<u>Division of Medical Sciences</u>
Ph.D. Programs at Harvard Medical School

Nanocourses
Spring Semester
2014 - 2015

Full listings available at:
https://nanosandothercourses.hms.harvard.edu/

For information call: 617-432-0162

Division of Medical Sciences (DMS) Nanocourse Policy

Read below to learn how to receive course credit and register for a nanocourse:

Course Credit:

Although students are encouraged to take as many nanocourses as they please, official credit will be granted for up to six nanocourses only. Students must participate in all sessions of a nanocourse and complete all the assignments in order to qualify for credit. Completion of three nanocourses will be equivalent to a quarter course credit.

Course Registration:

Nanocourse enrollment is required only for students who wish to accrue credit. Students are required to enroll on the web site in advance of the course (as specified per course on the web site). Students may drop a course using the web site, up to one week prior to the first session of the course. Failure to attend or complete the course will result in an incomplete grade for students who do not drop the course one week before the course date. An incomplete grade will also be given to students who do not attend both days of a nanocourse for which they have enrolled if they do not drop the course as specified above.

Intellectual Unit:
Presentation Techniques for Scientists

Nanocourse Director(s): Sarah Jessop, Fred Winston
Curriculum Fellow:Emily Gleason
Lecturers:

Nanocourse Lecturers:
•   Sarah Jessop, Associate Director for Speaking Instruction, Derek Bok Center for Teaching and Learning, Harvard University
•   Fred Winston, Professor of Genetics, Harvard Medical School

Presentations are an essential part of a scientist's career. From pre-qualifying exams to job talks, seminars, and classroom teaching, it is important to effectively communicate one's ideas to a wide range of audiences. During the first two sessions of this course we will discuss many aspects of an effective scientific presentation including developing oral communication techniques, creating clear visual aids, and developing talks for different audiences. Registered students will then put these skills to work the following week by creating and delivering a brief practice presentation. Registered students are expected to attend both lecture sessions and at least one of the practice presentation sessions. At the end of the course students will have gained skills they can apply to future presentations.

DROP DEADLINE: Monday, January 26, 2015

Assignment
Using the techniques discussed in class, students should prepare a brief presentation on their current research project. Presentations should be no more than 7 minutes long and geared towards a broad audience of scientists. Students will present their talk at one of the two presentation sessions and receive feedback from the audience. Students are also expected to participate in the discussion of fellow students' presentations.

First Session: Monday, February 2, 2015, 1 – 3 PM
Location: TBD

Second Session: Thursday, February 5, 2015, 1 – 3 PM
Location: TBD

Third Session: Monday, February 9, 2015, 1 – 3 PM
Location: TBD

Fourth Session: Thursday, February 12, 2015, 1 – 3 PM
Location: TBD

Intellectual Unit:

The Art of Scientific Storytelling: Transform Your Research Manuscript Using a Step-By-Step Formula

Nanocourse Director(s): Fred Winston
Curriculum Fellow:Emily Gleason & Joya Mukerji
Lecturers: Rafael Luna

Research manuscripts are written to have an impact on the scientific community and to be cited by others. However, there are thousands of research articles published in our respective fields each year. Is it possible to distinguish one's research paper by communicating science in a clear and compelling fashion?

This interactive nanocourse provides instruction on how to write a scientific manuscript using the structural aspects of storytelling, i.e. dramatic arc. We will explore the logic of narrative craft and adapt it to writing a scientific manuscript. Dr. Luna will introduce his Scientific Storytelling method for writing research manuscripts. During the first session, instruction will be provided on the implementation of the Scientific Storytelling method into the basic components of a research manuscript: Title, Abstract, Figures, Results, Introduction, and Discussion. Registered students will then apply these concepts towards writing a title and an abstract for their own research, which will be critiqued and revised during the second and third sessions. Registered students must attend all three sessions and write and revise a title and abstract (see assignment) to receive credit for this course.

