grading components including relative weight of assignments

SIGNATURES

	<u>10/21/14</u>		<u>10/21/14</u>
Course Proposer	Date	Department Chair	date
<i>Please note that the department will be required to report assessment data to the GEC annually.</i>			
	Support	Do not support*	DC Initial
_____	<input type="checkbox"/>	<input type="checkbox"/>	_____
Library Faculty	Date	Impacted Discipline Chair	Date
	Support	Do not Support*	Approve
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacted Discipline Chair	Date	GEC Chair	Date

*** If the proposal is not supported, a memo describing the nature of the objection must be provided.**

Course Coordinator: Phone: Email:

From: Talitha Matlin <tmatlin@csusm.edu>
Date: Friday, October 24, 2014 9:39 AM
To: jjameson <jjameson@csusm.edu>
Subject: Re: GES 103

Thank you, this looks good!

Talitha

From: Julie Jameson <jjameson@csusm.edu>
Date: Thursday, October 23, 2014 at 9:46 PM
To: tmatlin <tmatlin@csusm.edu>
Subject: GES 103

Hi Talitha,
I think John has addressed your problems with GES 103. They will be taking primary research articles and using them to create the "background" for their lab notebooks. This allows them to take from the primary literature and present it in a written format. You will find this addressed in part B in the third set of boxes. Let me know if you have any other questions or concerns. I have attached the most recent draft for you. THANKS!!

Julie

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Julie Jameson, PhD
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Part A: B2 Life Science General Education Learning Outcomes (GELOs) related to course content. [Please type responses into the tables.]

Life Science GELOs this course will address:	Course content that addresses each GELO.	How will these GELOs be assessed?
<p>B2.1: Students will state or identify accepted modern biological principles and/or use knowledge of those principles to solve problems in the biological sciences.</p>	<p>Course covers all structural levels of biological organization, from the role of different biological molecules in biochemical processes to the interactions found in the whole biosphere. The workings of the cell, including mitosis, meiosis, photosynthesis, fermentation and cellular respiration are covered, and so is the role of genes, and interaction between genes, in perpetuating life through subsequent generations of cells. Biotechnology is covered to prepare the students for understanding the potential value of future biotechnological discoveries and their implications in our everyday lives. The importance of genetic diversity in populations is stressed and so is the role of microevolution and evolution in developing and maintaining such diversity. We cover the diversity of life from bacteria to humans, and proceed to various aspects of ecology, from population ecology, through communities, ecosystems and finally the biosphere. The last portion of the course looks at the effect of human impact on the environment, as well as a lecture on animal behavior.</p>	<p>Student understanding of each aspect of the course content is assessed through weekly quizzes, and again on the Midterm and Final Exam.</p>
<p>B2.2: Students will describe and apply the discipline's primary methods to problems through hypothesis development, critical evaluation of evidence, data collection, fieldwork, and/or employment of mathematical and computer analysis.</p>	<p>Students will go through the steps of the Scientific Method and understand how to apply it to conduct a valid scientific experiment. The students will use knowledge of Mendelian genetics to calculate the results of genetic crosses involving autosomal recessive, autosomal dominant, and x-linked genes, as well as incomplete dominance and multiple allele systems such as blood typing.</p>	<p>Students will be given a specific scenario and identify the components necessary to conduct a valid scientific experiment. The students will be given specific genetic problems requiring them to hypothesize and calculate the specific ratio of offspring expected for genetic crosses, including such that affects humans, such as Cystic Fibrosis, Huntington's, and hemophilia.</p>
<p>B2.3: Students will describe various theories relevant to the discipline.</p>	<p>Laws of thermodynamics will be presented and their implications discussed for the maintenance of biological systems. The theory of</p>	<p>Students will be given quiz and exam questions that require them to understand why biological systems from cells</p>

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	evolution will be presented in the context of the scientific results available that led to the development of the theory, and the importance of the theory will be stressed as the mechanism for the development and interrelationship between the species diversity of today.	to ecosystems require an input of energy. The students will apply their knowledge of the process of evolution to understand how the major groups of plants and animals evolved.
B2.4: Students will identify the limitations of scientific endeavors.	Course will discuss how valid scientific methods must be testable and falsifiable. The difference between doing correlational analyses and determining causal relationships between variables will be covered, as well as how sample bias can easily skew results.	Students will be given quiz and exam questions that require them to understand what components are required to do a valid scientific experiment.
B2.5: Students will identify and consider the value systems and ethics associated with human inquiry.	Course will discuss potential ethical implications of implementing aspects of present and future biotechnological discoveries, within the medical and the environmental fields, for example.	Student understanding will be assessed through classroom feedback.

