



Los Angeles Community College District

COURSE OUTLINE

(Replaces PNCR and Course Outline)

Section I: BASIC COURSE INFORMATION

OUTLINE STATUS: Course Update, 2005-2006

1. COLLEGE: Southwest

2. SUBJECT (DISCIPLINE) NAME¹: Microbiology
(40 characters, no abbreviations)

3. COURSE NUMBER: 1

4. COURSE TITLE: Introductory Microbiology

5. UNITS: 5

6. CATALOG COURSE DESCRIPTION -- Provide a description of the course, including an overview of the topics covered:

This course utilizes the theoretical approach to the study of microorganisms and offers the student a comprehensive knowledge of the fundamentals of microbiology. It includes an introduction to and history of microbiology, classifications and identification of microorganisms; physiology (nutrition and metabolism, growth, variability, etc); microbiology of air, water, soil and food, industrial and medical microbiology; laboratory techniques and methods of handling microorganisms.

7. CLASS SCHEDULE COURSE DESCRIPTION -- Provide a brief description of the course, including an overview of the topics covered:

This course utilizes the theoretical approach to the study of microorganisms and offers the student a comprehensive knowledge of the fundamentals of microbiology. It includes an introduction to and history of microbiology, classifications and identification of microorganisms; physiology (nutrition and metabolism, growth, variability, etc); microbiology of air, water, soil and food, industrial and medical microbiology; laboratory techniques and methods of handling microorganisms.

8. INITIAL COLLEGE COURSE APPROVAL DATE: 1974
COLLEGE OUTLINE APPROVAL DATE: 12/20/05

9. UPDATES (check all applicable boxes):

- Content Last Update: October 2002
Objectives Last Update: October 2002
College Specific Course Attributes/Data Elements Last Update:
Districtwide Course Attributes/Data Elements Last Update:
Other (describe) Last Update:

Empty rectangular box for additional information.

1 Underlined course attributes are the same for the course throughout the LACCD; all other course attributes are college specific.

10. CLASS HOURS:

	"Standard Hours" per Week (based on 18 weeks)	Total Hours per Term (hrs per week x 18)	Units
Lecture:	3.00	54.00	3.00
Lab/activity (w/ homework):			
Lab/activity (w/o homework):	6.00	108.00	2.00
Total:	9.00	162.00	5.00

Note: The Carnegie Rule and Title 5, section 55002 sets forth the following minimum standards: 1 unit = 1 hour lecture per week, 2 hours homework per week; **OR** 2 hours per week of lab with homework; **OR** 3 hours of lab per week without homework. The hours per week are based on a standard 18-week calendar. Lecture also includes discussion and/or demonstration hours, laboratory includes activity and/or studio hours.

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: **Yes** (If Yes, complete information below)

and

or

Subject	Number	Course Title	Units	Validation Approval Date (official use only)
Chemistry	51	Fundamentals of Chemistry	5.00	12/20/05 (formerly 10/21/97)
Biology	3	Introduction to Biology	4.00	12/20/05 (formerly 10/21/97)
Physiology	1	Introduction to Human Physiology	4.00	12/20/05 (formerly 10/21/97)

Corequisite: **None** (If Yes, complete information below)

Subject	Number	Course Title	Units	Validation Approval Date (official use only)

Advisories: **None** (If Yes, complete information below)

Subject	Number	Course Title	Units	Validation Approval Date (official use only)

