**Biology of Humans (Renewal)**

1. **What is the theme you propose for your group of courses? In what ways do you think this theme speaks to issues important to our freshman population? To the University’s mission?**

**Biology of Humans** is a currently existing Freshman Learning Community sequence of three Biology courses applicable to the Health Sciences major, and two of which are required courses for application to the University’s Nursing Program by pre-nursing students. This is a proposal to renew this learning community. The three courses constitute a year-long sequence of Biology, as opposed to the cluster format that may involve courses from as many as three separate disciplines and departments. The human body and its anatomy and physiology will be studied with focus on the unifying biological principles that underlie structure and function, from the molecular and biochemical nature of life, through the study of individual organisms and their interactions in populations. Whether as prerequisites for the large number of courses required “downstream” in the Health Sciences major, or as prerequisites to admission to the Nursing Program, it is important for students to complete this sequence in the freshman year. The alternative—taking the courses “piecemeal” across two years—ultimately extends the minimum time to complete the degree to five or more years, or could ultimately hinder a student’s chances for meeting the requirements for applying to the Nursing Program.

Importance of Issues to First Year Students: The three courses will offer a firm foundation in the scientific method for students aspiring to careers in the delivery of human healthcare. Students will learn the skills of scientific communication—both written and oral—and how to research a question/problem through library resources. Thus these courses will integrate and mesh with their required LIBY course in information literacy.

Connection to the University’s mission: The three courses address Institutional Learning Outcome 1, “to think critically and creatively and apply analytical and quantitative reasoning to address complex challenges and everyday problems,” and Outcome 4, “to work collaboratively and respectfully as members and leaders of diverse teams and communities.” These come directly from scientific investigation in a laboratory setting, information literacy in preparing and writing up results, and searching digital information through library resources—through working as investigative, collaborating teams.

2. **List the three courses (prefix, number, title, units):**

- BIOL 1007 +1002 Human Biology (1007 = 4 units lecture, 1002 = 1 unit lab)
- BIOL 2011 Anatomy and Physiology I (5 units)
- BIOL 2021 Anatomy and Physiology II (5 units)

3. **Explain how the theme will be used to integrate course content in each course. If appropriate, please describe how students will be involved in researching the theme and when in the year that will happen.**

In this sequence of courses, students will first learn about the structure and function of living organisms, and then will use the knowledge gained from this examination of life to examine the structure (anatomy) and function (physiology) of the human animal. The courses will all emphasize the unity of life forms on earth that can be seen by examination at the cellular and molecular levels, and then will build on this theme of “unity-yet-diversity” by examination of structures and functions of the multicellular organisms with whom we are most sympathetic—ourselves. Human health—disease, disease mechanisms, therapeutics—will be emphasized throughout the courses. This will be accomplished in each course within the context of research, library-based data gathering, report writing, and oral communication of scientific results. This is an approach that will integrate well with the freshman-required LIBY course in information literacy.
4. Explain how each course in the proposed learning community will support student learning of each of the cluster’s lower division general education area learning outcomes.

BIOL 1007 satisfies the B3, and BIOL 20111/21 satisfy the B2, B3 and/or B5 GE learning outcomes. On exams, students will demonstrate understanding of fundamental concepts of animal and human structure and function as unified by evolutionary principles. Students will also write original research papers and make oral presentations to confirm learning outcomes. The evaluation of how well learning outcomes are being met will occur via analysis of embedded questions on exams. The results of embedded questions will be tabulated and evaluated independent from the rest of the exam.
Application for General Education Credit  
for Lower Division Life Science (Area B2)

Course title: **Biology of Humans**
(+ Accompanying Intro Biol Lab)

Course number: **BIOL 1007**
(BIOL 1002)

**Note:** BIOL 1007 and BIOL 1002 are already approved for B2 GE and Area B lab

Courses approved for general education credit must provide students with explicit instruction in the approved student learning outcomes. Please be as specific as possible in your explanations, describing topics, readings, assignments, activities and assessments that illustrate how the course supports students’ acquisition of the learning outcomes. Remember, there may be no one on the review committees who has any knowledge of your discipline. Attach the course syllabus and any assignments and/or assessments needed to support your explanations.

**Please use this template to address ALL of the following learning outcomes.**

**Purpose of Science GE:** The goal of lower division general education in the natural sciences is to gain basic knowledge and learn key principles in the life and physical sciences as essential for an informed citizenry. In addition, students should recognize the experimental and empirical methodologies characteristic of science and understand the modern methods and tools used in scientific inquiry.

1. Students will demonstrate broad science content knowledge in the life sciences (such as cellular structure, the diversity and classification of life, or biological evolution) and be able to describe fundamental concepts in the life sciences that distinguish them from the physical sciences.

   In Biol 1007 and Biol 1002, students will: 1) investigate the cellular and molecular basis of life, including cellular structure and physiology, and ultimately the organization of cells into bacteria, plants and animals; 2) learn about the importance of chemical interactions in the structure and function of DNA and how these relate to disease mechanisms; 3) explore and examine a broad range of genetic adaptations seen in living organisms, 4) learn about the ecological relationships of living organisms, from individuals, to populations, to communities and ecosystems, and 5) explore the broad range of lifestyles and accommodations as a result of population and environmental pressures. This will be done in lectures whose focus will be biological issues faced by Earth’s inhabitants in the 21st century (with primary focus on biomedical and environmental issues relative to the biology of humans). Initial emphasis will be placed on the scientific method of hypothesis formulation and testing.

2. Students should be able to demonstrate the application of quantitative skills (such as statistics, mathematics, the interpretation of graphical data, etc.) to life science problems.

