

## HUN 4813C

### *Laboratory Techniques in Molecular Nutrition*

**Lecture:** 2 Credits, Wednesdays, Periods 6-7 (12:50-0-2:45 pm) BKL 0415

**Laboratory:** 1 Credit, Friday, Periods 6-8 (12:50-3:50 pm) FSHN 310 or WEIN 1070

**Instructor:** Felix R. Jimenez  
FSHN - Room 259B  
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#### **T/A:**

**Office Hours:** Monday and Tuesdays 2:00 – 5:00 pm

**Prerequisites:** CHM 2211, CHM 2211L

**Corequisites:** BCH 3025 or BCH 4024

**Attendance:** Required

**Credits:** 3

#### **Description:**

Laboratory techniques relevant to the study of nutrition, ranging from biochemistry, molecular biology, genomics, and bioinformatics.

#### **Course Learning Objectives:**

A main objective of this course is to introduce students to the theory, practice, and application of a variety of laboratory techniques that can be used to address and answer research questions in nutritional sciences. This course will cover both gold standard and cutting-edge research techniques in nutrition. Students will be challenged to apply their knowledge of nutrition to real research questions. After completing this course students should have a good knowledge of how common techniques are performed in nutritional science. Students will be able to fully comprehend scientific articles relevant to nutritional sciences, identify the components of experimental design and offer informed critique of findings in the literature.

- Demonstrate knowledge of biochemical analysis used in life sciences
- Identify limitations of research techniques
- Identify and understand study design and scientific models
- Refine laboratory skills and interpret results from techniques used in the lab
- Interpret and critique scientific articles

**Required Textbooks:** There is no required textbook for this course. Students will use relevant literature available through UF libraries (both physical and online).

**Recommended Materials:** A lab notebook, safety goggles, Scientific calculator (cell phones are not allow in class), and a laptop for the first laboratory session. there is a nominal materials fee associated with the lab component of this course. The fee will be in accordance with FSHN policy.

### **Method of Instruction**

Instruction will be provided through lectures (power point), handouts, demonstrations, lab exercises, homework assignments, readings (if the student can't download its assigned presentation), and case studies.

### **Required Personal Protective Equipment (PPE) in Laboratory**

1. **Clothing:** Wear long pants or skirts and closed toed shoes, and tie back long hair. Do not wear shorts, short skirts, sandals, or loose clothing.
2. **Lab coat:** Wear a lab coat that covers the arms.
3. **Gloves:** Wear appropriate gloves at all times in the laboratory, and take them off prior to exiting the laboratory. Gloves should never touch common surfaces outside the lab, including door handles, elevator buttons, and cell phones. When using highly toxic or corrosive chemicals, ensure that you are using the proper glove type.
4. **Eye protection:** Wear safety glasses with side shields. When handling chemicals that can cause eye damage or have potential to splash, wear full coverage goggles or a face mask. Do not wear contacts in the laboratory, as chemicals can lodge behind the contact, causing eye damage, or can fuse the contact to the eye.

## Lectures and Laboratory (Subject to change)

Week	Date	Day	Topic
1	11-Jan 13-Jan	Wed (Lecture) Fri (Lab)	Introduction BBP/BMW general training, IRB training and Human Clinical Plan
2	18-Jan 20-Jan	Wed (Lecture) Fri (Lab)	Study Design and Models Clinical trial
3	25-Jan 27-Jan	Wed (Lecture) Fri (Lab)	Dilutions and Solutions Pipetting and Spectrometry
4	01-Feb 03-Feb	Wed (Lecture) Fri (Lab)	Genetic Techniques DNA extraction and PCR
5	08-Feb 10-Feb	Wed (Lecture) Fri (Lab)	Exam + Lecture RNA extraction and qPCR
6	15-Feb 17-Feb	Wed (Lecture) Fri (Lab)	Protein, Western Blot, and Mass Spectrometry Western blot
7	22-Feb 24-Feb	Wed (Lecture) Fri (Lab)	Proteins, Western Blot and Mass Spectrometry Western blot
8	01-Mar 03-Mar	Wed (Lecture) Fri (Lab)	Genetic techniques ELISA
9	08-Mar 10-Mar	Mon (Lecture) Wed (Lab)	Metals and Nutrition, ELISA
10	15-Mar 16-Mar	Wed (Lecture) Fri (Lab)	Spring Break No Lab
11	22-Mar 24-Mar	Wed (Lecture) Fri (Lab)	Exam + Lecture Metal determination, Atomic Absorption
12	29-Mar 31-Mar	Wed (Lecture) Fri (Lab)	Current Topic Clinical trial
13	05-Apr 07-Apr	Wed (Lecture) Fri (Lab)	Current Topic Extra lab time
14	12-Apr 14-Apr	Wed (Lecture) Fri (Lab)	Current Topic Extra lab time
15	19-Apr 21-Apr	Wed (Lecture) Fri (Lab)	Current Topic Extra lab time
16	26-Apr 28-Apr	Wed (Review) Fri (No Lab)	Review