Assignment: After the first session, registered students should prepare and submit a title and abstract of their current graduate research or research of their respective laboratory. The title (115 character limit including spaces) and abstract (200-250 words) should incorporate aspects of the Scientific Storytelling method discussed in the first session. Please send your documents (either Word or pdf files) to Emily Gleason (Emily_Gleason@hms.harvard.edu) by 5pm on Sunday April 19th. Emily will then compile these documents and share them with the class prior to the second session. Please come to the second session prepared to critique your peers' work (see guidelines below). A subset of the titles and abstracts will be discussed in class.

At the end of the second session, Dr. Luna will return comments on the titles and abstracts to each participant in the class. Students will then revise their work in response to the feedback they received. Revised abstracts will be due prior to the start of the third session. Please send your documents (either Word or pdf files) to Emily Gleason (Emily_Gleason@hms.harvard.edu) by 12pm Thursday April 23rd. We will workshop the remaining titles and abstracts that were not discussed in the second session and discuss some of the students' revisions.

Guidelines for critical analysis:
Your critique should be divided into two halves: 1) the areas that worked well and 2) the areas that may need improvement. One must remember that the focus is to improve the scientific writing abilities of each participant. If there are grammar mistakes, please note them on the title or abstract. However, please keep the emphasis of the critical analysis on the content and clarity of the work. We will consider major aspects of the Scientific Story in your analysis. Finally, let's write our commentaries in a positive

and helpful manner.

Registered students will receive a complimentary book: The Art of Scientific Storytelling: Transform Your Research Manuscript with a Step-By-Step Formula.
http://www.amazon.com/The-Scientific-Storytelling-Step-Step/dp/0615821995

DROP DEADLINE: Tuesday, April 7, 2015

First Session: Tuesday, April 14, 2015, 2 - 4 PM
Location: TBD

Second Session: Tuesday, April 21, 2015, 2 - 4 PM
Location: TBD

Third Session: Friday, April 24, 2015, 2 - 4 PM
Location: TBD

Intellectual Unit:

Transposon-Insertion Sequencing: the design and analysis of a new approach for bacterial genetics

Nanocourse Director(s): Matthew Waldor
Curriculum Fellow:Zofia Gajdos
Lecturers: Michael Chao, Troy Hubbard, Kasia Baranowski, Karen Kieser

Day 1: 1 hour introductory lecture to TIS followed by a 2-hour interactive presentation that covers the implementation of TIS and relevant experimental considerations for every step of the process.

Day 2: A 3-hour hands-on workshop that focuses on how to use custom programs in Python and Matlab to visualize and analyze important TIS experimental metrics. Attendees will also utilize several methods to analyze existing TIS data and generate biologically meaningful results.

Overview:
Transposon-Insertion Sequencing (TIS) is a revolutionary microbial genetic technique that unites high-density genome-wide transposon mutagenesis with high-throughput parallel sequencing to identify genes and regulatory networks necessary for bacterial growth under virtually any experimental condition. As a computational approach, there are many experimental factors that can affect the applicability of the TIS technique and also impact the accuracy of downstream analysis methods. This course aims to introduce and discuss the implications of these experimental parameters and offer practical experience in the analysis of TIS data using a variety of computational platforms. There are two components to this course: a 3-hour lecture-based seminar and a 3-hour hands-on data analysis workshop. The lecture will present experimental considerations for different types of TIS studies, and examine their respective merits and pitfalls, relevant quality controls, and impact on downstream statistical analyses. In the follow-up workshop, participants will be introduced to the Python and Matlab platforms and use a variety of custom scripts to carry out a full analysis of existing TIS data, including mapping raw sequence information, normalizing the data for experimental biases, and finally performing statistical analyses and generating biologically meaningful results.

Goal:
Participants should leave this course with an understanding of fundamental experimental and statistical considerations that can affect the accurate implementation of the TIS approach. Through hands-on training, the participant will be familiarized with the tools necessary to perform a TIS study from start to finish and assess the quality of the resulting data.

DROP DEADLINE: Wednesday, January 21, 2015

First Session: Wednesday, January 28, 2015, 1 - 4 PM
Location: TBD

Second Session: Thursday, January 29, 2015, 1 - 4 PM

Location: TBD