   In Biol 1007 and Biol 1002, students will be shown, and asked to demonstrate, the application of quantitative skills across a wide range of biological questions. Some examples include, with particular attention on human examples: 1) The energetics of biochemical reactions; quantitative understanding of how the evolution of
enzymes underlies the evolution of life. 2) Exercises in understanding the genetic code, including practical exercises in decoding a length of DNA to see how it regulates the synthesis of an enzyme. Alternatively, the mechanism whereby a mutation in DNA leads to an aberrant enzyme and a disease phenotype will be worked out by students; this will be accomplished with an integrative view of the understanding of blood sugar chemistry (“the normal”) and diabetes (“the mutant”). 3) The energetics of the carbon cycle and a quantitative understanding of “greenhouse gases” and global warming, 4) Application of statistics to graphical data, particularly bar graphs, in order to understand by mathematical quantitation whether two or more results are “the same,” or “different.” On written (short answer and essay) examinations, students will demonstrate their understanding of the value of gathering and interpreting data as the basis for rigorous investigations in the life sciences and biomedical research.

3. Students should be able to demonstrate a general understanding of the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

Using examples drawn from an “issues oriented” Introductory Biology textbook, students will obtain an essential understanding of a “claim” (made with no supporting science), a “hypothesis” (or model to be tested), vs. a conclusion based on hypothesis testing. Students will take from the course the ability to distinguish between “correlation” (“People who are obese generally develop heart disease”) vs. “cause and effect” (Plaque formation and occlusion of the blood vessels of the heart ultimately cause a heart attack.”)
Application for General Education Credit
for Lower Division Life Science (Area B2)

Course title: Anatomy and Physiology I

Course number: BIOL 2011

Courses approved for general education credit must provide students with explicit instruction in the approved student learning outcomes. Please be as specific as possible in your explanations, describing topics, readings, assignments, activities and assessments that illustrate how the course supports students' acquisition of the learning outcomes. Remember, there may be no one on the review committees who has any knowledge of your discipline. Attach the course syllabus and any assignments and/or assessments needed to support your explanations.

Please use this template to address ALL of the following learning outcomes.

Purpose of Science GE: The goal of lower division general education in the natural sciences is to gain basic knowledge and learn key principles in the life and physical sciences as essential for an informed citizenry. In addition, students should recognize the experimental and empirical methodologies characteristic of science and understand the modern methods and tools used in scientific inquiry.

1. Students will demonstrate broad science content knowledge in the life sciences (such as cellular structure, the diversity and classification of life, or biological evolution) and be able to describe fundamental concepts in the life sciences that distinguish them from the physical sciences.

Please note: BIOL 2011 is already approved for B2 GE. These learning outcomes are provided for convenience of review.

Students will enter Biol 2011 in the winter quarter following a general introduction to the biological sciences in the fall quarter of the cluster (Biol 1007 and Biol 1002). The focus will be a narrowed application of those biological principles to the introductory study of the human body in terms of structure (anatomy) vs. function (physiology). Biol 2011 will focus on the continued study of the organization of matter into the structurally functioning form that is the human being, and is the 1st quarter of the two-quarter series Biol 2011 and Biol 2021, Anatomy & Physiology I, II. A primary, distinguishing feature of this course is the distinctly separate study of the specific “reactions” that lead to the development of the human, but that also govern our reproduction and life processes (i.e., physiology). This is also a basic, distinguishing feature separating the life sciences from the physical sciences. Conceptually, students will understand “the cell” first as the basic unit of a living form, that there is a genetically based uniformity of life on this planet, and that although the focus will be on human anatomy and physiology—tissues, organs, organ systems, and integrative physiology of the organ systems—it is the conservation of these systems by evolutionary pressure that will be an underlying theme.

2. Students will demonstrate the application of quantitative skills (such as statistics, mathematics, the interpretation of graphical data, etc.) to life science problems.

Much understanding of human anatomy and physiology is practically aimed at “healthier living” through understanding the mechanisms of disease that lead to therapeutics, and to disease prevention. There will be emphasis on scientific methodologies, systematic observations and discussion of experiments on both humans and correlating model mammals that have been conducted by scientists to determine how the human body develops anatomically, and functions
physiologically. Comparative anatomy will be invoked as possible to underscore evolutionary constraints on both structure (anatomy) and function (physiology). Students will be asked to demonstrate understanding of quantitation as required in laboratory activities and assignments. Students will be asked to demonstrate the application of quantitative skills in the form of basic statistics to analyze experimental data for significance, mathematics, the interpretation of graphical data—as presented in lecture, practical demonstration in laboratory sections, and as reinforced in Blackboard assignments, and examination.

3. Students will demonstrate a general understanding of the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

Students will be able to understand and describe the scientific method of “hypothesis formulation,” followed by appropriate experimental design to test alternative hypotheses, and then survey how data are analyzed to formulate a conclusion as to whether the hypothesis is most likely “correct,” or most likely “incorrect.” Students will also be able to understand that the investigative nature of science can lead to conclusions that distinguish “cause and effect” vs. “correlation.” For example, “Obesity causes diabetes” is on the surface merely an advertising claim. However, quantifying by field study the number of obese persons who also are diabetic (with perhaps an age distinction) might lead to a significant conclusion of correlation. Ultimately, through physiological and genetic studies with mouse models, it could be shown that obesity leads to the release of an individual molecule which could be a causative agent of diabetes.
Application for General Education Credit
for Lower Division Life Science (Area B2)

Course title: Anatomy and Physiology II  
Course number: BIOL 2021

Courses approved for general education credit must provide students with explicit instruction in the approved student learning outcomes. Please be as specific as possible in your explanations, describing topics, readings, assignments, activities and assessments that illustrate how the course supports students’ acquisition of the learning outcomes. Remember, there may be no one on the review committee who has any knowledge of your discipline. Attach the course syllabus and any assignments and/or assessments needed to support your explanations.

Please use this template to address ALL of the following learning outcomes.

