Minor in Nanotechnology

About This Program

The Minor in Nanotechnology is designed to provide undergraduate students majoring in either science or engineering with fundamental knowledge of the nanotechnology that is emerging as one of the most influential technologies shaping the future. This program intends to introduce the fundamentals and applications of nanotechnology in the areas of nanoelectronics and human health, with weighted emphasis on the development of new materials and their applications.

Minor program students are encouraged to experience research in nanotechnology by working as undergraduate research assistants. The advisor in Materials Science and Engineering may provide a list of faculty whose research field is closely related to the student's major and career interest.

Competencies

1. Upon completion of the minor, students will demonstrate knowledge of types of materials, their atomic or molecular bonding mechanisms leading to specific crystal structures, and the method of representing the structure in the frame of Bravais Lattice.
2. Upon completion of the minor, students will demonstrate knowledge of types of crystal defects common in crystalline materials, the factors affecting their formation and stability, and their influence on the physical properties.

Admissions Criteria

Admission to the minor program in Nanotechnology requires GPA of 2.0 or higher and approval by the Materials Science and Engineering Department undergraduate advisor as well as the student's home department. Information on admissions and course requirements can be obtained from the Materials Science and Engineering undergraduate program advisor. The minor will be conferred at the same time the degree is conferred and the degree and minor will be recorded on the student's transcript. The minor will not be on the diploma. Minors may not be conferred retroactively upon students who have graduated.

Curriculum

Foundations		
MSE 3300	INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING	3
MSE 4320	NANOSCALE MATERIALS	3
MSE 4351	CURRENT TOPICS IN NANOTECHNOLOGY	3
Specialization		
Select 3 courses from one of the following tracks in consulation with advisor:		9
Micro/Nano Electronics Track		
MSE 4354	ELECTRONIC MATERIALS AND DEVICES	
or EE 4329	SEMICONDUCTOR DEVICES	
MSE 4359	FAILURE ANALYSIS AND RELIABILITY ENGINEERING	
EE 4320	DIGITAL VLSI DESIGN	
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	
Additional courses, including relevant special topics courses in EE and MAE, with prior approval of MSE advisor.		
Nanobio Track		
MSE 4343	NANOBIOTECHNOLOGY	
BE 4333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION	
BE 4372	DRUG DELIVERY SYSTEM	
BE 4373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	
BE 4314	BIOMEDICAL IMPLANTS	
BE 4390	UNDERGRADUATE RESEARCH PROJECT	
Additional courses, including relevant special topics courses in EE and MAE, with prior approval of MSE advisor.		
Total Hours		**18**

Program Completion

Transferred course credit cannot be used for the minor. Prerequisites must be met for all courses. All courses used to satisfy the requirements must be passed with a minimum grade of C and their combined GPA must be at least 3.0. Consultation with the Materials Science and Engineering (MSE) advisor is encouraged to check the course availability.

An undergraduate research course (3 hours) can be included in the electives with appropriate course number and research topic selected in agreement with the faculty and MSE advisor. The letter grade will be given after evaluation of student's performance by evaluation committee.

Advising Resources

Location:

ELB 231

Email:

mse@uta.edu

Phone:

817-272-2538

Web:

Schedule an appointment (https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/materials-science/)