

Generic syllabus for MCB2000L, 3020L and 3023L

Summer 2013

Contact Information - Course Coordinator

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TAs for each section will be announced on the first day of class.

Please contact your TAs for any section specific questions!

Course time and location:

Labs will be held in the Microbiology and Cell Science Building, Museum Drive, Room 1030 and 1026 (teaching labs). On the first day **please make sure you are in the right section in the correct room**. Please check on ISIS for your correct section before you come to the first lab. Make sure you know who your TA is.

Labs start during the first week of classes.

Welcome!

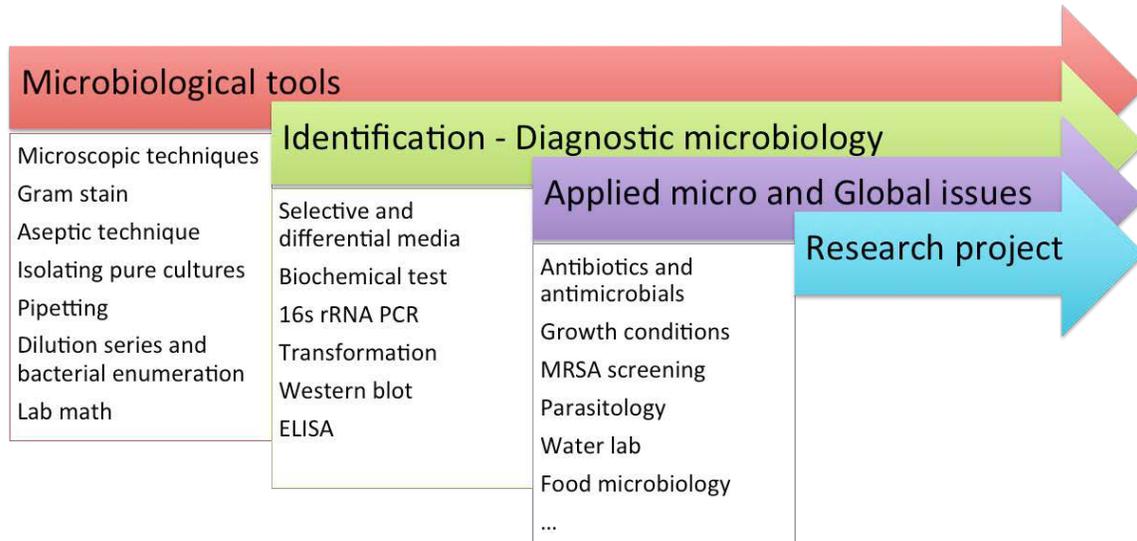
Welcome to the Microbiology Laboratory. In this course, we will learn techniques used in microbiology and how they affect all aspects of our lives. Many of you will be familiar with some of the topics covered in the lab exercises, but hands-on experience is invaluable to really understand many of the techniques taught. Your TAs and I will work closely with you to ensure that you have a good grasp of the topics and methods covered.

We have incorporated a number of projects and student initiated activities in to the syllabus as well as student presentations to provide you with a variety of learning experiences. Our ultimate goal is for you to complete the semester with the feeling that microbes are important in every aspect of our lives – and with the notion that you have learned something you can use for the rest of your life and not just to get an A!

I would like to emphasize that we are here to help you. Your TAs and I hope to see you all during open lab or our office hours (or by appointment), especially if you have questions or need assistance.

Course Overview

This is an undergraduate laboratory course to learn and explore a variety of microbiological techniques, skills and concepts. Topics that will be covered include visualization and enumeration of microbes, traditional, molecular and immunological diagnostic techniques, basic techniques used in parasitology, virology and mycology. Students will generate, analyze and interpret data, design and conduct a small research project and gain experience in technical writing and presentation skills. You will gain awareness about the ubiquity and diversity of microbes and the good and bad roles they play in your every day life.



What you will know at the end of the course

A student successfully completing basic microbiology lab course will demonstrate ability to use, explain and practice.....