Purpose of Science GE: The goal of lower division general education in the natural sciences is to gain basic knowledge and learn key principles in the life and physical sciences as essential for an informed citizenry. In addition, students should recognize the experimental and empirical methodologies characteristic of science and understand the modern methods and tools used in scientific inquiry.

1. Students will demonstrate broad science content knowledge in the life sciences (such as cellular structure, the diversity and classification of life, or biological evolution) and be able to describe fundamental concepts in the life sciences that distinguish them from the physical sciences.

Please note: BIOL 2021 is already approved for B2 GE. These learning outcomes are provided for convenience of review.

Students will enter Biol 2021 in the winter quarter following an introduction to the chemical nature of matter in the fall quarter, having focused on molecular structure and classification, and the energetics of chemical reactions. In Biol 2011 in the winter, students turned their attention to initial studies of structure and function in biological terms, with focus on the organization of matter into the structurally functioning form that is the human being. Biol 2021 is the second quarter of this two-quarter series and will focus more on the physiology of life through study of organ systems. A primary, distinguishing feature of this course is the distinctly separate study of the specific “reactions” that lead to the development of the human, but that also govern our reproduction and life processes. This is also a basic, distinguishing feature separating the life sciences from the physical sciences. Conceptually, students will understand “the cell” first as the basic unit of a living form, that there is a genetically based uniformity of life on this planet, and that although the focus will be on human anatomy and physiology—tissues, organs, organ systems, and integrative physiology of the organ systems—it is the conservation of these systems by evolutionary pressure that will be an underlying theme.

2. Students will demonstrate the application of quantitative skills (such as statistics, mathematics, the interpretation of graphical data, etc.) to life science problems.

Much understanding of human anatomy and physiology is practically aimed at “healthier living” through understanding the mechanisms of disease that lead to therapeutics, and to disease prevention. There will be emphasis on scientific methodologies, systematic observations and discussion of experiments on both humans and correlating model mammals that have been conducted by scientists to determine how the human body develops anatomically, and functions
physiologically. Comparative anatomy will be invoked as possible to underscore evolutionary constraints on both structure (anatomy) and function (physiology). Students will be asked to demonstrate understanding of quantitation as required in laboratory activities and assignments. Students will be asked to demonstrate the application of quantitative skills in the form of basic statistics to analyze experimental data for significance, mathematics, the interpretation of graphical data—as presented in lecture, practical demonstration in laboratory sections, and as reinforced in Blackboard assignments, and examination.

3. Students will demonstrate a general understanding of the nature of science, the methods applied in scientific investigations, and the value of those methods in developing a rigorous understanding of the physical world. Students should be able to identify the difference between science and other fields of knowledge. Students should be able to distinguish science from pseudoscience.

Students will be able to understand and describe the scientific method of "hypothesis formulation," followed by appropriate experimental design to test alternative hypotheses, and then survey how data are analyzed to formulate a conclusion as to whether the hypothesis is most likely "correct," or most likely "incorrect." Students will also be able to understand that the investigative nature of science can lead to conclusions that distinguish "cause and effect" vs. "correlation." For example, "Obesity causes diabetes" is on the surface merely an advertising claim. However, quantifying by field study the number of obese persons who also are diabetic (with perhaps an age distinction) might lead to a significant conclusion of correlation. Ultimately, through physiological and genetic studies with mouse models, it could be shown that obesity leads to the release of an individual molecule which could be a causative agent of diabetes.
Learning Outcomes
1. Learn the anatomy and physiology of the major organ systems of the human body
2. Understand human evolution and ecology in the context of all life on the planet
3. Be able to distinguish between scientific evidence and un-established claims about health in media
4. Learn the human life cycle from infancy through reproduction and old age

Required texts: Belk and Borden 2009. Human Biology, Benjamin Cummings Publisher

Blackboard: Course information, including announcements, instructor information, changes and/or additions to the syllabus, and other relevant information will be posted on Blackboard, which can be accessed via the web using your NetID (see www.csueastbay.edu for information).

Grading:
- Midterms (90%): 3 midterm exams – dates to be determined
- Participation (10%): Determined by participation in on-line discussions on Blackboard

Exams: Please note the exam dates, as there are NO MAKE-UPS for exams. If you miss a midterm lecture exam, you will receive a zero for that exam. If you have a medical emergency on the date of the lecture exam, you must notify me before or ASAP after the exam is given and provide documentation explaining your absence within one week of the exam. In this situation, your remaining exam grades will be averaged for the total exam grade.

Participation: Participation will be determined by on-line discussions on Blackboard. Periodically, I will post a link to a popular media article for you to read, listen to, or watch. You must participate in the online discussion of this article. I will keep a tally of points for your participation (which will be based on both quality and quantity of your posts). Once you reach 10 points, you will have full credit. I recommend that you participate early and often. Participation must be your own work. Plagarism is easily detected with a simple cut-and-paste search to Google, and will be grounds for a charge of academic misconduct.
## TENTATIVE LECTURE SCHEDULE – BIOL 1007

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Readings</th>
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<tbody>
<tr>
<td>1</td>
<td>Intro/Scientific method/ Human Evolution</td>
<td>Chap 1, 22</td>
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<tr>
<td>2</td>
<td>Human evolution /Chemistry of life/ Cells &amp; metabolism</td>
<td>Chap 22, 2-3</td>
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<tr>
<td>3</td>
<td>Genes/Tissues, Organs, Organ Systems</td>
<td>Chap 4-5</td>
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<tr>
<td>4</td>
<td>Skeletal, Muscular, Integumentary / Digestion</td>
<td>Chap 6,7</td>
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<tr>
<td>5</td>
<td>Urinary/Blood/ Cardio</td>
<td>Chap 11, 8, 9</td>
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<tr>
<td>6</td>
<td>Respiration/Immune system/Disease</td>
<td>Chap 10,12-13</td>
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<tr>
<td>7</td>
<td>Disease (continued) / Brain/Senses</td>
<td>Chap 14, 15</td>
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<tr>
<td>8</td>
<td>Endocrine System/ Robert Sapolski</td>
<td>Chap 16</td>
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<tr>
<td>9</td>
<td>Movie of Aging</td>
<td>Read for next week</td>
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<tr>
<td>10</td>
<td>Cell Cycle, Reproduction, Heredity</td>
<td>Chap 17 -19</td>
</tr>
<tr>
<td>11</td>
<td>Development and Aging, Ecology</td>
<td>Chap 21, 22</td>
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</tbody>
</table>

