

**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 104	Course Title: Principles of Biology: Human Emphasis	
Number of Units: 4 _____		
College or Program: CHABSS X 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): Lyndsey Robertson	Email: lmrobert@csusm.edu	Submission Date:

1. Course Catalog Description: Principles of cellular, organismal and population biology with primary representation relating to the human organism. Includes study of cells, tissues, and mammalian organ systems. *Enrollment restricted to Kinesiology majors. Three hours of lecture and three hours of laboratory.*

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

	10/27/14		10/28/14
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*	_____	Support	Do not support*
Library Faculty	<input type="checkbox"/>	<input type="checkbox"/>	Impacted Discipline	<input type="checkbox"/>	<input type="checkbox"/>
Date			Chair		
_____	Support	Do not Support*	_____	Approve	Do not Approve
Impacted Discipline	<input type="checkbox"/>	<input type="checkbox"/>	GEC Chair	<input type="checkbox"/>	<input type="checkbox"/>
Chair			Date		

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

Course Coordinator: Phone: Email:

From: Julie Jameson
Sent: Wednesday, October 29, 2014 12:45 PM
To: Marshall Whittlesey
Cc: Tracey Brown
Subject: FW: Library approval for BIOL 104
Attachments: BIOL 104 Final.pdf

Hi Marshall,
Here is BIOL 104 for recertification.
Best,
Julie

--

Julie Jameson, PhD
Assistant Professor
California State University, San Marcos
Science Hall I, Room 317
333 S. Twin Oaks Valley Road
San Marcos, CA 92096
760-750-8274
jjameson@csusm.edu

From: Talitha Matlin <tmatlin@csusm.edu>
Date: Wednesday, October 29, 2014 12:42 PM
To: jjameson <jjameson@csusm.edu>
Subject: Re: Library approval for BIOL 104

Looks good, BIOL 104 recert has library approval.

Thanks!
Talitha

From: Julie Jameson <jjameson@csusm.edu>
Date: Wednesday, October 29, 2014 at 12:39 PM
To: tmatlin <tmatlin@csusm.edu>
Subject: Library approval for BIOL 104

Hi Talitha,
Here is another recertification for GEC. I have attached the file. Let me know what you think?
Best,
Julie

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Julie Jameson, PhD
Assistant Professor
California State University, San Marcos
Science Hall I, Room 317
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*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?
<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>A survey /overview of all major biological principles are covered and presented in this course. The first third of the course covers the scientific method, organization of life, the structure function of cells , DNA, biotechnology and genetic principles. The course then shifts to cover the human body systems. The last portion of the course discusses the theory of evolution, fundamentals of ecology and the importance of ecosystems.</p>	<p>Students will be presented questions in exams, discussions, and in the laboratory setting to assess their understanding of the key biological principles. For example, students will be asked to identify what are the basic properties of life and what are the steps used in the scientific method?</p>

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Life Science w/ Lab GELOs this course will address	Course content that addresses each GELO.	How will these GELOs be assessed?
<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 use the scientific method to develop and test hypotheses that relate to cell biology, molecular biology and biotechnology. Statistical analysis will be employed to determine whether findings are significant.</p>	<p>Students will design experiments and interpret data. For example students will be asked to design an experiment to test the effect certain variables may have on pulse rate recovery. When designing an experiment, students will determine dependent and independent variables. Students will detail the experimental design in a lab notebooks.</p>
<p>B2.3: Students will describe various theories relevant to the discipline.</p>	<p>The cell theory and the theory of evolution will be presented. Students will learn that all living organisms are composed of cells. They will also learn about how life is interconnected and how/why the earth came to have great diversity .</p> <p>In addition, students will learn how muscles generate movement through the current model/ theory for muscle contraction (sliding filament model) .</p>	<p>Student understanding will be assessed by answering questions on exams pertaining to the content.</p> <p>Examples :</p> <ul style="list-style-type: none"> -Prior to Darwin, Lamark proposed that populations evolved by what ? -Explain why Natural Selection cannot produce perfection - Explain the sliding filament model of how muscle cells/fibers shorten
<p>B2.4: Students will identify the limitations of scientific endeavors.</p>	<p>Students will be made aware of the field of science dynamics; hypotheses and theories are challenged continually in both the lecture and laboratory setting.</p>	<p>In their laboratory notebooks, students will be asked to assess how their experimental design can be/was successful and how it may be/was limited. Negative results will be discussed and troubleshooting performed.</p>
<p>B2.5: Students will identify and consider the value systems and ethics associated with human inquiry.</p>	<p>Students will learn about the field of DNA technology and its role in Biotechnology including; techniques used and products created. The ethics of the development of these processes are discussed along with impacts on humans, the environment and specific species.</p>	<p>Students will actively participate in group discussions. For example, students will evaluate the pros and cons of Genetically Modified Products. Questions investigated include: What are the impacts on crop diversity? What are the impacts on human biology?</p>

