



COURSE OUTLINE

Outline Status: Outline Update (ECD 9619); 2009-2010

Section I: BASIC COURSE INFORMATION

1. **COLLEGE: L.A. SOUTHWEST COLLEGE**
2. **SUBJECT: BIOLOGY**
3. **COURSE NUMBER: 003**
4. **COURSE TITLE: INTRODUCTION TO BIOLOGY**
5. **UNITS: 4**
6. **CATALOG COURSE DESCRIPTION:**

In this course the student will 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 humans on the environment.

7. **CLASS SCHEDULE COURSE DESCRIPTION:**

*In this course the student will 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 humans on the environment.

8. **INITIAL COLLEGE APPROVAL DATE: Before 2000**
9. **COURSE OUTLINES UPDATE APPROVAL DATE: 3/16/10**
10. **CLASS HOURS:**

	Standard Hrs Per Week (based On 18 weeks)	Total Hs per Term (hrs per week x 18)	Units
Lecture:	3	54	3
Lab/Activity (w / homework):	3	54	1
Lab/Activity (w /o homework):	0	0	0
Totals:	Lecture: 3	Lecture: 54	Lecture: 3
	Lab: 3	Lab: 54	Lab: 1
	Total: 6	Total: 108	Total: 4
<i>Totals In Protocol:</i>	Lecture: 3	Lecture: 54	
	Lab: 3	Lab: 54	
	Total: 6	Total: 108	Total: 4

11. PREREQUISITES, COREQUISITES, ADVISORIES ON RECOMMENDED PREPARATION, and LIMITATION ON ENROLLMENT:

Note: The LACCD's *Policy on Prerequisites, Corequisites and Advisories* requires that the curriculum committee take a separate action verifying that a course's prerequisite, corequisite or advisory is an 'appropriate and rational measure of a student's readiness to enter the course or program' and that the prerequisite, corequisite or advisory meets the level of scrutiny delineated in the policy.

PREREQUISITES: No

	Subject	Number	Course Title	Units	Validation Approval Date

COREQUISITES: No

	Subject	Number	Course Title	Units	Validation Approval Date

ADVISORIES: No

	Subject	Number	Course Title	Units	Validation Approval Date

12. OTHER LIMITATIONS ON ENROLLMENT: (See Title 5, Section 58106 and Board Rule 8603 for policy on allowable limitations. Other appropriate statutory or regulatory requirements may also apply):

None

Section II: COURSE CONTENT AND OBJECTIVES

1. COURSE CONTENT AND OBJECTIVES:

COURSE CONTENT AND SCOPE - Lecture: Outline the topics included in the lecture portion of the course (<i>Outline reflects course description, all topics covered in class</i>).	Hours per topic	COURSE OBJECTIVES - Lecture: Upon successful completion of this course, the student will be able to..(Use action verbs - see <u>Bloom's Taxonomy</u> for 'action verbs requiring cognitive outcomes.')
1. Course Introduction and Syllabus Review a. The scientific method b. Experimental and control groups	3	1. Discuss the scientific method, including identification of dependent, independent, and standardized variables, and the role of a control group.
2. Theory of Evolution by Natural Selection a. Charles Darwin's observations	3	2. Examine the theory of evolution by means of natural selection, and evidence across biological disciplines.
3. Properties of Living Systems a. Irritability, Growth, Reproduction, Metabolism	3	3. Categorize the properties that distinguish living and non-living things.
4. Atomic and Molecular Structure and Movement a. Elements, compounds, and solutions b. Diffusion, osmosis, filtration, dialysis c. Tonicity	6	4. Describe the structure of atoms and the rules underlying the formation and movement of molecules.
5. Biologically Important Macromolecules a. Protein, carbohydrate, lipid, DNA/RNA	3	5. Illustrate and compare the structure and function of major biological molecules: carbohydrates, lipids, proteins, and nucleic acids.
6. Cell Structure and Function a. Cell membrane b. Organelles c. Cytosol and Inclusions	6	6. Examine cell structure and function.
7. Catalysis and Enzymes a. Enzyme action and controlling factors b. Importance of enzymes in living organisms	3	7. Analyze the role of enzymes in the control of chemical reactions in organisms.
8. Reaction Energetics a. Endergonic and exergonic reactions b. Role of ATP	3	8. Distinguish the energy interrelationships and the role of ATP in energy transformations.
9. Basic Metabolic Processes a. Cellular respiration b. Photosynthesis	6	9. Compare the similarities and differences between cellular respiration and photosynthesis in the regulation of energy transformations.
10. Somatic and Reproductive Cell Division a. Asexual reproduction b. Mitosis and meiosis c. Stages of human embryonic development	3	10. Explain the cellular basis of asexual and sexual reproduction, including embryonic development.
11. Fundamentals of Classic Mendelian Genetics a. Monohybrid crosses b. Dihybrid crosses	6	11. Identify simple Mendelian patterns of inheritance and the use of Punnett squares in the analysis of monohybrid and dihybrid crosses.

