## Course / Prefix Number: MCB 2010C  
### Course Title: Microbiology with Lab

<table>
<thead>
<tr>
<th>CRN:</th>
<th>20399</th>
<th>Credit:</th>
<th>4</th>
<th>Term:</th>
<th>Spring 2015</th>
</tr>
</thead>
</table>

### Course Catalog Description:
A survey of microbial forms with emphasis on bacteria, their morphology, physiology, and genetic mechanisms. This course provides laboratory support for the concepts taught in lecture.

### Instructor:
Dr. Chulaporn Muniganondh  
Contact Information: E-mail: muniganc@lssc.edu  
Office Location: SL Room 2  
Office Hours: By appointment only

### All students are required to use Lakehawk for official college e-mail communications. See the college webpage for instructions on activating Lakehawk.

### Prerequisites:
C or higher in BSC 1010C, or A in AP Biology in High School within the last 7 years, or satisfactory completion of the BSC 1010C Credit by Exam

### Co-requisites:
None

### Textbook and Other Course Materials:
ISBN-9780321733603  
**LAB MANUAL:** Dr. R.W. Osteen, Jr., Hand out.  
**SOFTWARE:** Virtual Unknown. Intuitive Systems, Inc.

### Technology and Online Computer Access Requirements:
Blackboard and Blackboard Collaborate are used in this class.

### Course Objectives:
(what the course will do)

1. To provide a basic understanding of viruses, bacteria, yeasts, molds, protozoa, chlamydia, rickettsia, and helminthes.
2. To provide knowledge of various types of pathogens, their characteristics, methods of identification, and life cycles.
3. To emphasize the cause, transmission, control prevention, and treatment of disease.
4. To improve laboratory skills and to increase knowledge of the techniques and use of lab equipment in microbiology.

### Student Learning Outcomes (SLOs) Assessed in this Course:
(what the students take with them beyond this course)

In order to understand the world of microbiology, the first portion of the course is designed to give the student a basic background in microbiological terms and concepts. A review of the cellular function of microbes reminds the student that these are indeed living organisms (except viruses). They have a cellular structure, metabolic pathways, enzymes, the capability of reproduction, and the ability to cause disease. It is expected that the student will understand these areas, apply them, and relate them to the types and spread of disease. An awareness, understanding, and respect for these microbes are necessary for survival in life.

The student needs to become familiar with the different types of microbes – viruses, bacteria, chlamydia, rickettsia, protozoa, fungi, and helminthes. Each group is detailed in lecture or lab. Their structure, method(s) of reproduction, relationships to each other and us, and abilities to exist in nature will be studied in order to understand and apply microbiology.

The student must become aware of and understand the body’s defenses against these microbes. We come in contact with microbes daily. Nonspecific and specific immunity in
humans and animals are to be understood as the means in humans and animals to survive our
daily contact with these microorganisms. The different types of immunity are detailed.

Since most of the pathogens students will come in contact with are bacteria, a thorough
comprehension of their characteristics, colony appearances, growth media required, and
staining techniques is needed. Students will grow nonpathogenic bacteria in the lab,
understand the pure culture definition, appreciate their nutrient requirements, be able to stain
them, describe their shape and arrangement, gram stain if applicable, and use aseptic
techniques when dealing with them. The techniques used in handling these microbes are
important and need to be fully understood and thoroughly practiced and appreciated. In
addition no student should leave this course without an awareness of and appreciation for
aseptic technique.

Since most of our students will eventually work in a hospital or medical environment, a large
portion of this course is designed towards discussing the different pathogens and the diseases
they cause. Important cocci, bacilli, and spirochete pathogenic organisms are explained in-
depth in lecture.

The student must become competent concerning these dangerous organisms. Students will see
patients harboring them and will have to avoid contracting these organisms from them as well.
How they cause disease, their ease of transmission, and the outcomes of their disease
processes are thoroughly discussed. In addition, colony characteristics, enzymes produced,
and virulence are discussed as necessary. In addition to bacteria, the student is expected to
become familiar with the fungal, protozoan, and viral diseases. Growing fungi and observing
their structure is done in a laboratory exercise. Important viral diseases are discussed in lecture
and need to be well understood by students. Their modes of transmission, disease processes,
and methods of avoidance are expected to be understood not just for viruses, but also for
protozoans and fungi as well. In summary, many of our students will be working in a microbe-
hostile environment. A healthy respect for all microbes is a necessity.