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Life Science w/ Lab GELOs this course will address	Course content that addresses each GELO.	How will these GELOs be assessed?
<p>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.</p>	<p>Using laboratory techniques and protocols, students will perform a variety of experiments to understand cellular biology. For example, diffusion, osmosis and membrane transport will be studied to help students understand how molecules move and how molecules move through the cell membrane. In the same laboratory period, students will also subject living cells to extreme conditions (pure water , high salt) and hypothesize how osmosis will proceed.</p>	<p>Students will carefully detail their protocols and findings in a lab notebook. As an example, students will generate artificial cells in the laboratory filled with different concentrations of syrup or water and place them into opposing environments. Students will then hypothesize/ predict which substance will diffuse across the artificial cell membrane. After the experiment is complete they will analyze their results and detail them in their notebook.</p>
<p>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.</p>	<p>Cellular respiration, photosynthesis and human body systems will be experimentally examined as part of course content. Students will learn that photosynthesis is critical for living organisms on some level. Using experimental protocols, students will conduct experiments that teach them how respiration and cellular respiration are intimately connected.</p>	<p>Students understanding will be assessed by detailing experimental results and conclusions in their laboratory notebooks and answering questions on exams pertaining to the experiments. Lab notebooks will be assessed for completeness and logical/well built conclusions. For example, if students are performing experiments to examine photosynthesis, they will interpret their data and explore deeper concepts in their conclusions including how photosynthesis relates to the environment, ecology and human life.</p>

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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?
<p>Students will communicate effectively in writing to various audiences. (writing)</p>	<p>Students will be required to complete a research poster presentation. The topic of the presentation will be chosen at the discretion of the student as long as it pertains to the field of Biology.</p>	<p>Students will present their poster to their peers and instructor in a lab setting. The presentations will be peer evaluated using a rubric and set criteria that include:</p> <ul style="list-style-type: none"> -Does the information demonstrate that the author did thorough research? -Is the information easy to understand and informative?

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<p>Students will think critically and analytically about an issue, idea or problem. (critical thinking)</p>	<p>Students will be required to think critically and problem solve every week in the laboratory setting. They will need to generate hypothesis troubleshoot protocols, and interpret their results.</p> <p>For example, genetics principles will be discussed including how traits and certain diseases are inherited (dominance, recessive, co-dominance, sex linked).</p>	<p>The validity of the hypothesis generated will be evaluated.</p> <p>Students will be presented scenarios in lab and exams to predict the probability of offspring inheriting certain traits or condiditons.</p> <p>Examples :</p> <p>A color-blind woman marries a man who is not color-blind. All of their sons, but none of their daughters, are color-blind. Which of the following statements correctly explains these results?</p> <p>A) The gene for color vision is incompletely dominant to the gene for sex determination. B) The gene for color vision is codominant with the gene for sex determination. C) The gene for color vision is found on the X chromosome. D) The gene for color vision is found on the Y chromosome.</p> <p>A woman has been trying to conceive for several years, unsuccessfully. At a fertility clinic, they discover that she has blocked fallopian tubes. Using modern technologies, some of her eggs are removed, fertilized with her husband's sperm, and implanted into her uterus. The procedure is successful, but the couple discovers that their new son is color-blind and has blood type O. The woman claims that the child can't be theirs since she has blood type A and her husband has type B. Also, neither parent is color-blind, although one grandparent (the woman's father) is also color-blind.</p> <p>As a genetic counselor, how would explain to the parents that it is possible</p>
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<p>Students will find, evaluate and use information appropriate to the course and discipline. (Faculty are strongly encouraged to collaborate with their library faculty.)</p>	<p>Students will conduct research on a topic of biology of their choosing (from a list provided by the instructor). They will use scientific resources to gather related content to their topic and further their understanding. Students will then present their findings in a poster to their peers in a concise and cohesive manner</p>	<p>The instructor evaluates the poster and presentation on a specified set of criteria that include the ability of the student to report and cite supporting evidence in their background section.</p> <p>In addition, students will be required to evaluate their peers oral presentations and accompanying posters for responsible use of references. Is the information cited? (i.e. Lowe 2001 or www.cmc.org)</p>
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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):*

CSUSM 2: Exposure to and critical thinking about the interrelatedness of peoples in local, national, and global contexts. *No* *Yes (please describe):*

