COURSE OUTLINE
SECTION I: Course Information

COLLEGE: Los Angeles Southwest College

SUBJECT TITLE: BIOLOGY

COURSE NUMBER: 3

COURSE TITLE: INTRODUCTION TO BIOLOGY

UNITS: 4

CATALOG COURSE DESCRIPTION—Provide a brief description of the course, including an overview of the topics covered.

In this course the student learns to identify and describe the basic characteristics of life through the concepts of cell structure and function, energy interrelationships, information transfer and duplication, reproduction and development, evolution, ecology, and adaptation. The student will also be able to apply the concepts to related laboratory exercises, current and historical literature, and discussions of the effect of man on the environment.

CLASS HOURS:

<table>
<thead>
<tr>
<th>Hours per week (for 18 weeks)</th>
<th>Total Hours per term</th>
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</thead>
<tbody>
<tr>
<td>Lecture hours: 3</td>
<td>54</td>
</tr>
<tr>
<td>Lab hours: 3</td>
<td>54</td>
</tr>
</tbody>
</table>

Total hours: 54

Note: The Carnegie Rule and Title 5 section 557602 sets forth the minimum standards, which require 3 hours of work per unit of credit (e.g., 1 hour lecture + 2 hours of homework, 3 hours of lab without homework, etc.). Two hours per week of lab with homework = 1 unit. 3 hours of lab per week without homework = 1 unit. Lecture also includes discussion and/or demonstration hours; laboratory includes activity and/or studio hours.

SUBJECT CODE: 133

SUBJECT ABBREVIATION: BIOLOGY

SPC CODE (assigned by District Office):

ABBREVIATION FOR TRANSCRIPTS: BIOLOGY

DEPARTMENT CODE: 97

TOP CODE (see Taxonomy of Programs at www.cccco.edu/ccco/bsd/curinc/curriculum.htm)

DEGREE APPLICABLE: ☑ Yes ☐ No

REPETITIONS:

Number of times can this course be repeated for credit (two maximum): None

How does the repetition of this course meet Title 5 sections 55761-55765 and 55161 requirements?
Course Subject: BIOLOGY  Course Number: 3; Title: Introduction to Biology; Year: 2002-2003

BASIC SKILLS: NO ☐ Yes ☑

(Title 5, section 55001(h) defines "basic skills as 'courses in reading, writing, computation, and English as a Second Language which are designated as non-degree credit courses pursuant to Title 5, section 55001(b)."

COURSE CLASSIFICATION (choose only one):

☒ Liberal Arts and Sciences
☐ Developmental Preparatory
☐ Basic Skills
☐ Course for Substantially Handicapped
☐ Occupational

SAM CODE (choose only one):

☐ A --Apprenticeship (approved for offering to apprentices only)
☐ B --Advanced Occupational (but not limited to Apprentices)
☐ C --Clearly Occupational (but not Advanced)
☐ D --Possibly Occupational
☐ E --Non-Occupational

CROSS REFERENCE (Is this course listed as equivalent in content to existing college/District courses in another discipline?)

NO ☐ Yes ☑ (If yes, list courses: documentation of cross-discipline agreement must be provided)

SPECIAL COURSE FOR STUDENTS WITH DISABILITIES:

NO ☐ Yes ☑

PREREQUISITE, COREQUISITE, ADVISORY, LIMITATION ON ENROLLMENT

Prerequisites: NO ☐ Yes ☑ (If yes complete information below)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number</th>
<th>Course Title</th>
<th>Units</th>
<th>Validation Approval Date</th>
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Corequisites: NO ☐ Yes ☑ (If yes complete information below)

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</table>

Advisories: NO ☐ Yes ☑ (If yes complete information below)

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<th>Units</th>
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<td></td>
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<td>Eligibility for English</td>
<td>2</td>
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</tbody>
</table>
Course Subject: BIOLOGY  Course Number: 3, Title: Introduction to Biology; Year: 2002-2003

