

# Cover Sheet: Request 10626

## Lab skills Bootcamp - new class approval

### Info

Process	Course New Ugrad/Pro
Status	Pending
Submitter	Oli,Monika moli@ufl.edu
Created	12/14/2015 3:21:13 PM
Updated	4/15/2016 11:00:44 AM
Description	This course provides a foundation and advanced skills all biological science students should master. We emphasize analytical, computing, communication and other lab skills above and beyond bench work.

### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CALS - Microbiology and Cell Science 514910000	Triplett, Eric		12/15/2015
No document changes					
College	Approved	CALS - College of Agricultural and Life Sciences	Brendemuhl, Joel H	Corrections and revisions requested by the CALS CC have been made.	3/3/2016
Replaced Syllabus bootcamp Oli 9-15.docx					1/28/2016
Replaced Syllabus bootcamp Oli revised 1-28.docx					2/25/2016
University Curriculum Committee	Comment	PV - University Curriculum Committee (UCC)	Case, Brandon	Added to the April agenda.	3/21/2016
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			3/21/2016
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

# Course|New for request 10626

## Info

**Request:** Lab skills Bootcamp - new class approval

**Submitter:** Oli,Monika moli@ufl.edu

**Created:** 4/5/2016 12:52:01 PM

**Form version:** 5

## Responses

**Recommended Prefix**MCB

**Course Level** 3

**Number** xxx

**Lab Code** None

**Course Title**Lab Skills Bootcamp and Professional Competencies

**Transcript Title**Lab Skills Bootcamp

**Effective Term** Earliest Available

**Effective Year**Earliest Available

**Rotating Topic?**No

**Amount of Credit**1

**Repeatable Credit?**No

**S/U Only?**No

**Contact Type** Regularly Scheduled

**Degree Type**Baccalaureate

**Weekly Contact Hours** web

**Category of Instruction** Intermediate

**Delivery Method(s)**Online

**Course Description** This course provides a foundation and advanced skills all biological science students should master. We emphasize analytical, computational, communication and other lab skills above and beyond bench work.

**Prerequisites** BSC 2010

or equivalent

Restrict to Ag majors + MCY majors

**Co-requisites** CHM2045 or equivalent

**Rationale and Placement in Curriculum** This course is a supplement and enhancement of skills all (micro)biology students should master during their time at UF. This course will help students in other lab classes and make them more competitive to find research positions early on in their career. This class emphasizes skill acquisition and mastery, practical applications and critical thinking.

**Course Objectives** Skills students should know and be able to apply by the end of the class include

1. Awareness of microbiology in every day life and interpretation and analysis of news reports and scientific literature
2. Biomath (metric conversions, bacterial enumeration, growth curves, data analysis, basic statistics, Excell functions, graphing...)
3. Bioinformatics skills (including cloning, primer design and PCR, BLAST analysis, etc.)
4. Knowledge of various software tools (i.e., Endnote reference management, Prism/Sigma Plot, Gideon) and data analysis
5. Familiarity with microbiology supply companies (ATCC, Difco BBL, Fisher, Sigma,

BD, Remel) and development of a budget

6. Miscellaneous basic lab skills (writing and following SOPs, notebook keeping, reagent ordering and database management, grants)
7. Familiarity with common microbiological testing methods and quality control in the pharmaceutical and food industry
8. Written and oral communication skills
9. Experimental design and problem solving

**Course Textbook(s) and/or Other Assigned Reading** No required textbooks. This case based class uses primary material like software instruction manuals and video based instruction. A variety of original data sets are provided for data analysis. In addition to material provided students will be familiarized with tools like Lynda.com, GIDEON, labmath calculators etc. This class does not need a textbook because of the variety of applications, tools and software packages it teaches the students.

