

# **Plant Biochemistry**

CHEM 387/465 – Spring 2022

Dr. Miguel A. Ballicora (Instructor)

Flanner Hall Room #105 (or Online): Tuesdays & Thursdays 4:15 pm – 5:30 pm

## **Major Themes**

The major themes in this course will be about selected topics in Plant Biochemistry. We will discuss and learn about distinctive areas of biochemistry that are critical for the life of photosynthetic organisms. These are essential to sustain life as a whole in the planet, and the source for our energy and food needs. Main focus will be on metabolism and structure.

The structure of the course will involve lectures by the instructor, student presentations, and discussions. The topic schedule is tentative (see below), since it may slightly change to accommodate the interest generated by discussions in class. It may also change if needed to accommodate seminars or unexpected situations.

## **Goals**

A successful course will lead the student to gain knowledge of key metabolic paths in plants in order to appreciate the importance of the field in our world and their careers. In addition, the course is designed to develop student's skills to communicate scientific knowledge and how to find resources to answer scientific questions.

## **Website and Professor-Student Communication**

The website will be on *Sakai* and the URL is <http://sakai.luc.edu>

Students are responsible to check *Sakai* regularly (once a day) as well as the Loyola email account (once a day) for updated information. The instructor will send messages to that e-mail account. Grades will be posted in *Sakai*.

## **Presentations**

Each student will present once during the semester. Each presentation will be approximately 12 min long, followed by questions and answers (~5 min). The speakers will provide the instructor with the abstract of their presentation on the days indicated by the instructor. Students will select the paper for presentation upon approval of the instructor. In case of two or more people picking the same paper, the person with the earliest e-mail will present it and the others will need to find a new one. Since you will need to have found 3 papers for each round of presentations you should be ready to pick another to present if necessary. There will be three rounds of presentations, so the student is expected to find a total of nine papers, read them, and summarize them.

The emphasis of the selected papers must be molecular structure (protein, lipids, carbohydrates, etc), function, and/or metabolism rather than cells, genetics, or organisms. There will be grade deductions if this is not respected. It is part of the grade choosing an appropriate paper. A handout and a copy of the main literature reference for each presentation must be given to the instructor before the presentation.

The day of your presentation you should provide an electronic copy of your presentation for posting on the class website and have the slides uploaded to the computer 5 minutes before class start. Alternatively, you could send an electronic copy to the instructor the day before (no later than 8 pm). Please talk to the instructor about it.

### **Online environment**

At the time of this course starting, the University has determined that classes will be online until January 31<sup>st</sup>. After that date, it is intended the classes will be in person (FH105), but it may occur that in certain circumstances some classes in the future may be online. The instructor will inform whenever this occurs. When classes are online, logging into Sakai and going into the Zoom Tab should be able to access the virtual environment for the class. Changes in the schedule are not expected, but maybe possible.

### **Participation**

The instructor strongly encourages the students to participate in class and interact with other classmates. To facilitate the communication, a discussion forum will be set up in *Sakai*. Students can post questions, answers to other student questions, and anything related to the course.

### **Reading assignments**

No textbook has been assigned for this course. Students are expected to read some papers they will be searching related to the topics. Three summaries will be written, which will be graded and shared with the rest of the class. The instructor will provide proper instructions about all this. Hand outs and web links may also be provided by the instructor.

### **Grading (CHEM387)**

Presentation	20%
Mid-term examination 1	20%
Mid-term examination 2	20%
Discussion & participation	5%
Assignments	10%
Final examination	25%

### **Grading (CHEM465)**

Presentation 1	15%
Presentation 2	15%
Mid-term examination 1	15%
Mid-term examination 2	15%
Discussion & participation	5%
Assignments	10%
Final examination	25%

The final score of the course will be, rounded, and the letter assigned according to the following table

Letter	Range
A	91-100
A-	85-90
B+	80-84
B	75-79
B-	70-74
C+	65-69
C	60-64
C-	55-59
D+	50-54
D	45-49
F	44 and below

There will be no make up examinations under any circumstance for exams. In the event of a missed first examination due to a documented medical or family emergency, the score on the final examination, corrected by the ratio of the class averages on the two examinations, will determine the missed examination score.

