

This is a SouthArk Master Syllabus. The course syllabus distributed by the instructor may include additional requirements, must be followed by the student in the given term, and is considered to supersede the Master Syllabus.

Course Number

MBIO 1124/L

Course Title

Microbiology

Course Description

ACTS Equivalent Course Number = BIOL 2004

Prerequisite: Pass BSTD 0613 and BSTD 0413 with a grade of “C” or better or make an appropriate score on the placement test. Introduction to the world of microbes, including those that cause human diseases. Instruction is given in classification, metabolism, morphology, and identification of bacteria plus basic techniques for the microbiology laboratory. Classifications of parasites and fungi are included. Three hours lecture and two hours laboratory.

College Mission

South Arkansas Community College promotes excellence in learning, teaching, and service; provides lifelong educational opportunities; and serves as a cultural, intellectual, and economic resource for the community.

College Wide Student Learner Outcomes

Critical Thinking

Responsibility

Communication

ACTS Course

Program Course

ACTS Outcomes

The student will explain, describe, discuss, recognize, and/or apply knowledge and understanding of the following:

1. History of microbiology
2. Biological and chemical concepts, including metabolism, as applied to microorganisms
3. Basic classification, characteristics and behavior of microorganisms
4. Host-microbe interactions that result in infection
5. Fundamentals of immunology
6. Principles of asepsis, sterilization, and disinfection
7. Principles of epidemiology as they apply to the effect of microorganisms on the human population
8. General methods for the prevention and control of infectious disease transmission
9. Microbial growth
10. Microbial genetics

The student will explain, describe, discuss, recognize, and/or apply knowledge and understanding of the following lab activities:

11. Use of microscope
12. Preparation of stains
13. General laboratory techniques, including but not limited to aseptic technique, streak plate, and identification methods

Program Outcomes

If this is not a program course, leave this space blank. Number your program outcomes.

Course Learner Outcomes

CLO #	Course Outcomes	Unit Outcomes/ Competencies	ACTS	Program Outcomes	Critical Thinking	Communication	Responsibility	Assessment
CLO 1	Demonstrate knowledge of the history of microbiology, the structure of a cell and the laboratory environment.	1,2,3,4, 5	1, 3		CT 4			Unit Test
CLO 2	Able to discuss cellular metabolism, growth, and replication along with microbial genetics.	6,7,8,9, 10,11, 12,5	2, 9, 10		CT 4			Unit Test
CLO 3	Demonstrate understanding of Control of Microorganism by Chemical And Physical Methods	5,13,14, 15,16,1 718,19, 20	6, 8		CT 4			Unit Test
CLO 4	Apply knowledge of the Immune System in the diagnosing and reporting of infectious disease	21,22,2 3,24,25 ,26,27 28,	4, 5, 7, 8		CT 4			Unit Test
CLO 5	Recognizes the characteristics of microorganism other than bacteria	29,30,3 1,32, 33, 34, 35, 36, 5	1, 3		CT 4			Unit Test
CLO 6	Communicate in basic language of microbiology involving aspects of this unit.	1-41 & L1-L3	1- 13			C1, C2		Final Exam
CLO 7	Demonstrate general laboratory techniques, including but not limited to: use of a microscope, preparation of stains, aseptic technique, streak plate, and identification methods.	L1- L3	11 - 13				R2	Laboratory Manual Laboratory Final

