500 Level Courses
NANO 500: Introduction to Nanomaterials and Interactions. 3 credits.
Introduction to nanotechnology. Discussion of the Feynman challenge and its relation to modern science. Applications to nanostructures of charges, currents, diamagnetics, paramagnetics, and ferromagnetics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: BS in any physical science, mathematics, or engineering; or permission of certificate director.

Registration Restrictions: Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Schedule Type: Lecture
Grading: This course is graded on the Graduate Regular scale.

Students in a Non-Degree Undergraduate degree may not enroll.

NANO 510: Strategies for Nanocharacterization. 3 credits.
Introduces various nanocharacterization techniques, with a discussion of which techniques are most useful in various applications. Includes gates and bridges, chemical thermodynamics, kinetics, and solid-state reactions. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: NANO 500 or permission of certificate director.

Registration Restrictions: Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Schedule Type: Lecture
Grading: This course is graded on the Graduate Regular scale.

Students in a Non-Degree Undergraduate degree may not enroll.

NANO 520: Survey of Nanostructures. 3 credits.
Discusses nanomechanical oscillators and nanoresonators, nanofibers, and conducting polymer nanowires. Nanomechanical beams for reacting ion etching. Electron-beam lithography and photolithography. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: NANO 500 and 510 or permission of certificate director.

Registration Restrictions: Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Schedule Type: Lecture
Grading: This course is graded on the Graduate Regular scale.

Students in a Non-Degree Undergraduate degree may not enroll.

NANO 530: Nanofabrication. 3 credits.
Covers pulsed laser deposition, molecular beam epitaxy, controlled vapor deposition, reactive sputtering, and doping and implant isolation. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: NANO 500 and 510, or permission of certificate director.

Registration Restrictions: Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Schedule Type: Lecture
Grading: This course is graded on the Graduate Regular scale.

Students in a Non-Degree Undergraduate degree may not enroll.

600 Level Courses
NANO 610: Nanoelectronics. 3 credits.
Introduces basic elements of nanoelectronic structures, including quantum layers, quantum wires, and quantum dots. Covers subband structure, transport in quantum layers, behavior in the presence
of magnetic fields, Coulomb blockades, CMOS nanodevices and
nanoelectronics, and SOI multigate device physics and modeling. Offered
by Computational & Data Sciences. May not be repeated for credit.

**Recommended Prerequisite:** NANO 500, 510, and 520, or permission of
instructor.

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy,
Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level
students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Lecture

**Grading:**
This course is graded on the Graduate Regular scale.

**NANO 620: Computational Modeling in Nanoscience.** 3 credits.
Introduction to simulation methods used in nanoscience. Covers
computational approaches to modeling molecular and condensed matter
at the nanoscale level, including interatomic and molecular potentials,
molecular mechanics, molecular dynamics, monte carlo averaging,
ensemble distributions, numerical sampling, thermodynamic functions,
dynamic structure, and introduction to cellular automata. Offered by
Computational & Data Sciences. May not be repeated for credit.

**Recommended Prerequisite:** NANO 500, 510, and 520, or permission of
instructor.

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy,
Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level
students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Lecture

**Grading:**
This course is graded on the Graduate Regular scale.