

Course Number and Title

ISC2400L X-LAB 1

Catalog Description

Cross-Disciplinary Laboratory 1 is the first course in a two-semester, inquiry-based laboratory curriculum focusing on major themes and concepts in biology, chemistry and physics with an emphasis on their integrated applications in modern, quantitative research. Satisfies course requirements for BSC 2010L, CHM 2045L and PHY 2053L or PHY 2048L.

Credit Hours

3 CR

Prerequisites

None

Course Fee (Materials, Supplies, and Equipment Fees)

\$140

Instructor Information

Section 1H26: TBD

Section 1H27: TBD

Office hours: by appointment

Course Coordinator

Gabriela Waschewsky, Ph.D.

Office: Room A229A Sisler Hall

Telephone: 294-3994

E-mail: waschewsky@ufl.edu

Office hours: by appointment

Course Meeting Times and Locations

Tuesdays and Thursdays

Section 1H26 periods 10-E1 in SIS213

Section 1H27 periods 10-E1 in SIS221

Student Responsibilities

Students will be responsible for a significant amount of work outside the laboratory. There will be a pre-lab assignment due before each lab period. In addition, students are expected to arrive on time and stay until dismissed. You will be expected to work independently on some assignments and collaboratively on other assignments.

Collaboration is encouraged through most of the laboratory period. All lab experiments are performed in small groups, and the lab manuals are written to promote discussion between groups. Each lab will end with submitting a mini-report, in the form of an abstract, poster, or presentation. Students are expected to keep a detailed and up to date laboratory notebook.

e-Learning Course Website

All course materials, announcements, exercises, assignments, and grades will be available through the class website on [e-Learning](#). Registration for this website is automatic with your course registration. Login authentication is through your 'gatorlink' username and password. All changes to the course schedule or operating procedure will be announced and documented on this website. It is your responsibility to be familiar with the contents of the website and monitor it for changes. Substantive changes will be accompanied by an announcement. Configure your messaging preferences to forward announcements to your most active email account for best results.

Required Materials

1. **Lab Notebook.** Quad-ruled, 80-sheet or greater, with *non-removable* pages, is required starting on the first day of class. If the notebook does not come with pages already numbered, you may use a pen to number them.
2. **Safety Glasses.** Any UF-approved safety eyewear. Appropriate safety eyewear is available at the UF bookstore. By Monday of the second week, failure to bring safety eyewear to every class meeting will be an automatic ten percent deduction for the lab activity for that day.
3. **Proper Attire.** You are required to wear loose-fitting long pants and closed-toed shoes in lab. You will not be allowed to participate in that day's laboratory activity if your instructor determines that your attire is unsafe.
4. **Lab Coat.** Starting Tuesday of the third week, a knee-length lab coat with full-length sleeves is required for laboratory work. Refer to the course website for details on purchasing a lab coat.

Course Textbook

There is no textbook. All reading material will be provided via the e-Learning website.

Attendance Policy

Attendance during every lab session is required for the full duration of the session or until dismissed. Students must be present in the lab at the beginning of the lab session; late arrivals may be counted as an absence, at the instructor's discretion.

You must attend the first lab session of the term (see schedule for date). If you miss this lab session, you will be dropped from the course unless you contact the course coordinator immediately.

An unexcused absence from any lab session will result in the loss of all the points/credit available for that session. A second unexcused absence will result in an automatic and non-negotiable reduction of one letter grade for the course. More than two unexcused absences can result in a failing course grade.

The policies for allowable absences follow the university policies:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. Except in the case of emergencies, excused absences must be negotiated in advance with the instructor and will follow UF attendance policy. In the case of an excused absence the student is responsible for contacting the instructor, who will determine an appropriate make-up activity.

IMPORTANT: Attendance at the Final Presentation event is mandatory. Students who fail to attend and participate in the Final Presentation event may receive less than a C grade in the course.

Learning Outcomes Assessment

A typical laboratory exercise will consist of foundational reading and exercises, the experiment itself with data collection, analysis, and reporting components. From these activities each student's percentages will be averaged to obtain a course percentage; the course grade will be computed from the percentage using the grading scale shown below.

Assessment	% of Final Grade
Pre-Experiment Quiz*	10%
Lab Experiment Participation*	25%
Experiment Report*	25%
Lab Skills Mastery *	25%
Lab Notebook	10%
Final Presentation	5%
Total	100%

We encourage collaboration between groups and, of course, lab partners are supposed to help each other as much as possible during the lab session. While we expect students to work together and help each other, students will receive individual grades based on their performance on the pre-experiment

quizzes, lab experiment, and lab notebooks. The experiment report will be completed and graded as a group activity. The mastery assessment will be completed by one student representing the group. The lowest score will be dropped for each starred * assessment. In addition, 10 points earned by timely completion of the optional DataCamp R Tutorial will replace the next lowest pre-experiment quiz grade.

