

Syllabus for Physics 650, Spring 2024

Topics in Current Research

Itzhak Bars

SSC 216B, X-00047, bars@usc.edu

<http://physics.usc.edu/~bars/>

See Blackboard for assignments, posted documents, and useful links

Class times: 3:00-3:50 PM, Zoom link at Blackboard
Office hours: request an appointment to meet on Zoom

Lectures and goals

This course will consist of a series of lectures by the faculty of the Department of Physics and Astronomy about their own research for the purpose of familiarizing first year graduate students about the research that is being conducted currently in the department.

By being exposed to a number of different topics and lecturers the students will not only be informed about departmental research activities but also they may hopefully develop the ability to understand presentations on scientific topics potentially very distant from their own field of research, while simultaneously learning skills for oral and written communication of scientific concepts.

The lectures will be offered mainly online except for one or two lectures that will be offered in-person as well as online formats simultaneously. Video recordings and perhaps lecture notes (if available) will be posted in Blackboard after each lecture.

Participation, homework, final & grading

Students are expected to attend all the lectures unless a valid excuse is provided. Questions by the students during and at the end of the lectures are welcome and highly encouraged.

To pass the class you need a grade 70 or above out of maximum 100 in the following activities.

- Attendance and participation. You should keep your **video on** and be **muted** unless you need to say something. Zoom keeps track of the amount of time attended. The participation grade will partly be proportional to the amount of time attended and partly to the amount of your active participation in the form of questions or live discussion. This is 30% of the grade.
- Assignments: After each lecture write a short essay 2 paragraphs or more about what you understood and got out of the lecture. 100 points for each essay. This is 30% of the grade.
- Final report, 5 pages or more about a research topic that you are interested in or that you would like to learn more about. This is 40% of the grade.

The schedules for the lectures, assignments and the final report are in the “Schedule of Lectures and Assignments” in the Contents section in your Blackboard account.

Code of Ethics

Read carefully the [Code of Ethics](#) found in your Blackboard account. Students must write their own weekly essays and their own final report. Violation of the code of ethics will result in failing to pass or worse.

Faculty Liaison

All classes in the Department of Physics & Astronomy have an assigned Faculty Liaison to serve students as a confidential, neutral, informal, and independent resource when they wish to discuss issues concerning their course without directly confronting their instructor. The Faculty Liaison for this class is Dr. Vera Gluscevic, gluscevi@usc.edu, 213-740-0897, ACB 526.

Additional Information

Topics in Current Research, Section 50642

First day of classes: Monday, January 8, 2024

Last day to add: Tuesday, January 30, 2024

Last day to change to Pass/No Pass: Tuesday, January 30, 2024

Last day to drop without a mark of "W" and receive a refund: Tuesday, January 30, 2024

Last day to withdraw without a "W" on transcript or change pass/no pass to letter grade: Tuesday, February 27, 2024

Last day to drop with a mark of "W": Friday, April 5, 2024

Last day of classes: Friday, April 26, 2024

End of session: Wednesday, May 8, 2024



Schedule of Lectures and Assignments

The tentative schedule for class meetings is given in the following table:

<u>Date</u>	<u>Professor</u>	<u>Title</u>
1/09/2024	Itzhak Bars	Organization
1/16/2024	Stephan Haas	Topological Quantum Systems
1/23/2024	Rosa Di Felice	Computational approaches for the structure and electronic structure of matter
1/30/2024	Nathan Benjamin	Pure gravity and the bootstrap
2/06/2024	Christoph Haselwandter	Biological Matter Theory
2/13/2024	Kelly Tuo	Ultrafast Quantum Opto-Spintronics Group: Research Overview
2/20/2024	Itzhak Bars	2T-Physics
2/27/2024	James Boedicker	Biophysics of Cellular Networks
3/05/2024	Vitaly Kresin	Magic Nanoclusters and Super Nanodroplets
3/11/2024	vacation	Spring Vacation
3/19/2024	TBA	TBA
3/26/2024	Elena Pierpaoli	Lessons from the Cosmic Microwave Background
4/02/2024	Peter Foster	Dissipation and energy propagation across scales in an active cytoskeletal material
4/09/2024	TBA	TBA
4/16/2024	TBA	TBA
4/23/2024	TBA	TBA

The TBA slots will be filled up later.

Homework schedule:

After a presentation on each Tuesday there is a **required assignment** to earn 100 points toward your pass/nopass grade: Write a short essay about what you think you learned in this presentation. The essay should be 2 paragraphs or longer. Although, you are not required to do so, you are encouraged to research the topic further in the internet or more deeply in professional journals. If you wish you may include in your essay relevant comments or observations derived from your individual learning experience.

The deadline to upload your required assignment is midnight on the Sunday following each presentation. See the assignments link in Blackboard for instructions to upload your essay.

Final exam schedule:

The official date for the final exam is Tuesday May 7. In lieu of an exam there will be a required 5 page (or more) report on a physics research topic of the student's choice. This topic may or may not be related to the lectures presented in this class. The intention for such a report is for the students to focus their interests as they are getting ready to choose an advisor and begin their research adventure for their PhD theses.

The deadline for uploading your report is midnight 5/7/2024, but you can do it at any time after the last class meeting on 4/23/2024. Use the link in the Assignments window to upload your report.