**Academic Integrity:**

The successful functioning of the academic community demands honesty, which is the basis
of respect for both ideas and persons. In the academic community, there is an ongoing
assumption of academic integrity at all levels. There is the expectation that work will be
independently thoughtful and responsible as to its sources of information and inspiration.
Honesty is an appropriate consideration in other ways as well, including but not limited to the
responsible use of library resources, responsible conduct in examinations, and the responsible
use of the Internet. (See college catalog for complete statement.)

**Important Information for Students with Disabilities:**

Any student with a documented disability who requires assistance or academic
accommodations should contact the Office for Students with Disabilities immediately to
discuss eligibility. The Office for Students with Disabilities (OSD) is located on the Leesburg
Campus, but arrangements can be made to meet with a student on any campus. An
appointment can be made by calling 352-365-3589 and specific information about the OSD
and potential services can be found at [www.lssc.edu](http://www.lssc.edu), then go to “Quick Links” and click on
Disability Services.

**Privacy Policy (FERPA):**

The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR
Part99) is a Federal law that protects the privacy of a student’s education records. In order for
your information to be released, a form must be signed and in your records located in the
Admissions/Registrar’s Office.
### Attendance / Withdrawal Policies:

Missing any assigned class or lab session always reduces your opportunity for learning and has an adverse effect on the final grade earned in this course.

**Audit:**

A student may change from credit to audit only during the ADD/DROP period. Go to Admissions for proper forms. The course will appear on your record as an audit, but no college credit will be granted. Auditors cannot take lecture exams, lab exams, lab quizzes or the lecture final exam.

**Withdrawal:**

Students who wish to withdraw from the course may do so with a grade of “W” until the end of the withdrawal period for the term. It is the student’s responsibility to withdrawn from this class. No withdrawal will be permitted after the deadline.

### Withdrawal Deadline:

March 25th, 2015

### Methods of Evaluation:

Overall Course Grade:

Your overall (TENTATIVE) course grade is determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Exams</td>
<td>400</td>
</tr>
<tr>
<td>Final Lecture Exam</td>
<td>100</td>
</tr>
<tr>
<td>Lab Exams and Quizzes</td>
<td>200</td>
</tr>
<tr>
<td>Unknowns Identifications and Lab Reports</td>
<td>150</td>
</tr>
<tr>
<td>Group Projects</td>
<td>75</td>
</tr>
<tr>
<td>Assignments</td>
<td>50</td>
</tr>
<tr>
<td>Class Attendance</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

### Grading Scale:

- 900 -1000 = A
- 800 - 899 = B
- 700 - 799 = C
- 600 - 699 = D
- 0 - 599 = F

### Course Calendar:

Please see updated Course Calendar in Blackboard.

### Classroom Rules and Policies:

This class accepts responsibility to maintain the Honor Code at all times. All communications must be professional and respectful. Violations of academic integrity including cheating, plagiarism and fabrication of information submitted on projects, assignments, reports, or exams will not be tolerated. All electronic devices must be turned off in the class.

### Violence Statement:

Lake-Sumter State College has a policy of zero tolerance for violence as stated in College Board Rule 2.17. Appropriate disciplinary action will be taken in accordance with Board Rule 2.17.

### Syllabus Disclaimer:

Information contained in this syllabus is, to the best knowledge of this instructor, considered correct and complete when distributed to the student. The instructor reserves the right, acting within policies and procedures of Lake-Sumter State College, to make necessary changes in course content or instructional techniques without prior notice or obligation to the student.
# TENTATIVE LECTURE SCHEDULE