Please be considerate of other members of the class and **turn off any electronic devices** (i.e., cell phones, pagers, etc.) before entering class. Using cell phones or pagers during quizzes or exams is forbidden. Any form of academic dishonesty, including cheating, copying, plagiarism, etc., will result in failure of the course and placement of a letter of reprimand in your academic record – just don’t do it! I will post a copy of the university academic misconduct policy on Blackboard. You are responsible for knowing and understanding it.
BIOL1002  
Introduction to Biology Laboratory  
Spring 2014

This Lab will meet on

Instructor:
e-mail:
Phone:
Office Hrs:

Prerequisite
Prior or current enrollment in BIOL1001 or equivalent.

Required material

Description of the Lab
We will explore the Science of Biology in practice in the Lab; with some introductory laboratory experiences including Biochemistry, Cellular and Molecular Biology, Genetics, Physiology, Ecology and Evolution.

Student Learning Outcomes
After completion of this course, students will be able to:
1. Understand the scientific method and basic vocabulary of scientific terms
2. Understand the chemistry of life and how cells work
3. Understand how the major functions of organ systems in the human body and functions to maintain homeostasis
4. Understand the basics of evolutionary theory and its role in biology
5. Understand cellular reproduction, replication of genetic material and mechanisms of inheritance
6. Utilize the material learned from this course towards health, medical, and life decisions for the future.

Expectations/Goals
I do not expect you to become qualified scientist in 3 months. What is expected from you though is to actively participate during the activities, with a scientific approach, to understand your environment and Biology in the general sense. You have to listen carefully to what I say during the labs, so BE ATTENTIVE! I will do my best to post guidelines when needed, but I also always repeat everything that needs to be known in the lab, so again BE ATTENTIVE! You need to attend all labs and be on time. You will also need to take the class quizzes and submit your work on time and complete.

YOU MUST CHECK BLACKBOARD AND YOUR HORIZON E-MAIL REGULARLY!
Accommodation for students with disabilities
It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact their instructors early in the quarter to discuss their individual needs for accommodations.

Academic dishonesty
Students are expected to do their own assigned work. If it is determined that a student has engaged in any form of academic dishonesty, the student may be given an "F" for the course, and may face additional sanctions from the University. Academic dishonesty in any portion of the academic work for a course may be grounds for awarding a grade of “F” for the entire course.

Just to be clear
You are expected to attend all the labs, as you will have assignments/homework to do regarding what we do during the lab. I will always understand an emergency or an unexpected situation, but you will need to communicate with me regarding these situations. You will need to email/notify me if you do not plan on attending class. Phones, tablets, and computers will not be allowed in class, and must be inside your backpacks. Tardiness will result in a lowered attendance grade. Closed-toed shoes must be worn at all times in the lab. There will be no make-up quizzes, but I will drop the one with your lowest grade. All homework and assignments are due on the due date. I will accept late work with a 10% reduction in the grade for each day it is late. If you were out sick, I will need to see a valid doctor’s note for full credit after the assignment due date. No extra credit assignments will be assigned for the course.

Additional Readings and Clarification of the Manual on BlackBoard
I will be posting clarification about the Manual when needed. I will probably post some additional REQUIRED readings as well as optional ones. Please read them. I will let you know of any modifications of the syllabus and post them on Blackboard as well, so listen and keep track.

Grade distribution (%)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>94-100</td>
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<td>B</td>
<td>87-89</td>
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<td>C</td>
<td>77-79</td>
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<td>D</td>
<td>67-69</td>
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<td>D-</td>
<td>66-63</td>
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<td>F</td>
<td>00-59</td>
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Course Assignments
1) Written and Oral assignments:

ALL WRITTEN ASSIGNMENTS ARE DUE BY 11:59 PM ON THE DUE DATE VIA TURN-IT-IN.COM ON BLACKBOARD.

a) Osmosis Graph (10 pts.): Use rubric to show complete and accurate graph of results from lab.
b) **Nutrition Data (10 pts.):** Provide print-outs of graphs from website and complete reflection and summary worksheet provided. More detailed instructions will be posted on Blackboard in Course Materials.

c) **Formal Lab Report (Enzymes as bio catalyst) (20 pts.):** Write a formal lab report using instructions in class and rubric to guide what information is required.

d) **Interactions Summary (Hike) (5 pts.):** Write one paragraph for 5 different interactions summarizing what we observed on our ecology hike. More detailed instructions will be posted on Blackboard in Course Materials.

e) **Research presentation (Natural selection) (5 pts.):** In class oral presentation by lab group for findings from natural selection data/hike summary interactions.

2) **Lab quizzes: (40 pts.)** There will be five quizzes during the course, four of which will count towards your final grade. The lowest score quiz score will be dropped. They have two purposes: (1) to check for comprehension of key vocabulary, data analysis and big ideas from each lab, and (2) to be certain you are prepared for the lab we will be conducting that day in class. Quizzes will be conducted in the first 15 minutes of our lab, no make-up quizzes will be given as you are expected to attend all lab sessions. All quizzes are cumulative!

3) **Participation: (10 pts.)** Students who arrive on time and are fully engaged in their work will be given full points. Multiple absences, lateness, excessive time out of the lab, or other off-task behavior will result in a loss of points.