Laboratory Safety

1. **Microbiological procedure**, including, proper lab etiquette (hand washing, disinfecting lab benches and equipment), follow methods for aseptic transfer, reporting all spills, understanding OSHA's Blood borne Pathogen Standard, proper disposal of different types of waste, following good lab practice, including returning materials to proper locations, proper care and handling of equipment
2. **Protective procedures**, Including tying long hair back, wearing personal protective equipment (lab coats, gloves when needed, closed toed shoes); No eating or drinking in the laboratory
3. **Emergency procedures**, including, locating and properly using emergency equipment, reporting all injuries immediately to the instructor

Laboratory Skills

1. **Use a bright field light microscope** to view and interpret slides, properly prepare slides and various stains to visualize microbes

2. **Use micropipettes** and understand the correct volume and pipette tips to use for each experiment, comprehend accuracy and precision to have a good pipetting technique
3. Properly **use aseptic techniques**, to obtain and maintain a pure culture
4. **Identify unknown organisms** by using appropriate microbiological media and test systems, and molecular methods
5. **Estimate the number of microbes** using dilution techniques, spectrophotometer and a hemocytometer; predict how various growth conditions affect the number of life cells
6. Perform and interpret a **disk diffusion assay** and understand how to test for the effectiveness of a variety antimicrobial agents
7. Perform and interpret an **ELISA assay** and know techniques how to determine antibody prevalence in a patients immune response to pathogens;
8. Be able to describe the problem of **global water contamination**, and understand the prevalence of global occurrence of parasites, perform and interpret a **fecal float** and conduct water purification methods to prevent water born infections
9. Use standard microbiology **laboratory equipment** correctly (including, incubators, centrifuges, vortex, spectrophotometer, PCR machine, imaging system) and follow experimental protocols

Laboratory Thinking Skills

1. **Understand and apply the scientific method**, including formulation of a clear, answerable question and hypothesis; research of peer reviewed scientific literature, conduct and execute appropriate experiments with correct controls, evaluate, analyze and interpret results
2. **Analytical skills**, including collection and organizing data in a spreadsheet, analyze and presenting data in an appropriate form (graphs, tables, figures, or descriptive paragraphs), assessing the validity of the data (means, standard deviation, significance) and drawing appropriate conclusions based on the results
3. **Communication skills**, including preparation of presentations of current topics in microbiology, developing educational materials and presenting lab results or findings to your peers
4. **“Big picture” skills**, including understanding how microbes play a beneficial and detrimental role in our lives and the environment. Students should be able to read and interpret current news and popular literature relating to microbiology and evaluate the scientific merit of the information presented. All students should comprehend that science is not “black and white” and that new scientific findings may alter the interpretation of older dogmas. Finally students should get a glimpse of how microbes have always shaped history and affect our every day life in a myriad of ways.

Textbooks and Required reading

NO LABMANUAL is required. All information will be posted on Sakai.

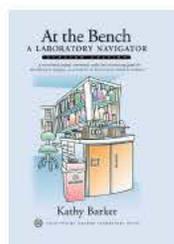
Recommended books:



Photographic Atlas for Microbiology Labs, 4th ed (or any other) by Leboffe & Pierce, ISBN# 978-089582-8729



Lab Math: A Handbook of Measurements, Calculations, and Other Quantitative Skills for Use at the Bench by Dany Spencer Adams
http://www.amazon.com/Lab-Math-Measurements-Calculations-Quantitative/dp/0879696346/ref=sr_1_2?ie=UTF8&qid=1356736187&sr=8-2&keywords=at+the+bench



At the Bench: A Laboratory Navigator by Kathy Barker
<http://www.amazon.com/At-Bench-Laboratory-Navigator-Updated/dp/0879697083>

Modules, reading material and other instructional material will be posted on Sakai or through iTextbook (iPad compatible). Your TA will determine which of the reading materials will be included in the quizzes and assignments.

Getting started

Course Correspondence as well as lab exercises, assignments and exams will be available via eLearning Sakai Website <http://lss.at.ufl.edu/>. If you need any help with the eLearning system please visit the eLearning Help page at <https://lss.at.ufl.edu/help.shtml>. You may also contact the UF help desk at 352-392-HELP, Option 2.

1. All students should **sign up for "Science Daily – Infectious Disease"** (automatic email update) http://www.sciencedaily.com/news/health_medicine/infectious_diseases/ Some class discussions will be based on current news
2. Like the MCS Facebook page for interesting news and current updates; the postings can be part of the class material!
<http://www.facebook.com/UFMicrobiology>
3. Please Remember to check the **Announcements** and **Mail** each day in Sakai. "I did not know about the assignment, deadline..." is NOT an accepted excuse. For this course there are two Sakai sites for the course. Your instructor will have his/her own Sakai webpage where section specific information will be posted, and

“Microbiology is For All Of Us” will post general course information pertinent to all students taking Micro lab.