12. The Molecular Basis of Genetics a. Protein synthesis b. Transfer, messenger, and ribosomal RNA c. Transcription and translation	4	12. Discuss the modern concept of a gene and information transfer, including the processes of transcription and translation.
13. Ecology and Adaptation a. Ecological concepts and cycles b. Human impact on environment c. Plant and animal adaptations	3	13. Assess current ecological conditions of the earth and recognize the effect humans have on the environment.
Final Examination	2	
	Total: 54	
	Total Hrs In Protocol: 54	

1. (cont'd) LAB:

COURSE CONTENT AND SCOPE - Lab: Outline the topics included in the laboratory portion of the course (<i>Outline reflects course description, all topics covered in class.</i>)	Hours per topic	COURSE OBJECTIVES - Lab: Upon successful completion of this course, the student will be able to..(Use action verbs - see <i>Bloom's Taxonomy</i> for 'action verbs requiring cognitive outcomes.')
1. Tools for Scientific Inquiry a. Meter, liter, gram, and degrees Celsius b. Metric conversions	4	1. Employ the metric system of measurement to measure length, mass and volume.
2. Testing for Biological Macromolecules a. Benedict's test, Million test, Lugol's, and Biuret test	4	2. Differentiate among the different chemical tests for biological macromolecules.
3. Parts and Use of the Microscope a. Observation of letter "e" slide b. Wet mount preparation of cheek cells	4	3. Explain the parts of the microscope and set it up properly to create a wet-mount slide for examination.
4. Catalysis and Enzymatic Function a. Physical factors (pH and temperature) b. Amylase activity	4	4. Set up a chemical reaction using enzymes and analyze how different physical factors affect its function.
5. Cellular Respiration a. Roles of oxygen and glucose b. Measurement of carbon dioxide production	5	5. Diagram the different raw materials and end products of cellular respiration.
6. Photosynthesis a. Plants under light/dark conditions and detection of starch	4	6. Experiment on the effects of light on the reactions of photosynthesis.
7. Mitosis and Meiosis a. Functions and phases b. Diploid and haploid cells c. Homologous chromosomes and crossing over	5	7. Differentiate between the processes of mitosis and meiosis and diagram what happens to the chromosomes.
8. Genetics and Punnett Squares a. Monohybrid and dihybrid crosses	6	8. Using Mendelian genetics, solve Punnett square problems.
11. Gel Electrophoresis a. Restriction enzymes b. Preparation, loading, running, and analyzing the gel	4	9. Interpret the results of DNA fragments on an agarose gel and compare with a suspect's banding pattern.

