



# *Biomolecules*

**ELEC-E3260**

**Spring 2023**

# *Biomolecules teachers*



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# *Course content*

- Lecture & Topics
  - ✓ Spectroscopy and Microscopy: general
  - ✓ Mass Spectrometry
  - ✓ Raman and InfraRed Spectroscopy
  - ✓ UV-visible and Fluorescence Spectroscopy
  - ✓ THz Spectroscopy
  - ✓ Microscopy

# *What you should already know*

Basics knowledge on:

- Bachelor-level in **Mathematics, Physics** (photon, forces), **Chemistry** (ionic, covalent, hydrogen bonds, solvents);
- High-school knowledge in **Biology**  
(structure of the cell, DNA and chromosomes...).

# *What we expect you to learn*

## **Knowledge**

- Molecular Physics
- Physical insight into biological systems
- Microscopy & Spectroscopy techniques

## **Skills**

- Peer-to-peer communication (in-class discussion, exam)
- Writing scientific documents (essay, learning diary)

# Course schedule (tentative)

Date	Lecture topic
Week 1	General Introduction on Spectroscopy & Microscopy
Week 2	Microscopy techniques
Week 3	Mass Spectrometry
Week 4	UV-visible & Fluorescence Spectroscopy
Week 5	Raman & Infrared Spectroscopy
Week 6	TBA
23.02.2023	Exam

# *Lecture structure*

- Topic of the day/week: *peer-to-peer* discussion (45 mins)
- Break (10 mins)
- Topic of the day/week: *peer-to-peer* teaching (45 mins)

# Assignment: Learning Diary

\_\_\_\_\_  
Your name: \_\_\_\_\_

\_\_\_\_\_  
Date/Week: \_\_\_\_\_

\_\_\_\_\_  
How long did it take you to write the learning diary this week? \_\_\_\_\_ h

- *What is the one or two concepts I have learned this week, which I believe are important? Please briefly summarize (max two sentence each) (mandatory)*
- *How do I feel in this remote learning set?*
- *What did I learn? How is what I learned linked to what I have learned before in other classes?*
- *Was there some vocabulary that was not familiar to me? If yes, can you provide example(s)?*
- *Was it there something I did not understand? Why I did not understand (for example, explanation not clear, missing concepts or tools to understand, totally new concept, etc.?)*
- *Is what I am learning relevant to other things I have studied or that I plan to study in the future? What is the connection?*
- *Would you suggest anything done differently?*
- *If I think about this week classes (lecture, slides, in-class activities, etc.), is there something which I have found very helpful in understanding concepts and/or mechanisms? Or on the opposite, did I find something extremely difficult which was not helping my learning?*

(You do not need to answer all the questions, only bold is mandatory. Use these questions to guide you on reflection for this week class)

Weekly learning diary  
(from week 2, DL on Fridays, 18h,  
4 points/each, 20 points total):

reflection and brief summary of weekly  
course content  
(template available on MC)



# *Assignment: Essay & Exam*

- **Essay** (DL 20.02.2023, 40 points)

The essay focuses on one bio-molecule. You can choose a biomolecule on MC or you can propose your own (send us an email). Template will be available on MC.

If you submit your draft by 08.02.2023, you will receive feedback from teachers and earn 5 extra points.

- **Oral Exam** (23.02.2023, 40 points)

We will have a discussion on some of the topics discussed during our lectures. The exam will mainly focus on concepts and aspects of biomolecule and the study of their properties.

Exam is on **23.02.2023** (schedule will be soon available on MC)

# *ELEC-E3260 Resources*

- **Recorded Lectures** will be uploaded published on MyCourses
- **Slides** will be uploaded on MC before the class, so you can take notes during sessions. Many slides contain reference to peer-reviewed scientific papers. All materials is referenced so you can retrieve the paper if looking forward for more detailed readings.

Please note that slides/recorded lectures are expected to be studied/view prior to class. Content will be used both on Tuesday and Thursday classes.

# *Workload & Grades*

Assignment	Workload	Points
Lectures	24	-
Learning Diary (5)	15	20
Essay	40	40
Exam	45	40
<b>Total</b>	<b>124</b>	<b>100</b>
Extra points		
Essay draft		5
Longer exam (40 minutes)	-	20

Points	Grade
<50	Fail
50-59	1
60-69	2
70-79	3
80-89	4
90-100	5

# *Deadlines (always h18.00)*

<b>Assignment</b>	<b>Deadline</b>
Choose your bio-molecules (MC page)	Week 1 (ASAP)
Learning Diary	Weekly (from week2), on Fridays
Essay to receive feedback (optional)	08.02.2023
Essay (final version)	20.02.2023