We are currently soliciting applicants for the 16th Los Alamos Dynamics Summer School. This summer school focuses a select group of students on the multi-disciplinary field of cyber-physical dynamic systems as defined by the National Science Foundation “engineered systems that are built from and depend upon the synergy of computational and physical components.”

The summer school has two focus areas:

- The multi-disciplinary nature of research in cyber-physical systems
- Development of written and oral communications skills.

**Students**
The program is designed for 15 upper division (Junior or Senior) undergraduate students or first year graduate students. Attempts will be made to identify high quality students from diverse academic and cultural backgrounds. Acceptance into the program is based on academic record and letters of recommendation. As a general guideline, students should have sufficient academic achievement that they are, or will be, eligible for graduate school. A variety of academic disciplines are being sought, including computer science, aerospace/mechanical/electrical engineering, mathematics/statistics, and neuroscience.

**Compensation**
In lieu of salaries, the students will be provided with a fellowship that is intended to also cover relocation and housing expenses. Fellowship amounts range from $7000 to $10,500, depending on academic status and the point of origin for the student’s travel to LANL. We will work with students to find housing after they have been accepted into the program. This program is limited to US citizens.

**Tutorials**
Students will participate in weekly tutorials on various aspects of cyber-physical systems such as signal processing, dynamic systems, system identification, embedded systems, model validation, nonlinear systems, and machine learning. To reinforce these tutorials, all students will design, build, test, and apply cyber-physical systems to pertinent research questions.

**Projects**
The students will be placed into 3-person multi-disciplinary teams, assigned a research activity to be completed in an intense 9-week time frame, and partnered with a LANL staff member as a mentor. The goal is for the students to produce results and document their activities in a manner suitable for reporting at professional conferences. The 2014 Summer School students will present their research results at an international conference.

**Field Trips:**
In addition to guest lectures, the students will participate in tours at Los Alamos National Laboratory during the program.

**How to Apply:**
Students should send an email with the following documents to ladss@lanl.gov:

1. Resume
2. 1-page cover letter describing your interest in this summer school and multi-disciplinary cyber-physical dynamic systems research as well as your near term (1-3 year) academic and professional goals
3. Official transcripts (a copy is fine for application purposes, but the original will be needed prior to the start of the summer school)
4. At least one letter of recommendation

Applications must be received by Dec. 5, 2014. Acceptance notifications will be sent by Dec. 19, 2014

Additional information can be found at [http://ladss.lanl.gov](http://ladss.lanl.gov)

Questions? Please contact ladss@lanl.gov, Chuck Farrar at farrar@lanl.gov or David Mascarenas dmascarenas@lanl.gov
Energy Harvesting for Wireless Sensing

Piezoelectric and thermoelectric materials convert ambient energy into useful electricity. Energy harvesting devices will lead to completely self-contained sensor systems.

Sensor Nodes for Nonproliferation

Applying adaptive signal processing to enable remotely deployed nuclear detectors for non-proliferation applications.

Manufacturing Process Monitoring

Monitor product quality in real-time
Model and control process physics

Sensory Substitution

Vibro-haptic human-machine interface utilizing principles of sensory substitution

Lecture Topics

- Sensor Networks
- Controls/Dynamic Systems
- Probability and Statistics
- Signal Processing
- Embedded Systems
- System Identification
- Detection Theory/Machine Learning
- Model Validation and Verification

About Los Alamos and Los Alamos National Laboratory:

Population of roughly 18,000
The lab employs almost 1000 summer interns each year
35 miles from Santa Fe
Lots of outdoor activities