10. Bacterial/Fungal Growth on Agar a. Antibiotic sensitivity	4	10. Examine procaryotic cells and characteristics of bacteria.
11. Movement of Materials a. Diffusion, osmosis, and filtration b. Active transport	4	11. Compare processes of diffusion, osmosis, and filtration through experimentation.
12. Midterm and Final Lab Practicum	6	
	Total: 54	
	Total Hrs In Protocol: 54	

1. (cont'd) SLO:

The student will.. (outcome)	As measured by the following method.. (assessment strategy)	And, if applicable, scored by the following learning rubric. (provide attachment)	Results are examined to determine if the outcome is achieved. Include planned or actual assessment date. (results & evaluation)	Recommendations to improve teaching and learning. (modifications)
LECTURE: 1. Correctly apply the scientific method to solve a problem.	1. Students, after examining a fictitious biological phenomena, will answer questions related to their problem-solving technique. EXPECTED OUTCOME: At least 70% of students will demonstrate at least 80% proficiency.		Fall 2010	
2. Differentiate between cell organelles and functions.	2. Embedded assessment--common questions in final exam. EXPECTED OUTCOME: At least 70% of students will demonstrate 80% proficiency.		Spring 2010	
LAB 3. Given the results of a DNA fingerprint from gel electrophoresis, correctly identify the "suspect" and provide appropriate rationale. :	3. Embedded assessment--common questions in final exam. Students, after examining a completed gel, will answer questions related to their conclusion. EXPECTED OUTCOME: At least 70% of students will demonstrate at least 80% proficiency		Fall 2011	
SLO REVIEWED 2/22/10 GY				

Essential Academic Skills: Reading and Communication

2. REQUIRED TEXTS:

Provide a representative list of textbooks and other required reading; include author, title and date of publication:

Essential Biology with Physiology, Campbell, 2008; Programmed Life Science Labs #1-12, Verity, 2004

3. READING ASSIGNMENTS:

Provide a representative list of textbooks and other required reading; include author, title and date of publication:

Students will read three articles on biological science in current scientific magazines and will write a review.

4. WRITING ASSIGNMENTS:

Writing assignments, as required by Title 5, in this course may include, but are not limited to the following:

Students will write reviews of three articles reporting on biological science in the current popular and scientific magazines. 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 mutation in living systems 8. Identify and describe animal behavior 9. Identify and describe plant adaptations to the environment

Essential Academic Skills: Critical Thinking and Other Course Components

5. REPRESENTATIVE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING:

Provide examples of assignments, as required by Title 5, that demonstrate critical thinking.

Laboratory reports are required of each of the 13 laboratory exercises performed in the class by the student. Each report emphasizes the purposes of 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 valid and reliable sources 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) their own evaluation of the information presented in a logical manner.

6. SELF-REFLECTIVE LEARNING:

If applicable, describe how students will reflect on their development as active learners. Provide representative examples below.

NA

7. COMPUTER COMPETENCY:

If applicable, explain how computer competency is included in the course.

Students use computers to analyze data and draft laboratory reports.

8. INFORMATION COMPETENCY:

If applicable, explain how information competency is included in the course.

Students are required to read general publications such as newspapers and magazines to explore areas of biology that are of interest to them.

Evaluation and Instruction

9. REPRESENTATIVE OUTSIDE ASSIGNMENTS (HOMEWORK):

Out of class assignments (Homework) may include, but are not limited to the following:

Examples of homework: 1)Students will describe the functions of each of the main types of white blood cells; and 2)After performing and collecting data from a breath-holding assignment performed at home, the student will use the results to explain in writing the role of carbon dioxide in stimulating the urge to breathe.

10. METHODS OF EVALUATION:

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.' Methods of evaluation may include, but are not limited to the following (please note that evaluation should measure the outcomes detailed 'Course Objectives' at the beginning of Section II):

Multiple Choice Take-Home Practice Exams; Short Essay Answers to Laboratory Problems and Questions, Fill-In and Short Answer In-Class Exams. Take-Home and exam essays

11. METHODS OF INSTRUCTION:

Please Check All That Apply

Discussion

Activity

- Field Experience**
- Independent Study**
- Purposeful Collaboration**
- Other (Please Explain)**

12. SUPPLIES:

List the supplies the student must provide.

NA

13. DIVERSITY:

If applicable, explain how diversity (e.g., cultural, gender, etc.) is included in the course.