**MCB 2010 CRN 20399**

<table>
<thead>
<tr>
<th>WEEK OF</th>
<th>LECTURE LESSON</th>
<th>TEXTBOOK CHAPTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 01/07/15</td>
<td><em>Course introduction, discuss syllabus, make additional class rules, seal a deal and sign personal data sheet. Blackboard Collaborate and Blackboard Course Contents Preview.</em></td>
<td></td>
</tr>
</tbody>
</table>
| II 01/12/15 | Lesson 1: The Main Themes of Microbiology.  
Lesson 2: Cell Biochemistry.  
Lesson 3: Eukaryotic and Prokaryotic Cell Structures. | Chapter 1, 2, 3, 4, 8, 10, 11, 13 |
| III 01/19/15 | Review  
**EXAM 1**  
Lesson 1, 2, 3 |  |
| IV 01/26/15 | Lesson 4: Bacteria, Viruses, Fungus, Protozoa, and Parasitic Helminthes.  
Lesson 5: Principles of Disease and Epidemiology Pathogen Transfer, and Microbial Mechanisms of Pathogenicity. | Chapter 12, 14, 15 |
| V 02/02/15 | Assignment 1 Due and Review  
**EXAM 2**  
Lesson 4, 5 |  |
| VI 02/09/15 | Lesson 6: Nonspecific Immunity, Normal Biota, Nonspecific Host Defenses.  
Lesson 7: Specific Immunity.  
Lesson 8: Bacterial Metabolism and Growth, Microbial Genetics, Biotechnology | Chapter 5, 6, 8, 9, 16, 17, 18, 20 |
| VII 02/16/15 | *PROJECT 1*  
Microbes |  |
| VIII 02/23/15 | Assignment 2 Due and Review.  
**EXAM 3**  
Lesson 6, 7, 8 |  |
| IX 03/02/15 | Lesson 9: Microbial Diseases of the Skin and Eye.  
Lesson 10: Microbial Diseases of the Nervous System. | Chapter 21, 22 |
| X 03/09/15 | SPRING BREAK |  |
| X 03/16/15 | Review  
**EXAM 4**  
Lesson 9, 10 |  |
| XI 03/23/15 | Lesson 11: Microbial Diseases of the Cardiovascular and Lymphatic Systems.  
Lesson 12: Microbial Diseases of the Respiratory System. | Chapter 23, 24 |
| XII 03/30/15 | Review  
**EXAM 5**  
Lesson 11, 12 |  |
| XIII 04/06/15 | Lesson 13: Microbial Diseases of the Digestive System.  
Lesson 14: Microbial Diseases of the Urinary and Reproductive Systems.  
**Assignment 3** Due and Final Review. | Chapter 19, 25, 26 |
| XIV 04/13/15 | *PROJECT 2*  
Microbial Diseases |  |
| XV 04/20/15 | FINAL EXAM |  |
# TENTATIVE LAB SCHEDULE

**MCB 2010 CRN 20399**

<table>
<thead>
<tr>
<th>WEEK OF</th>
<th>LAB TITLE</th>
<th>LAB BOOK</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 01/07/15</td>
<td><em>Lab introduction,</em> discuss <em>Lab Manual, lab syllabus, lab safety and rules.</em></td>
<td>Hand out</td>
</tr>
<tr>
<td>III 01/19/15</td>
<td><em>The Microscope and VU preview.</em> Quiz I</td>
<td>Hand out</td>
</tr>
<tr>
<td>IV 01/26/15</td>
<td>Virtual lab: Negative Stain, Acid-Fast Stain, and Spore Stain.</td>
<td>Hand out</td>
</tr>
<tr>
<td>V 02/02/15</td>
<td><em>Simple Stain, Gram Stain, Negative Stain, Acid-Fast Stain, Spore Stain.</em> Quiz II</td>
<td>Hand out</td>
</tr>
<tr>
<td>VI 02/09/15</td>
<td>Virtual lab: Aseptic techniques, Isolation techniques, Sterilization techniques, Enumeration and Dilution methods.</td>
<td>Hand out</td>
</tr>
<tr>
<td>VII 02/16/15</td>
<td><em>VU Report 1 Due Media and Biochemistry tests and Midterm Review.</em></td>
<td>Hand out</td>
</tr>
<tr>
<td>VIII 02/23/15</td>
<td><em>Environment cultures.</em> MIDTERM LAB EXAM</td>
<td>Hand out</td>
</tr>
<tr>
<td>IX 03/02/15</td>
<td>Virtual lab: Media and Biochemistry tests Continued. Fungi, Parasitic Helminthes and Insects. Quiz III</td>
<td>Hand out</td>
</tr>
<tr>
<td>X 03/09/15</td>
<td>SPRING BREAK</td>
<td>Hand out</td>
</tr>
<tr>
<td>XI 03/16/15</td>
<td><em>VU Report 2 Due Serological test, Skin, Throat and Rectal cultures. Fungi,</em></td>
<td>Hand out</td>
</tr>
<tr>
<td>XII 03/23/15</td>
<td>Virtual lab: Bacterial Identification.</td>
<td>Hand out</td>
</tr>
<tr>
<td>XIII 03/30/15</td>
<td><em>Bacterial Identification Continued.</em></td>
<td>Hand out</td>
</tr>
<tr>
<td>XIV 04/06/15</td>
<td>VU Report 3 Due and Final Review. Bacterial Identification Lab Report Due.</td>
<td>Hand out</td>
</tr>
</tbody>
</table>

**FINAL LAB EXAM**