FOOD CHEMISTRY LAB (FOS 4311L)

Note: We will have lab the 1st week of Class on January 13th! We will go over lab safety, syllabus, and practice common techniques used in this class.

Here you will find information for the Food Chemistry laboratory course. Laboratory handouts and information including group data can be found in the Data file on Canvas or in that week's module. **Due Dates for Lab Reports can be found in the Assignment Section on Canvas.**

You will need to purchase a bound notebook for the laboratories. **Notebooks must be some type of bound book, i.e., laboratory notebook, computational book, or spiral bound notebook that contains at least 150 pages.** The pages from these notebooks must not be able to be easily ripped out. In your, laboratory notebook, you will write all information pertaining to the lab - method outline/flow chart, all modifications to the method, all results generated and any observations you may have noted while performing the lab. Laboratory are considered legal documents within governmental, industrial, and academic laboratories. Hence why it is very important to write everything down.

Basic Requirements:

1. Labs will be held Tuesday (3:00 – 6:00 pm).
2. There are no make-up labs, however in case you do miss lab you will need to notify the instructor within forty-eight hours with written documentation of your excused absence from lab. Otherwise, you will receive a **zero**. If you know in advance of a possible absence you will need to inform the instructor to ensure it is considered an excused absence. Accommodations for a makeup lab **may** be allowed. *Please note if you are traveling or representing the University of Florida at an event that will be considered an excused absence if documentation is received by the instructor.
3. **Lab (Formal/informal)** reports are due approximately 2 weeks after you perform the lab - on Tuesday by **11:59 pm**. The due date of each lab is given both under the 'Assignments' and 'Calendar' link. The reports are to be submitted in the appropriate folder on Canvas. Late reports will lose 3 pts for each day submitted after the deadline. **Reports will not be accepted beyond 3 days late, and thus will result in a 0 (zero) grade**.
    1. Lab reports will be submitted as individual assignments; however, you may work together in your lab groups. This will be discussed in the lab report section. You may discuss the results, questions, and the discussion with your group members, however you will each turn in your own report. Examples of suitable lab reports can be found on canvas.
    2. If you have questions, please reach out to either me or the teaching assistant.

LAB RULES

1. You are expected to keep a laboratory notebook and must bring it to every lab meeting.
2. You are always expected to wear a lab coat and safety googles/glasses while in the lab.

3. You are expected to come properly dressed for lab. This includes wearing closed-toe shoes, long pants, and if you have long hair, it should be pulled back and out of your face.
4. You are also expected to arrive to class on time. If you are more than **15 minutes late** you are considered absent and will receive a zero for that lab.
5. All cell phones are turned off and put away.
6. You must clean up your glassware and lab area before leaving. Otherwise, you will have points deducted from the lab.

Assignments

Lab Notebook, Data, and Participation – 7.5 points (each section is worth 1.5 points)

The purpose of requiring notebooks is to acquaint students with GOOD LABORATORY PRACTICES they will encounter in your field of study. Proper data accumulation, organization and review are necessary to validate information and form a basis for decisions made in the food industry and health professions.

Here is the outline—**each section is one point each.**

1. Notebook checked at the beginning.
2. Follows lab notebook format.
    a. Procedures, results, and data are written on the RIGHT side of the notebook.
    b. Calculations and formulas are written of the LEFT side of the notebook.
3. Contains all the sections.
    a. Date
    b. Lab number and what the lab is: e.g., LAB 2: MEASUREMENTS
    c. An outline of the procedure you are doing.
    d. Table for entering your data.
4. Results and data.
    a. You will be entering your data into the Canvas Excel files as well. You can enter it during class (I will have it open on the lab computer). You can opt to enter it remotely as well.

Laboratory Dress Code

NOTE: If dress code is non-compliant you **will** be sent home to change. Here is the outline—**each section is worth one point each.**

1. Only flat closed toed shoes with a nonskid sole are allowed. Sneakers, work shoes. No open toes, crocs, or sandals allowed.
2. Long or short sleeved full coverage shirts. No sleeveless, tank tops, midriffs.
3. Loose fitting pants. This includes leggings! Shorts are not allowed. Loose fitting clothing prevents hot items from sticking to the skins, which can help prevent burns from happening.
4. Hair shoulder length needs to be tide back.
5. Jewelry & watches should not be warned. Put them in your backpack prior to class.