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

<p>Course Requirements:</p>	<p>How will this requirement be met by the instructor?</p>
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Course Requirements:	How will this requirement be met by the instructor?
<p>Course meets the All-University Writing requirement: A minimum of 2500 words of writing shall be required in 3+ unit courses.</p>	<p>Students keep a laboratory notebook and answer essay/ short answer questions on each exam taken in the course. In the laboratory students will answers questions related to the laboratory exercise. Students will also be required to complete a scientific poster presentation (with an accompanying written paper/ research information).</p> <p>Examples of exam short answer question: -Name and briefly describe both ways viruses infect - List and describe the five basic processes of the digestive system -Name and describe the 3 stages of swallowing -What are the 2 circulatory pathways? What is the function/purpose of each?</p>
<p>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).</p>	<p>All concepts presented are covered with in the course content. The first third of the course covers the scientific method, organization of life, the structure function of cells , DNA, biotechnology and genetic principles. The course then shifts to cover the human body systems. The last portion of the course discusses the theory of evolution, fundamentals of ecology and the importance of ecosystems.</p>
<p>Courses will require students to develop an understanding of the core information sources and the literature of the science disciplines.</p>	<p>All information presented in the course will be gathered from reputable scientific sources. How to find and assess scientific sources of information will be discussed and explained including the use of Pubmed and the library website.</p>
<p>Courses will require students to think critically so that they are able to distinguish scientific arguments from pseudo-scientific myths or opinions.</p>	<p>Students are challenged with questions about what is currently being debated in the media or past controversies. Students are encouraged to recall information presented in the course and apply to discussions. Students are encouraged to think about all the information presented and formulate their own conclusion.</p> <p>Example : The media presents that the hypothesis that vaccinations cause Autism. Students are encouraged to think about what information has been presented in the mass media and compare to the scientific research that is available. Through the application of the scientific method to both sets of information , students try to decipher what is public opinion versus actual scientific fact .</p>

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BIOL 104 – Principles of Biology: Human Emphasis

Instructor: Lyndsey Robertson, *M.S.*

Email: lmrobert@csusm.edu

Office Hours: by appointment

Lectures: Online

Laboratories: Mondays 10:30 am-1:15 pm or 1:45 pm-4:30 pm Science Hall 1 room 316

Dates to Remember:

Add/drop period: August 25-September 8

Last day to drop class with no academic record: September 8

Drop period—"W" will appear on transcript: September 22

Petition to drop the class after September 23—serious and compelling reasons only.

Required Course Materials:

Biology: The Core

Eric J. Simon, ISBN-10: 0321735862 • ISBN-13: 9780321735867

Catalog Course description:

BIOL 104 (4) Principles of Biology: Human Emphasis Principles of cellular, organismal and population biology with primary representation relating to the human organism. Includes study of cells, tissues, and mammalian organ systems. *Enrollment restricted to Kinesiology majors. Three hours of lecture and three hours of laboratory.*

General Education Learning Objectives :

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 Learning Outcomes for the Course:

This introductory biology course is based on the major conceptual principles underlying all of biology, with emphasis on human cellular life, inheritance, evolution, ecology and behavior. This course does not meet requirements for the biology major. This course builds on six fundamental conceptual themes. The topics and objectives are listed below. It includes principles of cellular, organismal and population biology with primary representation relating to the human organism. Includes the study of cells, tissues and human organ systems.

Nature of Biology : Students will understand the overarching principles of biology and explain how these are relevant to everyday life. Students will be able to discuss the interrelatedness of all life, and the unique role of humans in that relationship.

Cells: Students will be able to recognize the relevance of cell structure and function including the major macromolecules and cell division.

Genetics : Students will be able to explain how traits are inherited using Mendel's laws of inheritance.

Evolution: Students will be able to describe and explain natural selection as a mechanism for evolution.

Ecology: Students will be able to understand the ecological principles including food webs, populations and communities

Human Biology: Students will be able to describe process and function of primary body systems.

Students will be able to relate these Biology systems to evolution, genetics, and ecology.

Course Website:

Lecture materials, handouts, supplemental readings, etc. will be posted on the class Cougar Courses container

Grading :

The grade in the course will be based on your performance on the following

Participation:	15 pts
Assignments:	85 pts
Exam 1	100 pts
Exam 2	100 pts
Final Exam	100 pts
Presentation	50 pts
<u>Laboratory</u>	<u>130 (participation and write ups)</u>

Total 580 pts

Grading is based on a percentage of the total number of points earned divided by the total number of points possible.