12. REPETITIONS -- Number of times course may be repeated for credit (three maximum): **0 0** (see: Section V, #9)

13. OTHER LIMITATIONS ON ENROLLMENT (see Title 5, Section 58106 and Board Rule 6803 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 : <u>If applicable</u> , 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 (<i>If applicable</i>): Upon successful completion of this course, the student will be able to... (<i>Use action verbs – see Bloom’s Taxonomy below for “action verbs requiring cognitive outcomes.”</i>)
1. General Introduction To Microbiology A. History of microbiology as a science B. Microbiology and its subdivisions C. Nomenclature and classification D. Survey of the microbial world	3	1. Recall the history of microbiology and report the nomenclature and classification of microorganisms . 2. Describe the proper laboratory techniques and use of equipment essential to isolation, identification and classification of bacteria from a mixed culture: techniques of observation, asepsis, isolation, cultivation, maintenance, morphological, cultural, biochemical and serological characterization of bacteria. 3. Describe physiological aspects of microorganisms (e.g., growth, metabolism, nutrition). 4. Explain the principles involving asepsis, disinfection, sterilization, pathogenicity, epidemiology, chemotherapy and immunity. 5. Selecting appropriate medical microbiology topics, differentiate between the epidemiology of human pathogens and nonpathogenic microorganisms. 6. Assemble the principles of microbiology that are applied to the health care of patients, personal, and community hygiene. 7. Appraise the need for research in building the body of knowledge that makes microbiology a science. 8. Assess the contributions of air, soil, water, applied microbiology and biotechnology to the improvement of human life. SLO: 1) Given two unknown species of bacteria, correctly identify them in the lab utilizing proper lab techniques based upon morphological, biochemical, and serological results.
2. Use of Equipment	3	
3. Basic Microbiological Techniques	5	
4. General Characteristics of Microorganisms A. Protozoa B. Fungi C. Rickettsiae, Chlamydie, Mycoplasma, Viruses and Helminths D. Procaryotic Cells	5 4 4	
5. Bacterial Physiology A. Enzymes and Sources of Energy	4	
6. Growth and Reproduction A. Physical and Chemical Requirements B. Reproductive Processes C. Growth Rate and Measurement	4 4 4	
7. Microbial Genetics	4	
8. Control of Microorganisms A. Sterilization, Disinfection, Antiseptics, Sanitation, Germicide, Bactericide, Fungicide, Viricide, Sporocide, Bacteriostatic, Antibiotics	4 1 2	
9. Principles of Disease and Epidemiology	2	
10. Pathogenicity and Resistance A. Pathogens vs. non-pathogens	2 2	
11. Pathogens of Skin and Eyes	1	
12. Pathogens of the Nervous System	2	
13. Pathogens of the Cardiovascular System		
14. Pathogens of the Respiratory System		
15. Pathogens of the Digestive Tract		
16. Pathogens of the Urinary and Reproductive Tract		
17. Air, Soil, and Water Microbiology		
18. Applied Microbiology and Biotechnology		
19. Final Exam		
Total Lecture hours*	54	

COURSE CONTENT AND SCOPE -- Laboratory : <u>If applicable</u> , outline the topics included in the	Hours per Topic	COURSE OBJECTIVES - Laboratory (<i>If applicable</i>): Upon successful completion of this course, the
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laboratory portion of the course (<i>outline reflects course description, all topics covered in class</i>).		student will be able to... (<i>Use action verbs – see Bloom's Taxonomy below for "action verbs requiring cognitive outcomes."</i>) ²
1. Check in; lab safety; ubiquity of microbes	4	1. Demonstrate the ability to streak for isolation from a mixed culture by obtaining different colony types. 2. Demonstrate aseptic techniques by maintaining active and reserve cultures without contaminating them. 3. Demonstrate Gram stain technique by obtaining the correct Gram reaction. 4. Design the correct use of all-purpose, selective, and selective differential media. 5. Demonstrate an understanding of the individuality of bacteria by selecting the most significant media, reagents and tests to use in studying the characteristic morphology, cultural, biochemical and serological activities of two unknown bacteria. 6. Collect data in a logical sequence, arrange and evaluate these data, and make logical conclusions i.e., the correct genus and species names in the simulated specimen.
2. Aseptic and plating techniques	4	
3. Microscopes and wet mounts	4	
4. Smears and simples stains	4	
5. Gram stain	4	
6. Capsule and Endospore stains	4	
7. Metachromatic granules/Acid-fast stains	4	
8. Aseptic technique/streaking	4	
9. Pipettes, Classification, and Counting	4	
10. Fungi, protozoa, titrating	4	
11. Parasitic worms and viruses	4	
12. Effects of growth	4	
13. UV irradiation, disinfectants, antiseptics, and antibiotics	4	
14. Selective and differential media	4	
15. Exoenzymes and sugar fermentation	4	
16. Nitrate reduction, urea hydrolysis, hydrogen sulfide production	4	
17. IMViC and gram negative pathogens	28	
18. Staphylococcus and Streptococcus	4	
19. Urine and throat cultures		
20. Investigative work on unknown samples		
21. Practicums and quizzes		
Total Lab hours*	108	

*Total lecture and laboratory hours (which include the final examination) must equal totals on page 1.

