

Bluegrass Community & Technical College  
An Equal Opportunity Institution

**Spring 2016 Syllabus and Course Objectives-BIO 209**  
Dr. Julia Mallory Craven (859)684-0329 or jcraven0001@kctcs.edu

<b>Course Title:</b>	Introduction to Microbiology Laboratory
<b>Course Identification:</b>	BIO 209-J001, #3847 Tuesday and Thursday 11 :30-1 :30, OSB 244
<b>Credit Hours/Contact Hours:</b>	2/4
<b>Prerequisites:</b>	One unit of chemistry or consent of instructor; BIO 226 or concurrent
<b>Instructor:</b>	Dr. Julia Craven OSB 244 , (859)-245-4108 <a href="mailto:jcraven0001@kctcs.edu">jcraven0001@kctcs.edu</a> Office hours: Tuesdays and Thursdays 10:30-11:30 and 1:30-2:00
<b>Division:</b>	Natural Sciences
<b>Department:</b>	Biological Sciences
<b>Biology Area Coordinator:</b>	Becky McCane, OB 234A, 246-6442 <a href="mailto:becky.mccane@kctcs.edu">becky.mccane@kctcs.edu</a>
<b>Natural Sciences Division Assistant Dean:</b>	Shirley Whitescarver, OB 325C, 246-6465 <a href="mailto:shirley.whitescarver@kctcs.edu">shirley.whitescarver@kctcs.edu</a>
<b>Natural Sciences Division Office Manager:</b>	Phyllis Cunningham, OB 234, 246-6445 <a href="mailto:phyllis.cunningham@kctcs.edu">phyllis.cunningham@kctcs.edu</a>

**Official Course Description:** Laboratory exercises in general microbiology. Laboratory 4 hours per week.

*General Education Competencies*

- A. Knowledge of human cultures and the physical and natural worlds through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts.
- B. Intellectual and practical skills, including
  - inquiry and analysis
  - critical and creative thinking
  - written and oral communications
  - quantitative literacy
  - informative literacy
  - teamwork and problem solving
- C. Personal and social responsibility, including
  - civic knowledge and engagement (local and global)
  - intercultural knowledge and competence
  - ethical reasoning and action
  - foundations and skills for lifelong learning
- D. Integrative and applied learning, including synthesis and advanced accomplishment across general and specialized skills

*Student Learning Outcomes for Natural Sciences*

In BIO 209, students will learn to:

1. Demonstrate an understanding of the methods of science inquiry by
  - Identifying and characterizing bacterial and fungal cultures
  - Describing the correct use and application of physical and chemical methods of microbial control
  - Demonstrating the correct use of the microscope
  - Demonstrating proper use of laboratory apparatus  
(LEAP A and B)
2. Explain basic concepts and principles in one or more of the sciences by
  - Demonstrating proper aseptic laboratory techniques
  - Relating laboratory tests for the identification of microbes to microbial metabolism and genetics  
(LEAP A and B)
3. Apply scientific principles to interpret and make predictions in one or more of the sciences by
  - Preparing and interpreting microscopic slides of microorganisms
  - Preparing bacterial and fungal cultures for study and identification
  - Demonstrating proper aseptic laboratory techniques
  - Describing the use of immunology to diagnose infectious diseases  
(LEAP A, B, and D)
4. Explain how scientific principles relate to issues of personal and /or public importance by
  - Describing the diagnosis of common infectious diseases
  - Describing the role of parasites in human disease
  - Describing the role of the laboratory in food and water microbiology  
(LEAP A, B, C, and D)

**Textbooks:**

- Required:** *Laboratory Manual to accompany Bio 209, Spring 2016*, by Professor Susan C. Kavanaugh
- Optional :** *A Photographic Atlas for the Microbiology Laboratory*, by Michael J. Leboffe & Burton E. Pierce

**Laboratory Content:** Labs will be used to perform experiments and investigations illustrating lecture principles. Also, lab time will be used to give quizzes, practical exams, and other assignments.

**Laboratory Supplies:** (available at BCTC Bookstore)

1. A full-length, long-sleeved fluid resistant lab coat that can be worn over your clothing at all times in the lab is required. You will not be permitted to attend lab without one; this is an OSHA safety requirement. These are available for purchase at the BCTC Bookstore. You will leave your lab coat in OSB244 throughout the semester.
2. A black "Sharpie" glass marker for labeling test tubes and petri dishes
3. One box of plastic gloves. This is an OSHA safety requirement.