**Weekly Schedule of Topics** Week 1: Getting started and introductions

- Discussion: Introductions
- Quiz: Global Awareness test (Procter and Gamble) - ungraded
- Quiz: Pre-class test - ungraded

Week 2: What is a lab? Getting oriented

- Introductions
- What is a lab?
- Working in the Lab
- Lab and academic hierarchy
- Assignment: Labs and opportunities near you
- Quiz: Finding a good PI
- Your interview
- Undergraduate research experience

Week 3: Scientific Literature and Reference management

- Scientific Literature and Reference Management
- How to Cite Literature (Endnote Web)
- Endnote Web Tutorial
- Why is citing important?
- Peer reviewed vs. non-peer reviewed
- Interpretation & Analysis of Scientific Literature
- Assignment : Scientific Literature

Week 4: Communicating Science

- Communicating To The General Public
- Writing A Scientific Research Article
- Giving A Talk
- Making a poster
- Quiz: Communicating science
- Project: Public health projects – microbes in the News (see below)
- Project: Your independent research project (see below)

Week 5: Lab and Workplace Skills - Training

- UF Training: BBP and BMW
- Biosafety ppt UF EH&S Hippa, Ferpa
- Lab rules and lab safety

Week 6 and 7: Data Analysis

- Excel Tutorials
- Basic statistical analysis
- Analysis Tutorial
- Other graphing software
- Data management and analysis

- Assignment: Data management and analysis
- Example data sets

#### Week 8 and 9: Labmath

- Lab Math: why bother with math in microbiology
- Lab Math Tools
- Fun with dilutions
- Conversions
- Lab Math practice examples and problems
- Quiz: Lab Math

#### Week 10 and 11: Bioinformatics

- What is Bioinformatics?
- NCBI
- PCR and primer design
- DNA
- Phylogeny
- Quiz: Bioinformatics 1
- Proteins
- Genomes
- Assignment: Applications and medial relevance of bioinformatics
- Quiz: Bioinformatics 2

#### Week 12: Soft Skills

- Your SWOT analysis
- Networking
- Project management
- Assignment: submit your CV
- Critical Thinking and Problem solving
- Discussion: Many Students Don't Have the Resume and Interview Skills to Actually Get Hired

#### Week 4-11 Project: Public health projects – microbes in the News

- Select your project topic
- Background investigation
- Assignment: your public health project

#### Week 4-12 Project: Your independent research project (see below)

- Select your project topic
- Scientific Method and Scientific Thinking
- Assignment: literature review
- Planning and designing an experiment
- Lab Notebook Etiquette
- Supplies and Equipment
- Funding and grant writing
- Budget
- Quiz: the research environment
- Assignment: Writing your final report

#### **Grading Scheme** Items Graded

% Value

Skills assessment 50

Quizzes

30

Discussions

5  
Public Health project 15  
Total

100

**Instructor(s)** Monika Oli

# Lab Skills Bootcamp and Professional Competencies

Online only, Spring (1CR); Restrict to Ag majors + MCY majors

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## Course Coordinator

Monika W. Oli, PhD

<http://microcell.ufl.edu/directory/faculty/monika-oli/>

eMail: [moli@ufl.edu](mailto:moli@ufl.edu)

Phone number: 352-3928434

Office Hours: To be announced at the beginning of class and by appointment

Course will be hosted in Canvas: <http://elearning.ufl.edu/>

## Description

This course provides a foundation and advanced skills all biological science students should master. We emphasize analytical, computational, communication and other lab skills above and beyond bench work.

## Course overview

This class is designed to provide students with a variety of lab skills beyond actual bench work. Student is not expected to have much background in microbiology or lab based skills. Modules will be assigned to prepare the students for applying to research positions during undergraduate education, for graduate school. We teach non-bench lab skills which are usually not taught in any other class. These skills are a preparation for graduate school, professional school, government and industry position in (micro)biology.

The course design is based on case studies and real life scenarios. The activities are driven by computer based activities, tutorials and skills mastery. This course is best suited for a curious self-motivated student. Students are additionally expected to explore a variety of tools and resources independently.