**Note: this syllabus is subject to change at the discretion of the instructor.**

This is a tentative schedule. If there are any subsequent changes you will be provided timely notice.

<table>
<thead>
<tr>
<th>Lab/days</th>
<th>Course description</th>
<th>Lab pg.</th>
<th>Preparation – in lab work</th>
<th>Quizzes/Assignments</th>
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<tbody>
<tr>
<td>#1 4/07</td>
<td>Scientific Inquiry Method</td>
<td>p.1-8</td>
<td>Prepare for Lab#1</td>
<td></td>
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<tr>
<td>#2 4/14</td>
<td>Structure and Function of Cells</td>
<td>p.9-27</td>
<td>-Prepare for Lab#2 &lt;br&gt;-Observe and draw plant and animal cells.</td>
<td>Quiz#1</td>
</tr>
<tr>
<td>#3 1/21</td>
<td>Biological Membranes: Diffusion and Osmosis</td>
<td>p.28-31</td>
<td>-Prepare for Lab#3 &lt;br&gt;-Make sure you understand the lab and the assignment.</td>
<td>Quiz#2</td>
</tr>
<tr>
<td>#4 1/28</td>
<td>Enzymes as Biological Catalysts</td>
<td>p.32-41</td>
<td>-Prepare for Lab#4 &lt;br&gt;- Make sure you understand all aspect of the catalase experiments and what is expected for the assignment.</td>
<td>Osmosis Assignment due on or before <strong>11:59pm on 5/05</strong> via Turn-it-in on Blackboard</td>
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<tr>
<td>#</td>
<td>Date</td>
<td>Title</td>
<td>Pages</td>
<td>Instructions</td>
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| 5  | 5/05  | *Genes and Inheritance*                                             | p.42-56 | -Prepare for Lab#5  
-Answer all the lab questions found in the Lab manual.  |
| 6  | 5/12  | *Plants and Photosynthesis*                                         | p.69-81 | -Prepare for Lab#6  
-Print the plant diversity sheet  |
| 7  | 5/19  | *An Introduction to Animal Diversity*                                | p.63-68 | -Prepare for Lab#7  
-Print the animal diversity sheet.  |
| 8  | 5/26  | *Human Nutrition – Virtual Lab (No Lab This Week: Do not come to class)* | p.57-62 |  
-Prepare for Lab#8  
-Print the plant diversity sheet.  |
| 9  | 6/02  | *Garin Grassland Walk: View of an Ecological Niche*                  | p.82-91 | -Prepare for Lab#8  
Wear flat shoes for the “hike”  |
| 10 | 6/09  | *A Study of Natural Selection*                                       | p.92-94 | -Prepare for Lab#10  
-In class oral presentation  |

**Quiz#3**  
Enzyme Lab Report due on or before **11:59pm on 5/12 via Turn-it-in on Blackboard**  

**Quiz#4**  
Familiarize yourself with the website above  

**Quiz#5**  
-Hike assignment due on or before 3/10 11:59pm on turn-it-in on Blackboard.
Biology 2011 – Anatomy and Physiology
Winter 2014

Class meeting: Valley Business and Technology Center, Rm. 0124, MWF 1:20-2:30
Instructor: Dr. Tess Freidenburg
Office: SS 312
Office hours: Friday 2:30-4:00pm, or by appointment
Email: tess.freidenburg@csueastbay.edu (this is the best way to reach me!)

Required materials:

- *Human Anatomy and Physiology*, Marieb and Hoehn, (9th ed), Pearson
- *MasteringA&P (MAP)*, online quizzes, homework and review (can be bundled with the text)
- *iClicker* (any model should work)

Recommended materials:

- *The Physiology Coloring Book;* Kapit, Macey & Neisami, Harper & Row Publ., 1987

Blackboard:
Course information will be posted on Blackboard: [http://bb.csueastbay.edu/](http://bb.csueastbay.edu/)

Grading:

Your grade will be determined by your performance in lecture and lab, with points distributed as follows:

- **Exams**: 2 midterms, each worth 15%, comprehensive final worth 25%
- **Homework (MAP)**: 10%
- **Online quizzes (MAP)**: 7%
- **Class participation (iClickers)**: 5%
- **Library research project**: 3%
- **Lab**: 25% (you must pass the lab in order to pass the course!)

The scale for grading is as follows:

- A 94-100
- A- 90-93.9
- B+ 87-89.9
- B 84-86.9
- B- 80-83.9
- C+ 77-79.9
- C 74-76.9
- C- 70-73.9
- D+ 67-69.9
- D 60-66.9
- F >60

Course information:

- **Number of units**: This is a 5 unit course
- **Prerequisites**: Recommended preparation: high school biology and chemistry, or BIOL 1001 (or 1005) and BIOL 1002 (or 1005); CHEM 1100 or 1601 (or 1605).
- **Course description**: An integrated approach to health through the essential concepts of human physiology and anatomy. Analysis of skeletal, muscular, sensorimotor, cardiovascular and respiratory systems. *Not open to students with credit for BIOL 2010. Not for Biology B.S. degree*
credit.

- **Course objectives:** Students will
  - Develop a vocabulary of terminology to effectively communicate information related to the anatomy and physiology of the human body
  - Be able to identify and describe the gross and microscopic anatomy of the major organs and organ systems
  - Understand how the major organ systems work individually and collectively to maintain homeostasis

- **Student learning outcomes:** Students completing this course will have an increased understanding of the respective roles of the major organ systems (e.g., skeletal, cardiovascular, respiratory, muscular) in maintaining homeostasis. In addition, students will be able to explain physiological functions of body systems, including the role of feedback loops to control physiological systems. Using the knowledge acquired in the course, students will hone their ability to synthesize information about physiological processes and to connect that information to concepts such as healthy lifestyle choices and the effects of homeostatic imbalances.

