

SYLLABUS

QBIO 493: Quantitative Biology Honors Seminar

This course is a required course for students majoring in Quantitative Biology (<http://qbio.usc.edu>) with Honors distinction.

Fall 2020

Time and Location: Mondays, 3:30-5:10 pm **ONLINE**

Course Instructors: Dr. Remo Rohs (rohs@usc.edu; office hours by appointment)

Dr. Mark Chaisson (mchaisso@usc.edu; office hours by appointment)

Introduction: The Quantitative and Computational Biology Section offers a Quantitative Biology (QBIO) major. This major allows biology students to achieve a fuller background in the quantitative sciences such as computer science and statistics that are essential for modern data driven biological science.

Course Objectives: The goal of this honors seminar is to stimulate your interest in biological research and to develop your ability to communicate scientific ideas effectively. QBIO 493 includes a particular focus on quantitative analysis of biological data.

Expectations: One primary means for achieving the course goals is to get involved in academic research in the field of quantitative biology. Students enrolled in QBIO 493 are expected to do research in a lab of their choice approved by the instructors.

In addition, reading the scientific literature is highly encouraged. The instructors will provide suggestions for literature studies that specifically relate to a student's research interests.

Course Requirements: Each QBIO 493 student is required to give two oral presentations during the semester. One presentation is about a paper they recently read (the topic of this presentation needs to be approved by the instructors), and the third presentation is on recent progress in the student's own research. A schedule for presentations will be generated early in the semester.

Grading: Course grades will be based both on presentations and class participation as follows:

% of Grade	Criteria
60 %	Presentation (about publication related to student's research)
40 %	Participation and discussion of other presentations

Students are expected to ask questions and exchange ideas freely. Each student should be prepared to ask at least one question by the end of each presentation.

COURSE SCHEDULE

08/17/20: Remo Rohs

Course Introduction; Quantitative approaches to gene regulation

08/24/20: Mark Chaisson

Genome-first detection of genetic variation

08/31/20: Meisam Razaviyayn

I-CONVEX: Fast and Accurate *de Novo* Transcriptome Recovery from Long Reads

09/07/20: NO CLASS – Labor Day

09/14/20: Serghei Mangul

Computational methods to study adaptive immune response from next-generation sequencing data

09/21/20: Michael ‘Doc’ Edge

The new forensic genetics and its privacy implications

09/28/20: Peter Calabrese

Germline Selection, Cancer, and Detecting Rare Mutations

10/05/20: Adam MacLean

Studying systems biology and stem cell dynamics with big data and little models

10/12/20: Student Presentations

1. Ari Cohen
2. Darius Scott

10/19/20: Student Presentations

1. Sophia Pei
2. Leon Zha

10/26/20: Student Presentations

1. Judy Wang
2. Alex Hill

11/02/20: Student Presentations

1. Emily Yang
2. Yijun Shao

11/09/20: Student Presentations

1. Christopher Neely
2. Jaclyn Ready

Statement for Observance of Religious Holidays: USC's policy grants students excused absences from class to observe religious holidays: <http://ori.usc.edu/life/calendar/absences/> In this case, please contact your instructor in advance to agree on alternative course requirements.

Statement for Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity: USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Statement on Academic Conduct and Support Systems

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs

Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/sssa

Diversity at USC

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.

Provides overall safety to USC community. dps.usc.edu