

DISCIPLINA PPG BIOFÍSICA - 2023-1

BFB 798 – BIOFÍSICA ESPECIAL (Remediação Ambiental)

Prof^a. Responsável: Valéria Freitas (valeria@biof.ufrj.br)

Carga horária: 45 horas

Data de início: 13/06 a 27/06

Dias e horário das aulas: terça à sexta-feira das 10 às 12 horas e 14 às 16 horas

Ementa: A disciplina aborda diferentes estratégias biológicas e não biológicas para a remediação de problemáticas no ponto de vista de poluição ambiental, com ênfase nos ambientes aquáticos, considerando impactos como metais, eutrofização, poluentes orgânicos e emergentes, biotoxinas e patógenos. A proposta da disciplina é dar suporte ao conhecimento inicial sobre estratégias como, por exemplo, biodegradação e fitorremediação - no âmbito dos serviços ecossistêmicos -, além de processos oxidativos avançados, desenvolvimento e utilização de membranas tecnológicas, etc.

BFB 752 - BIOLOGIA DE INSETOS VETORES

Prof. Responsável: Fabio M. Gomes (fabiomg@biof.ufrj.br)

Carga horária: 15 horas

Data de início: 02/06 a 30/06

Dias e horário das aulas: sextas-feiras das 13 às 16 horas

BFB813 – Fundamentos Biofísicos no Estudo de Macromoléculas.

Prof^a. Responsável: Jennifer Lowe (lowe@biof.ufrj.br)

Carga horária total da disciplina: 45 horas (aula + estudo individual).

Carga horária por dia de aula: 4 horas.

Carga horária de estudo individual: 2 horas/aula.

Data de início e fim das aulas: 02 de Junho a 04 de Julho de 2023.

Dias e horário das aulas: terças e sextas-feiras das 8:00 às 12:00.

Limite de inscritos: 10

Pré-requisitos: sem pré-requisitos, porém a disciplina será ministrada em inglês. Mas, não se preocupe, sua proficiência em inglês NÃO será avaliada durante o curso. Leia as instruções abaixo:

Atenção: Esta disciplina será um curso EMI (English of Instruction):

Welcome to the course “Biophysical Principles in the Study of Macromolecules” (BFB813)! This is an EMI course, which means, we are going to use the English language in our classes. This modality of course is a great opportunity to prepare yourself for a successful academic professional life. As you may know, English is the official language in scientific field, and it is essential to communicate in English with researchers all over the world. In our classes I will present you different activities to stimulate your English speaking. However, you just keep that in mind:

#1. DON'T BE SHY AND DON'T BE AFRAID OF MAKING MISTAKES. **Your English proficiency will not be evaluated during the course.** It will be used as a medium of instruction, thus, the most important thing is to communicate in English, that means, understand what others say and be understood (even if the grammar is incorrect). This is particularly important when you should talk about science in a congress, for example.

#2. DIVE RIGHT IN ALL ACTIVITIES TO GET THE MOST OUT OF SPEAKING SKILLS. I cannot force you to fully participate in the activities during classes, but more you participate, more you will improve your English!

Syllabus of BFB 813

Course Title: Biophysical Principles in the Study of Macromolecules (BFB 813)

Instructor: Jennifer Lowe, Ph.D. – Associate Professor

Office location: CCS – Room: I2-035

Office hours for student questions (by email or schedule a specific time)

Email: lowe@biof.ufrj.br

University Name: Universidade Federal do Rio de Janeiro (UFRJ)

Department: Instituto de Biofísica Carlos Chagas Filho

City and Country: Rio de Janeiro, Brazil

Dates: Tuesdays and Fridays from 2nd June to 4th July 2023. 8:00 AM – 12:00 PM.

Description: Introduction concepts of the most common methods in the study of macromolecules, such as spectrophotometry, fluorimetry, SDS-PAGE, isoelectric focusing, western-northern-southern blot, chromatography, centrifugation, besides dialysis, osmometry, and cell fractionation. Flipped learning method will be used in this course. That means student should read all material (videos, texts, and articles) provided by the instructor in Google Classroom platform and make your own research to learn the theoretical concepts BEFORE classes. During classes, theoretical concepts will be worked on so that students understand their applicability, learn the correct use of techniques, and correctly analyze the results, presented as case studies.