### **Final Exam**

The University sets the schedule for all final exams. The final will be held on:

**Tuesday May 3<sup>rd</sup>, 4:15 pm to 6:15 pm**

There will be no make-up final exams given under any circumstance, and the exam will not be given early, either. Individual students who have four (4) final examinations scheduled for the same date may request to have one of those exams rescheduled. If a student reports having four final examinations scheduled for the same date, students should be directed to e-mail a petition to Adam Patricoski, Assistant Dean for Student Academic Affairs, CAS Dean's Office ([apatricoski@luc.edu](mailto:apatricoski@luc.edu)).

### **Health, Safety, and Well-Being On-Campus**

Please be familiar with and adhere to all policies and protocols posted on the *Campus Info & Resources* site: <https://www.luc.edu/healthsafetyandwellbeing/campusinforesources/>

### **Student Accommodations**

The Student Accessibility Center (SAC, formerly known as SSWD), Sullivan Center (773-508-3700), <http://www.luc.edu/sac>, has the mission “to support, service, and empower Loyola University Chicago students with disabilities” and to “Partner with faculty and staff to provide opportunities for collaboration, professional development, personal growth, and staff interaction, as they relate to students with disabilities.” Please direct all questions concerning accommodations of disabilities to the Student Accessibility Center. Academic accommodations afforded to students require documentation and review. The Student Accessibility Center will issue accommodation letters for registered students to present to their instructors: accommodations are not active until students present these letters to their instructors. If students' accommodations involve attendance or deadlines, instructors and students will jointly complete and execute an Agreement Form articulating their terms. See <https://www.luc.edu/sac/faculty/facilitatingaccommodations/> for guidance about implementing various kinds of

accommodations in a way that is appropriate to your class. The Student Accessibility Center stands ready to work with you.

**Loyola University Absence Policy for Students in Co-Curricular Activities (including ROTC):**

Students missing classes while representing Loyola University Chicago in an official capacity (e.g., intercollegiate athletics, debate team, model government organization) shall be allowed by the faculty member of record to make up any assignments and to receive notes or other written information distributed in the missed classes.

Students should discuss with faculty the potential consequences of missing lectures and the ways in which they can be remedied. Students must provide their instructors with proper documentation i.e., “[Athletic Competition & Travel Letter](#)” describing the reason for and date of the absence.

This documentation must be signed by an appropriate faculty or staff member and it must be provided to the professor in the first week of a semester. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to allow the student to take the examination at another time.

(<https://www.luc.edu/athleteadvising/attendance.shtml>)

**Expected behavior**

Dishonest behavior such as cheating may cause to fail that given assignment (or set of assignments) or examination. Cell phones or any other distracting devices are not allowed in class. Please, turn them off, particularly during presentations of other classmates. In the exams, students are not allowed to use any sort of electronic device (laptop computers, cell phones, iPods, radios, calculators etc.) unless the instructor specifically authorizes them.

**Tentative schedule**

In a separate sheet, there is the intended schedule for the lectures.

**Instructor:**

Miguel A. Ballicora

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Office hours: Special meeting hours could be arranged by appointment (e-mail me – be sure that you get a confirmation)

**CHEM 387/465, Tentative Schedule**

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Tue	1/18	Introduction	1
Thu	1/20	Photosynthesis	2
Tue	1/25	Photosynthesis & Carbon fixation	3
Thu	1/27	Photosynthesis & Carbon fixation	4
Tue	2/1	Starch, sucrose, and carbohydrates	5
Thu	2/3	Starch, sucrose, and carbohydrates	6
Tue	2/8	Starch, sucrose, and carbohydrates	7
Thu	2/10	Student Presentations	8
Tue	2/15	Student Presentations	9
Thu	2/17	Student Presentations	10
Tue	2/22	Midterm Exam #1	11
Thu	2/24	Cell wall	12
Tue	3/1	Cell wall	13
Thu	3/3	N and S metabolism	14
Tue	3/8	SPRING BREAK	
Thu	3/10		
Tue	3/15	N and S metabolism	15
Thu	3/17	Student Presentations	16
Tue	3/22	Student Presentations	17
Thu	3/24	Student Presentations	18
Tue	3/29	Student Presentations	19
Thu	3/31	Midterm Exam #2	20
Tue	4/5	Secondary Metabolism. Terpenes	21
Thu	4/7	Phenolic & Aromatic compounds	22
Tue	4/12	Student Presentations	23
Thu	4/14	EASTER HOLIDAY	
Tue	4/19	Student Presentations	24
Thu	4/21	Student Presentations	25
Tue	4/26	Student Presentations	26
Thu	4/28	Student Presentations	27
Tue	5/3	FINAL EXAM (4:15 PM)	