OTHER LIMITATIONS ON ENROLLMENT (see Title 5, 53106 and Board Rule 6403 for policy on allowable limitations):

None
BIOLOGY 3
Section II: RELATIONSHIP TO PROGRAMS

Relationship to College Programs

COURSE IS AN APPROVED REQUIREMENT FOR AN APPROVED ASSOCIATE DEGREE OR CERTIFICATE PROGRAM:

No ☐ Yes ☒ If yes, list program(s) below. Approved programs are listed on the State Chancellor's Office website at www.cccco.edu/cccco/ssed/curric/inventory.htm

COURSE MEETS GENERAL EDUCATION REQUIREMENTS FOR THE ASSOCIATE DEGREE:

No ☐ Yes ☒ (If yes indicate area)

Plans A and B, Area A, Natural Sciences

Articulation Information
(To be completed in consultation with the College Articulation Officer)

TRANSFER STATUS:

University of California: YES
California State University: YES

Date requested: Before 1996
UC approval date: Before 1996

Date requested: Before 1996
College approval date: Before 1996

GENERAL EDUCATION FOR TRANSFER:

IGETC Certification: YES

Area Requested: Area 5
Biological Sciences
Date requested: 1991
IGETC approval date: 1991

Area Requested: Category B2
Life Forms
CSU approval date: Before 1996

2nd Area Requested:
Date requested:
IGETC approval date:

CSU approval date:

MAJOR REQUIREMENTS FOR TRANSFER – Has this course been articulated to meet lower division major requirements?

YES
SECTION III: COURSE CONTENT AND OBJECTIVES

COURSE CONTENT AND SCOPE: OUTLINE TOPICS TO BE INCLUDED IN THE LECTURE PORTION OF COURSE, IF APPLICABLE
(Outline reflects course description, all topics covered in class)

<table>
<thead>
<tr>
<th>COURSE CONTENT AND SCOPE: OUTLINE TOPICS TO BE INCLUDED IN THE LABORATORY PORTION OF COURSE, IF APPLICABLE (Outline reflects course description, all topics covered in class)</th>
<th>Hours per topic</th>
<th>COURSE OBJECTIVES — Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Orientation, History of Biology, New Directions in Biological Science, Metric System</td>
<td></td>
<td>Upon successful completion of this course the student will be able to. (Use action verbs — see Bloom’s Taxonomy below for action verbs requiring cognitive outcomes.)</td>
</tr>
<tr>
<td>2. Science and Society, Science as Process Characteristics of Life, Social and Scientific Lag, Microscope</td>
<td></td>
<td>The goals of this course are that the student:</td>
</tr>
<tr>
<td>4. Mitosis, Surface Area to Volume Relations</td>
<td></td>
<td>2. Demonstrate the ability to read with comprehension, current, historical and popular literature in biology.</td>
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<tr>
<td>5. Composition of Matter. Biologically Important Molecules</td>
<td></td>
<td>3. Demonstrate the ability to use laboratory methods for studying the processes of living plants and animals.</td>
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<tr>
<td>6. Exchange of Materials. Active and Passive Processes, Homoclastic, Movement of Materials</td>
<td></td>
<td>4. Apply the general concepts from the textbook or other references to the specific principles which are demonstrated by the laboratory exercises and show this in the written reports.</td>
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<tr>
<td>7. Photosynthesis, Energy Trap</td>
<td></td>
<td>5. Express awareness of the complexity and interconnectedness of living organisms in the environment.</td>
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<td>8. Respiration, Energy Release, Cellular Respiration,</td>
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<td>9. The Role of Enzymes, DNA’s Role in Heredity, Gene Action</td>
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<td>10. Reproduction, Gametogenesis, Meiosis, Mutation, Selection Genetic Engineering, Genetic Control</td>
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<td>11. Mendelian Genetics, Genetics Problems, Additive Gene Action, Multiple Alleles, Sex Linked Characteristics, Human Heredity, Sea Urchin Development</td>
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<td>14. Barriers to Dispersal, Natural Selection, and Speciation</td>
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<td>15. Ecosystems, Plant Communities</td>
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<td></td>
<td>Total lecture hours 54</td>
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Subsequent to Orientation, students will name and identify the basic cell parts under microscope, recognize from a drawing or diagram, the parts of a cell, match functions of cell parts, meet the objectives of the laboratory exercise-Mitosis, Cell Structure and Function.