NA

14. SCANS COMPETENCIES:

(required for all courses with vocational TOP Codes; recommended for all courses)

SCANS (Secretary's Commission on Necessary Skills) are skills the Department of Labor identified, in consultation with business and industry leaders, which reflect the skills necessary for success in the workplace. Check the appropriate boxes to indicate the areas where students will develop the following skills (please note that all SCANS competencies do not apply to all courses):

RESOURCES

- Managing Time:** Selecting relevant goal-related activities, ranking them in order of importance, allocating time to activities, and understanding, preparing and following schedules.
- Managing Money:** Using or preparing budgets, including making cost and revenue forecasts; keeping detailed records to track budget performance, and making appropriate adjustments.
- Managing Material and Facility Resources:** Acquiring, storing, allocating, and distributing materials, supplies, parts, equipment, space or final products in order to make the best use of them.

INTERPERSONAL

- Participating as Member of a Team:** Working cooperatively with others and contributing to group's efforts with ideas, suggestions and effort.
- Teaching Others New Skills:** Helping others learn needed knowledge and skills.

- Exercising Leadership:** Communicating thoughts, feelings, and ideas to justify a position, encouraging, persuading, convincing or otherwise motivating an individual or group, including responsibly challenging existing procedures, policies or authority.
- Negotiating:** Working toward agreement that may involve exchanging specific resources or resolving divergent interests.
- Working with Cultural Diversity:** Working well with men and women and with people from a variety of ethnic, social, or educational backgrounds.

INFORMATION

- Acquiring and Evaluating Information:** Identifying a need for data, obtaining the data from existing sources or creating them, and evaluating their relevance and accuracy.
- Organizing and Maintaining Information:** Organizing, processing and maintaining written or computerized records and other forms of information in a systematic fashion.
- Interpreting and Communicating Information:** Selecting and analyzing information and communicating the results of others, using oral, written, graphic, pictorial, or multimedia methods.
- Using Computers to Process Information:** Employing computers to acquire, organize, analyze and communicate information.

SYSTEMS

- Understanding Systems:** Knowing how social, organizational and technological systems work and operating effectively with them.
- Monitoring and Correcting Performance:** Distinguishing trends, predicting impacts of actions on system operations, diagnosing deviations in the functioning of a system/organization, and taking necessary steps to correct performance.
- Improving or Designs Systems:** Making suggestions to modify existing systems in order to improve the quality of products or services and developing new or alternative systems.

TECHNOLOGY

- Selecting Technology:** Judging which sets of procedures, tools or machines, including computers and their programs, will produce the desired results.
- Applying Technology to Tasks:** Understanding overall intent and proper procedures for setting up and operating machines, including computers and their reprogramming systems.
- Maintaining and Troubleshooting Equipment:** Preventing, identifying, or solving problems with equipment, including computers and other technologies.

Section III: RELATIONSHIP TO COLLEGE PROGRAMS

1. THIS COURSE WILL BE AN APPROVED REQUIREMENT FOR AN APPROVED ASSOCIATE DEGREE OR CERTIFICATE PROGRAM: Yes

a. If yes, the course will be a requirement portion of the 'approved program' listed on the State Chancellor's Inventory of Approved Programs (approved programs can be found on the State Chancellor's Office website at <https://misweb.cccco.edu/webproginv/prod/invmenu.htm>)

Geography AA - Program: 220600 State ID: 08452 Geology AA - Program: 191400 State ID: 10738 Liberal Studies AA - Program: 490100 State ID: 08454 Liberal Studies (Teaching Preparation) AA - Program: 490120 State ID: 19186 Liberal Studies (teaching preparation) AA - Program: 490123 State ID: 19187 Psychology AS - Program: 200100 State ID: 02885

2. GENERAL EDUCATION REQUIREMENTS FOR THE ASSOCIATE DEGREE STATUS:

a. Area Requested: A. Natural Science

Approval Date:

If applicable, provide an explanation of how the course meets the General Education parameters for one of the five general education areas - Natural Sciences, Social and Behavioral Sciences, Humanities, Language and Rationality, Health and Physical Education -- contained in Board Rule 6201.14 -General Education Requirements.
http://marlin.laccd.edu/district/BoardRules_AdmsRegs/boardrules.htm

