

Course Outline

Lecturers

Simon Billinge, Columbia University/Brookhaven National Laboratory.

Benjamin Chu, Stony Brook University.

Juan Colmenero, University of Basque Country.

Bill Hamilton, Oak Ridge National Laboratory.

Ken Herwig, Oak Ridge National Laboratory.

Tim Lodge, University of Minnesota.

Chuck Majkrzak, National Institute of Standards and Technology.

Simon Mochrie, Yale University.

Bradley Olsen, Massachusetts Institute of Technology.

Dieter Richter, Jülich Center for Neutron Science.

Sunil Sinha, University of California, San Diego.

Jeremy Smith, University of Tennessee/Oak Ridge National Laboratory.

Eugene Stanley, Boston University.

Norman Wagner, University of Delaware.

David Weitz, Harvard University.

Yang Zhang, University of Illinois at Urbana-Champaign.

Course Coordinator: Meiyun Chang-Smith, ORNL (changsmithm@ornl.gov).

Target Audience: Graduate students, research scientists, postdocs and faculty with research interests in the fields of Soft Matter Physics, Biophysics, Materials Science, Chemical Engineering, Bioengineering, Biomedical Engineering, Nuclear Engineering, Chemistry and Biology.

Lectures: This course will be taught from the lecturers' institutions and will be available on-line in real time and through web-casting. There will be two 75-minute lectures weekly from 2:00 to 3:15 pm in the afternoon (US Eastern Standard Time) for 13 weeks starting Tuesday 9/3/2013 and ending Thursday 12/5/2013.

Technology: To participate in this course, all you need is minimally a laptop/PC, web browser and web cam (for lecturers). Adobe Connect, a web based platform for virtual conferencing, will be used for the live transmission and recording of the lectures as well as creating Flash Video files for subsequent streaming from the course website. Registrants will be given the course URL for login to Connect prior to the start of the semester.

Literature: Some Lecture notes will be provided. For formally enrolled students, there may be reading assigned by the local participating professors. The following reading list is only suggestive and arranged chronologically.

Introduction to the Theory of Thermal Neutron Scattering (3rd Edition) (2012). G.L. Squires. Cambridge University Press.

Dynamics of Soft Matter - Neutron Scattering Applications and Techniques (2011). Victoria Garcia Sakai, Christiane Alba-Simonesco, Sow-Hsin Chen. Springer-Verlag, New York.

Neutron Spin Echo in Polymer Systems (Advances in Polymer Science) (2010). Dieter Richter, Michael Monkenbusch, Arantxa Arbe, Juan Colmenero. Springer.

Interaction of Photons and Neutrons with Matter: An Introduction (2nd Edition) (2007). Sow-Hsin Chen, Michael Kotlarchyk. World Scientific Publishing Co., Singapore, London.

Neutron, X-rays and Light. Scattering Methods Applied to Soft Condensed Matter (North-Holland Delta Series, 1st Edition) (2002). Thomas Zemb, Peter Lindner (Editors). North-Holland.

Methods of X-ray and Neutron Scattering in Polymer Science (Topic in Polymer Science) (2000). Ryong-Joon Roe. Oxford University Press, New York, Oxford.

Polymers and Neutron Scattering (Oxford Series on Neutron Scattering in Condensed Matter) (1997). Julia Higgins, Henry Benoit. Oxford Science Publications.