93-100% of points = A 90-92% of points = A- 87-89% of points = B+

83- 86% of points = B 80-82% of points = B- 77-79% of points = C+

70-76% of points = C 67- 69 % of points = D+ 60-66% of points = D

59 % or below = F

Assignments/Quizzes:

These range from interactive activities, research problems, Quizzes, questions that pertain to the content, or problems to be solved/analyzed. Each assignment has questions that assess the student's understanding of the concept. Each assignment/ Quiz is worth 5- 10 points.

Assignments will

Exams:

Exams will cover all information discussed in lecture up to the date of each exam. All exams will be administered via Cougar Courses using the Safe Exam Browser . Students will only be able to take the exam through the Safe Exam Browser. The Safe Exam Browser will limit students ability to use other components of their computer aside from the keyboard while they are taking the Exam. All computers in the CSUSM computer labs have the Safe Exam Browser installed. If you will be taking the Exam on your own computer you need to download and install the Safe Exam Browser. The Exams will be made available for a period of five days. **The short answer and essay questions will satisfy the University Writing Requirement.**

Laboratory:

A separate schedule will be available of Cougar courses. The laboratory is worth a total of 200 points, each lab 10 points (5 points for questions/write up, 5 points participation). Lab is a required component for the course and you are required to be present for every lab. **The laboratory write ups will satisfy the University Writing Requirement**

Laboratory objectives and expectations:

The objectives of the laboratory component of this course is to provide the student hands on experiences with the concepts and materials discussed in the lecture as well as the opportunity to explore the techniques of experimentation and scientific analysis.

The laboratory is a crucial part of the course. The Department of Biological Sciences requires that you participate fully in laboratory exercises, i.e. the laboratory must be experienced. If you

miss the equivalent of more than four laboratory periods, participation will be considered unsatisfactory and you will receive an "F" in the course.

Literature Research Poster Project:

As one of your laboratory assignments you will conduct literature research on various topics in Human Biology. Guidelines will be posted separately on Cougar Courses. You can either do the project on your own or with one other person in your laboratory section. The written portions of your poster will uploaded to TurnItIn on Cougar Courses. **The Literature Research poster project write will satisfy the University Writing Requirement**

Academic Honesty and Integrity:

Students are responsible for honest completion and representation of their work. There will be no tolerance for infractions. 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 or the assignment of a failing grade for an exam, assignment, or the class as a whole. Incidents of academic dishonesty will also be reported to the Dean of Students for sanctions at the University level.

Disabled Students:

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentations to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 5205, 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.

Tentative Course Schedule * I reserve the right to make changes at any time:

WEEK	DATE	LECTURE TOPICS	CHAPTERS
1	8/25-8/29	Introduction to course , Science of Life	1
2	9/1-9/4	Chemistry of life, Macromolecules	2
3	9/8-9/12	Cell Structure and Function, Cell Membranes	3
4	9/15-9/19	Photosynthesis and Cellular respiration	4
5	9/22-9/26	Cell Division and the Human Life Cycle, Patterns of Inheritance	5
6	9/29-10/3	EXAM 1	
7	10/6-10/10	DNA Biotechnology, Genetic Counseling	6
8	10/13-10/17	Cardiovascular System: Heart and Blood Vessels, Respiratory System	11

9	10/20-10/24	Digestive System and Nutrition, Urinary System and Excretion	11
10	10/27-10/31	Skeletal System, Muscular System	11
11	11/3-11/7	Exam 2	
12	11/10-11/14	Nervous System, Senses, Endocrine	11
13	11/17-11/21	Defenses Against Disease, Parasites and Pathogens	11,8
14	11/24-11/28	Human Evolution	7
15	12/1-12/5	Global Ecology	12
16	12/8-12/12	Final Exam due by Friday 12/12	

Lab Topics / Schedule

WEEK	DATE	ACTIVITIES AND TOPICS
1	8/25	Lab Orientation and Scientific Method
2	9/1	No lab - Campus Closed
3	9/8	Biochemistry, Macromolecules
4	9/15	Enzymes
5	9/22	Microscope, Diffusion and Osmosis
6	9/29	Photosynthesis and Cellular Respiration
7	10/6	Mitosis, Meiosis, and the Human Life Cycle, Patterns of Inheritance
8	10/13	Introduction to Biotechnology
9	10/20	Nutrition, Digestion, and Excretion
10	10/27	Circulation, Respiration
11	11/3	Introduction to infectious disease
12	11/10	Skeletal and Muscular System
13	11/17	TBD
14	11/24	Presentations

15	12/1	TBD	
16	12/8	Finals week No lab	