Course Syllabus

BIOL1406 -- - Biology I

Revision Date: 8/22/2016

Catalog Description: Fundamental principles of living organisms will be studied including physical and chemical properties of life, organization, function, evolutionary adaptation and classification. Concepts of cytology, reproduction, genetics, and scientific reasoning are included. Laboratory activities will reinforce the above concepts. (Lecture + Lab) (Lab Fee) (26.0101.51 03)

Prerequisites: MATH 1314. Successful completion of college Algebra or concurrent enrollment in higher-level mathematics is recommended.

Semester Credit Hours: 4
Lecture Hours per Week: 3
Lab Hours per Week: 3
Contact Hours per Semester: 96
State Approval Code: 26.0101.51 03

Core Components and Related College Student Learning Outcomes
This course counts as part of the academic requirements of the Panola College Core Curriculum and an Associate of Arts or Associate of Science degree. ☒ Yes ☐No: If no, skip to Instructional Goals.

The items below marked with an X reflect the state-mandated outcomes for this course **IF this is a CORE course**:

☒ Critical Thinking Skills – to include creative thinking, innovation, inquiry and analysis, evaluation and syntheses of information

- ☐ CT1: Generate and communicate ideas by combining, changing, or reapplying existing information
- ☒ CT2: Gather and assess information relevant to a question
- ☒ CT3: Analyze, evaluate, and synthesize information

☒ Communication Skills – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication

- ☒ CS1: Develop, interpret, and express ideas through written communication
- ☐ CS2: Develop, interpret, and express ideas through oral communication
- ☐ CS3: Develop, interpret, and express ideas through visual communication

☒ Empirical and Quantitative Skills – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

- ☐ EQS1: Manipulate and analyze numerical data and arrive at an informed conclusion
- ☒ EQS2: Manipulate and analyze observable facts and arrive at an informed conclusion

☒ Teamwork – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

- ☒ TW1: Integrate different viewpoints as a member of a team
- ☒ TW2: Work with others to support and accomplish a shared goal

☐ Personal Responsibility – to include the ability to connect choices, actions, and consequences to ethical decision-making

- ☐ PR1: Evaluate choices and actions and relate consequences to decision-making

☐ Social Responsibility – to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

- ☐ SR1: Demonstrate intercultural competence
- ☐ SR2: Identify civic responsibility
- ☐ SR3: Engage in regional, national, and global communities

Instructional Goals and Purposes:
The purposes of this course are … to provide instruction in an atmosphere of mutual respect where students may develop their intellect and skills; to contribute to the development of students as responsible and informed members of society; to provide courses for students wishing to complete certificate programs, associate degree programs or wishing to transfer to a baccalaureate program.

General Course Objectives:

1. To help students become better informed citizens by providing opportunities to learn the differences between science as a way of knowing and other disciplines such as art, philosophy and religion
2. To provide students an opportunity to understand and appreciate the complexity and relationships of living systems.
3. To help students become better informed regarding their own health and better informed as health services consumers by coming to a better understanding of the complexities of the human body
4. To make students aware of changing technologies in science and the responsibilities and ethical decisions that come with the use of various technologies.
5. To help students become better informed regarding environmental issues.

Learning Outcomes: *[from the ACGM catalog]*
After successfully studying all materials and resources presented in the course, the student will be able to:

1. Describe the characteristics of life.
2. Explain the methods of inquiry used by scientists.
3. Identify the basic requirements of life and the properties of the major molecules needed for life.
4. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
5. Describe the structure of cell membranes and the movement of molecules across a membrane.
6. Identify the substrates, products, and important chemical pathways in metabolism.
7. Identify the principles of inheritance and solve classical genetic problems.
8. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
9. Describe the unity and diversity of life and the evidence for evolution through natural selection.

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Learning Outcomes for lab portion: (from ACGM)
After successfully studying all materials and resources presented in the course, the student will be able to:

1. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.

2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory
3. Communicate effectively the results of scientific investigations
4. Describe the characteristics of life.
5. Explain the methods of inquiry used by scientist
6. Identify the basic properties of substances needed for life.
7. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.

Course Content:
A general description of lecture/discussion topics included in this course are listed in the Learning Objectives section of this syllabus. Students in all sections of this course will learn the following content: Course content (see course description) will be taken from the adopted text and lab manual, scientific journals, current popular periodicals, appropriate online sources and pertinent reference literature.

Methods of Instruction/Course Format/Delivery:

This course is offered in face-to-face format with frequent use of online resources. Both the lecture and lab portions of this course may include but not be limited to presentations by the instructor, videos, presentations by students, class discussions. While the lab portion of the class will be heavily hands-on with students expected to work individually and in teams, the lecture portion of the course may also include some "hands-on" active learning type activities. Some activities will demand that students come prepared to initiate and follow through on the activity independently with the instructor available for guidance and to answer questions.

Major Assignments / Assessments:
The following items will be assigned and assessed during the semester and used to calculate the student's final grade.

Assignments

1. The lecture portion may include but not be limited to objective and essay type written assignments, presentations by students, observation by the teacher of student participation and interaction, class discussions. Some of these activities may come from the required texts and online support as well as other ancillary online resources.
2. The lecture portion may include but not be limited to objective and essay type items in lab reports, the gathering, presenting and analysis of data, the creation of experiments, presentations by students, observation by the teacher of student participation and interaction, class discussions. Some of these activities may come from the required texts and virtual labs.

Assessment(s):

1. Lecture: Quizzes, Unit Tests, Observations
2. Lab: Observation of lab activities, lab reports,

Course Grade:
The grading scale for this course is as follows:

40% from average of Unit Exams (5 or 6 exams)
20% from assignments
20% from the Laboratory Average (40% from quizzes, 60% from written or observed activities)
20% from the Final Exam (comprehensive over all but the last unit)

Service Learning: Students are expected to complete a course-related service learning project which they select and have approved by the instructor. Points will be awarded based on the nature of the project, quality of the effort, the number of hours required by the project and the appropriate completion of

the required documentation and reflection paper. Points will be added to a low unit test score. Failure to complete the service learning project will result in 10 points being deducted from a unit test score.

Required Texts, Materials, and Supplies:

- Textbook: Campbell Biology in Focus ; Lisa A. Urry, et al; 2014; Pearson Higher Education
- Lab Manual: Investigating Biology; Judith Giles Morgan, M. Eloise Brown Carter; 2011; Pearson Higher Education
- Required supplements:
    - Access Code to Mastering Biology with Virtual Labs Full Suite (must be aligned with required text; Pearson Higher Education); Includes ebook for "Getting Ready for Biology"
    - Access to Khan Academy (free)
    - Access to Howard Hughes Medical Institute BioInteractive and other ancillaries (free)
    - Access to other free online resources as necessary

Required Readings:

- May include but not be limited to news publications, professional journals, agency publications.

Recommended Readings:

- May include but not be limited to news publications, professional journals, agency publications.

Other:

- For current texts and materials, use the following link to access bookstore listings: http://www.panolacollegestore.com
- For testing services, use the following link: http://www.panola.edu/elearning/testing.html
- If any student in this class has special classroom or testing needs because of a physical learning or emotional condition, please contact the ADA Student Coordinator in Support Services located in the Administration Building or go to http://www.panola.edu/student-success/disability-support-services/ for more information.
- Withdrawing from a course is the student's responsibility. Students who do not attend class and who do not withdraw will receive the grade earned for the course.
- Student Handbook, *The Pathfinder:* http://www.panola.edu/student-success/documents/pathfinder.pdf