

SYLLABUS

BISC 321: Multidisciplinary Seminar: Science, Technology and Society

Spring 2020

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: Anastasiia Sadybekov (asadybeko@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 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.

In the first lecture, I will broadly outline some current topics in science and technology that have major impact on our society and may define its future. This first meeting will also give information on writing the weekly reports and on the term paper and answer your questions regarding the homework and grading of this course.

The first weekly report, due 1/27, 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:

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| 1/13 | Vsevolod "Seva" Katritch, Ph.D.
Asst. Professor of Chemistry and Biological Sciences
How Science and Technology Shape Society |
| 1/20 | MLK Day – no class |
| 01/27 | Scott Fraser, Ph.D
Provost Professor of Biological Sciences and Biomedical Engineering
Multimodal Sensing and Imaging of Working Biological Systems |
| 2/03 | Andrew Hires, Ph.D
Asst. Professor, Department of Biological Sciences, Neurobiology Section, Bridge Institute, USC
Reverse-Engineering the Sense of Touch |
| 2/10 | 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

2/17 President's Day – no class

02/24 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

03/02 Peter Kuhn, Ph.D.

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

The Wicked Problem of Cancer

03/09 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

3/16 Spring Break – no class

03/23 James Boedicker, Ph.D.

Assistant Professor of Physics and Biological Sciences, USC

Back-of-the-envelope biology

3/30 Gale Lucas, Ph.D.

Asst. Professor, Departments of Computer Science, Psychology, and Civil &
Environmental Engineering, Institute for Creative Technologies and Center for
Intelligent Environments, USC

Best of both worlds: Virtual agents that leverage rapport and anonymity

4/06 Mark Chaisson, Ph.D.

Asst. Professor of Biological Sciences, Mathematics, and Computer Science

Genomics and the Age of Information

04/13 Dani Byrd, Ph.D.

Professor of Linguistics

Human Speech Production, Perception, and Technology

4/20 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

04/27 Valter Longo, Ph.D.

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 at atomistic level

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 shall include the 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, and the Term Paper. 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 on Academic Conduct and Support Systems

Academic Conduct

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 Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions>. 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>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community - such as a friend, classmate, advisor, or faculty member - can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu/> describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <https://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicssupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.