California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form

ABSTRACT

Course Abbreviation and Number: BIOL 211	**Course Title: Introduction to Organismal and Population Biology**	
Number of Units: 4		
College or Program: ☐CHABSS ☒CSM ☐CEHHS ☐COBA ☐Other_____	**Desired term of implementation:** ☒Fall ☐Spring ☐Summer Year:	**Mode of Delivery:** ☒ face to face ☐ hybrid ☐fully on-line
Course Proposer (please print): **Robert R. Mustard**	**Email:** **rmustard@csusm.edu**	**Submission Date:**

1. Course Catalog Description:
The second of a two-semester core sequence that provides the student with basic knowledge in biology, including specific experimental techniques and familiarity with the scientific method. Emphasizes physiology, development, diversity of life, evolution and ecology. *Three hours lecture and three hours laboratory. Prerequisite: BIOL 210 with grade of C (2.0) or better.*

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

☒	Course description, course title and course number
☒	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
☒	Topics or subjects covered in the course
☐	Registration conditions
☒	Specifics relating to how assignments meet the writing requirement
☒	Tentative course schedule including readings
☒	Grading components including relative weight of assignments

SIGNATURES

Course Proposer Date

Department Chair date

Please note that the department will be required to report assessment data to the GEC annually. _____ ***DC Initial***

	Support	Do not support*
Library Faculty Date	☐	☐

	Support	Do not support*
Impacted Discipline Chair Date	☐	☐

	Support	Do not support*
Impacted Discipline Chair Date	☐	☐

	Approve	Do not Approve
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: Tracey Brown
Sent: Thursday, December 11, 2014 4:57 PM
To: Julie Jameson; Marshall Whittlesey
Subject: Last ONes
Attachments: BIOL_175_recert_v3.pdf; BIOL_177_recert_v3.pdf; BIOL_211_recert_Robert.docx

Hi,

Here are the forms for BIOL 175/177 – this is essentially the same course but one is restricted to nursing majors and the other to kine – thus the forms are nearly identical

Also is the updated version of the BIOL 211 with the suggested changes from the librarian. I think Julie already has the signature page from Rob and I (but I have done the changing).

Hopefully this is the last of it!

Thanks,

Tracey

From: Talitha Matlin <tmatlin@csusm.edu>
Date: Monday, December 15, 2014 9:57 AM
To: jjameson <jjameson@csusm.edu>
Subject: Re: Last ONes

Hi Julie,

These all look good to me and have library sign-off.

Talitha

California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form

Part A: B2/B3 Life Science with Lab General Education Learning Outcomes (GELOs) related to course content.

[Please type responses into the tables.]

Life Science w/ Lab GELOs this course will address:	**Course content that addresses each GELO.**	**How will these GELOs be assessed?**
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.	This course allows students to learn about the breadth and diversity of life on Earth. We begin with single-celled organisms that are responsible for human health or for causing diseases, and then continuing through more-familiar multi-cellular organisms. The course further explores topics of anatomy and physiology in plants and animals. These topics introduce and reinforce relatedness and descent with change from a common ancestor (evolution). The course also introduces essential concepts of ecology, helping students to see and understand interactions between living and non-living elements of ecosystems. This course also presents challenges to living organisms and ecosystems due to effects of human activities (climate change).	The lecture exams address many of these topics, an example question is: You conduct a genetic analysis of four species of plants: A, B, C, and D. You decide to use the percent similarity of DNA base pairs for a particular gene as a standard for their taxonomic classification. Plants A and D have 90% of the base pairs in common, while species B and C have 93% of the base pairings in common. Neither B nor C shares more than 85% of the base pairs with either A or D. You conclude that species A and D should be grouped together in the one clade, and that B and C should be grouped together in another clade. You consider no other characteristics in your classification. What type of technique have you employed in your classification scheme? a) Traditional classification. b) Phenotypic approach. c) Molecular systematics. d) Cladistic approach. e) A shared derived trait