**Critical Dates:**

Classes Begin	January 11 <sup>th</sup>
Exam	February 8 <sup>th</sup>
Exam	March 22 <sup>nd</sup>
Quizzes	At the beginning of each Lab session.
Lab Assignments due	April 19 <sup>th</sup> and April 26 <sup>th</sup>
Presentations	March 29 <sup>th</sup> to April 19 <sup>th</sup>
Major Assignment due/Lab book	April 28 <sup>th</sup>
Classes End	April 28 <sup>th</sup>

**THERE IS NO FINAL EXAM FOR THIS COURSE****Evaluation Scheme:**

There will be two exams, one major assignment, 2 laboratory assignments, 8 quizzes, and a presentation in this course.

Major assignment: Each student will compose a research project proposal in the area that they choose. The idea must incorporate a molecular component; the assignment cannot be questionnaires or interviews etc. The proposal will be comprised of an introduction with a background literature search and rationale for the project, an outline of the experimental plan that includes methods and techniques used and a description of the possible outcomes, limitations, and future directions. Limit of 3 pages (Times New Roman, 12, single or 1.15 space). References, graphics, or pictures do not count as limited page.

Laboratory Assignment 1 (Molecular Analysis) (Lab book): Students will write a summary of the molecular techniques that they performed in the labs. The assignment must include an introduction, brief methods description, results (with pictures or graphics), and discussion (results and discussion together). Show your Work.

Laboratory Assignment 2 (Human Clinical): Students will write a summary of their laboratory work on their human experiment. The assignment must include an introduction, brief methods description, results, and discussion (results and discussion together). Limit of 2 pages

Presentation Assignment: Choose any paper in the field of nutrition, molecular nutrition, diet, minerals & nutrition, or any peer reviewed publication related to nutrition in the context of disease.

Exams	30%
Laboratory Assignments	20%
Quizzes	10%
Presentation	10%
Major Assignment	30%

**UF Grading Policy:**

Grade %	Letter Grade	GPA
93.4-100	A	4.00
90.0-93.3	A-	3.67
86.7-89.9	B+	3.33
83.4-86.6	B	3.00
80.0-83.3	B-	2.67
76.7-79.9	C+	2.33
73.4-76.6	C	2.00
70.0-73.3	C-	1.67
66.7-69.9	D+	1.33
63.4-66.6	D	1.00
60.0-63.3	D-	0.67
0-59.9	E	0.00

**CELL PHONES ARE PROHIBITED FROM USE IN THIS CLASSS!!!!**

**Class and Laboratory Attendance:**

Class and lab attendance and participation are mandatory in accordance with the University of Florida's policy on attendance that can be found

at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx> (Links to an external site.)

Students will behave in an appropriate manner in class, taking care not to disrupt other students learning activities. Students are asked to be punctual and submit assignments on time.

### **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>.

### **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 at 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.

### **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.

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

Rm 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

### **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/](http://www.counseling.ufl.edu/cwc/)

Counseling Services

Groups and Workshops

Outreach and Consultation

Self-Help Library

Wellness Coaching

U Matter We Care, [www.umatter.ufl.edu/](http://www.umatter.ufl.edu/)

Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

**Student Complaints:**

The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy. More information can be found here: [https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf) (Links to an external site.)

**Critical Incident Management:**

University of Florida expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the UF Schools are required to follow their school-specific procedures.

**OPEN LAB SESSIONS WILL BE HELD TWO TIMES PER WEEK. THIS ALLOTTED TIME GIVES YOU THE OPPORTUNITY TO PRACTICE ANY TECHNIQUES THAT WE ARE DEVELOPING IN THIS COURSE. THIS IS NOT MANDATORY BUT HIGHLY SUGGESTED. THE OPEN LAB HOURS ARE:**

**Tuesdays and Thursdays from 2:00pm-5:00pm**