IVY TECH COMMUNITY COLLEGE

COURSE OUTLINE

AND

COURSE SYLLABUS

MICROBIOLOGY I

BIOL211 20F (31525)
BIOL211 21F (31529)

Fall 2014

INSTRUCTOR:

Dr. Betty Burns Sipe

School of Liberal Arts and Sciences 765-289-2291 x1441

email: bsipe@ivytech.edu

Course Web site:
http://faculty.ivytech.edu/~bsipe
COLLEGEWIDE COURSE OUTLINE OF RECORD

BIOL 211, MICROBIOLOGY I
COURSE TITLE: Microbiology I
COURSE NUMBER: BIOL 211
PREREQUISITES: BIOL 101 Introductory Biology or APHY 101 Anatomy and Physiology I and earning a grade of “C” or better in MATH 023 Essentials of Algebra I or MATH 080 Mathematics Principles with Algebra
SCHOOL: Liberal Arts and Sciences
PROGRAM: Liberal Arts
CREDIT HOURS: 3
CONTACT HOURS: Lecture: 2 Lab: 2
DATE OF LAST REVISION: Fall, 2013
EFFECTIVE DATE OF THIS REVISION: Fall, 2014

CATALOG DESCRIPTION: Presents an overview of microbiology including fundamental structures of microorganisms, their metabolism, classification and interaction with other living things, and the laboratory techniques for their study. Introduces industrial and clinical applications of microbiology.

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course the student will be expected to:
1. Describe the general properties and characteristics of bacteria, fungi, parasites, and viruses.
2. Describe the divisions of microbiology and taxonomic classification of bacteria.
3. Identify the internal and external structures of the eukaryotic vs. the prokaryotic cell and define the function of each.
4. Use the bright field microscope in the study of microorganisms, identify the parts of the microscope, and state the function of each.
5. Understand and apply recommended guidelines for safe handling of microorganisms and infectious materials.
6. Describe and recognize various bacterial morphologies.
7. Perform and/or interpret the gram stain on both direct and indirect smears.
8. Describe the general principles of bacterial metabolism, nutrition, reproduction, and energy liberation and storage.
9. Discuss the structure of DNA and the processes of replication, transcription, and translation.
10. Discuss the use of physical and chemical methods and antimicrobial agents in the control of microorganisms.
11. Describe the epidemiology of various kinds of infectious diseases and the invasive mechanisms employed by bacteria.
12. Describe the processes of transfer of genetic information between bacteria including transformation, transduction, and conjugation.
13. Discuss the applications of general concepts in microbiology for food, agriculture, ecology, health, and industry.
14. Perform identification tests, use a flow diagram, and describe epidemiology and describe disease correlations.
15. Describe the fundamentals of recombinant DNA technologies, genetic engineering, and biotechnology as they relate to microbiology, medicine, industry, and the environment.
16. Describe basic principles of immunology, immunity, and serological testing and interpretation.
17. Use appropriate microbiology media, test systems, and lab equipment.

COURSE CONTENT: Topical areas of study include --
Scope of microbiology Fundamentals of chemistry
Microscopy and staining Characteristics of prokaryotic and eukaryotic cells
Essential concepts of metabolism Epidemiology and nosocomial infections
Growth and culturing of bacteria Nonspecific host defenses and host systems
Recombinant DNA Eukaryotic microorganisms and parasites
Viruses’ Host-microbe relationships and disease processes
Sterilization and disinfection Immunology
Environmental microbiology Applied microbiology
Bacteria Microbial genetics

HOW TO ACCESS THE IVY TECH COMMUNITY COLLEGE LIBRARY:
The Ivy Tech Library is available to students’ on- and off-campus, offering full text journals and books and other resources essential for course assignments. Go to http://www.ivytech.edu/library/ and choose the link for your campus.

ACADEMIC HONESTY STATEMENT:
The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.
Cheating on papers, tests or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior. The direct copying of another student's labs or homework will be treated as cheating.