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<th>COURSE OBJECTIVES — Laboratory</th>
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<td>Upon successful completion of this course the student will be able to. (Use action verbs — see Bloom’s Taxonomy below for action verbs requiring cognitive outcomes.)</td>
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Function: Identify glucose, starch, protein, and fat in protoplasm. Perform the glucose, starch, protein, and fat tests. Identify the action of enzymes that change the form of substances to be used or stored by the organism. Meet the objectives for the lab exercise Substances in Protoplasm. Meet the objectives for the program Atoms and Elements. Prepare demonstrations of diffusion and osmosis. Meet the objective for the lab exercise Movement of Materials. Differentiate between external, internal, and cellular respiration; relationships between photosynthesis and respiration; between energy storage within cells as deep storage, quick release, and linkage energy. Perform simple paper chromatography using chlorophyll extracts. Perform glucose and starch tests for the digestion of carbohydrate by enzymes. Focus of Living Things in the Environment, Meiosis and Genetics.

Total lab hours: 54

<table>
<thead>
<tr>
<th>Bloom's Taxonomy</th>
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<tbody>
<tr>
<td><strong>SIMPLE SKILLS</strong></td>
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<td>Knowledge define</td>
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**APPROPRIATE READINGS**

Reading assignments may include, but are not limited to the following:

Students will read and report on three articles form the current popular literature, scientific news, and scientific literature. The topics and journals to be selected from an approved list. The reports will use a standard report and bibliography format. Students will also validate the results of their laboratory exercises using historical and current scientific information from their textbook and other valid and reliable sources.
WRITING ASSIGNMENTS:
Writing assignments may involve, but are not limited to the following. (Title 5, section 55002 requires grades to be based on demonstrated proficiency in subject matter and the ability to demonstrate that proficiency, at least in part, by means of essays, or, in courses where the curriculum committee deems them to be appropriate, by problem-solving exercises or skills demonstrations by students)

Students will write reviews of three articles reporting on biological science in the current popular and scientific following each of ten of their laboratory exercises.

Students will demonstrate the following laboratory skills:
1. Use the compound microscope
2. Use standard biological science laboratory equipment
3. Use reagents to test for organic and inorganic materials found in living systems.
4. Use stains, buffers, and solvents used in biological investigations and preparation of cellular and histological slides.
5. Use metric measurements in biological investigations
6. Make qualitative and quantitative measurements of living systems
7. Determine genetic variation and mutation in living systems
8. Identify animal behavior
9. Identify and describe plant adaptations to the environment

APPROPRIATE OUTSIDE ASSIGNMENTS:
Out of class assignment may involve, but are not limited to

Students will learn to use the Readers' Guide to Periodical Literature, the card catalogue, and library reference collections. Students will visit the zoo, botanical garden, or other collection of plants and animals to observe adaptation and variation in living systems.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING:
Critical thinking may include, but is not limited to analysis, synthesis, and evaluation

1. Laboratory reports are required of each of the 13 laboratory exercises performed in the class by the student. Each report emphasizes the purpose of the exercise, method used and the results obtained, and the conclusions that could be confirmed from these results. Each laboratory report must also include a statement from a valid and reliable source that reinforces the conclusions of the exercise. Each laboratory exercise demonstrates a biological or scientific principle that the student uses to validate basic concepts regarding living systems. These exercises form the basis for critical thinking about aspects of the living world.
2. The article reviews require critical thinking. The student prepares a report that includes 1) the summary of the article, 2) a discussion of the information presented with the opinions of two other authorities included, and 3) his own evaluation of the information presented in a logical manner.
3. The field report requires that the student keep a journal log in which he objectively writes his observations.
Manages Money: Uses or prepares budgets, including making cost and revenue forecasts; keeps detailed records to track budget performance, and makes appropriate adjustments.