**Laboratory Attendance:**

1. Attendance at all laboratory sessions is mandatory.
2. A student will be allowed to miss **one (1) excused lab** without penalty.
3. If a student must miss a lab period, a valid, documented, written excuse (to be determined by the lab instructor) must be provided.
4. Each unexcused lab may result in a **5% decrease** in the final grade.

**Withdrawal Policy:**

1. A student may withdraw from BIO 209 without the consent of the instructor until **Monday, March 7 12, 2016**.
2. After **March 7, 2016** the student will not be permitted to withdraw from BIO 209 **without written permission from the instructor**.
3. The student must submit a written request to withdraw to the instructor; no one other than the instructor can sign the withdrawal request.

**Make-up Work Policy:**

1. If a student must miss a lab or an exam, he/she must contact the lab instructor within 24 hours.
2. The student must provide a written, documented, valid excuse (to be determined by the instructor). Examples of valid excuses include illness, death of a family member, traffic accident, or religious holiday.
3. Due to the perishable nature of the lab materials and cultures, any missed lab up prior to the next lab period.
4. If a student misses more than one exam, he/she must withdraw from the course or will receive a grade of zero for that exam.

**Late Work Policy:** No late work will be accepted.

**Other Policies:**

1. All food, drinks, and smoking or chewing tobacco is prohibited in the laboratory.
2. Students must be on time for lab. Safety instructions and quizzes are given at the beginning of each lab period. A student who is late may be counted absent at the discretion of the instructor.
3. Cheating will not be tolerated under any circumstances. If a student is determined to be cheating, he/she will be dismissed from the exam and from the course with an "E".

4. If you have any questions concerning these policies, refer to the *Student Code of Conduct*, available in OB 200 or at <http://www.kctcs.edu/student/code/htm>. Failure to abide by these policies will be grounds for dismissal from the course.

**Weather policy:** Inclement weather or other emergencies may cause BCTC classes to be cancelled or delayed. If classes are **delayed**, you are to report to school at the announced time and attend the class that you would NORMALLY attend at that time. Information about cancelled or delayed classes will be posted on the BCTC website. Many local radio and television stations will also carry announcements. Instructors may send email messages and/or Blackboard announcements regarding assignments for a class that was cancelled. Students are responsible for checking these sources for such messages. \*\*

**\*\*If this class is delayed or cancelled, I will post an announcement on Blackboard and send out an email message. I also suggest subscribing to SNAP, our official emergency notification system, that will send alerts to your computer and/or phone.**

**SAP Statement:** If you receive grants and/or loans to pay for this class, you should be aware that withdrawing from or failing this class may affect your future financial aid eligibility. You should review the Financial Aid Satisfactory Academic Progress (SAP) policy for additional information. Contact the Financial Aid Office for a copy of the SAP policy. You are expected to attend class and have the required textbook(s) even though you have not received your financial aid or you may have an appeal in process

**Reasonable Accommodations:** If a student has a special need that may require an accommodation or assistance, please inform the instructor of that fact at the beginning of the course or as soon as the special need is identified.

**Code of Student Conduct:** All rules and regulations set forth in the current edition of the *Student Code of Conduct* will be followed in this course. Failure to abide by these policies will be grounds for dismissal from the course. If a student has any questions concerning these or any other policies, he/she should refer to this booklet, available in Room 200 OB or on the Web at <http://www.kctcs.edu/student/code/htm>.

**Instructional Assistance:** Several avenues are available to the student to assist in preparing for this course. Please utilize the instructors' office hours. The textbooks and lab manuals are on reserve in the library. Also, free tutoring is available (hours TBA).

#### **Course Requirements and Grading Criteria:**

1. There will be **three (3) 100 point lab exams** given during this course, each worth **25%** of the total course grade. Exams will be a combination of practical and written questions.
2. In addition to the lab exams, lab quizzes will be given at the beginning of the lab period at the discretion of the instructor. Other additional assignments such as reports may be given as needed throughout the semester. The **lab quiz/assignment average** will count as **25%** of the total course grade.
3. A modification of your final grade may be made at the discretion of the instructor based upon effort, professional attitude, attendance, or other extenuating circumstances.