California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form

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.	Much of the investigative effort in Lab is based on the mensurative (observational) approach. Students explore live and preserved specimens, study anatomical models, and conduct dissections to observe structures (anatomy) and explore functions (physiology). Additional exercises are manipulative (experimental), in that students will conduct experiments to determine an outcome or effect based on various treatments. These experiments may be computer-based simulations, measurements of actual (or simulated) specimens, or activities they do themselves. Results are quantified and entered into computer applications, and statistical analysis is then done on the results to determine the significance of the outcome.	Lecture exams, Lab exercises, Written work. For example in the Go Fish! lab assignment, they are required to design an experiment to compare two groups of organisms based on a physical trait such as length. They must collect this data and perform a statistical analyses.
B2.3: Students will describe various theories relevant to the discipline.	Focus areas in the course include phylogeny (relatedness between species through study of the passing of a beneficial trait from an ancestral organism to its descendent species), homeostasis (maintenance of balance between different physiological systems), and interconnectivity between different levels of ecosystems.	For example midterm 2 has the following essay question: Humans, like most animals, have homeostatic mechanisms to help maintain an optimal thermoneutral zone. Describe the response mechanisms in humans to conditions that are alternately too hot and too cold, identifying when the response is behavioral or physiological, and whether the particular process demonstrates positive or negative feedback
B2.4: Students will identify the limitations of scientific endeavors.	Students examine the Scientific Method, and address the essential differences between observational (mensurative) and experimental (manipulative) exercises. The course also guides students in the approach of making decisions (conclusions) based solely on the evidence developed from reproducible experimental results.	One lab exercise requires the students to perform population growth simulations and the students are asked to compare the results from multiple replications of the trials.

California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form

B2.5: Students will identify and consider the value systems and ethics associated with human inquiry.	Course will discuss potential ethical implications the impact of human activities on the environment.	For example, students are asked to answer the following on lecture exam: Explain how the presence or absence of coyotes affects bird diversity in the canyons of San Diego County. A good answer would include a discussion of relationships between predators and their communities, and what happens when those predators are removed by humans.
B3.1 Students will demonstrate that they can conduct experiments, make observations, or run simulations using protocols and methods common in the scientific discipline in which the course is offered.	Extensive careful examination of preserved specimens, prepared microscopic slides, anatomical models and live specimens in lab, including some dissections of plant and animal specimens. Computer-based simulations and turn-based "games" explore ecological interactions. Students also develop research questions based on observations of populations, and then formulate hypotheses that could generate data to find the basis for differences between populations.	Again referring to the Go Fish! lab assignment, students will they are required to design an experiment to compare two groups of organisms based on a physical trait such as length. They also run simulations in the Pop Eco lab.
B3.2 Students will be able to interpret the results of experiments, observations or simulations, understanding random and systematic errors associated with those activities, and making appropriate conclusions based on theories or models of the scientific discipline in which the course is offered.	As the students conduct experiments, they identify the different factors (independent and dependent experimental variables), assess the relationships between the factors (with possible extensions to causes of the observed effects), and measurement of the significance of the differences between experimental treatments. The course also guides students in the interpretation of the results produced. Students then prepare graphs to present the results with effective visual elements.	After collecting data for the Go Fish! Assignment they must also interpret and discuss their results in written format and propose future research projects.

California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form

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

GE Outcomes required of <u>all</u> 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 produce two papers in the Lecture portion of class (one group effort, one solo). There is also one paper written in the Lab portion of class, based on an experimental exercise conducted in lab.	The submitted papers will be graded against a rubric and guidelines document provided to them by the instructor.
Students will think critically and analytically about an issue, idea or problem. (critical thinking)	Students are given guidance in the format of the reports to be produced, and they are responsible for formulating their own topics and finding the supporting published material in the scientific literature to support their arguments.	One writing assignment is as follows and requires critical thinking to complete: Consider two rivers: one is spring-fed, and has a constant volume (flow) and water temperature year-round; the other river drains a desert landscape, and has periodic floods, followed by times when the river completely dries up, all at unpredictable intervals. Which of the two rivers would you predict is more like to support a larger community of animals, and why?
Students will find, evaluate and use information appropriate to the course and discipline. (Faculty are strongly encouraged to collaborate with their library faculty.)	The students must include primary literature in all three papers they submit. We discuss what constitutes 1° literature in class, and they also meet the science librarian.	In their papers, they are graded on if they successfully found and cited journal articles properly, as well as used the articles appropriately to support their statements and results (part of rubric).

Part C: GE Programmatic Goals: The GE program aligns with CSUSM specific and LEAP Goals. All B2/B3 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.	☐ ***No*** ☒***Yes***
LEAP 2: Intellectual and Practical Skills	☐ ***No*** ☒***Yes***
LEAP 3: Personal and Social Responsibility	☒ ***No*** ☐***Yes***
LEAP 4: Integrative Learning	☐ ***No*** ☒***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.	☐***No*** ☒***Yes (please describe):*** The principles of human anatomy and physiology are shared by all people regardless of race, ethnicity. Adaptive variations of people living in certain environments are explained through the sciences of genetics and natural selection.
CSUSM 2: Exposure to and critical thinking about the interrelatedness of peoples in local, national, and global contexts.	☐ ***No*** ☒***Yes (please describe):*** The connections between elements of the ecosystem are not constrained by artificial, political boundaries; students are instructed on how their actions can have long-term and long-distance effects.