Bloom's Taxonomy

SIMPLE SKILLS <<----->> COMPLEX SKILLS					
			Critical Thinking		
<u>Knowledge</u>	<u>Comprehension</u>	<u>Application</u>	<u>Analysis</u>	<u>Synthesis</u>	<u>Evaluation</u>
define	translate	interpret	distinguish	compose	judge
repeat	restate	apply	analyze	plan	appraise
record	discuss	employ	differentiate	propose	evaluate
list	describe	use	appraise	design	rate
recall	recognize	demonstrate	calculate	formulate	compare
name	explain	dramatize	experiment	arrange	value
relate	express	practice	test	assemble	revise
underline	identify	illustrate	compare	collect	score
	locate	operate	contrast	construct	select
	report	schedule	criticize	create	choose
	review	shop	diagram	set up	assess
	tell	sketch	inspect	organize	estimate
			debate	prepare	measure
			inventory		

² In general "activity" courses or portions of courses are classified "laboratory."

			question relate solve examine categorize		
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2. REQUIRED TEXTS:

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

Tortora, T., *Microbiology, An Introduction*, Benjamin Cummings Pub., 8th ed., 2005.
Bieshir, L., *Microbiology in Practice, A Self-Instructional Lab Course*, Harper/Row, 6th ed. 2003
Funke, B. R., *Study Guide for Microbiology, an Introduction*, Benjamin Cummings Pub., 6th ed., 2005.
Leboffe, *Photographic Atlas For the Microbiology Lab*, Morton Pub., 3rd ed., 2004.

3. SUPPLEMENTARY READINGS:

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

1. DeKurif, P., *Microbe Hunters*, New York, Harcourt Brace Publishers, 1996.
 2. Lennette, E.H., et. Al., *Manual of Clinical Microbiology*, 4th ed., American Society for Microbiology, 1985.
 3. Baron, S., ed., *Medical Microbiology*, 2nd ed., Addison Wesley Publishers, 1986.
- (These readings supplement classroom instruction and better prepares students for exams and identification of their unknown microorganisms.)

4. WRITING ASSIGNMENTS:

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.” Writing assignments in this course may include, but are not limited to the following:

An example of a writing assignment is the final lab report corresponding to the student's identification of two bacterial unknowns. The report includes a description of the student's lab procedures and results. An analysis of results is discussed that leads to the selection of the proper identity of the bacterial specimens.

5. REPRESENTATIVE OUTSIDE ASSIGNMENTS:

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

1. Writing out answers to specific course objectives for each lecture and turning in this assignment at the appropriate unit examination.
2. Reading and studying the required lecture and laboratory reading assignments.
3. Studying the computer assisted drills corresponding to the letter assignments.

6. REPRESENTATIVE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING:

Title 5, section 55002(a) requires that a degree-applicable course have a level of rigor that includes “critical thinking and the understanding and application of concepts determined by the curriculum committee to be at college level”. Critical thinking may include, but is not limited to analysis, synthesis, and evaluation. Provide examples of assignments that demonstrate critical thinking.

Students are given a mixed culture of two different genera of bacteria simulating a patient's clinical specimen. The successful completion of this two week scientific investigation, which is carefully designed to initiate independent student investigation, requires that students use the scientific methodology to identify both unknown bacteria by genus and species.

7. 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):

Essay assignments, problem-solving exercises, skills demonstrations, tests and quizzes, homework, and term projects/lab reports.

8. METHODS OF INSTRUCTION:

Methods of instruction may include, but are not limited to the following:

- Lecture
- Discussion
- Laboratory
- Activity
- Field Experience
- Independent Study
- Other (explain)

9. SUPPLIES:

List the supplies the student must provide.

N/A

10. COMPUTER COMPETENCY:

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

Students are encouraged to use computers in research and preparation of term projects and reports.

11. INFORMATION COMPETENCY:

Information competency is the ability to find, evaluate use, and communicate information in all its various formats. It combines aspects of library literacy, research methods and technological literacy. Information competency includes consideration of the ethical and legal implications and requires the application of both critical thinking and communications skills. If applicable, explain how information competency is included in the course.