Unit Outcomes/ Competencies/Objectives

1. List the history of the development of the microscope.

2. List the development of microbiology as a science from the theory of spontaneous generation to present.
3. Know the parts of a microbial cell and their function.
4. Know the laboratory environment, being able to define the temperature ranges, oxygen requirements, media, and laboratory techniques.
5. Communicate in basic language of microbiology involving aspects of this unit.
6. List the steps of glycolysis and explain its purpose.
7. List the steps of the Krebs cycle and explain its purpose.
8. List the steps of the Electron Transport System and explain its purpose.
9. Explain the difference in aerobic respiration, anaerobic respiration and fermentation.
10. Explain the process of DNA replication.
11. Recognize and discuss the difference in DNA and RNA.
12. Explain the process of protein synthesis.
13. Define sterilization.
14. List and discuss the types of sterilization procedures and how each is used.
15. Define disinfectant.
16. Discuss the characteristics of agents of disinfection.
17. List the agents of disinfection.
18. Define an antibiotic.
19. Know how antibiotics effect microorganisms.
20. Discuss the methods that organisms are tested for antibiotic susceptibility.
21. Discuss the composition of the blood and their origin and function.
22. Explain the categories of nonspecific immunity.
23. Explain what is meant by specific immunity.
24. Define antigen and antibody.
25. Discuss the different types of antibodies.
26. Define an allergy.
27. Discuss the different types of allergies.
28. List the type of medical laboratory testing that involve antigen-antibody reactions.
29. Define a parasite.
30. Draw and label the parts of a protozoa.
31. Draw and explain the asexual reproduction of a fungus.
32. Explain why Mycoplasma, Chlamydia, and Rickettsia are considered atypical bacteria.
33. Explain the differences in the three types of helminth parasites.
34. List the parts of a virus.
35. Explain the replication cycle of a virus.
36. Define lysogeny.
37. Define and distinguish between the disease category sporadic, endemic, and epidemic.
38. Explain the stages of the infectious disease cycle.
39. Define and distinguish between morbidity and mortality rates.
40. List the names, characteristics of, and the disease associated with organisms that cause human infection.
41. Explain the proper specimen collection techniques for microbiology laboratory specimens.

Laboratory Outcomes:

- L1. List the parts of the microscope and describe their function.
- L2. Perform the basic staining procedures used in microbiology:
 - a. Simple stain
 - b. Gram stain
 - c. Spore stain
 - d. Acid-fast stain
 - e. Capsule or negative stain
 - f. Flagella stain (discuss)
- L3. Perform the basic procedures for bacterial growth and identification used in the laboratory:
 - a. Aseptic technique
 - b. Tube transfer
 - c. Streak plate
 - d. Slant culture
 - e. Sugar fermentations
 - f. IMViC reactions
 - g. Unknown identification

Assessment Description(s)

The Research Essay is a 10 page essay which requires reference sources, collaborative writing, MLA formatting, and proper citation. The departmental research paper rubric is used for assessment and aligned with the outcomes of this course

Materials and Technological Requirements

Tortora, G., and Funk, B. (2015). Microbiology: An Introduction plus Mastering Microbiology Access Card. 12th ed.

Cappucino, J., and Welsh, C. (2016). Microbiology: A Laboratory Manual. 11th ed.

Class Attendance Policy

Students are expected to attend all classes in which they are enrolled. If a student is absent from a class session, it is the student's responsibility to make arrangements to complete or make up any work missed. No make-up work for missed classes will be allowed without the approval of the instructor. Students who enroll late must assume all responsibility for work missed. Classes not attended as a result of late enrollment may be counted toward excessive absences. Students not attending the entire class period may be counted absent for that period. An instructor may drop students with a grade of "WE" if students have been absent for an excessive number of days. Warning letters will be sent to the students advising them of the consequences of nonattendance and urging them to contact their instructors immediately. Excessive absences are defined as follows:

Regular Semester

Courses which meet once a week	2 absences
Courses that meet twice per week	3 absences
Courses that meet four times per week	5 absences

Summer Session

Courses that meet four times per week in a five week session	3 absences
Courses which meet two evenings per week in a 10 week session	3 absences

Students enrolled in special programs or individualized instruction should contact their program director/instructor regarding specific attendance requirements for the program/course. Some of the selective-admission, health-science programs have specific criteria regarding attendance. Students are encouraged to refer to program policies in these matters.

Jury Duty/Military/Official School Function

Scheduled absences are those that occur due to college-related activities or as a result of summons to jury duty or military duty. Classes missed as a result of scheduled absences will not be counted as excessive absences if the instructor is notified and provided documentation prior to the absence(s). Make-up work for scheduled absences will be at the discretion of the instructor.

In all instances, documentation must be provided to the instructor within 24 hours of receipt. Documentation should come from an appropriate party on letterhead or other official stationery with a signature and contact information. Documentation should list the corresponding dates of the leave.