Part B: General Education Learning Outcomes required of all GE courses related to course content:

GE Outcomes required of all Courses	Course content that addresses each GE outcome?	How will these GELOs be assessed?
Students will communicate effectively in writing to various audiences. (writing)	Students will keep a journal where they on a weekly basis have to go through newly published articles and select the scientific discovery they find most important during the week. They will write a summary of the discovery and carefully justify why they believe this was indeed the most important one.	Students regularly submit their journals for grading and comments.
Students will think critically and analytically about an issue, idea or problem. (critical thinking)	Students will analyze what potential biases may exist for a given experimental procedure and critically evaluate how that might impact what conclusions may be drawn. Pros and cons of different approaches will be considered when it comes to using specific global resources, i.e. global warming, but also important local issues such as water use and allocation in California.	Students will be given quiz and exam questions that require them to consider various aspects of global resource use.
Students will find, evaluate and use information appropriate to the course and discipline. (Faculty are strongly encouraged to collaborate with their library faculty.)	The writing assignment requires the students to find and evaluate information regarding scientific discoveries not necessarily directly related to the content of the course.	Students submit their journals on a regular basis and they will be graded on how carefully they justify what specific discovery during the week they found

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		to be most important. This means examining articles from the primary literature and placing them in the context of the week's experiments. Most often this performed to address the discovery's significance for the scientific field as a whole, but it may also be to explain the impact it has on the students themselves, or a person close to them
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Part C: GE Programmatic Goals: The GE program aligns with CSUSM specific and LEAP Goals. All B2 courses must meet at least one of the LEAP Goals.

GE Programmatic Goals	Course addresses this LEAP Goal:
LEAP 1: Knowledge of Human Cultures and the Physical and Natural World.	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
LEAP 2: Intellectual and Practical Skills	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
LEAP 3: Personal and Social Responsibility	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes
LEAP 4: Integrative Learning	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
CSUSM Specific Programmatic Goals	Course content that addresses the following CSUSM goals. Please explain, if applicable.
CSUSM 1: Exposure to and critical thinking about issues of diversity.	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (please describe):
CSUSM 2: Exposure to and critical thinking about the interrelatedness of peoples in local, national, and global contexts.	? <input type="checkbox"/> No <input type="checkbox"/> Yes (please describe):

Part D: Course requirements to be met by the instructor.

Course Requirements:	How will this requirement be met by the instructor?
Course meets the All-University Writing requirement: A minimum of 2500 words of writing shall be required in 3+ unit courses.	Students will write a weekly journal, where the University Writing Requirement is fulfilled.
Courses in the life sciences will take as their primary focus such concepts found in traditional life science disciplines (e.g., levels of organization of living systems, from molecules to ecosystems, structures and functions of living organisms, principles of genetics, patterns and theories of evolution, interactions of organisms with each other and their environment).	Each of the course requirements are covered as part of the course material.
Courses will require students to develop an understanding of the core information sources and the literature of the science disciplines.	Original studies will be referenced as a foundation for the development of each science discipline. Students will follow the content of current science articles published on a weekly basis.
Courses will require students to think critically so that they are able to distinguish scientific arguments from pseudo-scientific myths or opinions.	The scientific principles presented will help students weed out pseudo-scientific myths or arguments presented in the popular media.

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GES 103 Syllabus

Introduction:

The GES 103 course introduces some of the basic concepts and ideas of life and environmental sciences and demonstrates how they are applicable to the world around us. Fundamental ideas to be introduced include evolution, biological molecules, genetics, physiology, and ecology. The scientific principles will be covered from a conceptual viewpoint at a level suitable for non-science majors. Enrollment is restricted to students who have completed the Entry-Level Mathematics (ELM) requirement.