#### **4. Grading Scale:**

A	=	90-100%	C	=	70-79.9%	E	=	below 60%
B	=	80-89.9%	D	=	60-69.9%			

## BIO 209 TENTATIVE LAB SCHEDULE-SPRING, 2016

Date	Topic	
(T) Jan 12	Introduction/Syllabus Visit the BIO 209 Blackboard website. Review the Safety in the Lab Powerpoint slideshow presentation and 'Know your specimen collection techniques' article	Manual pp. 1-2
(R) Jan 14	Introduction to Microbes, Environnemental Isolates/Hand washing	Supplement
(T) Jan 19	Bacterial Media, Specimen Collection/ Microbial Growth & Media/Aseptic Techniques	Manual pp. 3-11
(R) Jan21	<b>Due: Questions pp. 10-11 due</b> <b>QUIZ #1-Aseptic technique, Specimen Collection and Storage, Bacterial Cell Structure, Bacterial Media</b> Microbial Media Growth Results Smear Preparation/Use of the Microscope	Manual pp. 12-14
(T) Jan 26	The Gram Stain Begin Special Stains	Manual pp. 15-20 Questions pp. 19-20 Manual pp. 21-25
(R) Jan 28	<b>Questions pp. 19-20 due</b> Special Stains (cont) Microbial Growth Curve	Manual pp. 21-25 Manual pp. 26-28
(T) Feb2	<b>QUIZ #2-Parts and Functions of Microscope, Total Magnification, Gram Stain Procedure, Capsules, Endospores, Flagella</b> Growth Curve Analysis Identification of Staphylococci	Manual pp. 28-32 Manual pp. 33-36
(R) Feb 4	Discuss Identification of Staphylococci Identification of Streptococci	Manual pp. 37-42
(T) Feb 9	Discuss Identification of Streptococci Identification of Neisseriae	Manual pp. 43 Manual pp. 44-48

(R) Feb 11	<b>QUIZ #3-Identification of <i>Staphylococci</i>, <i>Streptococci</i>, <i>Neisseriae</i></b> Identification of Enterobacteriaceae	Manual pp. 49-51
(T) Feb 16	Ames Test	Manual pp. 52-54
(R) Feb 16	Interpret Ames Test and Review for EXAM 1	
<b>(T) Feb 23</b>	<b>LAB EXAM #1</b>	
(R) Feb 25	Viral Plaque Assay	Manual pp. 55-57
(T) Mar 1	Discuss Viral Plaque Assay Identification of Fungi	Manual pp. 58-65
(R) Mar 3	Continue Fungi Identification of Protozoa/ Arthropod Vectors	Manual pp. 58-65 Manual pp. 66-67
(M) Mar 7	Last Day to withdraw from this class	
(T) Mar 8	<b>QUIZ #4-Phages and Fungi</b> Identification of Protozoa and Arthropod Vectors Identification of Helminths	Manual pp. 66-67 Manual pp. 68-69
(R) Mar 10	Identification of Helminths Food Microbiology	Manual pp. 68-69 Manual pp. 70-74
Mar 15, 17	SPRING BREAK	
(T) Mar 22	<b>QUIZ #5-Protozoans, Helminths</b> Food Microbiology	Manual pp. 70-74 Supplement
(R) Mar 24	Yeast Genetics, Review for Lab Exam #2	
(T) Mar 29	<b>LAB EXAM #2</b> Bring Soil to Next Class	
(R) Mar 31	Soil weight/drying Soil Serial Dilutions Pour and Spread Plate Techniques	Manual pp. 75-78

(T) April 5	Actinomycete Isolation and Dry Weight Introduction to Antibiotics and Case Studies	Manual pp. 75-78
(R) April 7	Disc Diffusion: Antibiotic Sensitivity Testing Disinfectants and Antiseptics	Manual pp. 79-89
(T) April 12	Discuss Disc Diffusion Ultraviolet Irradiation of Microbes Actinomycete Testing for Antimicrobial Activity	Manual pp. 79-89
(R) April 14	Discuss UV Irradiation Diagnostic Immunology Water Quality	Manual pp. 90-95 Manual pp. 96-102
(T) April 19	<b>QUIZ #6-Disc Diffusion and Disinfectants</b> Water Quality Testing	Manual pp. 96-102
(R) April 21	Field Trip TBA	
(T) April 26	<b><u>LAB EXAM #3</u></b>	