Manages Material and Facility Resources: Acquires, stores, allocates, and distributes materials, supplies, parts, equipment, space or final products in order to make the best use of them.

INTERPERSONAL

Participates as Member of a Team: Works cooperatively with others and contributes to groups efforts with ideas, suggestions and effort.

Teaches Others New Skills: Helps others learn needed knowledge and skills.

Exercises Leadership: Communicates thoughts, feelings, and ideas to justify a position, encourage, persuade, convince or otherwise motivate an individual or group, including responsibly challenging existing procedures, policies or authority.

Negotiates: Works toward agreement that may involve exchanging specific resources or resolving divergent interests.

Works with Cultural Diversity: Works well with men and women and with people from a variety of ethnic, social, or educational backgrounds.

INFORMATION

Acquires and Evaluates Information: Identifies a need for data, obtains the data from existing sources or creates them, and evaluates their relevance and accuracy.

Organizes and Maintains Information: Organizes, processes and maintains written or computerized records and other forms of information in a systematic fashion.

Interprets and Communicates Information: Selects and analyzes information and communicates the results of others using oral, written, graphic, pictorial, or multimedia methods.

Uses Computers to Process Information: Employs computers to acquire, organize, analyze and communicate information.

SYSTEMS

Understands Systems: Knows how social, organizational and technological systems work and operates effectively with them.

Monitors and Corrects Performance: Distinguishes trends, predicts impacts of actions on system operations, diagnoses deviations in the functioning of a system/organization, and takes necessary steps to correct performance.

Improves or Designs Systems: Makes suggestions to modify existing systems in order to improve the quality of products or services and develops new or alternative systems.

TECHNOLOGY

Selects Technology: Judges which sets of procedures, tools or machines, including computers and their programs, will produce the desired results.

Applies Technology to Task: Understands overall intent and proper procedures for setting up and operating machines, including computers and their reprogramming systems.
Maintains and Troubleshoots Equipment: Prevents, identifies, or solves problems with equipment, including computers and other technologies.
Section IV: APPROVAL INFORMATION

APPROVAL STATUS:

☐ New Course
☐ Addition of Existing District Course
☐ Course Change
☐ Outline Update

☐ District Approval Date: ____________________________
☐ College Approval Date: ____________________________

INDICATE HOW THE COLLEGE PLANS TO MEET THE EXPENSE OF THIS COURSE: An existing course. No additional funds needed

☐ By providing additional funds. Describe: _______________________________________________________

☐ By canceling class sections. Describe: _______________________________________________________

☐ By deleting/rotating sections of existing courses. Number of Sections to be deleted:
  First year: __________________ Second year: ________________ Third year: ________________

Will this directly impact other programs on campus? ☐ No ☐ Yes If yes, briefly explain how? _______________________________________________________

METHOD OF SUPPORT: (Indicate how the college plans to support the propose course)

Number of faculty needed: Full-time: _______________ Part-time: _______________
Number of other Staff: Classified: _______________ Student Worker: _______________

Classroom type needed:
Equipment Needed -- List equipment is currently available and what new equipment is needed and indicate funding source for any new equipment.

Supplies needed: -- List supplies and indicate dollar value:

Library/Learning Resources -- List existing and needed Library and Learning Resources, including the cost and funding source for needed resources.


CERTIFICATION AND RECOMMENDATION

☐ This course meets Title 5 requirements for Associate Degree applicable college credit towards an Associate of Arts Degree.

☐ This course meets Title 5 requirements, but does not satisfy the requirements for an Associate Degree applicable course.

We certify that the information and answers above properly represent this course.