General Education Learning Outcomes:

- B2.1. Students will state or identify accepted modern biological principles and/or use knowledge of those principles to solve problems in the biological sciences.
- B2.2 Students will describe and apply the discipline's primary methods to problems through hypothesis development, critical evaluation of evidence, data collection, fieldwork, and/or employment of mathematical and computer analysis.
- B2.3 Students will describe various theories relevant to the discipline.
- B2.4 Students will identify the limitations of scientific endeavors.
- B2.5: Students will identify and consider the value systems and ethics associated with human inquiry

Specific Course Learning Objectives:

1. Students will state or identify accepted modern biological principles and/or use knowledge of those principles to solve problems in the biological sciences.
2. Students will describe and apply the discipline's primary methods to problems through hypothesis development, critical evaluation of evidence, data collection, fieldwork, and/or employment of mathematical and computer analysis.
3. Students will describe various theories relevant to the discipline.
4. Students will identify the limitations of scientific endeavors.
5. Students will identify and consider the value systems and ethics associated with human inquiry.

Required Course Materials:

Lecture Text: Life, 6th edition, by Lewis et al., McGraw Hill
(any edition of Life will work)

Course Evaluation:

The course be divided and taught in modules, based on two general content areas.

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Module 1 deals with biological topics/concepts pertaining to cellular structure and function, DNA structure/technology, and fundamental principles of heredity and human genetics.

Module 2 covers topics pertaining to evolution, population growth and dynamics, ecosystem ecology, human impact on the environment, and animal behavior.

Grading:

Six quizzes, each worth 20 points, will be given during each module, and the two lowest quiz scores for the semester will be dropped.

There will also be a comprehensive exam worth 100 points at the end of each module.

NO make-up quizzes or exams will be allowed without prior arrangement!

The University Writing Requirement will be satisfied by an 80 point writing assignment. Further information will be given later in the semester.

Grades:

A = 92% of the total points possible

A- = 90-91%

B+ = 88-89%

B = 82-87%

B- = 80-81%

C+ = 78-79%

C = 72-77%

C- = 70-71%

D+ = 68-69%

D = 62-67%

D- = 60-61%

F = <60%

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LECTURE SCHEDULE

Introduction

- Lecture 1 – Scientific Method**
No chapter in textbook.
- Lecture 2 - What is Life? Chemistry of Life.**
Chapters 1+2.
- Lecture 3 - Chemistry of Life cont.**
Chapter 4 +QUIZ #1.
- Lecture 4 - Cells**
Chapter 4.
- Lecture 5 - Cell Structure**
Chapter 5 +QUIZ #2.
- Lecture 6 – The Energy of Life**
Chapter 6.
- Lecture 7 - Photosynthesis**
Chapter 7 +QUIZ #3.
- Lecture 8 – How Cells Release Energy**
Chapter 8.
- Lecture 9 - The Cell Cycle**
Chapter 9 +QUIZ #4.
- Lecture 10 – Meiosis**
Chapter 10.
- Lecture 11 – How Inherited Traits Are...**
Chapter 11 +QUIZ #5.
- Lecture 12 – Chromosomes**
Chapter 12.
- Lecture 13 – On Genomes**
Chapter 13 +QUIZ #6.
- Lecture 14 - Practice Midterm**
Midterm
- Lecture 2-1 - Evolution**
Chapters 15+18.
- Lecture 2-2 - Microevolution**
Chapter 16 +QUIZ #2-1.
- Lecture 2-3 - Speciation**
Chapter 17.
- Lecture 2-4 - Early Earth**
Chapter 19 +QUIZ #2-2.

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Lecture 2-5 - Diversity of Life

Chapters 23 + 26.

Lecture 2-6 - Homeostasis

Chapter 39 +QUIZ #2-3.

Lecture 2-7 - Population Growth

Chapter 43.

Lecture 2-8 - Communities

Chapter 44 +QUIZ #2-4.

Lecture 2-9 - Ecosystems

Chapter 44.

Lecture 2-10 - Biosphere

Chapter 45 +QUIZ #2-5.

Lecture 2-11 - Environ. Challenges

Chapter 46.

Lecture 2-12 - Animal Behavior

Chapter 42 +QUIZ #2-6.

Lecture 2-13 - Practice Final Exam

Final Exam

Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy. All written work and oral presentation assignments must be original work. All ideas/material that are borrowed from other sources must have appropriate references to the original sources. Students are responsible for honest completion of their work including examinations. There will be no tolerance for infractions. If you believe there has been an infraction by someone in the class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty, in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade for an exam, assignment, or the class as a whole. Incidents of Academic Dishonesty will be reported to the Dean of Students. Sanctions at the University level may include suspension or expulsion from the University.

*The Academic Dishonesty Definitions can be found at
<http://www.csusm.edu/dos/studres/cheating11.html>*