--

b. Area Requested: None

Approval Date:

If applicable, provide an explanation of how the course meets the General Education parameters for one of the five general education areas - Natural Sciences, Social and Behavioral Sciences, Humanities, Language and Rationality, Health and Physical Education -- contained in Board Rule 6201.14 -General Education Requirements.
http://marlin.laccd.edu/district/BoardRules_AdmsRegs/boardrules.htm

--

Section IV: ARTICULATION INFORMATION

(Complete in consultation with College Articulation Officer)

1. TRANSFER STATUS:

a. Transferable to the University of California: Yes b. UC Approval Date: Before 2000	c. Transferable to the California State University: Yes d. College Approval Date: Before 2000
--	--

2. GENERAL EDUCATION FOR TRANSFER:

<p><i>IGETC Certification</i></p> <p>a. Area Requested: 5B: Biological Science b. Date Requested: c. IGETC Approval Date: Before 2000</p> <p>If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<p><i>CSU Certification</i></p> <p>a. Area Requested: B2: Biological Science b. Date Requested: c. CSU Approval Date: Before 2000</p> <p>If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>
<p>a. 2nd Area Requested: b. Date Requested: c. IGETC Approval Date:</p> <p>If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<p>a. 2nd Area Requested: B3 : Laboratory Activity b. Date Requested: c. CSU Approval Date: Before 2000</p> <p>If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>

3. MAJOR REQUIREMENT FOR TRANSFER:

Will this course be articulated to meet lower division major requirements?:

List college/university and the majors:

CAN NUMBER: **CAN SEQUENCE #:**

CAN Approval -

Date requested: Date approved:

Section V: SUPPLEMENTAL COURSE INFORMATION

1. **DEPT/DIVISION NAME:** Natural Sciences, Health and Physical Ed

2. **DEPT/DIVISION CODE:** 07

3. **SUBJECT CODE:** 133

4. **SUBJECT ABBREVIATION:** BIOLOGY

5. **RECOMMENDED MINIMUM QUALIFICATION AREA:**

6. **ABBREVIATION FOR TRANSCRIPTS:** INTRODUCT TO BIOLOGY

7. **DEGREE CREDIT:**

Indicate whether the course meet the 'standards for approval' for degree credit course set forth in Title 5, section 55002(a)(2), which requires the course to have a degree of intensity, difficulty, and vocabulary that the curriculum committee has determined to be at the college level: **Degree Applicable**

8. **GRADING METHOD:** LETTER GRADE

9. **REPETITIONS:** # of times repeated for credit: **0**

If this course is repeatable, explain how repetition of this course meets Title 5, section 55041(c)(2)(B):

10. **PRIOR TO TRANSFERABLE LEVEL:**

This course attribute applies to **English, Writing, ESL, reading and mathematics** courses ONLY. If applicable, indicate how many levels below the transferable level this course should be placed: **Not applicable**

11. **CREDIT BASIC SKILLS:**

Title 5, section 55000(j) 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 55002(b).': **No**

12. **CROSS REFERENCE:**

Is this course listed as equivalent in content to existing College/District courses in another discipline?: **No**

If Yes, list courses (documentation of cross-discipline agreement must be provided):

13. **COURSE SPECIFICALLY DESIGNED FOR STUDENTS W/ DISABILITIES:**

Title 5, section 56029 allows a course to be repeatable when continuing success of the students with disabilities is dependent on additional repetitions of a specific class. Is this course designated as an 'approved special class' for students with disabilities?: **No**

If yes, provide an explanation of how this course meets the requirements of Title 5, section 56029:

14. COOPERATIVE EDUCATION STATUS:

Title 5, section 55252 allows for two types of Cooperative Education: 1) General Work Experience Education -- i.e., supervised employment, which is intended to assist students in acquiring desirable work habits, attitudes and career awareness, which need not be related to the students' educational goals; or 2) Occupational Work Experience Education - - i.e., supervised employment, extending classroom based occupational learning at an on-the-job learning station, which is related to the students' educational or occupational goal. Is this course part of the college's approved cooperative work experience education program?: **No**