IMPORTANT: Students must participate in all aspects of the Final Presentation in order to receive greater than a C- grade in the course. Attendance at the presentation event is mandatory.

Grading Scale

Point Range (%)	Letter Grade	GPA equivalent
≥ 93.3	A	4.00
90.0 – 93.29	A-	3.67
86.7 – 89.99	B+	3.33
83.3 – 86.69	B	3.00
80.0 – 83.29	B-	2.67
76.7 – 79.99	C+	2.33
73.3 – 76.69	C	2.00
70.0 – 73.29	C-	1.67
66.7 – 69.99	D+	1.33
63.3 – 66.69	D	1.00
60.0 – 63.29	D-	0.67
< 60.0	E	0

Note that a “C-minus” grade will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

Lab Computer Use

Much of our data acquisition and reporting will be performed through the use of laboratory computers that will be available for you to use under the UF acceptable use policy (<https://it.ufl.edu/policies/acceptable-use/acceptable-use-policy/>). While data acquisition computers will be provided, you are welcome to bring your own laptop or tablet to facilitate post-experiment reports.

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.

You will use the software applications listed below, all of which will be provided to you. It will not be necessary for you to purchase any software for this course.

- The Microsoft Office products Excel, Word and PowerPoint will be used to will be used to graph and analyze data, and create reports and presentations. All UF students have free access to these applications and you should become familiar with their basic use.
- Arduino will be used for data acquisition and instrument control.
- NIH ImageJ will be used for image acquisition and analysis.
- R and RStudio will be used for graphical analysis and mathematical modeling.

Health and Wellness Resources

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

- UF Counseling & Wellness Center: <http://www.counseling.ufl.edu/cwc/> 3190 Radio Rd, 392-1575
- Student Health Care Center: <http://shcc.ufl.edu/> 280 Fletcher Dr., (352) 392-1161

Academic Resources

- e-Learning technical support: phone (352) 392-4357 (select option 2) or email to helpdesk@ufl.edu, website: <http://helpdesk.ufl.edu/>.
- Career Resource Center, Reitz Union, (352) 392-1601. Career assistance and counseling. <https://career.ufl.edu/students/>
- Library Support: <http://cms.uflib.ufl.edu/ask> Get help using the libraries.
- Teaching Center: Broward Hall, (352) 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu>
- Writing Studio: 302 Tigert Hall, (352) 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio>
- Student Complaints Campus: <https://registrar.ufl.edu/writtencomplaints>

Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students 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.”

The Honor Code (<https://sccr.dso.ufl.edu/process/student-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructors in this class.

Accommodation for Students with Disabilities

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/students/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodations. Students with disabilities should follow this procedure as early as possible in the semester.

Instructor and Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. A link to instructor evaluations will be available on the course Canvas site. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

Tentative Course Schedule

Week	Date	Laboratory Activity
1	1/7	Electric Circuits 1
1	1/9	Electric Circuits 2
2	1/14	Electric Circuits 3
2	1/16	Measurement and Error
3	1/21	Preparing Solutions
3	1/23	Introduction to Arduino
4	1/28	Thermodynamic Measurements
4	1/30	Calorimetry 1
5	2/4	Calorimetry 2
5	2/6	Measuring Force
6	2/11	Measuring Torque
6	2/13	Bite Force 1: Image Analysis
7	2/18	Bite Force 2: Regression Analysis
7	2/20	Scientific Literature Search + Library Tour
8	2/25	Density and Buoyancy
8	2/27	Analyzing Motion
9	3/3	SPRING BREAK NO CLASS
9	3/5	SPRING BREAK NO CLASS
10	3/10	Resistance and Resistivity 1
10	3/12	Resistance and Resistivity 2
11	3/17	Building a Spectrometer 1
11	3/19	Building a Spectrometer 2
12	3/24	Calibrating a Conductivity Sensor
12	3/26	Conductivity of Aqueous Solutions
13	3/31	pH Measurement
13	4/2	Titrations
14	4/7	Building an Electrolytic Cell
14	4/9	Measuring Electric Fields
15	4/14	Gel Electrophoresis 1
15	4/16	Gel Electrophoresis 2
16	4/21	Final Presentations