COURSE SYLLABUS FOR MCB 4034L: “Advanced Microbiology Lab”
1 credit
Spring 2015 semester: Tuesday March 10 – Tuesday April 21

COURSE MEETING TIMES AND LOCATION: Labs will be held in the Microbiology and Cell Science Bldg. on Tuesdays and Thursdays as follows:

Section 1596: Periods 3-5 (9:35 pm – 12:35 am) -- room 1030
Section 0161: Periods 7-9 (1:55 pm – 4:55 pm) -- room 1030

All labs, the midterm, and final exam will be held in the above rooms of the Microbiology and Cell Science Building, according to the attached schedule. The instructor reserves the right to change the schedule as deemed necessary to complete the objectives of the course, and will inform the students of this via e-learning and/or lectures.

COURSE DESCRIPTION: Application of microbial, molecular biological and immunological techniques to the expression, isolation, identification and characterization of recombinant proteins produced in bacteria. The approaches are relevant in both basic research and industrial production of proteins.

PRE-REQUISITES: MCB 3020L or MCB 3023L with a grade of C or better.
MCB 4203, MCB 4304, PCB 4522 or PCB 5235 recommended

INSTRUCTOR CONTACT INFORMATION:
Dr. Wilfred Vermerris
Cancer/Genetics Research Complex 302
(352) 273-8162 (Office)
Email: wev@ufl.edu
The best time to request help is after class, preferably with an advance notification

GRADUATE TEACHING ASSISTANT:
Ramya Rallabandi
Email: ramyarallabandi@ufl.edu

UNDERGRADUATE TEACHING ASSISTANT:
Maria Korah
Email: mariakorah@ufl.edu

COURSE OBJECTIVES:
Upon completion of this course, students will:
1. Have gained hands-on experience with several “advanced” microbiology and molecular biology techniques (i.e. isolation of DNA and proteins, manipulation of DNA, Sanger sequencing, western blotting)
2. Understand the theory, advantages, and potential limitations of these techniques
3. Understand the application of these techniques in industrial microbiology
4. Perform data analysis and interpretation of experimental results using a variety of software and web-based resources
5. Properly document experiments, results, and data analysis using a laboratory notebook and report
6. Summarize the findings of this research by writing a scientific abstract.

REQUIRED TEXTBOOK: No textbook is required. All course materials will be available through Sakai.

**Background reading materials, lecture notes, on-line assignments, pre-lab quizzes, and other tools for this course will be available through the Sakai Learning Support System homepage [http://lss.at.ufl.edu/]. You will need to enter your Gatorlink username and password to access the system. If you do not have an active GatorLink ID, cannot remember your GatorLink login information, or if your ID does not work, please refer to the GatorLink website [http://gatorlink.ufl.edu] or to the UF Computing Help Desk (The Hub, 392-HELP) for assistance.
SUPPLIES: Lockers are available in the hallway to store your personal belongings during the lab period. A lock for your locker (during lab only) is recommended. Disposable gloves and other personal protective equipment will be provided as needed. Please dress appropriately in consideration of the lab activity (i.e. use of stains, microbial cultures). For safety reasons, all students are REQUIRED to wear closed-toed shoes in the lab. Failure to comply will result in dismissal for that particular day and a 25-point penalty (see attendance policy below). The use of cell phones in the lab is prohibited.

ATTENDANCE POLICY: Attendance and participation in all lab periods is mandatory, and attendance at each lab will be monitored with the use of a sign-in sheet. As stated on the registration form for this course, for each unexcused absence, 25 points will be deducted from the overall point total at the end of the semester. The ONLY exception to the 25-point deduction is if a student has to miss a lab due to a religious observance, illness, or bereavement, (documentation/proof for the latter two categories may be required). Absence due to professional school tests (MCAT, DAT, GRE, etc.), professional/graduate school interviews, biochemistry exams scheduled during normal lab times, or any other obligations will NOT be considered exceptions to the 25-point deduction. It is the student’s responsibility to try and avoid scheduling these commitments on lab days. Students will still be responsible for entering a lab notebook entry for each missed lab (please “cite” the person from whom you are borrowing data/results for the purpose of completing the missing entry). Likewise, you are responsible for learning any missed course material (lectures, online assignments) for the midterm quiz and final exam, whether an absence is excused, unexcused, or unexpected.

VOLUNTARY ASSISTANCE: students who are willing to assist with the preparations of the next lab (labeling tubes, dispensing reagents, etc.) before (morning section) or after (afternoon section) regular lab hours will qualify for bonus points (to be counted towards the final grade). Details will be provided during the first day of class.

