

SYLLABUS

BISC 321: Multidisciplinary Seminar: Science, Technology and Society

Note that BISC students can now take this course for major elective credit.

Spring 2018

Time and Location: Mondays, 3:30-4:50 p.m. in ZHS 252

Course Instructor: Dr. Vsevolod (Seva) Katritch (katritch@usc.edu, MCB-317)
<http://katritch.usc.edu>

Teaching Assistant: Nilkanth Patel (nilkantp@usc.edu, MCB-300)

Introduction: One of the hallmarks of science and technology is that it is ever-changing, growing, and extending in its pursuit of knowledge with far-reaching implications for society. The main content of this course is to have faculty from various disciplines and other representatives across society convey their knowledge in areas of their own research and expertise and tell us why they believe their perspective and knowledge is relevant to technological advance, careers and the world around us.

Our first meeting, with Dr. Katritch on Monday, 1/8, in ZHS 252, will broadly give information on current topics in technology, including biotechnology and medicine, and on cultural changes that have profoundly changed the goals of a significant fraction of our society. This first meeting will also give information on writing the weekly reports and on the term paper. The first meeting will also be used to address your questions regarding the homework and grading of this course.

The first weekly report, due 1/23, asks the following questions:

- What are, in your opinion, the 2 breakthroughs in science in the last 3 years with most societal implications? Please explain briefly.
- What are, in your opinion, the 2 emerging technologies in the last 3 years with most societal implications? Please explain briefly.

The TA will hold two meetings, one where the selection of a topic for the term paper will be discussed and a second where the TA will discuss the structure and goal of the term paper. The TA has to approve the topic of the term paper before spring break and is available for individual meetings with students to discuss questions regarding the weekly reports and/or term paper.

Tentative Schedule:

1/08 Vsevolod (Seva) Katritch, Ph.D.

Asst. Professor of Biological Sciences and Chemistry
How Science and Technology Shape Society

1/15 MLK Day – no class

1/22 Andrew McMahon, Ph.D.

W. M. Keck Provost Professor of Stem Cell Biology and Regenerative
Medicine, and Biological Sciences Chair of Stem Cell Biology and

Regenerative Medicine Director, Eli and Edythe Broad Center for
Regenerative Medicine and Stem Cell Research at USC
Regenerative Medicine - Reality and Expectation

1/29 Andrew Hires

Asst. Professor, Department of Biological Sciences, Neurobiology Section,
Bridge Institute, USC

Reverse-Engineering the Sense of Touch

2/05 Jonathan Gratch

Director for Virtual Humans Research, Institute for Creative Technologies,
Research Professor, USC Viterbi School of Engineering Computer Science
Department

**AI's Final Frontier? Buildings machines that understand and shape human
emotion**

2/12 Michael Waterman, Ph.D.

University Professor of Biological Sciences, Mathematics, and Computer Science

Genomics and the Age of Information

2/19 President's Day – no class

2/26 Charles McKenna, Ph.D.

Professor of Chemistry and Pharmaceutical Sciences

Director, USC Center for Drug Discovery

Drug Discovery - Life and Death Technology, Past, Present and Promise

3/05 David Agus, M.D.

Professor of Medicine and Engineering

Director, Lawrence J. Ellison Institute for Transformative Medicine of USC

The Lucky Years: How to Thrive in the Brave New World of Health

3/12 Spring Break – no class

3/19 Scott Fraser, Ph.D.

Provost Professor of Biological Sciences and Biomedical Engineering

Multimodal Sensing and Imaging of Working Biological Systems

3/26 Steve Kay, Ph.D.

Provost Professor of Neurology, Biomedical Engineering, and Biological Sciences

Director, Michelson Center for Convergent Bioscience

Circadian Rhythms in Health and Disease

4/02 James Boedicker

Assistant Professor of Physics and Biological Sciences, USC

Back-of-the-envelope biology

4/09 Peter Kuhn, Ph.D.

Dean's Professor of Biological Sciences, Medicine, and Biomedical Engineering

The Wicked Problem of Cancer

4/16 Dani Byrd, Ph.D.

Professor of Linguistics

Human Speech Production, Perception, and Technology

4/23 Valter Longo

Professor of Gerontology and Biological Sciences

Director, USC Longevity Institute

Nutrition, Genes, Aging and Disease

Reserve lecture in case of a speaker cancellation:

Vsevolod Katritch, Ph.D.

Asst. Professor of Biological Sciences and Chemistry, Bridge Institute

Orchestrating cell communications

Weekly Reports (10 points each; 130 points total): Reports should be no more than one page in length and should contain a maximum of one page with up to 500 words. Reports must be typed as printer output. No electronic submissions will be accepted. Late reports will be graded on the basis of 5 possible points. There are 13 weekly reports.

Each weekly report will be graded based on the following components: Name of lecturer, date of lecture, and title of the lecture. List the main points raised during the lecture and discuss the meaning of each. The writing should consist of complete and grammatically correct sentences.

Term Paper (30 points): This paper, no more than three pages in length, is similar in format to the weekly reports. This report should take up a topic, chosen by you, on a subject not covered by any of the lectures. This report must provide a short bibliography that includes a few citations of your primary sources. Term Papers will be due in the final week of the course.

Grading: Your final letter grade in this course will be based upon all of your written reports, including the Term Paper. Thus, since there are no exams in this course, active participation and attendance are important components. The grade will consist of 130 points for weekly reports and 30 points for the term paper (160 points will be 100%).

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 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/>.