Skills students should know and be able to apply by the end of the class include

1. Awareness of microbiology in every day life and interpretation and analysis of news reports and scientific literature
2. Data analysis and Biomath (metric conversions, bacterial enumeration, growth curves, data analysis, basic statistics, Excell functions, graphing...)
3. Bioinformatics skills (including cloning, primer design and PCR, BLAST analysis, etc.)
4. Knowledge of various software tools (i.e., Endnote, Prism, Sigma Plot, Gideon)
5. Familiarity with microbiology supply companies (ATCC, Difco BBL, Fisher, Sigma, BD, Remel) and development of a budget

6. Miscellaneous basic lab skills (writing and following SOPs, notebook keeping, reagent ordering and database management, grants)
7. Different methods of scientific communication (scientific papers, posters, communication to general public)
8. Awareness of industry guidelines and regulatory bodies
9. Experimental design and problem solving

### **Course time and location**

This course is taught asynchronously online and material will be available through Canvas. Classes begin the first week of the semester. Voluntary monthly student conferences/office hours will be arranged using Skype or Adobe Connect.

### **Student Evaluation**

Student skill mastery will be assessed through weekly skills assessments and quizzes. Following instructions, self-motivation as well as creative thinking is a must in this class (part of participation grade). Mastery of skills (not memorization of material!) is expected for all modules and part your grade will come from semester long student projects. Topics should include something you are interested in, relevant to (micro)biology and your future career.

### **Textbooks and Required reading**

No required textbooks. This case based class uses primary material like software instruction manuals and video based instruction. A variety of original data sets are provided for data analysis. In addition to material provided students will be familiarized with tools like Lynda.com, GIDEON, labmath calculators etc. This class does not need a textbook because of the variety of applications, tools and software packages it teaches the students.

### **Getting started**

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

Any requests for make-ups due to technical issues **MUST** be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You **MUST** e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

1. Please Remember to check the **Announcements** in Canvas. "I did not know about the assignment, deadline..." is NOT an accepted excuse.
2. Please make sure you have a functional computer and download all necessary software (MS office, Endnote web, trial versions of other programs). We often will do computer-based exercises.

3. All assignments, projects and reports are submitted electronically through Canvas. Each assignment is processed through **Turnitin.com** and as such is checked for plagiarism.

**Student evaluation**

Student skill mastery will be assessed through weekly skills assessments (assignments) and quizzes. Following instructions, self-motivation as well as creative thinking is a must in this class. Topics should include something you are interested in, relevant to (micro)biology and your future career ambitions.

The grading adheres to UF grading policies. For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Items Graded	% Value
Skills assessment	50
Quizzes	30
Discussions	5
Public health project	15
<b>Total</b>	<b>100</b>
A	92
A-	90
B+	87
B	82
B-	80
C+	77
C	72
C-	70
D+	67
D	62
D-	60
E	<60

**WEEKLY SYLLABUS**

Week 1: Getting started and introductions

- Discussion: Introductions
- Quiz: Global Awareness test (Procter and Gamble) - ungraded
- Quiz: Pre-class test - ungraded

Week 2: What is a lab? Getting oriented

- Introductions
- What is a lab?
- Working in the Lab
- Lab and academic hierarchy
- Assignment: Labs and opportunities near you
- Quiz: Finding a good PI
- Your interview
- Undergraduate research experience

Week 3: Scientific Literature and Reference management

- Scientific Literature and Reference Management
- How to Cite Literature (Endnote Web)
- Endnote Web Tutorial
- Why is citing important?
- Peer reviewed vs. non-peer reviewed
- Interpretation & Analysis of Scientific Literature
- Assignment : Scientific Literature



#### Week 4: Communicating Science

- Communicating To The General Public
- Writing A Scientific Research Article
- Giving A Talk
- Making a poster
- Quiz: Communicating science
- Project: Public health projects – microbes in the News (see below)
- Project: Your independent research project (see below)

#### Week 5: Lab and Workplace Skills - Training

- UF Training: BBP and BMW
- Biosafety ppt UF EH&S Hipaa, Ferpa
- Lab rules and lab safety