Medical leave

For medical-related absences, documentation must include written notice from the treating medical professional documenting time needed off related to medical reasons and time student may resume classes. The medical reason does not need to be listed on the documentation; the documentation must include only that there is a medical reason, the amount of time the student needs to be absent, and the time the student should be able to return to classes. Students who elect to work at home while on excused leave must meet with their instructors to make arrangements to do so. Working on coursework while on medical leave is not a requirement but can be requested by students. If students request that they be allowed to work at home while on an excused leave, the instructor will make every reasonable effort to ensure that the student is able to do so.

For students who have a medical condition necessitating time off or accommodation:

- 1) They may work at home on assignments if they choose to if on medical leave approved by a medical professional
- 2) Receive appropriate accommodations related to coursework (i.e., excused from labs with potentially harmful chemicals, have a larger desk, etc.)
- 3) Resume their studies where they left off once they return to classes
- 4) Be allowed to make up any missed work related to medical leave
- 5) Receive incompletes on their transcripts until coursework is completed, according to the incomplete grade contract.
- 6) Be given a reasonable time frame in which to complete missed coursework

Academic Honesty Policy

Students enrolled at South Arkansas Community College are expected at all times to uphold standards of integrity. Students are expected to perform honestly and to work in every way possible to eliminate academic dishonesty. Academic dishonesty includes cheating and plagiarism, which are defined as follows:

- Cheating is an attempt to deceive the instructor in his/her effort to evaluate fairly an academic exercise. Cheating includes copying another student's homework, class work, or required project (in whole or in part) and/or presenting another's work as the student's own. Cheating also includes giving, receiving, offering, and/or soliciting information on a quiz, test, or examination.
- Plagiarism is the copying of any published work such as books, magazines, audiovisual programs, electronic media, and films or copying the theme or manuscript of another student. It is plagiarism when one uses direct quotations without proper credit or when one uses the ideas of another without giving proper credit. When three or more consecutive words are borrowed, the borrowing should be recognized by the use of quotation marks and proper parenthetical and bibliographic notations.

If, upon investigation, the instructor determines that the student is guilty of cheating or plagiarism, the following penalties will apply:

- The student will receive a penalty of no less than a zero on the work in question.
- The instructor will submit a Student Academic Misconduct Form, written report of the incident, to the appropriate dean.
- The dean will submit form to Vice President for Learning to determine disciplinary action.
- The Vice President for Learning will determine whether further disciplinary action will be taken.
- All decisions may be appealed for review through the college's academic appeals procedure.

Equal Opportunity-Affirmative Action Statement

South Arkansas Community College does not discriminate on the basis of age, race, color, creed, gender, religion, marital status, veteran's status, national origin, disability, or sexual orientation in making decisions regarding employment, student admission, or other functions, operations, or activities.

Library Services

Library Homepage: <http://southark.libguides.com/homepage> Library Contact: LibraryStaff@southark.edu or 870.864.7115

Procedures to Accommodate Students with Disabilities:

If you need reasonable accommodations because of a disability, please report this to the Vice President of Student Services with proper documentation. . VPSS Contact: 870.875.7262

The Early Alert System

In an effort to ensure student retention and success, South Arkansas Community College employs an Early Alert System to identify and support at-risk students as soon as possible in a given semester. The intent of Early Alert is to provide this assistance while there is still time to address behaviors or issues that have the potential of preventing students from completing their courses and degree plans. Students referred through the Early Alert System will be required to work on a corrective action plan with their student advising coach and to include attendance accountability and mandatory academic tutoring either in the academic division or in the Testing and Learning Center (TLC).

Once the Student Advising Coach has met with the referred student, and again when the student has met the prescribed corrective actions, the coach will update the Early Alert System so that the instructor is kept informed of the progress in resolving issues.

Behavioral Review Team

At South Arkansas Community College (SouthArk), we are committed to proactive leadership in student wellbeing and campus safety. By focusing on prevention and early intervention with campus situations that involve any person experiencing distress or engaging in harmful or disruptive behaviors, the BRT will serve as the coordinating hub of existing resources to develop intervention and support strategies and offer case management. Students, faculty, staff, and campus guests are encouraged to report any person on campus who is a concern. BRT Contact: 870.875.7262 BRT@southark.edu

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