COPYRIGHT STATEMENT:
Students shall adhere to the laws governing the use of copyrighted materials. They must insure that their activities comply with fair use and in no way infringe on the copyright or other proprietary rights of others and that the materials used and developed at Ivy Tech Community College contain nothing unlawful, unethical, or libelous and do not constitute any violation of any right of privacy.
ADA STATEMENT: Ivy Tech Community College seeks to provide effective services and accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, you are required to register with Disability Support Services at the beginning of the semester. If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classrooms. Disability Support Contact Information for each campus:

- Muncie and New Castle – Lois Weiss 765-289-2291 ext 1388,
- Anderson campus – Patricia Toombs 765-643-5745 ext 1076,
  
**ptoombs@ivytech.edu** Patricia Toombs
  
Association Director of Student Support & Development
Ivy Tech Community College
325 W 38th Street
Anderson, IN 46013
(765) 643-5745, ext. 1076
Fax (765) 643-5790

Marion campus – Brian Sprayue 765-651-3111 ext 3311, **bsprayue@ivytech.edu**

THE INSTRUCTOR MUST BE PRESENTED WITH YOUR DISABILITY PAPERS BEFORE ANY ACCOMMODATION CAN OCCUR

CELL PHONE POLICIES: *Cell phones, smart phones, tablets, pagers and other cellular devices must not be accessed during class and lab times. They must be turned off or set on vibration during these times. There must be absolutely no communication through any means including but not limited to texting, phone calls, emails, IM, tweeting, any social media site, etc. during class or labs without instructor permission. Electronic devices must be turned off during quizzes, tests and lab exams.*

REQUIRED TEXT/CURRICULUM MATERIALS:

- Lab Manual: *Introductory Microbiology Laboratory Skills*, 2012 Betty Sipe, CompuTeach Educational Technologies
- hair tie, highlighter pen, lab coat or scrubs
- Lab goggles must be purchased for lab. These are available in the bookstore.

INSTRUCTOR AVAILABILITY: Instructor: Dr. Betty Burns Sipe
Email: bsipe@ivytech.edu
Office Hours for Conferences, Questions: ___________________________________________
Other conference times may be scheduled by emailing instructor.
METHODS OF INSTRUCTIONAL DELIVERY:
The suggested readings from your text are listed in the outline and schedule. Additional readings and assignments may be made at appropriate times during the semester. It is important to read the required material before coming to class and bring your textbook so that you can take full advantage of group participation experiences and discussions. The course is taught using a variety of learning strategies:

- short in-class writing activities, small group activities
- concepts maps, journal article reviews, spelling, pronunciation
- games, cartoons
- web site activities
- historical essay
- crossword puzzles
- various laboratory experiences.
- Samples of historical essays, case studies for unknown microorganism research, microorganisms pronunciation (CD’s checked out from instructor)
- Two activities are virtual labs: Lab 2 Introduction and the Unknown Microorganism Research. The web site: http://faculty.ivytech.edu/~bsipe/
- Final lab Unknown Research Project involves a live bacterium to identify

EVALUATIONS METHODS AND GRADING CRITERIA:
If you miss a class, you must take the initiative to contact the instructor or other students to find out if a test has been announced. There may be as many as 6 lecture tests, 2 lab Exams, and an independent research project (ex. a Virtual Unknown Microorganism Project). In addition to these types of evaluations, there may be class participation activities such as cross word puzzles, quizzes, spelling test, historical essay, pronunciation and small group activities.

GRADE COMPUTATION:

Lecture = 45%
Lab = 30%
Comprehensive Final = 25%

Lecture points include homework, lecture exams and quizzes plus other assignments within the lecture portion of the class.
Lab includes two lab exams, a Gram stain slide, an Unknown Project, and lab related quizzes or reports.
Comprehensive final is given the last day of class and is administered department wide.