4. Please **bring your laptop computer or tablet to each lab**. We often will do computer based exercises. Bring a camera, cell phone or tablet to take pictures of your lab results.
5. Throughout the Semester there will be **Open Lab** sessions to provide you with extra hands on time and an opportunity to ask questions and get more experience with the techniques discussed in class. Information regarding open lab will be emailed as schedules are finalized.
6. All assignments, projects and reports are expected to be submitted electronically through Sakai. Each assignment is processed through **Turnitin.com** and as such is checked for plagiarism.
7. **Attendance is mandatory**. If you can help not missing class please don't. Each day new techniques are taught and it is easy to fall behind! Arriving late and not coming to class without an excused absence will affect your attendance grade (10%)
8. Got a Question? Please come see us - we are here to help!

Expectations of the students

Read the **Syllabus** to know your deadlines and exam schedules. Your TA however will announce specific days for your own section so **PAY ATTENTION!**

As student, you are expected to fully **engage yourself** in all aspects of the class

You are expected to **come prepared** to class and have read the assigned reading material and especially watched the introductory videos.

You are expected to **follow our Lab Etiquette** at all times (see next chapter). You have to respect the potential pathogens we are working with.

Attendance to all laboratory sessions **is mandatory** and your instructor will record attendance. Should a conflict arise, notify your lab instructor in advance if possible and find arrangements to make up the missed material and quizzes. Unexcused absences will result in a zero for that day's attendance. You must e-mail your instructor within 24h after the missed lab to qualify for makeup opportunity and provide valid written excuse.

No cheating and plagiarism is allowed. You will receive an automatic 0 without warning if caught for a particular assignment, project or exam.

Student evaluation

Student grades are composed through a multitude of activities, including quizzes, exams, presentations, projects, attendance and participation. FOLLOWING INSTRUCTIONS IS A MUST as well as CREATIVITY WILL BE REWARDED.

Items Graded	% Value
Student Initiated Research Project	20
Participation, Attendance	10
Quizzes	10
Midterm Exam	15
Final Exam	15
Projects, talks, ELN...	30
Total	100

Quizzes

Quizzes will either be given in the lab or assigned to be completed in Sakai. This will be up to your individual TAs. Quizzes will contain material from the upcoming lab and from any previous module. Quizzes can include material from required readings and student presentations. All quizzes are cumulative. The lowest quiz grade will be dropped.

Exams

Exams are designed to test your knowledge of practical skills learned in class and also determine comprehension of the learned material.

Practical component: a large part of the midterm is comprised of a practical exam where

you have to perform the skills and techniques learned over the first weeks of class. Final exam could be a take home or practical exam. Details for each examination will be explained and discussed by your TA. Cheating will automatically result in 0 points without warning and may lead to a report to the Dean of Students Office (DSO).

Reports/presentations

Your TA will assign various projects. Please follow the instructions of your TA exactly. Projects can include role play, presentations, diagnostic project, etc.

Student Initiated Research Project (SIRP)

Each student has the opportunity to work on an independent research project as part of the class. You can work in groups and the project has to be approved by your TA. Your approach has to follow the principles of scientific method. You have to submit a small research proposal and include current papers from the literature as well as a budget for your research. It is possible to conduct a bioinformatics study using existing databases. The final project will be presented as a poster during the last week of class.

Electronic lab notebook (ELN)

You will keep an electronic lab notebook, which contains all your results, answers to questions, projects, observations, etc. This will help you to understand the material better. You can add any information into the ELN. You can use your ELN during the exams – no other material are allowed. Depending on your TA you may be asked to comply with a particular format. In general your ELN should include the following.