“MAKE-UP” IN-CLASS ASSIGNMENT/EXAMS: The administration of make-up assignments and/or exams is at the discretion of Dr. Vermerris, and will be assessed on a case-by-case basis.

REFERENCE LETTER POLICY: Upon request, Dr. Vermerris will write a limited number of reference letters for students applying to graduate and/or professional school who meet the following conditions: (1) Student has achieved a final letter grade of “A” in the class, (2) Student has no unexcused absences, (3) Student has no incomplete or missing coursework (on-line and in-class assignments, quiz, random notebook check, final exam, etc.), (4) Student has actively-participated during the course.

GRADES: The grading scheme for this course is as follows:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-term exam</td>
<td>250 points</td>
</tr>
<tr>
<td>Final Exam</td>
<td>250 points</td>
</tr>
<tr>
<td>Online exercises (2 @ 50 points each)</td>
<td>100 points</td>
</tr>
<tr>
<td>Pre-lab quizzes (7 @ 25 points each)</td>
<td>175 points</td>
</tr>
<tr>
<td>Abstract</td>
<td>25 points</td>
</tr>
<tr>
<td>Lab report</td>
<td>200 points</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,000 points</td>
</tr>
</tbody>
</table>

Final letter grades will be assigned based on the number of points earned, as follows:

- A = 940-1000 points
- A- = 900 – 939.9 points
- B+ = 870 – 899.9 points
- B = 840-869.9 points
- B- = 800-839.9 points
- C+ = 770-799.9 points
- C = 730-769.9 points
- C- = 700-729.9 points
- D+ = 650-699.9 points
- D = 600-649.9 points
- E = 0-599.9 points

For information on current UF policies for assigning grade points, see [https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx)

WORK IN TEAMS: You will be working in fixed teams (=2 or 3 students depending on the section) for the duration of the semester. Teams will be formed during the first day of class. Each team will get a designated number and seat to keep track of samples. One final report and one abstract per team are to be turned in.
MID-TERM EXAM: There will be one mid-term exam in the regular class room (see course schedule for exact date). You must bring your lap top computer and UFID card to the exam. Basic calculators are recommended. The use of cell phones is prohibited.

FINAL EXAM: A cumulative final exam (similar in format to the mid-term) that covers the entire semester’s material will be given during your regularly-scheduled lab (as opposed to the official exam date listed in the registrar’s course schedule). You must bring your lap top computer and UFID card to the exam. Basic calculators are recommended. The use of cell phones is prohibited.

If you cannot bring a computer to class, you must make alternative arrangements with the course instructor at least 1 week prior to the exam.

LABORATORY NOTEBOOK: All students are expected to maintain a paper or electronic laboratory notebook (ELN) that details the completion of all laboratory experiments performed during the semester. Instructions on how to properly document and maintain your notebook will be given by the instructor during the first week of class. This scientific record keeping will be an absolute necessity for writing up your final scientific paper (see below). Lab partners may keep a shared notebook (e.g. Google Docs) if preferred.

LAB REPORT: You and your lab partner will be responsible for turning in a jointly co-authored report that details the experiments performed in class throughout the semester. More details and guidance will be provided in class throughout the semester.

ONLINE EXERCISES: Two on-line exercises will be assigned through the MCB4034L Sakai course website during the semester (see attached schedule for due dates). These will typically consist of an online web tutorial or other resource to be completed by the student, followed by a series of multiple-choice questions. The links to the online material will be available throughout the semester, but students will have only one week to complete the multiple-choice questions associated with each exercise. ACCESS TO THE MULTIPLE-CHOICE QUESTIONS WILL BE CLOSED AFTER THE DUE DATE/TIME FOR COMPLETION.

PRE-LAB QUIZZES: Seven on-line pre-lab quizzes will be administered through the MCB4034L Sakai course website throughout the semester. These open-book quizzes are designed to promote reading of the lab protocols before they are performed in class, and will typically be comprised of multiple choice or fill-in-the-blank type questions based on the relevant lab protocols. Access to the pre-lab quizzes will always be open for 24 hours prior to the due date/time posted in the attached schedule. If a student fails to complete an on-line assignment or pre-lab quiz prior to the Due date, they will receive 0 points for that assignment or quiz. Absolutely no Extensions or “make-up” quizzes will be given, with the exception of proof of technical difficulty precluding on-time submission (see below).