The following grading scale is used for microbiology:
90-100 = A  
70-79 = C *  
59 and below = F
80-89 = B  
60-69 = D

*State guidelines dictate that a letter grade of “C” or better is required for advancement and credit.
ATTENDANCE POLICY: The nature of the lab experiences in this course involves working with different live bacteria and appropriate equipment throughout the semester. Students will be taught the safe and proper techniques during each lab session. The initial few weeks of the course are crucial for learning the microbiology skills that are needed for the rest of the term. In the case of an absence from the lab at any time, the student must make arrangements with their local Assistant Chair to make up the lab exercise before returning to the next lab class period. Since supervision and instruction is necessary, an appointment must be made.

In the case of a series of absences, a student would be considered a safety liability to their classmates and the facility. At this point, the student may be referred to the Department Chair who will begin disciplinary procedures potentially leading to removal from the course. Our goal is to have a safe classroom and to assure that students are good lab partners to their fellow classmates.

No behavior that is deemed by the instructor to be careless or potentially dangerous will be tolerated in any manner. If unsafe practices are noted, the student will be required to attend a review session with the instructor before they may reenter the lab. Failure to do so will start the removal process.

Attendance is strongly suggested for the lectures. Students must take the initiative to make up lecture absences and assignments. The only excusable absence is a qualified personal or family emergence. Documentation such as a doctor’s note, funeral notice, etc. for that absence must be provided to the instructor. If you are pregnant or think you might be pregnant, please notify the instructor and discuss with your doctor concerning participation in certain labs.

LABORATORY FEE: This fee covers the cost of microbiological media and other materials that you will use this semester.

REGIONAL ATTENDANCE STATEMENT-- Updated 20JUL12
Given the clear correlation between class attendance and student success, the East Central Region has developed the following standards in order to emphasize the importance of class attendance:

Students missing 25% or more of class sessions in a semester course will be encouraged to continue in the course, but will receive a failing grade. Students will be notified via their Ivy Tech email account.

Students attending 100% of class sessions as determined by the instructor will be awarded one percentage point of extra credit in recognition of this achievement.

Students who are assigned a failing grade because of their lack of attendance and who believe that an extraordinary circumstance beyond their control caused an absence may appeal the absence violation directly to the appropriate department chair. The department chair for this particular course is Chair Nancy Risner, nrisner1@ivytech.edu. The appeal
must be in writing with supporting documentation and made within one week of the email notice from the instructor. Students should continue to attend the course and complete course requirements during the appeal process. Attendance is also reported to the Registrar for auditing purposes. Some students may be required to repay part of their Financial Aid, including the Pell Grant, if these audits show poor attendance.

If you miss the final exam; you will receive an FW no matter what your grade would have been otherwise. If you withdraw from the course, you could lose your financial aid. Earning a D (or higher) may be better than receiving a W.

**STUDENT APPEAL/GRIEVANCE PROCESS**: Students who are experiencing difficulties/conflict in a class need to speak with their instructor FIRST, unless the particular circumstances of the conflict dictate otherwise. Once that avenue of inquiry has been exhausted, students may take their concerns to Michele Moore mmoore@ivytech.edu

If a resolution cannot be reached at this level the student will be directed to the Department Chair for Biological & Chemical Sciences, Nancy Risner at nrisner1@ivytech.edu.

If a resolution cannot be reached at this level, the student will be directed to the Dean of General Education, Neil Anthony (nantony@ivytech.edu). All issues must be presented in written form to the appropriate individual.

Following this hierarchy is imperative. Students who fail to follow this procedure will be sent back to the appropriate level before their particular issues will be heard at a higher level.

Further details on this procedure can be found in the Student Handbook, located at http://www.ivytech.edu/Muncie/rights.htm

If you are encountering a problem please let your concerns be known by following this outlined procedure. Do not wait until the semester is over to let your issues be heard!

**Additional Statements Regarding Microbiology lab:**

1. Missing laboratory work will cause students to miss important laboratory safety procedures. If a student misses a laboratory class, the student must make arrangements to attend an open-lab session to make up the missed work. Making these arrangements includes contacting your regular instructor as soon as possible and traveling to the location of the open-lab session. Missed work will be documented and this document will be forwarded to open-lab personnel.
2. Starting with Laboratory #3, any part of a missed lab must be made up before a student can attend a subsequent lab. This is for safety reasons.

