

## **Marine Microbiology and Molecular Biology (MMMB)**

**Spring Semester 2017**

**OCB 4525L (1 credit) CRN #17928**

Lab day and time: Tuesday 1:00-4:30 pm

Course Location: Johnson Education Center, Harbor Branch Oceanographic Institute

### **Instructors:**

Lead Instructor: Dr. Peter McCarthy (772-242-2632), [pmccart5@hboi.fau.edu](mailto:pmccart5@hboi.fau.edu), FAU Marine Science Building Room #147

Dr. Esther Guzmán, (772-242-2452), [eguzman9@hboi.fau.edu](mailto:eguzman9@hboi.fau.edu)

TA: TBD

Instructor Office Hours:

McCarthy: Tues 9-10am, Thurs 9-10am and by appointment

All other instructors by appointment

Prerequisites: CHM 2045 Minimum Grade of C-, and CHM 2045L Minimum Grade of C-, and CHM 2046 Minimum Grade of C-, and CHM 2046L Minimum Grade of C-

Corequisite: OCB 4525

### **Course Description:**

The theory, techniques, applications, and interplay of microbiology, molecular genetics, recombinant DNA, and bioinformatics in the context of modern-day marine research. Formal teaching consists of one 3 hour lab per week. To master the material covered in this course it is expected that the student will spend a minimum of two hours per week per credit hour on the out of classroom assignments such as data manipulation, reading assignments and completion of lab notebooks.

### **General Course Outline (subject to change)**

Cultivation and identification of microbes found in association with invertebrates and sediments of the Indian River Lagoon. Molecular approaches to microbial community analysis. Analysis of microbes for their biotechnological potential.

### **Course Objectives:**

By the end of the course the student will have gained the following laboratory skills: cultivation of microbes using aseptic technique; use of microscopic techniques and staining to observe diverse microbes; community analysis using PCR-related techniques; and identification of microbes through analysis of the 16S rRNA gene and BLAST searching.

### **Textbooks:**

None; Reading materials will be provided by the lecturers.

### **Course Calendar:**

Week of April 24<sup>th</sup>: Hand in lab notebooks and summary report by final exam

### **Course Policies and Procedures**

#### **1. Course Evaluation**

The Lab is graded by all of the instructors based on the clarity of the lab notebook, the summary report and participation in class.

All exams will be scored using the following rubric:

90-100	A
86.5-89.9	A-
83.3-86.4	B+
80-83.2	B
76.5-79.9	B-
73.3-76.4	C+
70-73.2	C
66.7-69.9	C-
63.4-66.6	D+
60-63.3	D
56.6-59.9	D-
<56.6	F

**Attendance Policy:** *Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.*

*Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final grade as a direct result of such absence.*

Reasonable accommodation will also be made for students participating in a religious observance.

2. **Incomplete Grade:** A grade of Incomplete (“I”) is reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of “I” will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU’s University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate. As per university policy, an incomplete grade will only be given to a student who fulfills all of the following criteria:
  - a. misses multiple exams or the final examination due to a legitimately documented emergency as defined by the FAU Academic Policies and Regulations:  
[http://www.fau.edu/academic/registrar/09-10\\_catalog/academics.html](http://www.fau.edu/academic/registrar/09-10_catalog/academics.html)
  - b. has a grade of C or better
  - c. submits evidence of the emergency and signs an incomplete agreement.
3. **Safety:** No food or drinks are permitted in the laboratory.
4. **Classroom Etiquette Policy:** University policy on the use of electronic devices states: “In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions.” You may be asked to leave the class session for noncompliance.
5. **Student Honor Policy:** Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at [http://www.fau.edu/ctl/4.001\\_Code\\_of\\_Academic\\_Integrity.pdf](http://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf)

**Cheating is a serious offense. If you are caught cheating, you will receive an F in the course. In addition, you will be referred to the Dean of Student Services and charged with an academic crime. Test procedures and rules will be stated at the beginning of each exam.**

6. **Disabilities Statement:** In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU’s campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses.
7. **Important Dates:** The following dates are based upon the current university academic calendar. Changes to these critical dates have occurred in the past and you are

responsible for checking the academic calendar on the university website for any changes during the academic term. <http://www.fau.edu/registrar/pdf/acadcal1516.pdf>

Last day to withdraw w/o receiving a "W"	January 21 <sup>st</sup>
M.L.K. Jr. Holiday	January 16 <sup>th</sup>
Last day to withdraw w/o receiving an "F"	April 7 <sup>th</sup>
Spring Break	March 6 <sup>th</sup> -12 <sup>th</sup>

University Final exam Schedule: <http://www.fau.edu/registrar/courses/final-exams.php>

### Lab Schedule

Lab	1:30-4:30 Tuesday		
Date	Topic	Lecturer	Out of lab assignments
10-Jan	Intro to lab: safety, notebooks, reporting	PM	
17-Jan	Collection & Plating of samples	PM	Completion of lab notebook, data analysis
24-Jan	DNA extraction of mixed samples, LH-PCR	EG	Completion of lab notebook, data analysis
31-Jan	Plate counts, visual evaluation of diversity, isolation	PM	Completion of lab notebook, data analysis
7-Feb	Isolation and Resub. Examination of crude suspensions	PM	Completion of lab notebook, data analysis
14-Feb	DNA extraction of isolates; pick colonies from mixed cultures.	PM	Completion of lab notebook, data analysis
21-Feb	16S PCR. Isolation and Resub... pick colonies from previous lab and culture; Microscopy, Staining, Slants.	PM	Completion of lab notebook, data analysis
28-Feb	Cleanup DNA and run 16S gels	PM	Completion of lab notebook, data analysis
6-Mar	SPRING BREAK		
13-Mar	SBTS Cruise		
20-Mar	LH-PCR analysis	EG	Completion of lab notebook, data analysis
27-Mar	Provide sequences (predetermined), bioinformatics to identify sequence	EG	Completion of lab notebook, data analysis
3-Apr	Microscopy, staining, fermentation	PM	Completion of lab notebook, data analysis
10-Apr	Antimicrobial assays, plate analysis from previous week; Set up cellulase and xylanase assays	PM	Completion of lab notebook, data analysis
17-Apr	Develop cellulase and xylanase plates; Finish up lab; final reports due to be handed in at Final exam	PM	Completion of lab notebook, data analysis