**Course requirements:**

- **Exams:** There will be three multiple-choice exams (2 midterms; one comprehensive final); dates are listed on the syllabus. Please note these dates, as there are no make-up exams. If you have an emergency you must contact me before class begins and provide documentation within one week. Unexcused absence from an exam or failure to notify the instructor prior to the exam will result in a score of zero. All lecture exams will stress the lecture material; readings are designed to expand and deepen understanding of the material covered. It is unlikely that you will do well without keeping up with the assigned reading. For all exams, be sure to bring a #2 or softer pencil and a scantron that is free of tears and creases.

- **Homework and online quizzes:** Homework and quizzes are assigned on MAP online. It is your responsibility to check and meet all deadlines for the assigned work. Late assignments may receive no points. More detailed information about homework assignments and quizzes will be posted on Blackboard.

- **Library research project:** Students will be asked to complete a research project that will culminate in a short literature review of a current topic in human anatomy and physiology. Specific guidelines, including a grading rubric, will be posted on Blackboard at the start of the term.

- **Laboratory Sections:** A unit of credit is given for the lab. Failure to attend lab will result in a failing grade--a passing grade in lab is required to pass the course, since 5 units of credit cannot be awarded for only 4 units successfully completed. See below for more specific information about the laboratory sections.

- **Office hours and study habits:** Please come to office hours (mine and/or your TA’s) if you have questions or are having trouble with the material. To be successful, you need to read the text, take notes, and keep up with the homework and online quizzes (you should expect to spend 2-3 hours studying for every hour of lecture!). It is your responsibility to be an active participant in your education by seeking help if you don’t understand the material.

**Academic conduct and class policies:**

- **Classroom courtesy:** It is inappropriate and discourteous to bring into class any device that emits an audible sound; please turn off or silence electronic devices during class. If you arrive late to class, please enter quietly and sit in the back to minimize disturbance.

- **Cheating:** If it is determined that cheating or other dishonest behavior has occurred, a grade of "F" will be assigned to all individuals involved, and further actions (which may include expulsion from the University) may be initiated as detailed in the University catalog.

- **Disabilities:** We will provide reasonable accommodations for physical or learning disabilities.
Please register with student services and notify me as early as possible (first week of class).

**Anticipated lecture schedule** (any changes to the schedule will be posted on Blackboard)

<table>
<thead>
<tr>
<th>Week of</th>
<th>Lecture topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 6</td>
<td>Intro, Levels of organization, major organ systems</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Cells and organelles, tissues</td>
<td>3, 4</td>
</tr>
<tr>
<td></td>
<td>Tissues; bone</td>
<td>4, 6</td>
</tr>
<tr>
<td>Jan 13</td>
<td>Bone</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Skeleton: Axial</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Skeleton: Appendicular</td>
<td>7</td>
</tr>
<tr>
<td>Jan 20</td>
<td>No class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Joints: structure and function</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Midterm review</td>
<td></td>
</tr>
<tr>
<td>Jan 27</td>
<td>Midterm 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muscles: contraction, structure</td>
<td>1, 3, 4, 6, 7, 8</td>
</tr>
<tr>
<td></td>
<td>Muscle: skeletal, smooth</td>
<td>9</td>
</tr>
<tr>
<td>Feb 3</td>
<td>Muscle: control, metabolic types</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Finish muscles: begin heart anatomy</td>
<td>9, 18</td>
</tr>
<tr>
<td></td>
<td>Heart: excitation and contraction</td>
<td>18</td>
</tr>
<tr>
<td>Feb 10</td>
<td>Heart: regulation, feedback, homeostasis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Finish heart; circulation: vessels</td>
<td>18, 19</td>
</tr>
<tr>
<td></td>
<td>Circulation: exchange and control</td>
<td>19</td>
</tr>
<tr>
<td>Feb 17</td>
<td>Finish circulation</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Review session</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Midterm 2</td>
<td>9, 10, 18, 19</td>
</tr>
<tr>
<td>Feb 24</td>
<td>Respiration: gas exchange</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Respiration: control of depth and rate</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Nervous system: cells and membrane potential</td>
<td>11</td>
</tr>
<tr>
<td>March 3</td>
<td>Nervous system: action potential</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Nervous systems: synapses</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Peripheral nervous system: nerves and motor control</td>
<td>13</td>
</tr>
<tr>
<td>March 10</td>
<td>Autonomic nervous system</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Finish autonomic nervous system</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Review session</td>
<td></td>
</tr>
</tbody>
</table>

**The Final Exam will be Wednesday, March 19 from 2:00-3:50 pm**

**Laboratory Info**

Labs provide you with the opportunity to apply practical knowledge of what you have read in the text and heard in lecture. It is your responsibility to come to class prepared to actively engage with the materials provided and to ask your TA for help if you don’t understand in the information.

Information about lab activities, including Student Learning Objectives (SLOs), reading assignments, and other activities will be posted on your lab Blackboard site.

Labs meet in South Science 346. Lab exercises and pop-quizzes start on-time so schedule to take into account possible traffic problems. Since lab activities require the entire lab period, late arrival may result in loss of credit for the entire lab meeting. Missing two labs without medical excuse will result in failing the course.

**Lab sections:** Tue 9:20-11:50pm **(A- Archana Patel)**; Tue 5:30-8:00pm **(B- Sara Sadre)**; Wed 2:40-
5:10pm (C- Crystal Vardakis); Thurs 9:20-11:50pm (D- Amber Lyon-Colbert); Thurs 2:40-5:10pm (E- Amber Lyon-Colbert); Thurs 5:30-8:00pm (F- Amber Lyon-Colbert); Fri 9:20-11:50pm (G- Samantha Zacarias); Fri 2:40-5:10pm (H- Archana Patel);

**Grading:** Your lab grade will be based on your answers to pre-lab activities, laboratory exercises, lab reports, and periodic pop quizzes. Your TA will provide you with more detailed information about the grading breakdown for the laboratory sections.