#### Week 6 and 7: Data Analysis

- Excel Tutorials
- Basic statistical analysis
- Analysis Tutorial
- Other graphing software
- Data management and analysis
- Assignment: Data management and analysis
- Example data sets

#### Week 8 and 9: Labmath 1

- Lab Math: why bother with math in microbiology
- Lab Math Tools
- Fun with dilutions
- Conversions
- Lab Math practice examples and problems
- Quiz: Lab Math

#### Week 10 and 11: Bioinformatics 1

- What is Bioinformatics?
- NCBI
- PCR and primer design
- DNA
- Phylogeny
- Quiz: Bioinformatics 1
- Proteins
- Genomes
- Assignment: Applications and medial relevance of bioinformatics

- Quiz: Bioinformatics 1
- 

#### Week 12: Soft Skills

- Your SWOT analysis
- Networking
- Project management
- Assignment: submit your CV
- Critical Thinking and Problem solving
- Discussion: Many Students Don't Have the Resume and Interview Skills to Actually Get Hired

#### Week 4-11 Project: Public health projects – microbes in the News

- Select your project topic
- Background investigation
- Assignment: your public health project

#### Week 4-12 Project: Your independent research project (see below)

- Select your project topic
- Scientific Method and Scientific Thinking
- Assignment: literature review
- Planning and designing an experiment
- Lab Notebook Etiquette
- Supplies and Equipment
- Funding and grant writing
- Budget
- Quiz: the research environment
- Assignment: Writing your final report

#### Supplemental information:

- Important Lab Procedures (that are relevant to the material learned)
- Other resources
- Careers and professional development
- Your skills portfolio
- Training resources
- Regulatory aspects: IRB, IACUC, FDA, Clinical trials
- Scientific foundations and competencies for future physicians
- Grants and funding: Grants.gov; Grantome.gov
- Survey software: Qualtrics
- Tutorials @ Lynda.com
- GIDEON

## **OTHER UF POLICIES**

### **MAKE-UP POLICY**

Late assignments will be penalized by deducting 25% of the possible points for each late day. Excused absences from exams and/or assignments follow the criteria of the UF Undergraduate Catalogue (e.g., illness, serious family emergency, military obligations, religious holidays) and must be communicated by a formal signed documentation to the instructor as soon as possible. An alternative deadline for exams and assignments will be arranged by the instructor. Requirements for make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### **NETIQUETTE GUIDE FOR ONLINE COURSES**

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

### **ACADEMIC HONESTY**

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following 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." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

### **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.

**Microsoft Office 365 Software is free for UF students**

<http://www.it.ufl.edu/gatorcloud/free-office-365-downloads/>

**Other free software is available at:**

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

To check for availability of the media and technical requirements, contact the UF Computing Help Desk at (352)392-HELP(4357).

**UNIVERSITY POLICY ON ACCOMMODATING 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. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

**ONLINE COURSE EVALUATION PROCESS**

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

**CAMPUS RESOURCES**

Resources are available on campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:

**Health and Wellness**

- U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.
- Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575;
- Sexual Assault Recovery Services (SARS) at the Student Health Care Center, 392-1161.
- For emergencies call: University Police Department, 392-1111 (or 9-1-1 for emergencies). <http://www.police.ufl.edu/>

### **Academic Resources**

- E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.
- Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <http://www.crc.ufl.edu/>
- Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>

### **UNIVERSITY OF FLORIDA COMPLAINTS POLICY AND STUDENT COMPLAINT PROCESS**

The University of Florida and most instructors believe strongly in the ability of students to express concerns regarding their experiences at the University. Most problems, questions and concerns about courses can be resolved by professionally communicating with the instructor. Please try to meet your instructor in person, make an appointment to call, or try to set up a remote meeting through Skype or other media.

If this does not help the University encourages the students who wish to file a written complaint to submit that complaint directly to the department that manages that course. If a problem really persists and cannot be resolved by communicating with the instructor and the department, contact

- Residential Course: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>.

External Consultation Results (departments with potential overlap or interest in proposed course, if any)

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	