Students locate, evaluate and use information found and choose appropriate information for completion of a task.

12. DIVERSITY:

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

All students are welcome; microbiology crosses all bounds of bias.

13. SCANS COMPETENCIES (required for all courses with vocational TOP Codes; recommended for all courses):

SCANS (**S**ecretary's **C**ommission on **N**ecessary **S**kills) 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 **"restricted" elective** 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 <http://misweb.cccco.edu/esed/webproginv/prod/invmenu.htm>)

Recommended elective for AA in Biology (Program ID # 08442) ; Prerequisite for Nursing Program (Program ID # 02877)

NOTE: In order for a course to be approved as a requirement for an associate degree or certificate program, the program must be listed on the State Chancellor's Office *Inventory of Approved Programs* AND the course must be listed in the college catalog as either a requirement or an elective for the program. If course is not part of an approved program at the college adopting the course, it will be considered to be a "stand-alone" course, and is subject to the State Chancellor's approval criteria. The college must complete and submit the Chancellor's Office "APPLICATION FOR APPROVAL OF CREDIT" form. Certain courses are granted "blanket approval" by the State Chancellor's Office and do not require separate approval. See the Chancellor's Office *Program and Course Approval Handbook* for details. LACCD Skills **Certificates are not State approved programs** and are not listed on the Chancellor's Office *Inventory of Approved Programs*.

2. **GENERAL EDUCATION REQUIREMENTS FOR THE ASSOCIATE DEGREE STATUS:**

- a. Area requested: **a. Natural Science** **Approval** date: before 1990

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_AdmRegs/boardrules.htm

- a. 2nd Area requested: **None** **Approval** date:

If applicable, provide an explanation of how the course meets General Education parameters for an additional general education area – *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_AdmRegs/boardrules.htm

Section IV: ARTICULATION INFORMATION

(Complete in consultation with College Articulation Officer)

1. TRANSFER STATUS:

- a. Transferable to the University of California: **Yes** c. Transferable to the California State University: **Yes**
 b. UC **approval** date: before 1996 d. College **approval** date: before 1996

2. GENERAL EDUCATION FOR TRANSFER:

IGETC Certification:

- a. Area requested: **5-B: Biological Sciences**
 b. Date requested: 12/90
 c. IGETC **approval** date: Fall 1991

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.

CSU Certification:

- a. Area requested: **B-2: Biological Science**
 b. Date requested: before 1990
 c. CSU **approval** date: before 1990

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.

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- a. 2nd Area requested: **None**
 b. Date requested:
 c. IGETC **approval** date:

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.

- a. 2nd Area requested: **B-3: Laboratory Activity**
 b. Date requested: before 1990
 c. CSU **approval** date: before 1990

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.

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3. MAJOR REQUIREMENT FOR TRANSFER – Will this course be articulated to meet lower division major requirements?

YES

List college/university and the majors:

College/University	Major(s)

CAN NUMBER:

CAN SEQUENCE NUMBER:

CAN Approval -- Date requested:

Date approved:

Section V: SUPPLEMENTAL COURSE INFORMATION

1. **DEPARTMENT/DIVISION NAME:** Natural Sciences, Health, & Physical Education
2. **DEPARTMENT/DIVISION CODE:** 7
3. **SUBJECT CODE** -- 3 characters, assigned by District Office: **631** (existing subject codes are available on the LACCD web site at <http://www.laccd.edu/curriculum/directory-programs-courses/index.htm>)
4. **SUBJECT ABBREVIATION** -- 7 characters, assigned by District Office: **MICRO**
5. **SPC CODE** -- 3 characters, assigned by District Office:
6. **ABBREVIATION FOR TRANSCRIPTS** -- 20 characters, assigned by District Office: **MICRO**
- 7.
8. **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 :
This courses is **Degree Applicable**
9. **CREDIT/NO CREDIT GRADING:** **No**
10. **REPETITIONS** -- Number of times course may be repeated for credit (three maximum): **0**

How does the repetition of this course meet Title 5, section 58161 requirements? A course may be repeatable when, "course content differs each time it is offered, and that the student who repeats it is gaining an expanded educational experience for one of the following reasons: (A) Skills or proficiencies are enhanced by supervised repetition and practice within class periods; or (B) Active participatory experience in individual study or group assignments is the basic means by which learning objectives are obtained."