**Anticipated lab schedule** (any changes to the schedule will be posted on Blackboard)

<table>
<thead>
<tr>
<th>Week of</th>
<th>Lab Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 6</td>
<td>No labs this week!</td>
</tr>
<tr>
<td>Jan 13</td>
<td>Bones, body organization and metrics</td>
</tr>
<tr>
<td>Jan 20</td>
<td>No formal lab activities</td>
</tr>
<tr>
<td>Jan 27</td>
<td>Muscles and origins/insertions</td>
</tr>
<tr>
<td>Feb 3</td>
<td>Lab practical</td>
</tr>
<tr>
<td>Feb 10</td>
<td>Labtutor: EMG</td>
</tr>
<tr>
<td>Feb 17</td>
<td>Labtutor: Muscle stimulation</td>
</tr>
<tr>
<td>Feb 24</td>
<td>Labtutor: Reflexes and reaction times</td>
</tr>
<tr>
<td>Mar 3</td>
<td>LabTutor: EKG</td>
</tr>
<tr>
<td>Mar 10</td>
<td>Respiratory exercise</td>
</tr>
</tbody>
</table>
Biology 2021 –Anatomy and Physiology
Spring 2014

Class meeting: Meiklejohn Hall, Rm. 0124, MWF 12:00-1:10
Instructor: Dr. Tess Freidenburg
Office: Science N403B
Office hours: MW 1:15 – 2:00pm, or by appointment
Email: tess.freidenburg@csueastbay.edu (this is the best way to reach me!)

Required materials:
- Human Anatomy and Physiology, Marieb and Hoehn, (9th ed), Pearson
- MasteringA&P (MAP), online quizzes, homework and review (can be bundled with the text)
- iClicker (any model should work)

Recommended materials:
- The Physiology Coloring Book; Kapit, Macey & Neisami, Harper & Row Publ., 1987

Blackboard:
Course information will be posted on Blackboard: http://bb.csueastbay.edu/

Grading:
Your grade will be determined by your performance in lecture and lab, with points distributed as follows:
- Exams: 2 midterms, each worth 15%, comprehensive final worth 25%
- Homework (MAP): 10%
- Online quizzes (MAP): 7%
- Class participation (iClickers): 5%
- Library research project: 3%
- Lab: 25% (you must pass the lab in order to pass the course!)

The scale for grading is as follows:
- A    94-100
- A-   90-93.9
- B+   87-89.9
- B    84-86.9
- B-   80-83.9
- C+   77-79.9
- C    74-76.9
- C-   70-73.9
- D+   67-69.9
- D    60-66.9
- F    >60

Course information:
- Number of units: This is a 5 unit course
- Prerequisites: Co-requisites: BIOL 2010 (or 2011) or equivalent and CHEM 1100 (may be taken concurrently), or consent of instructor. Not open to students with credit for BIOL 2020.
- Course description: An integrated analysis of human physiology and anatomy of the
Course objectives: Students will
- Develop a vocabulary of terminology to effectively communicate information related to the anatomy and physiology of the human body
- Be able to identify and describe the gross and microscopic anatomy of the major organs and organ systems
- Understand how the major organ systems work individually and collectively to maintain homeostasis

Student learning outcomes: Students completing this course will have an increased understanding of the respective roles of the major organ systems (e.g., sensory, endocrine, urinary, reproductive) in maintaining homeostasis. In addition, students will be able to explain physiological functions of body systems, including the role of feedback loops to control physiological systems. Using the knowledge acquired in the course, students will hone their ability to synthesize information about physiological processes and to connect that information to concepts such as healthy lifestyle choices and the effects of homeostatic imbalances.

Course requirements:

- Exams: There will be three multiple-choice exams (2 midterms; one comprehensive final); dates are listed on the syllabus. Please note these dates, as there are no make-up exams. If you have an emergency you must contact me before class begins and provide documentation within one week. Unexcused absence from an exam or failure to notify the instructor prior to the exam will result in a score of zero. All lecture exams will stress the lecture material; readings are designed to expand and deepen understanding of the material covered. It is unlikely that you will do well without keeping up with the assigned reading. For all exams, be sure to bring a #2 or softer pencil and a scantron that is free of tears and creases.
- Homework and online quizzes: Homework and quizzes are assigned on MAP online. It is your responsibility to check and meet all deadlines for the assigned work. Late assignments may receive no points. More detailed information about homework assignments and quizzes will be posted on Blackboard.
- Library research project: Students will be asked to complete a research project that will culminate in a short literature review of a current topic in human anatomy and physiology. Specific guidelines, including a grading rubric, will be posted on Blackboard at the start of the term.
- Laboratory Sections: A unit of credit is given for the lab. Failure to attend lab will result in a failing grade—a passing grade in lab is required to pass the course, since 5 units of credit cannot be awarded for only 4 units successfully completed. See below for more specific information about the laboratory sections.
- Office hours and study habits: Please come to office hours (mine and/or your TA’s) if you have questions or are having trouble with the material. To be successful, you need to read the text, take notes, and keep up with the homework and online quizzes (you should expect to spend 2-3 hours studying for every hour of lecture!). It is your responsibility to be an active participant in your education by seeking help if you don’t understand the material.

