

## PROGRAM REQUIREMENTS

To receive the Nano-Scale Engineering Certificate at the undergraduate level, the student is required to obtain an undergraduate degree in a participating department of the College of Engineering. In addition, they are expected to follow the course sequence described on the web:

<http://www.engr.uky.edu/~necp/>

In the near future, additional courses will be offered in order to satisfy departmental program course requirements.

## POTENTIAL RESEARCH TEAM LEADERS AT U.K.

Students may work with any participating faculty member in the following Colleges and Centers including:

College of Engineering

- ♦ Electrical and Computer Engineering
- ♦ Mechanical Engineering
- ♦ Chemical and Materials Engineering
- ♦ Biosystems and Agricultural Engr.

College of Arts and Sciences

- ♦ Physics
- ♦ Chemistry

College of Medicine

College of Pharmacy

Center for Applied Energy Research

## CONTACT INFORMATION

For further information on the Nano-Scale Engineering Certificate option, contact to any of the faculty members listed below.

### *Mechanical Engineering*

Dr. M. Pinar Mengüç  
(859) 257-6336 ext. 80658  
[menguc@engr.uky.edu](mailto:menguc@engr.uky.edu)

### *Electrical and Computer Engineering*

Dr. Vijay Singh  
(859) 257-2794  
[vsingh@engr.uky.edu](mailto:vsingh@engr.uky.edu)

### *Chemical and Materials Engineering*

Dr. Bruce Hinds  
(859) 257-1302  
[bjhinds@engr.uky.edu](mailto:bjhinds@engr.uky.edu)

### *Current Active NECP Faculty:*

Zhi Chen (ECE) [zhichen@engr.uky.edu](mailto:zhichen@engr.uky.edu)  
Ingrid St.Omer (ECE) [istomer@engr.uky.edu](mailto:istomer@engr.uky.edu)  
Todd Hastings (ECE) [hastings@engr.uky.edu](mailto:hastings@engr.uky.edu)  
R. Andrews (ME/CAER) [andrews@caer.uky.edu](mailto:andrews@caer.uky.edu)  
J. Zach Hilt (CME) [hilt@engr.uky.edu](mailto:hilt@engr.uky.edu)

or, visit the web-site:

<http://www.engr.uky.edu/~necp/>



## NANO-SCALE ENGINEERING CERTIFICATE PROGRAM



## **NANO-SCALE ENGINEERING**

In coming decades, nanotechnology is expected to affect the society we live in significantly. The changes are likely to be realized indirectly and mostly in the tools and devices we use in our daily lives. There will be radical changes in fields as diverse as telecommunication, computers, medicine, manufacturing, environment, military, etc., both for diagnostics as well as for applications. Yet all these changes will take place only if we can build these nano-devices consistently and effectively, which will require a better understanding of many engineering fundamentals at nano-scale.

The process of engineering and fabricating structures 1-100 nanometers in size, which defines “nanoscale,” is not a straightforward endeavor. Understanding the science of nanoscale world is very important; yet, using these fundamental principles to engineer “bottom-up” processes in nanoscale world is equally more challenging. Engineers of tomorrow should be ready to tackle these challenges.

In response to these exciting developments, and to better qualify students for these new career opportunities, UK College of Engineering has implemented a multi disciplinary undergraduate certificate option in Nano-Scale Engineering. The program officially started in Summer 2004.

## **WHAT IS THE NANO-SCALE ENGINEERING CERTIFICATE PROGRAM?**

The College of Engineering, with a recent grant from the National Science Foundation, has established a Nano-Scale Engineering Certificate Program for undergraduate students. The purpose of the program is to enable undergraduate students, in participating departments within the College of Engineering, to learn the fundamentals and applications of nano-technology and nano-engineering.

Students are expected to take a total of four courses, one being a laboratory course. Three required lecture courses can be considered as technical electives in students’ home departments. In addition, the NECP students are expected to attend two semester-long seminar series, to be delivered by the experts on nanoscience and nanotechnology from all around the world.

## **ENTRANCE REQUIREMENTS**

In order to participate in the program, a student must be pursuing an undergraduate degree in a participating department and must

have a minimum cumulative GPA of 2.5. The student must also achieve a letter grade of C or better in each physics, chemistry and math course taken prior to the enrollment in the NECP.

Upon completion of the undergraduate degree program and the specific course requirements associated with the certificate program, the student will be awarded a Nano-Scale Engineering Certificate in addition to their B.S. degree program. Students are required to complete the requirements for the certificate at the same time as their normal degree requirements. In the event of extenuating circumstances, a student may apply for up to a one year extension to complete the certificate requirements following graduation. In order to receive such an extension the student must formally apply to the committee and receive approval.

## **SCHOLARSHIPS**

The National Science Foundation provides a limited number of scholarships to junior and senior students through a program administered through the University of Kentucky College of Engineering. Additional scholarships can be provided by participating research faculty.