- Detailed explanation of the concepts being learned that day
- Key terms/Vocabulary
- A proper protocol
- Data in the form of pictures, graphs, tables, etc

- Results
- Conclusion
- Answer to end of chapter questions

Class/on-line participation and attendance

- Participation in online discussion
- Bringing/sharing environmental samples for wet mount examination
- Bringing/sharing fecal samples with potential parasite eggs for the fecal float (parasitology) lab
- Bringing/sharing fermented food products for the food lab
- Sharing interesting news about microbiology with your class

Project submissions

1. Submissions after the deadline will be treated as late submissions, and 10% of the total assignment points will be deducted for each day after the deadline for 5 days; submission will not be accepted after that.
2. If you experience any problem with e-Learning system or while uploading assignments, contact the helpdesk immediately (352) 392-4357 (select option 2) or e-mail: learning-support@ufl.edu. Retain your e-mail or helpdesk ticket number as documentation of your problem.

Grading

Extra Credit Opportunities will be available throughout the semester at the discretion of your TA. Such Extra Credit Opportunities may include: Attending Open Lab, Presentation of current topic in class and posting it to Wiki, Wiki postings, contribution to discussion board

The grading scale may be adjusted based on class performance.

A	92
A-	90
B+	87
B	82
B-	80
C+	77
C	72
C-	70
D+	67
D	62
D-	60
E	<60</p>

Seating and Locker assignment

Please take the same seat in each class period. We will make notice of your location in the room and a seating chart will be handed out the first day of class.

You will be assigned a personal or shared locker for the period of the class or semester to leave your lab coats and backpack during lab and between lab periods. Please bring a lock for security.

Biosafety in the Microbiology Laboratory

We are regulated and inspected annually by the UF Environmental Health and Safety Department. We follow their guidelines - and you follow our instructions - to prevent any accidents and problems with contaminations. For more information about the regulations go to:

<http://www.ehs.ufl.edu/Lab/EHSintro.htm>

To comply with the University of Florida biosafety requirements **closed toed shoes are mandatory** in the laboratory. You can leave a pair in your locker so you don't forget. **Disposable lab coats will be provided to you** on the first day of class. It is mandatory to wear them at all times. Write your names on your coats and keep them in your lockers. Do not take them home. Do not take anyone else's' coat. Lab coats will be autoclaved and disposed according to UF regulations on the last day of the semester.

Underlying medical conditions

If you have any underlying medical conditions which can affect your **immune system** or make you more susceptible to infectious disease, you must inform your TA and consult with your physician before working in the microbiology laboratory.

For students and TAs with preexisting conditions, including pregnancy, taking immunosuppressive drugs, or who have other medical conditions (e.g., diabetes, immune system disorder) that might necessitate special precautions and it is recommended that they get medical clearance from the infirmary.

<http://shcc.ufl.edu/>

If you notice any unusual symptoms or of any spills or accidents occur, contact your TA immediately.

Please come and see me if you have any concerns (moli@ufl.edu)

Letter of recommendation

You may request a letter of recommendation only if you attend the section I am teaching. I will also write recommendation letters for most students who TA the microbiology laboratories in one of the following semesters. To sign up to TA, fill out the "MCB4934 - Supervised Teaching contract" form in the main office or download at <http://microcell.ufl.edu/PDF/TA-Form6-12contractv2.pdf>

Other UF policies

Academic Honesty

In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and

Conflict Resolution in the Dean of Students Office. It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

<http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php>

(Source: 2011-2012 Undergraduate Catalog)

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

We require for each student to have MS Office (Mac or PC) installed on their computers.

Microsoft Software for UF students

<http://www.software.ufl.edu/>

The Office of Information Technology has great news for University of Florida students! If you want to upgrade your operating system or need Microsoft Office Suite, this media will be available in the Spring 2011 semester. The different media available are: Windows 7 operating system Upgrade, Microsoft Office Professional Plus 2010 (32-bit/64-bit) for PC or Microsoft Office for Mac 2011. **Software is free for UF students.**

To check for availability of the media and technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357). Once the media is available, you can get it at the UF Computing Help Desk or at the UF Bookstore .

Other software training opportunities are available. For examples through Lynda.com

<http://www.lynda.com/member.aspx>

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575,

www.counseling.ufl.edu/cwc/

Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/

Services for Students with Disabilities

Please come and talk to your TA at the beginning of the semester about any accommodations required. We will make sure that the students needs are met to the best of our abilities in the laboratory setting.

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drcStudents with Disabilities
www.dso.ufl.edu/drc/

Students requesting classroom accommodation must first register with the Dean of Students Office in Peabody hall. The Dean of Student Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation at the beginning of the semester.