15. COURSE CLASSIFICATION: Liberal Arts and Sciences

Note: A course Classification, TOP Code and SAM code must be aligned e.g., Courses with an 'Occupational' Course Classification must have an 'Occupational' TOP Code and a SAM Code of A, B, C, or D; courses that do not have an 'Occupational' Course Classification cannot have an Occupational TOP Code and must have an 'E' SAM Code. Courses coded as 'basic skills' in #11 should be coded 'Adult and Secondary Basic Skills.'

16. TOP CODE - (6 digits XXXX.XX): **0401.00**

Course content should match discipline description in Taxonomy of Programs found at <http://ecd.laccd.edu/TaxonomyOfPrograms.doccurriculum.htm>

17. SAM CODE (Student Accountability Model): **E**

18. FUNDING AGENCY CODE:

19. STATE COURSE ID:

Section VI: APPROVAL STATUS**1. APPROVAL STATUS:**

		Approval Date Of	Board Date	Requested Effective Semester	Approved Effective Semester
a.	<input type="checkbox"/> New Course	College:	Board:	Effective Semester:	Effective Semester:
b.	<input type="checkbox"/> Addition of Existing District Course	College:	Board:	Effective Semester:	Effective Semester:
c.	<input type="checkbox"/> Course Change*	College:		Effective Semester:	Effective Semester:
d.	<input checked="" type="checkbox"/> Outline Update	College: 3/16/10			Effective Semester:
e.	<input type="checkbox"/> New Course	College:		Effective Semester:	Effective Semester:
f.	<input type="checkbox"/> New Course	College:	Board:	Effective Semester:	Effective Semester:

* Changes to a course require the completion of a 'Course Change Request' form and approval by the college's Curriculum Committee. In some cases districtwide approval is also required; see, Administrative Regulation E-65, section 3(c) for details.

Section VII: APPROVAL INFORMATION FOR NEW OR ADDED COURSES

(complete in consultation with Department Chair and the appropriate Academic Administrator)

1. **ORIGINATOR:** Kim, Kang

2. **DEPARTMENT:** 07

3. **IF THIS IS A NEW COURSE, INDICATE HOW THE COLLEGE PLANS TO MEET THE EXPENSE OF THIS COURSE:**

By additional funds. Describe:

By deleting courses from the college catalog and course database. List specific courses to be deleted:

By deleting sections of existing course. List courses and number of sections to be deleted:

FIRST YEAR: SECOND YEAR: THIRD YEAR:

By rotating sections of existing courses. List courses and number of sections to be rotated, as well as the semesters in which they will be offered:

4. **IMPACT**

IMPACT -- Will this course directly impact other course offerings and/or associate degree or certificate programs on campus? No (If yes, briefly explain how)

5. **METHOD OF SUPPORT**

-- Indicate how the college plans to support the proposed course:

A. Additional staff -- List additional staff needed:

This is an existing course that has been part of the Life Science curriculum since the discipline was started at the college.

B. Classroom -- List classroom type needed:

Lecture room of 24 - 56; Laboratory room for 28

C. Equipment -- List new equipment needed and indicate funding source for any new equipment:

All equipment required is already on hand in the labs.

D. Supplies- List supplies and indicate dollar value:

The Life Sciences requires approximately \$800 for each 24-student group.

E. Library/Learning Resources- The course initiator shall consult with the College Librarian and review the college library, book, periodical, and electronic resource collections relevant to this course. List additional titles and resources to be considered for purchase as funding permits:

--

CERTIFICATION AND RECOMMENDATION

- This course meets Title 5 requirements for Associate Degree applicable college credit towards an Associate 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.

Originator	Date
Department/Cluster Chairperson	Date
Articulation Officer	Date
Librarian	Date
Dean (if applicable)	Date
Curriculum Committee Chairperson	Date
Academic Senate President	Date
Vice President, Academic Affairs	Date