Lab Safety/Preparation

Here is the outline.

1. Only yourselves, lab manuals are allowed in the lab. All other items should be put away. **NOTE: Cell phones are allowed for taking pictures only!** – NO PHONE CALLS OR TEXTING IS ALLOWED. CALLS/TEXTING WILL RESULT IN 5 POINT LAB SAFETY LOSS.
2. Lab coats must always be worn while in the laboratory.
3. Gloves should also be worn when in the laboratory as well.
4. Clean as you go. Wipe down lab benches, and properly dispose of chemical waste in the properly label containers.
    a. Note: If you spill something that you are not able to safely clean up using a paper towel. Notify the laboratory instructor or the teaching assistant so they can get the spill kit.
    b. Know where the eye wash station and the safety shower are, in case of an emergency.
5. If you accidently break any of the glassware. Notify the laboratory instructor or the teaching assistant. So, they can get the broom to help clean up the broken glass. The broken glass should be placed in the broken glass container or the sharps container, depending on what broke.
6. DO NOT put trash in the broken glassware container. That is a safety issue and will result in 5 POINT LAB SAFETY LOSS.

Lab Clean Up -

Here is the outline.

1. Make sure to wipe down your lab area at the end of the lab.
2. Clean off/wipe down all the laboratory equipment that you used during the lab.
3. Make sure to properly dispose of the chemical waste you created during the laboratory into the properly labeled container.
4. Cleaning glassware: All glassware needs to be properly washed, and dried.
    a. One person from the group will dry and put item back where they retrieved it.
    b. Last person in the group will dry and put the item back into their containers and put back as instructed. There is an inventory sheet located by the electric box that states where everything goes as well.
5. COUNTER & TABLE BREAKDOWN: All surface areas that are used during the laboratory session are to be wiped down with soap and water then sanitized with 70% ethanol and wiped with dry towel.
6. Wipe down the sink and make sure there is no excess water.

Formal Lab reports – 50 points

A lab report will consist of the following sections:

1.) Title page
    a. Name
    b. Experiment conducted.
    c. Due date
2.) Abstract (2 pts.)
    a. Summary of the whole experiment in 250 words or less
3.) Introduction (5 pts.)
    a. Brief review of the literature
        i. The introduction in the beginning of the labs can help you with this, however, do not cut and paste what I wrote.
        ii. Remember to cite your work in text.
    b. Objectives
4.) Materials and Methods
    a. Materials required.
    b. Summary of the methods
5.) Results
    a. Figures
        i. Figures should be number and have a complete title or caption.
        ii. Should be completely labeled (both axes)
    b. Tables
    c. Statistics
6.) Discussion and interpretation of the results
    a. Use the literature to help explain why things happen.
    b. Does the data represent what you expect?
        i. If not, why not
        ii. This is your data report it.
7.) Answers to questions at the end of the lab
8.) Conclusion
9.) References*

Concise Lab Reports – 20 points

Unlike a formal lap report that requires a formal introduction. A concise lab report will be composed of the following seven sections.

1.) Title section
    a. Name
    b. Experiment conducted.
    c. Due date
2.) Objectives of the exercises (In your own words).
3.) Methods concisely written.
4.) Results
    a. Described what happened.
    b. Use any statistical test to back up your results.

   c. Graphs and tables
5.) Answers to the discussion questions
6.) References*
   a. *See note about references in the next section
7.) Appendix
   a. Calculations
   b. Etc.

Everything should be written in your own words. Do not cut and paste what is written in the lab report. If you do that you will lose points.

Lab Reports:

To enhance the student's ability to analyze and present scientific information in a logical and acceptable written format, laboratory reports are required for each general area of study. Reports are to be written using a scientific report outline.

You can work together on your lab report. You are not required to work together on the lab report if you do not want to. The following sections you can work with your group on and submit as one lab report:

Group components (one copy is required for each group)

Title/cover page: include names of your group members, number, title, and the date of the lab session
Abstract: Summary of the experiment in 200 – 250 words.
I. Introduction: background, objectives, reaction mechanisms, etc.
II. Materials and methods: you are not expected to copy and paste everything. You can cite the lab handouts.
III. Results: your data, standard curves, calculation, etc.