Academic conduct and class policies:

- Classroom courtesy: It is inappropriate and discourteous to bring into class any device that emits an audible sound; please turn off or silence electronic devices during class. If you arrive late to class, please enter quietly and sit in the back to minimize disturbance.
- Cheating: If it is determined that cheating or other dishonest behavior has occurred, a grade of "F" will be assigned to all individuals involved, and further actions (which may include expulsion from the University) may be initiated as detailed in the University catalog. As stated in University policy,
“By enrolling in this class, the student agrees to uphold the standards of academic integrity described at http://www20.csueastbay.edu/academic/academic-policies/academic-dishonesty.html”

- **Disabilities**: We will provide reasonable accommodations for physical or learning disabilities. Please register with student services and notify me as early as possible (first week of class).
- **Emergency information**: Information on what to do in an emergency situation (e.g., earthquake, electrical outage, fire) may be found at: http://www20.csueastbay.edu/af/departments/risk-management/ehs/emergency-management/index.html

**Anticipated lecture schedule** (any changes to the schedule will be posted on Blackboard)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lecture</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mon: 3/31</td>
<td>No class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wed: 4/2</td>
<td>Cell and tissues</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Fri: 4/4</td>
<td>Integumentary</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Mon: 4/7</td>
<td>CNS and brain</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Wed: 4/9</td>
<td>CNS and brain</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Fri: 4/11</td>
<td>PNS</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>Mon: 4/14</td>
<td>PNS</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Wed: 4/16</td>
<td>Senses</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Fri: 4/18</td>
<td>Senses</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>Mon: 4/21</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wed: 4/23</td>
<td>Exam 1</td>
<td>4, 5, 12 – 15</td>
</tr>
<tr>
<td></td>
<td>Fri: 4/25</td>
<td>Blood</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>Mon: 4/28</td>
<td>Renal system</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Wed: 4/30</td>
<td>Renal system</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Fri: 5/2</td>
<td>Renal system</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>Mon: 5/5</td>
<td>Acid-base balance</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Wed: 5/7</td>
<td>Endocrine</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Fri: 5/9</td>
<td>Endocrine</td>
<td>16</td>
</tr>
<tr>
<td>7</td>
<td>Mon: 5/12</td>
<td>Digestive</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Wed: 5/14</td>
<td>Digestive</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Fri: 5/16</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Mon: 5/19</td>
<td>Exam 2</td>
<td>16, 17, 23, 25, 26</td>
</tr>
<tr>
<td></td>
<td>Wed: 5/21</td>
<td>Nutrition</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Fri: 5/23</td>
<td>Nutrition</td>
<td>24</td>
</tr>
<tr>
<td>9</td>
<td>Mon: 5/26</td>
<td>No class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wed: 5/28</td>
<td>Reproductive</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Fri: 5/30</td>
<td>Reproductive</td>
<td>27</td>
</tr>
<tr>
<td>10</td>
<td>Mon: 6/2</td>
<td>Pregnancy and development</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Wed: 6/4</td>
<td>Pregnancy and development</td>
<td>28</td>
</tr>
</tbody>
</table>
The Final Exam will be Wednesday, June 11 from 12:00-1:50 pm

Laboratory Info

Labs provide you with the opportunity to apply practical knowledge of what you have read in the text and heard in lecture. It is your responsibility to come to class prepared to actively engage with the materials provided and to ask your TA for help if you don’t understand in the information.

Information about lab activities, including Student Learning Objectives (SLOs), reading assignments, and other activities will be posted on your lab Blackboard site.

Labs meet in South Science 347. Since lab activities require the entire lab period, late arrival may result in loss of credit for the entire lab meeting. Missing two labs without medical excuse will result in failing the course.

Grading: Your lab grade will be based on your answers to laboratory exercises, periodic pop quizzes, participation and lab practical exams. Your TA will provide you with more detailed information about the grading breakdown for the laboratory sections.

Anticipated lab schedule (any changes to the schedule will be posted on Blackboard)

<table>
<thead>
<tr>
<th>Week of</th>
<th>Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 31</td>
<td>No Lab meeting</td>
</tr>
<tr>
<td>April 7</td>
<td>LAB 1: Classification of Tissues &amp; Integumentary</td>
</tr>
<tr>
<td>April 14</td>
<td>LAB 2: Brain anatomy and cranial nerves</td>
</tr>
<tr>
<td>April 21</td>
<td>LAB 3: General Sensation and Special Senses: Vision</td>
</tr>
<tr>
<td>April 28</td>
<td>LAB 4: Blood Analysis</td>
</tr>
<tr>
<td>May 5</td>
<td>LAB PRACTICAL EXAM 1 (covers Labs 1 – 4)</td>
</tr>
<tr>
<td>May 12</td>
<td>LAB 5: Anatomy of Urinary System; Urinalysis</td>
</tr>
<tr>
<td>May 19</td>
<td>LAB 6: Endocrine</td>
</tr>
<tr>
<td>May 26</td>
<td>LAB 7: Digestive System &amp; Digestion</td>
</tr>
<tr>
<td>June 2</td>
<td>LAB PRACTICAL EXAM 2 (covers Labs 5 – 7)</td>
</tr>
</tbody>
</table>
Approved by Department Chairs:

[signed Donald A. Gailey, 4/4/14]  
Signature  Department  Date

Signature  Department  Date

Signature  Department  Date

Approved by College Dean/Associate Dean from each participating college

[signed Michael Leung, 4/4/14]  
Signature  Date

Signature  Date

Signature  Date

Signatures of three faculty members: Ideally, the person who will teach the courses will participate in the cluster planning. However, recognizing the staffing difficulties departments face, the faculty member who plans the cluster must agree to provide a thorough orientation to the expectations and methods developed for the learning community to the actual instructor. If monies are available, faculty should be available for meetings in the late spring to plan integration points in the yearlong curriculum.

[lecturers to be named, signed Donald A. Gailey, 4/4/14]  
Signature  Date

Signature  Date

Signature  Date

Proposals should be submitted as soon as possible and no later than Friday, April 4, 2014. Please submit proposals to sally.murphy@csueastbay.edu and linda.beebe@csueastbay.edu.

While Colleges do not approve courses for GE, College approval assures support for departmental participation.