Objectives: Students will be able to...

- present themselves to others and explaining their scientific project in English.
- describe the biophysical principles involved in the methods.
- evaluate the results obtained in the experiments.

- d. identify any inconsistency in the obtained results and propose ideas to improve the results.
- e. present a seminar about a specific method that (s)he never carried out.

Materials: There is no specific textbook for this course. Any textbook of cell biology or biochemistry that addresses the topics described in the description could be used. Many scientific papers will be used during the course, and it will be provided using Google Classroom platform. It will be used for the storage all the materials and to submission of assignments and instructor's feedback of the assignments. Pdf files containing Power Point slides used during presentations will be available in Google Classroom platform.

Grading: In each class, students should prepare and deliver assignments as quizzes, questionnaires, or forms (6 in a total). Each assignment represents 10% of the final grade (total of 60%). All students must present a seminar about a scientific paper of a specific method, which represents 10% of the final grade and at the end of the course, a summative assessment will be applied, and it represents 30% of the final grade.

Policies: In all assignments, plagiarism, cheating, forgery, and other violations of academic integrity will be taken seriously and will not be tolerated. That means copying of content from book/internet or any other source as colleagues' assignment will not be allowed. Plagiarism and academic integrity issues will be discussed in more detail during the course. Participation in all assignments is mandatory for all students and should follow the deadlines. Late submission will not be tolerated. Exceptions with documentation will be excused, such as a doctor's note. According to UFRJ's rules, an overall 75% attendance is compulsory for all the students during the course. All assignments are mandatory and must be delivered within the previously stipulated deadline.

Class Schedule (possible changes with previous notification):

Assignment	Weighting	Due	Description
Self-presentation and explain the scientific work.	0	Before 1st class (late May)	Write a text of a self-presentation in English and make a video of it. This assignment will not be graded, but it is important to evaluate student's English proficiency (written and speaking) and identify possible student needs.
List of exercises about solutions and calculations. Diffusion and Osmolarity	10	1st class 2nd June	The list of exercises will be important to evaluate previously basic knowledge for this course. Quiz about diffusion and osmolarity. Mini lecture: diffusion and osmolarity.
Spectrophotometer and Fluorimetry	10	2nd class 6th	Personalized feedback about the text and video presentation. Quiz about spectrophotometry and

		June	fluorimetry. Mini lecture of spectrophotometry and build a standard curve for protein quantification in class (small-groups discussion). Mini lecture fluorescence and analysis of different fluorescence photomicroscopes.
Cellular fractionation	10	3rd class 13th June	Mini lecture of cellular fractionation Fill the blanks activity about cellular fractionation.
Centrifugation/ultracentrifugation	10	4th class 16th June	Quiz about centrifugation. Mini lecture about centrifugation and major mistakes. Analysis of methods papers using centrifugation/ultracentrifugation.
SDS-PAGE and Western blotting	10	5th class 20th June	Directed study about SDS-PAGE and WB. Mini lecture and analysis of probable failure in experiments of SDS-PAGE and western blotting.
Chromatography	10	6th class 23rd June	Mini lecture. Pros and cons about chromatography.
Presentation of a scientific paper	10	7th class 27th June	Formative assessment: In pairs, students should make a presentation of a published method (in English). Self-presentation and short presentation of their research project after revision.
Final exam	30	8th class 30th June	Summative assessment: questions using real experimental results. Students should describe the methods, identify problems, and propose possible solutions.
Closure		4th July	Delivery of results and instructor feedback

Communication: Google Classroom platform will be used for all official information, communication, and materials of the course (sharing of videos, articles, slides, forms, tests, assignments, evaluation, and so on). There is a possibility of using a WhatsApp group, but just for quick communication and strictly about the course.

CATÁLOGO DE EMENTAS DISPONÍVEIS NO SITE

<https://www.posgraduacao.biof.ufrj.br/pos-graduacao-em-biofisica/disciplinas/>

LINK PARA INSCRIÇÃO:

<https://docs.google.com/forms/d/1fG1gKkFbZzb2YwDtYuEKubzvyCqU-Ulh3Cbz88GY6Zs/edit>

PERÍODO DE INSCRIÇÕES:

De 03/03/2023 até 15/03/2023