3. All labs that are late due to a student attending an open-lab instead of the regular lab time will incur grade deduction.

4. It is the responsibility of the student to obtain a signed form of completion from the instructor of the open-lab session. This form must accompany late lab work handed in to the regular instructor. Late lab work will not be accepted without this form.

Departmental follow-up to the BIOL 211 laboratory attendance policy:

1. The make-up lab days and times will be published in the course syllabus or announced by instructor. Anderson open lab hours will be Monday and Tuesday 12:00-1:00. Possible Open lab hours in Muncie and Marion will be determined by available space and faculty. Students may have to travel to make up missed work. Students may not miss their regularly scheduled class to make up lab work. This is a self-defeating situation. The student must schedule open-lab times around BIOL 211 offerings.

2. Faculty will communicate by email using a make-up form and that will be filled out immediately at the end of class by instructors and submitted. All Microbiology instructors will have to use this format for maintaining accurate records of missed and made-up lab work.

3. Faculty will communicate regarding materials and lab sequence at each campus. Instructors will be aware of schedule events that may put one class a bit behind another class.

MAKE-UP POLICY: There will be NO make-up tests for the quizzes, lecture and lab tests (Practicals). However, you may drop the lowest lecture test grade. Lab Exams cannot be made up. Class projects (crossword puzzles, essays, cartoon, etc) must be turned in at the beginning of the class in which they are due for full credit. Small group activities are due at the indicated times as noted by the instructor. These may not be able to be made up.

LAST DATE TO DROP: “LAST DAY TO WITHDRAW FROM SIXTEEN WEEK CLASSES: FOR FALL 2014 – NOVEMBER 15, 2014  Do not withdraw from any Ivy Tech class without discussing the long term effect this may have on your financial aid with an advisor.

To withdraw from a class, you must complete a change of registration form, and submit it to the Registrar’s Office before this date. Since the Registrar’s Office is not normally open on the weekend, you should submit the change of enrollment form before 5 pm, Friday November 14, 2014. Before you withdraw from a class, you should discuss the matter with your instructor and your advisor. They will help you determine if a withdrawal is actually the best course of action.”
WITHDRAWAL POLICY CONCERNING NURSING STUDENTS:
Please be advised of this new policy concerning withdrawal from a course:
Students in the nursing program can take a course only twice. A withdraw counts
as one time. The highest grade recorded will become the grade for that course.

RIGHT OF REVISION STATEMENT: The instructor reserves the right to make
changes in the syllabus as the semester progresses to accommodate progress of the class,
incorporation of selected timely activities, weather related events, etc. An updated
syllabus calendar and grading scheme will be provided.

ACTIVITIES SCHEDULE: (Tentative) See Calendar Handout.

LABORATORY PROTOCOL AND EXPECTATIONS: In addition to the standard
Laboratory Safety Precautions, microbiology requires additional safety requirements:

1) Lab coats or scrubs must be worn in lab at all times. You may wear scrubs or
other work related clothing to class after you have worked in a clinical facility.
Do NOT wear scrubs, etc. to clinical facilities or with patients after lab.

2) Proper hand washing techniques and standard universal precautions must be
exercised as all times. Report any accidents or potentially hazardous behaviors
immediately to instructor. If you have a cut or lesion on your hands or arms,
notify the instructor who will give instructions as to how to protect yourself.
Wash hands and use hand sanitizer after each lab.

3) Wear appropriate and safe clothing to lab. Students with long / fluffy hair must
use hair bands, etc. to keep hair from eyes and flames of Bunsen burner. The
method by which headscarves or hijabs are worn will be determined at the
discretion of the instructor to maximize safety issues. Labs include staining
techniques may damage clothing. Wear snug, simple, inexpensive clothing to
lab. Tank tops, bare midriff tops, etc. and short shorts are not permitted in lab
without a lab coat. Do not use any excessive hair products immediately before
coming to lab because these may be flammable. Safely goggles must be
purchased and must be used when working with open flames, glassware, live
microorganisms and making slides, etc. Do NOT wear sandals, flip-flops, or
open toed shoes.

