



MINI COURSE

DISCOVERING THE SUBATOMIC WORLD - NUCLEAR PHYSICS

Kurt Fletcher, Department of Physics and Astronomy, SUNY Geneseo



From the discovery of the electron in 1897 to the recent identification of the Higgs Boson, physicists have been intrigued by the subatomic world and have developed novel experimental methods to investigate particles and nuclei at these scales. These experiments have produced surprising results, revealing new realms of energetics and structural complexity for the atomic nucleus, internal structure of the protons and neutrons, and entirely new forms of matter. Some of these experimental methods are suitable for experiments at an undergraduate college while others are billion dollar investments involving international teams of hundreds of physicists and engineers.

In this course, we will discuss the question “How do we learn about the subatomic world?” by investigating key experimental approaches that have led to new discoveries. This course will emphasize experiments rather than theory.

This mini-course is geared to teachers that have an undergraduate degree in science. It is particularly relevant for Physics and Chemistry teachers, to review background that has led to the concepts that are typical of this topic. This mini-course will discuss the methods that have been used to obtain experimental evidence in nuclear physics. This professor uses a number of these methods with his undergraduate students at SUNY Geneseo.

If you have any questions about mini-courses, please email the program office at masterteacherprogram@suny.edu

Please RSVP for the mini-course with your Site Coordinator.

DATES:

March 3 5:30-7:30pm @ SUNY Geneseo

March 10 5:30-7:30pm @ SUNY Geneseo

March 17 5:30-7:30pm @ SUNY Geneseo

Biography

Kurt Fletcher is a SUNY Distinguished Teaching Professor and previous winner of the Chancellor's Award for Excellence in Teaching at SUNY Geneseo. Together with his colleagues, Dr. Fletcher has developed one of the largest undergraduate Physics Departments in SUNY and one of the largest in New York with an interdisciplinary science approach. His research includes the design of instruments to measure processes associated with internal confinement fusion (ICF) implosions. This includes measuring the energies of neutrons ejected in ICF implosions (most of the energy released in fusion events is carried by ejected neutrons) and detecting charged particles in ICF events. Professor Fletcher is one of the Site Coordinators of the Finger Lakes region of the NYS Master Teacher Program, and is the Director of SUNY Geneseo's Noyce Scholarship Program.

What is a Mini Course?

Mini-Courses provide an opportunity to explore new content, new applications of content, or new pedagogical techniques. They are designed for science, technology, engineering and math teachers to advance our understanding of the interdisciplinary nature of STEM education. Master Teachers are requested to attend the sessions in person if they are held at their regional campus. (In keeping with the cohort-model structure of the NYS Master Teacher Program, Master Teachers help organize smaller groups for on-line real-time viewing throughout the state.) Master Teachers are encouraged to email questions and comments to the professor throughout the two-hour session, and to continue their learning by forming a PLT, designing a related mini-course to share with the cohort or with teachers in their home schools, or another form of professional development that their participation may inspire. Master Teachers will receive additional resource materials for further investigation from the mini-course professor.