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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 55502(d) 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** If Yes, course must be non-degree applicable.
 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 WITH 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 Sciences**

Note: A course's 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) .

Course content should match discipline description in Taxonomy of Programs found at www.cccco.edu/cccco/esed/curric/curriculum.htm.

17. SAM CODE (Student Accountability Model): **E – Non-Occupational**

SAM Codes (see CCC Chancellor's Office *Student Accountability Model Operations Manual*, 1984) should be assigned as follows:

Priority "A" – Apprenticeship: Courses designed for an indentured apprentice must have the approval of the State of California, Department of Industrial Relations Department, Division of Apprenticeship Standards.

Priority "B" – Advanced Occupational: Courses taken by students in the advanced stages of their occupational programs. Courses should be offered in one specific occupational area only. Priority letter "B" should be assigned sparingly; in most cases, no more than two courses in any one program should be labeled "B." "B"-level courses must have Priority "C" prerequisites in the same program area.

Priority "C" – Clearly Occupational: Courses generally taken by students in the middle stages of their programs should have a difficulty level sufficient to detract "drop-ins." Courses may be offered in several occupational programs within a broad area. The "C" priority, however, should also be used for courses within a specific program area when the criteria for "B" classification are not met. A "C"-level course should provide the student with entry-level job skills.

Priority "D" -- Possibly Occupational: "D" courses are those taken by students in the beginning stages of their occupational programs. The "D" priority can also be used for service (or survey) courses for other occupational programs.

Priority "E" -- Non-occupational.

SECTION VI: APPROVAL STATUS

1. APPROVAL STATUS:

- a. New Course . Board Approval Date: . Effective Semester:
- b. Addition of Existing District Course . College Approval Date: . Effective Semester:
- c. Course Change* . College Approval Date: . Effective Semester:
- d. Outline Update . College Approval Date: 12/20/05

* 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.

CONTENT REVIEW FOR PREREQUISITE VALIDATION

Target Course & Number, Title: **Microbiology 1, Introductory Microbiology**
(Course to which pre/corequisite/advisory applies)

Check
Applicable
Box

Prerequisite: Chemistry 51 and (Biology 3 or Physiology 1)

Corequisite:

Advisory:

A. Target Course Entry Skills: Microbiology 1

(For prerequisites/corequisites, list specific skills and/or knowledge necessary for students to succeed in the target class. For advisories, list skills/knowledge which will enrich or deepen the student's knowledge obtained from the course but without which the student may still succeed in the course. Attach additional sheet if necessary. NUMBER EACH SKILL.)

Upon entering Microbiology 1, students should be able to:

1. use metric (SI) measurements.
2. explain atomic structure and chemical bonding.
3. recognize chemical symbols and balance chemical equations.
4. name and describe functions of cellular organelles.
5. describe the process of cell division (mitosis).
6. differentiate between osmosis, diffusion, filtration, hypotonic/hypertonic solutions.
7. describe methods of respiration (aerobic and anaerobic) in plants and animals.
8. prepare reports, check for errors in measurement, and compile laboratory records (notebook).

**B. Exit Skills Provided By Prerequisite/Corequisite/Advisory Course or Assessment:
Chemistry 51 and (Biology 3 or Physiology 1)**

(List specific skills and/or knowledge that are the outcome of the prerequisite/corequisite/advisory course or assessment. For courses already in the curriculum, these should be present in the course objectives in the course outline. Attach additional sheet if necessary. NUMBER EACH SKILL.)

From Chemistry 51*:

1. complete math conversions using metric measurements or metric-SI and English measurements.
2. demonstrate factors affecting accuracy of measurements and how calculation must be done to show limits of accuracy.
3. explain atomic structure, basic elements of chemical bonding and the periodic table of elements.

From Biology 3:**

4. develop the ability to use laboratory methods for studying life processes of living plants and animals.
5. apply the general concepts from the textbook or other references to the specific principles that are demonstrated by the laboratory exercises and show this in the written reports.