4) Watch carefully to make sure your Bunsen burner is attached to the correct gas jet
on your side of the lab table.

5) Know the location of the Large Red Button that turns off the gas in lab.

6) Food or drinks, including water bottles, are NOT permitted in class or lab areas.

7) Lab work groups may be changed as the semester progresses to facilitate the most
effective, smoothly working teams. Often more experience students will be paired
with less experienced students to maximize learning experiences.
8) Minimize excessive talking within groups. Conversations should be limited primarily to lab activities.

9) Announced or unannounced lab quizzes may be given before each lab to ascertain that you have read and prepared for the labs.

**Statement of Expected Skills:** This is a highly intensive course in which certain skills are required. You must able to follow oral and written directions. There are specific class and laboratory skills we expect you to have at this time. One of the most important is use of the microscope. Our course objectives do not allow us to reteach microscope skills. If you feel you may be deficient in microscope skills, you have several options:

1) You may withdraw from the class at this time for full refund.
2) You can take advantage of the an open lab time to remedy deficiencies. The times for these sessions will be posted in each lab.
3) You can assume full responsibility for learning as we go and possibly risk falling behind and not passing the course.

**HOW TO SUCCEED IN THIS CLASS:**

1. Attend class. Arrive early if possible, and review.
2. Read the assigned material. You may need to read the material several times. Write down the important ideas found in the reading assignment. Ask yourself questions about the reading as you read through the material. Quiz a friend over the material.
3. Study. Time spent thinking about the course concepts is essential for an understanding for those concepts to take place. Many students study better with friends, but you should also reserve some private study time for yourself to help prepare for the individual exams and reading quizzes. Study at regular intervals; for a 3 credit hour class, 1 to 1.5 hours a day is appropriate. Find a quiet calm place to study. For private study, the library is a good choice.
4. Use the course resources. Course resources include texts, notes, and etc., but they also include classmates, tutors, and the instructor. By making friends with your classmates, you improve your social skills, enlarge your people network, find study partners, and make the class more enjoyable. Your classmates may explain some things in ways that you understand better than the instructor’s approach. Tutoring is another course resource. *Ivy Tech provides free tutoring.* Don’t wait until halfway through the course if you’re having any trouble. If you would like to work with a tutor, contact the Academic Support Center on your campus or the Life Science Lab Teacher on your campus.
5. Take pride in your workmanship on the assignments. Put forth your best effort. Realize that we need to work together to find success

**Class Website:** A class web site will be used throughout the semester. The web site will also be used for Lab 2 as well as the unknown lab activities. The address is [http://faculty.ivytech.edu/~bsipe](http://faculty.ivytech.edu/~bsipe) Click on BIO211 HOME PAGE-Ivy Tech-Faculty-Web to pull up the course menu.
Personal Grade Report Number Form

I will be providing a grade report summary sheet several times throughout the semester after each major test or lab practical. I will give you a 4-digit number that has been randomly generated. If you want to substitute any other 4-digit number (this number cannot begin with a zero), mark out the number given to you and substitute your number. I will record your number in my grade book and return this form to you the next class period. Unless you tell someone your number, only the two of us will know your report number.

Your Report Number is ________________

Name (Please print): ________________________________

Signature: _______________________________________

Section Number: ______________

Date: __________________________
Person Introduction

1. Name

2. Address

3. Home Phone:
   email:
   cell phone:
   work phone (if appropriate):

4. Courses now taking

5. Where working

6. Birth space (first, middle youngest?)
   Family, children

7. Hobbies

8. Something you're proud of......

   Something you'd like for me to know about yourself

9. Proposed major

10.

11. Why have you chosen your particular profession?

12. Previous work experience