Individual components (each group member will write their own)

IV. Discussions (bold text that answers required questions in lab handout)
V. Conclusions: summarizes the experimental finding (results and discussions)
VI. References

*You will also be required to have a reference section with a **minimum of three references.** Please note that having only **three references** are the minimum number, I highly recommend you use more than three references when writing your laboratory reports to ensure that you receive the maximum number of points. Citations must be done according to the Journal of Food Science. Examples are shown below. You are expected to cite within your text as well. Citations within your text are numbered in the order that they are used. Every time you use that reference you must cite it again. Any material that I provided you will not be counted as one of your three references. I want you to go out and find additional references.

*If you have any questions regarding citing your references where it is within your report or at the end do not hesitate to email me (Kthompsonwitrick@ufl.edu) or one of the teaching assistants.

Journal Articles
-Cetó, X.; Gutiérrez-Capitán, M.; Calvo, D.; del Valle, M., Beer classification by means of a potentiometric electronic tongue. *Food Chemistry* **2013,** *141* (3), 2533-2540.
- Brown, J.; Jones, M.; Green, D. Article title. *J. Agric. Food Chem.* **1980**, *28*, 1-4. (Use issue number only if each issue begins with page 1.)

Books
-Smith, L.; Caldwell, A. Chapter title. In *Book Title*, edition no.; Keys, F.; Park, G., Eds.; Publisher: City, State (or Country if non-U.S.), Year; Vol. no., pp.
- Shellhammer, T., Beer Fermentation. In *The Oxford Handbook of Food Fermentations*, Bamforth, C. W.; Ward, R. E., Eds. Oxford University Press: New York City, New York, 2014; p 805.

Lab Report Schedule

Lab #	**Week Lab Performed**	**Due Date**	**Points**
1: Introduction	January 14	January 21	10
2**: Ice Crystal Formation**	January 21	February 4	50. (Formal)
3: Weak Acids	January 28 (Tutorial)	February 11	20
4. Reducing Sugars	February 4	February 18	20
5**: Jelly Making**	February 11	March 4	50. Formal)
6. Jelly Lab Continues	February 18		
7: Proteins Assay	February 25	March 11	20
8. Lipid Oxidation	March 4	March 25	50 (Formal)
No Lab	March 11	-----	----
Spring Break	March 18	-----	----
11. Color	March 25	April 15	50 (Formal)
Final Exam	April 8		50 points

***Bold indicates Experimental Foods kitchen in the pilot plant.**

Laboratory reports

To enhance the student's ability to analyze and present scientific information in a logical and acceptable written format, laboratory reports are required for each general area of study. Reports are to be written using a scientific report outline.

They will be submitted electronically.

Lab reports will be turned in by 11:59 pm on the due date. Late reports will lose 3 pts for each day submitted after the deadline. Reports will not be accepted beyond 3 days late and thus will result in a 0 (zero).

Copies of the formal and informal lab report rubrics can be located in the student lab manual that is posted on canvas.

Grades

Assignment	Points
Informal Lab Reports (20 points each)	20 * 3 = 60
Formal Lab Reports (50 points each)	50 * 4 = 200
Lab Notebook/Data, and Participation (5 points)	12 * 7.5 = 90
Laboratory Final	50
Introductory Questions	10
Total Points	410

Grading Policy

The following is given as an example only.

Percent	Grade	Grade Points	Points
90.0 - 100.0	A	4.00	369 -410
87.0 - 89.9	B+	3.33	356 -368
82.0 - 86.9	B	3.00	336 -355
80.0 – 81.9	B-	2.67	328 -335
77.0 – 79.9	C+	2.33	315 -327
72.0 – 76.9	C	2.00	295 -314
70.0 – 71.9	C-	1.67	287 -294
68.0 - 69.9	D+	1.33	278 – 286
62.0 - 67.9	D	1.00	254 -277
60.0 - 61.9	D-	0.67	2 – 253
0 - 59.9	F	0.00	0 - 239