From Physiology 1*:**

6. apply physical laws to activities concerning biological processes.
7. apply chemical laws to activities concerning biological processes.
8. identify terminology, facts, methodology, principles, and theories of human physiology.
9. apply the skills in a laboratory setting in the interpretation, analysis, synthesis, and evaluation of data.

CONTENT REVIEW SKILLS MATRIX FOR PREREQUISITE VALIDATION

Microbiology 1 Entering Skills of Target Course

Chemistry 51* and (Biology 3 or Physiology 1***)**
Exit Skills of Prerequisite Course

	1	2	3	4	5	6	7	8
1	*							
2								*
3		*	*					
4				**	**	**	**	
5								**
6						***		
7						***	***	
8				***	***	***	***	
9								***

Comments:

(Include justification for assessments, health and safety, or non-course prerequisites)

Validation requires at least one match of each exit skill with each entry skill. **Was validation achieved? YES**

PARTICIPANTS IN CONTENT REVIEW:

(Signatories should include instructors for both exit and entering skills courses.)

Name: _____ Title: _____ Initial: _____ Date: _____

Name: _____ Title: _____ Initial: _____ Date: _____

Name: _____ Title: _____ Initial: _____ Date: _____

CERTIFIED BY:

Initiator Date

Department Chairperson Date

Curriculum Chairperson

**LOS ANGELES COMMUNITY COLLEGE DISTRICT
COURSE STANDARDS AND CRITERIA**

Subject: **Microbiology** Number: **1** Course Title: **Introductory Microbiology**

Using the Official Course Outline, please determine whether or not the above listed credit course meets the following standards and criteria required in Title V, Part VI of the California Administrative Code, and which has been designated as appropriate to the Associate Degree. Place a (X) in the appropriate box.

<u>CRITERIA AND STANDARDS</u> Section 55002	<u>RATING CRITERION</u>	
	MET	NOT MET
Is recommended by the responsible college officials, and the academic senate or other appropriate faculty body as meeting the requirements of this subsection and has been approved by the local district governing board as a course meeting the needs of the students for admission.	X	
Is taught by a credentialed instructor in the discipline.	X	
Is offered as described in an outline in official college files. That the outline shall specify the unit value, scope, objectives, content in terms of a specific body of knowledge, appropriate reading and writing assignments, outside of class assignments, instructional methodology and methods of evaluation for determining whether the stated objectives have been met by students.	X	
Is taught in accordance with a set of instructional objectives common to all students.	X	
Provides for measurement of students performance in terms of the stated course objectives and culminates in a formal recorded grade based upon uniform standards in accordance with Section 55578 of Title 5, which is permanently recorded as an evaluation of student performance; bases grades on demonstrated proficiency in subject matter determined by multiple measurement for evaluation; and has examinations, including essays and/or, where appropriate, uses appropriate symbol systems and/or skills demonstrations by students.	X	
Grants units of credit based upon a specified relationship between the number of lecture and/or laboratory hours or performance criteria specified in the course outline; and requires a minimum of three hours of work per week including class time for each unit of credit, prorated for short-term, lab and activity courses.	X	
Treats subject matter with a scope and intensity which requires students to study independently outside of class time.	X	
Requires, when appropriate, entrance skills and consequent prerequisites for the course before students are enrolled	X	
Requires the ability to think critically and to understand and apply concepts in order to participate in the course.	X	
Requires learning skills and a vocabulary appropriate for a college course.	X	
Requires the use of college level educational materials.	X	

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.

<hr/> Glenn Yoshida Originator	<hr/> 12/20/05 Date
<hr/> Glenn Yoshida Department/Cluster Chairperson	<hr/> 12/20/05 Date
<hr/> Linda Larson Singer Articulation Officer	<hr/> 12/20/05 Date
<hr/> Shelley Werts Librarian	<hr/> 12/21/05 Date
<hr/> Earnestine Thomas-Robertson Dean (if applicable)	<hr/> 12/20/05 Date
<hr/> Linda Larson-Singer Curriculum Committee Chairperson	<hr/> 12/20/05 Date
<hr/> Reggie Morris Academic Senate President	<hr/> 12/20/05 Date
<hr/> Earnestine Thomas-Robertson for Leige Henderson Vice President, Academic Affairs	<hr/> 12/22/05 Date
<hr/> Audre Levy College President	<hr/> 12/21/05 Date