California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form

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 submit several papers over the course of the semester. Two lecture assignments include a group (two-person) research paper of ~1700 words, a solo paper of ~850 words. A solo lab research paper of ~850 words is also required.
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).	Over the first half of the semester, students explore the diversity of living organisms, with emphasis on Domain Eukaryota. As they study that progression of life, they also give close examination to the shared traits derived from common ancestors (the study of phylogenetic clades, which arise through evolution). The latter half of the semester explores physiological systems of animals, and then expands into the interactions of organisms with their environment (population and community ecology).
Courses will require students to develop an understanding of the core information sources and the literature of the science disciplines.	Students will use various reference indices and research databases to build support for their arguments in their research papers. They will also see presentations from CSUSM Biology Reference Librarian(s) and Writing Center Consultants to learn more about the resources on campus.
Courses will require students to think critically so that they are able to distinguish scientific arguments from pseudo-scientific myths or opinions.	Students begin the semester with a review of the Scientific Method, which uses empirical evidence (direct observational or experimental data) to develop testable hypotheses. Students are also introduced to methods of statistical analysis, so that they can mathematically (objectively) compare result sets to assess statistical significance.

CALIFORNIA STATE UNIVERSITY
DEPT. OF BIOLOGICAL SCIENCES

BIOLOGY 211 LECTURE,
FALL 2014

INTRODUCTION TO ORGANISMAL AND POPULATION BIOLOGY

INSTRUCTOR

Rob Mustard

Email: rmustard@csusm.edu

Phone: 760-750-3400, x8288

Office: Science Hall Two, Room 121

Office Hours: Mondays and Fridays, 9am-noon; Tuesdays and Thursdays, 11am-1pm; ***or by appointment***

TEXT

The main text for this course is Campbell Biology, 9th Edition (ISBN: 9780321558237) *or later* by Reece, Urry, et al. If you have another introductory level, major's biology textbook, you should be able to get most of the same information. However, many of the images and figures shown in lecture will come from Campbell and it may be helpful to bring the book to class.

COURSE PREREQUISITES

Biology 210, our first-semester, introductory course on molecular and cellular biology (or its equivalent) is a prerequisite to this course. You will be asked to provide proof of passing such a course, or you will be dropped from the class.

COURSE DESCRIPTION

This course examines biological concepts related to the structure and metabolic functions of plants and animals, physiological adaptations, biodiversity, relationships

between organisms at the population and community levels, and relationships between organisms and their environments at the ecosystem level. The intent of learning these fundamental concepts and related principles is to prepare you for advanced study in biology. In addition to the lectures, there is also a required weekly laboratory section where more hands-on experience may be gained. In addition to lectures, there may also be problem-solving exercises where students will work in groups.

LEARNING OUTCOMES

Upon completion of this course, a successful student should:

- be able to describe the major eukaryotic Kingdoms and Phyla and their phylogenetic relationships
- understand the major life cycles of eukaryotes, including alternation of generations
- understand the major physiological processes found in plants and animals such circulation, gas exchange, and nutrition
- have a good understanding to major ecological concepts at the individual, population and community levels

COURSE WEBSITE / ONLINE CONTENT

This course will use Cougar Courses for the delivery of lecture outlines, readings, study guides, grade-keeping etc. To access Cougar Courses go to http://cc.csusm.edu and use your student i.d. (the prefix of your campus email account) and password to login. If you have difficulty you may need to contact the student helpdesk.

IMPORTANT DATES

- Drop deadline (without notation in record): 08 September 2014
- Withdraw deadline ("W" grade on record): 22 September 2014
- After 22 September 2014 (Census Day), an evaluative grade (A through F) will be recorded.

COURSE ASSESSMENT

This course will employ a variety of assessment tools to gauge your progress and performance in class. There are additional points to be earned in the laboratory section of the class; **however, you cannot earn a "C" or better in the course if you do**

Item	Number	Points Each	Total
Lecture Exams	4	100	400
Lecture Papers	2	100 + 50	150
Lecture Total:			**550**
Laboratory (see lab syllabus)			**300**
Course Total:			**850**

not pass the lecture portion of the class. The class assignments will include:

- ***Exams*:** Exams and assignments in the course will be designed to test your understanding of key concepts, not merely memorization. The exams will be a combination of multiple choice, fill-in, true/false and/or short-answer essay questions.
- ***Writing Assignments*:** Several papers, spanning 8-10 pages and ~2500 words in total, will be assigned between the Lecture and Lab sections of class. These papers will require research to be conducted online or in the Library, and will also be in a more-technical format than assignments that students may have worked on in earlier semesters. Scientific writers use a different style of writing (as well as of citing their references); students will use the Council of Science Editors (CSE) citation style, and will learn how to avoid using directly-quoted passages in their papers. Students will also have the opportunity to work with the STEM Reference Librarian and the STEM Writing Consultants, two valuable resources available right on campus. **These assignments meet the University Writing Requirement.**
- ***Participation/Attendance*:** It is in your best interest to come to class, as we will have several in-class active learning assignments. These could range from a brief essay about a topic, to solving a problem while working as a group. If you miss that day you will not be able to make up the points.
- ***Make-up or Extra Credit*: NO** makeup exams or assignments will be allowed unless there is a legitimate and documented reason. ***Extra credit will not be offered or accepted.***
- ***Grades in the course*** are assigned according to the following scale:
  A = 90% and above; B = 80 - 89.99%; C = 70 - 79.99%; D = 60 - 69.99%; F = <60%.

DISABLED STUDENT SERVICES

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 4300, and can be contacted by phone at (760) 750-4905, or TTY (760) 750-4909. Students authorized by DSS to receive reasonable accommodations should meet with me during my office hours in order to ensure confidentiality.

PLAGIARISM

Students will be expected to adhere to standards of academic honesty and integrity, as outlined in the University's 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 (citations) to the original sources.

Students are responsible for honest completion of their work – including exams. Copying other student's work (plagiarism) will be punished to the fullest degree. You will receive no warning if the instructor feels that plagiarism and/or copying has occurred. The practice of science has a long history of collaboration, and many of your lecture- and lab-assignment answers will be similar; however, you must not copy directly from one another, or from another author's works. In addition, *students who allow other students to copy their work are also complicit in the act of cheating*. This is especially true of solo assignments; each student will need to complete his or her own paper as an individual effort.

There will be no tolerance for infractions. Copying of other students' work or plagiarism will be punished to the fullest degree. You will receive no warning if the instructor feels that plagiarism and/or copying has occurred. The instructor reserves the right to do everything in her/his power to punish this offense, but at a minimum, you will receive zero (0) points for plagiarized or copied work. You may also receive an F for the semester, as well as be reported to the Dean of Students for further disciplinary action. Sanctions at the University level may include suspension or expulsion from the University.

REVIEW THE CAMPUS GUIDELINES ON ACADEMIC HONESTY IN THE MOST RECENT EDITION OF THE CSUSM CATALOG.

California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form

Draft Lecture Schedule (dates may change)

9:00–10:15am, Tuesdays & Thursdays, ACD 305/411

WEEK	DATE	DAY	LECTURE TOPIC	Lect.	Chapter
1	8/26	Tues	Introduction & Systematics	1	26
	8/28	Thur	Prokaryotes & Protists	2	27, 28
2	9/2	Tues	Protists, cont'd.	2	28
	9/4	Thur	Plant Diversity	3	29, 30
3	9/9	Tues	Plant Growth	4	29, 30
	9/11	Thur	Plant Growth, cont'd.	4	29, 30
4	9/16	Tues	Plant Nutrition/Transport/Repro	5	35, 36
	9/18	Thur	Plant Nutrition/Transport/Repro	5	35, 36
5	9/23	Tues	TBD		
	9/25	Thur	**Mid-term Exam #1**		
6	9/30	Tues	Fungi	6	31
	10/2	Thur	Animal Diversity	7	32,33
7	10/7	Tues	Animal Diversity, cont'd.	7	33, 34
	10/9	Thur	Animal Diversity, cont'd.	7	34
8	10/14	Tues	Thermoregulation	8	40
	10/16	Thur	Nutrition	9	41
9	10/21	Tues	TBD		
	10/23	Thur	**Mid-term Exam #2**		

10	10/28	Tues	Circulation & Gas Exchange	10	42
	10/30	Thur	Osmoregulation	11	44
11	11/4	Tues	Hormones and Reproduction	12	45, 46
	11/6	Thur	Neurophysiology	13	48, 49, 50
12	11/11	Tues	***Veterans Day – no class!!***		
	11/13	Thur	Neurophysiology, cont'd.	13	48, 49, 50
13	11/18	Tues	**Mid-term Exam #3**		
	11/20	Thur	Ecology; Intro & Population	14	53,54,55
14	11/25	Tues	Community Ecology	15	53,54,55
	11/27	Thur	***Thanksgiving – no class!!***		
15	12/2	Tues	Ecosystem Ecology	16	53,54,55
	12/4	Thur	**Mid-term Exam #4**		
16	12/9	Tues	**Final Exam @ 9:15 – 11:15am**		

California State University, San Marcos General Education Program
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST
• AREA B2/B3: Life Science with a Lab Component
See GE Handbook for information on each section of this form