SAKAI HINTS for ONLINE QUIZZES AND ASSIGNMENT SUBMISSION: It is recommended that you take online assessments during Help Desk hours whenever possible. If you have a problem while taking an Assessment, log out and log back in as quickly as possible. If the assessment is timed, the timer will continue to run while you are logged out. If you still encounter difficulties, take a screen shot of the problem so the Help Desk can investigate and you will have proof of the problem for your Instructor. Call the Help Desk (352-392-4357) immediately. When you submit an Assignment you get a confirmation screen that contains a confirmation number. You might want to capture a screen shot or print it for your records. The Assignment list will also show this Assignment as "submitted" including the date and time of your submission. If you do not get the confirmation screen and your Assignment is not listed as "submitted," you have not submitted the Assignment.

DEPARTMENT OF MICROBIOLOGY AND CELL SCIENCE LABORATORY REGULATIONS
1. The laboratory is not a clean environment and eating, drinking (this includes bottled water!), or smoking is not allowed in the laboratories for personal health reasons.
2. Do not block the hallway while you are waiting to enter the laboratory. Sit in the classroom or on the benches in the hallway.
3. Note the locations of the emergency showers, fire extinguishers, fire exits, and restrooms (will be shown on the first day of class).
4. At the beginning and end of each laboratory period, wipe off the top of your laboratory bench with the
disinfectant solution provided at the end of each row.

5. Keep your work area free of non-essential materials at all times. Coats, purses, headphones, cell phones, iPods, backpacks, etc. are NOT to be brought into the lab, for safety/sanitary reasons. Lock valuables in your hall locker. Your lab notebook, writing utensil(s), and printed instructions are exceptions to this rule (these items can be brought into the lab), but take care to keep these items clean. For example, keep these items in a clean area of your bench well away from any active work areas, do not handle these items while wearing gloves, etc.

6. Laptop computers are allowed in the lab if you so desire, but at your own risk, and solely for the purpose of class (i.e. not for email, chatting, surfing, shopping, etc.). You can use your computer to take notes during lectures and to keep your electronic notebook. A protective keyboard cover is recommended for sanitary reasons and to minimize the effects of accidental spills.

7. Long hair should be tied back during the laboratory period, and loose clothing should be kept well away from the Bunsen burner flames. Please dress appropriately in consideration of the day’s lab activity (i.e. use of stains). For safety reasons, students must wear closed-toed shoes while working in the lab. Students that do not comply with this requirement will be asked to leave the lab, and are responsible for making up any ensuing missed course work. Avoid putting pens, pencils, fingers, etc. into your mouth.

8. Always wear disposable gloves (provided) when working with live bacterial cultures and stains. Dispose of used gloves in the BIOHAZARD BAGS (see number 9 below).

9. Learn the correct and safe way of discarding items in the lab. Pipets should be placed into the stainless steel trays, pointing in a single direction. Culture tubes and flasks should have the markings removed with alcohol and be placed into the appropriate racks. Contaminated disposables are to be put into the BIOHAZARD BAGS and/or into containers specially provided for this purpose. Non-contaminated trash must be put into the regular trash cans, NOT Biohazard bags. Bacterial cultures must NEVER BE POURED DOWN THE SINK, NOR SHOULD THEY BE REMOVED FROM THE PREMISES.

10. Immediately report all accidents such as cuts, burns, spilled cultures, spilled stains, to the instructor. Take all precautions to avoid such accidents. Report any classmate who habitually demonstrates hazardous behavior.

11. Wash your hands thoroughly with soap and water before leaving the laboratory, as well as any time during period as needed.

12. Consistent carelessness or disregard of these regulations may be cause for dismissal from the course.

**Academic Honesty, Software Use, Campus Helping Resources, Services for Students with Disabilities**

**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.

(Source: 2011-2012 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. Violations will be reported and will result in penalties.

Please note that all unauthorized online posting or distribution of MCB4034L course materials is considered a form of academic dishonesty and such actions will be treated accordingly. The course materials (lecture notes, lab protocols, assignments, etc.) are assembled and intended for students taking MCB4034L only, this is why they are only available for student use from the secure Sakai MCB4034L course website. Unauthorized posting of course materials infringes on UF’s copyright policies and the “Fair Use” Act (http://www.generalcounsel.ufl.edu/faq/Copyright.pdf). This policy will be vigorously upheld at all times in this course.

**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.

**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/
Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Training Programs
Community Provider Database

*Career Resource Center*
First Floor JWRU
352-392-1601
www.crc.ufl.edu/

*Services for Students with Disabilities*
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/drc/