

## SYLLABUS

### QBIO 105: Introduction to Quantitative Biology Seminar

This course is a required course for students majoring in Quantitative Biology and can only be taken by QBIO students.

**Spring 2025**

- Time and Location:** **Tuesdays, 3:30–5:10 pm, RRI 101**  
Meet-the-speaker reception with refreshments, 3 pm, RRI lobby
- Course Instructors:** Dr. Peter Calabrese ([petercal@usc.edu](mailto:petercal@usc.edu))  
Associate Professor of Quantitative and Computational Biology (Teaching), Director of Undergraduate Studies, QBIO Major  
Office: RRI 404B
- Dr. Remo Rohs ([rohs@usc.edu](mailto:rohs@usc.edu))  
Professor and Chair of Quantitative and Computational Biology  
Office: RRI 413H
- Teaching Assistant:** Paulina Smaruj ([smaruj@usc.edu](mailto:smaruj@usc.edu))  
Ph.D. Candidate in Computational Biology and Bioinformatics  
Office: RRI 413A

#### Introduction:

This course is the introductory seminar for the QBIO major. It is ideally taken as freshman but it can be taken after a student's transfer into the QBIO program. The instructors will introduce the general field of Quantitative Biology, its definition and role within Biology, and its relationship with Chemistry, Computer Science, Engineering, Mathematics, Medicine, and Physics. The curriculum will include introductory lectures by the instructors, guest lectures, and discussions.

#### Schedule:

- 1/14 Dr. Remo Rohs**  
Professor of Quantitative and Computational Biology  
***Course introduction***
- Dr. Peter Calabrese**  
Associate Professor of Quantitative and Computational Biology (Teaching)  
***Introduction to neural networks***
- 1/21 Dr. Helen Berman**  
Professor (Research) of Quantitative and Computational Biology  
***Coevolution of structural biology and the Protein Data Bank***
- 1/28 Dr. Bérénice Benayoun**  
Associate Professor of Gerontology  
***Sex-dimorphic regulation of mammalian aging***
- 2/4 Dr. Soheil Shams**  
President, TESA Research, Inc.  
***Artificial Intelligence and bioinformatics – a 30-year personal journey***

- 2/11 Dr. Chang (April) Shu**  
Assistant Professor of Population and Public Health Sciences  
***Genetic studies of autism spectrum disorders***
- 2/18 Dr. Judith Kribelbauer**  
Gabilan Assistant Professor of Biological Sciences  
***Measuring everything, everywhere, all at once: combining genome-integrated reporter assays and deep learning to understand enhancer-promoter communication***
- 2/25 Dr. Julia Schwartzman**  
Gabilan Assistant Professor of Biological Sciences  
***Bacterial collective behaviors and ecological function***
- 3/4 Dr. Peter Foster**  
Assistant Professor of Physics & Astronomy  
***From cytoskeletal assemblies to living machines***
- 3/11 Dr. Kate White**  
Gabilan Assistant Professor of Chemistry  
***Quantitative mapping and visualization of peptide hormone maturation***
- 3/18 SPRING BREAK**
- 3/25 Dr. Arun Durvasula**  
Assistant Professor of Population and Public Health Sciences  
***Quantitative models of human evolutionary genetics***
- 4/1 Dr. Don Arnold**  
Professor of Biological Sciences and Biomedical Engineering  
***Tracing neural circuits using antibody mimetics***
- 4/8 Alex Galvagni**  
CEO, Age of Learning, Inc.  
***Impact of AI on leading edtech company***
- 4/15 Dr. Irene Chiolo**  
Associate Professor of Biological Sciences  
***Heterochromatin repair: a chromatin perspective***
- 4/22 Dr. Matthew Michelson**  
CEO, Readout AI, Inc.  
***AI in healthcare: some practical applications***
- 4/29 Dr. Dani Byrd**  
Professor of Linguistics  
***Human speech***

**Weekly Reports (10 points each; 150 points total):** Reports should be no more than one page in length with up to 500 words. Reports must be typed and submitted electronically via *Brightspace*. Late reports will receive a maximum of 5 points. There will be a total of 15 weekly reports. These reports will have two parts: (a) summary of the previous lecture, and (b) potential questions for this week's lecture. For part (a), you must state the name of the previous lecturer, the date and title of the lecture, and list the main points raised during the lecture and discuss the meaning of each. For part (b), you should research the current week's lecturer and topic and pose several potential questions. **Reports are due the following week at lecture time.**

**Grading:** Your final letter grade in this course will be based upon all of your written reports, participation and discussion. Since there are no exams in this course, active participation and attendance are important components. In-person attendance is required. If you are sick, contact us as soon as possible and accommodations will be made. The grade will consist of 150 points for weekly reports. Participation and active discussion will be considered for the final grade.

**Statement for Observance of Religious Holidays:** USC's policy grants students excused absences from class to observe religious holidays: <http://orl.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 the 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/>.