

## APPENDIX A



### PROGRAM ANNOUNCEMENT For Undergraduate Programs

**Name of Institution:**

University at Albany, State University of New York

**Date:**

March 31, 2008

**Proposed program titles:**

Nanoscale Science and Nanoscale Engineering

**Proposed degrees or other awards:**

Bachelor of Science

**Total Credits:**

132

**If baccalaureate degrees are proposed, will a waiver of external review be requested:** (Y/N) N  
{If 'Yes', complete the waiver request section on the reverse.}

**Academic unit(s) that will offer program:** College of Nanoscale Science and Engineering

**Proposed HEGIS codes:** 0915.00 (for both Nanoscale Science & Nanoscale Engineering)

**Proposed beginning date:** September 1, 2009

**Program summary:** {Attached as Appendix A.1}

<b>Projected enrollment:</b>	When the program begins	After five years
Full-time students	40	300
Part-time students		

**Will programs lead to certification/licensure?**  Yes  No **If Yes, in what field or specialty?**

**Will special accreditation be sought?**  Yes  No **If Yes, by what group? By what date?**

Accreditation for the B.S. program in Nanoscale Engineering will be sought from ABET (*Accreditation Board for Engineering and Technology*) by the close of the fifth full year of instruction.

**Will programs or any constituent courses be offered off-campus?**  Yes  No

**If Yes, at what address?**

**How much?** {Specify number of courses and related credits}

**Via telecommunications?**  Yes  No **If Yes, to what location(s)?**

*For more information, contact the following academic officer:*

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**Title:** Vice President and CAO

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#### Response to Announcement (requested of other State University campuses)

Do you have a similar or related program? What has been your experience with the program? Would the introduction of this program have any effect, positive or negative, on your institution? Please specify. Do you perceive a need for this kind of program? Is there opportunity for articulation or inter-institutional cooperation? The response should be addressed to the proposing campus' President with a copy to the University Provost, The State University of New York, State University Plaza, Albany, NY 12246.

## Curriculum

Show the draft list of required and elective courses in the majors. The goal is to provide other campuses and System Administration with a clear sense of the structure and content of the core of the planned program.

### NANOSCALE SCIENCE

LOWER DIVISION		UPPER DIVISION	
Course Title	Cr	Course Title	Cr
Nanotechnology Survey	3	Integrated NanoLaboratory I	3
Societal Impacts of Nanotechnology	3	Integrated NanoLaboratory II	3
Economic Impacts of Nanotechnology	3	Introduction to Quantum Theory for Nanoscale Systems	3
Disruptive Nanotechnologies	3	Nanoscale Molecular Materials and Soft Matter	3
Chemical Principles of Nanoscale Science and Engineering I	4	Quantum Origins of Material Behavior	3
Chemical Principles of Nanoscale Science and Engineering II	4	Nanoscale Surfaces and Interfaces	3
Physical Principles of Nanoscale Science and Engineering I	4	Advanced Physical/Chemical Concepts for Nanoscale Science	3
Physical Principles of Nanoscale Science and Engineering II	4	Electronic Properties of Nanomaterials	3
Physical Principles of Nanoscale Science and Engineering III	4	Nanoscale Electronic Devices	3
Physical Principles of Nanoscale Science and Engineering III (Honors)	4	Concepts in Molecular Electronics	3
Biological Principles of Nanoscale Science and Engineering I	4	Magnetic and Spintronic Materials and Devices	3
Biological Principles of Nanoscale Science and Engineering II	4	Optoelectronic Materials and Devices	3
Computer Control of Instrumentation	2	Nanoscale Surfaces and Interfaces	3
Introduction to Nanoscale Engineering Design and Manufacturing	2	Advanced Physical/Chemical Concepts for Nanoscale Science	3
Advanced Circuits Laboratory	2	Nanoscale Physical Properties in Reduced Dimensions	3
Finite Element Modeling	2	Growth of Nanostructured Materials	3
Numerical Simulation	2	Particle Induced Chemistry	3
Structure of Matter	3	Properties of Nanoscale Composite Structures	3
Structure of Matter (Honors)	3	Nanostructural Characterization Techniques	3
Thermodynamics & Statistical Mechanics for Nanoscale Systems	3	Biochemical Principles for Nanoscale Science	3
Thermodynamics & Stat. Mechanics for Nanoscale Systems (Honors)	3	Energetics and Kinetics in Nanobiological Systems	3
		Biological Architectures for Nanotechnology Applications	3
		Nanobiology for Nanotechnology Applications	3
		Nanoscale Bio-Inorganic Interfaces	3
		Biological Routes for Nanomaterials Synthesis	3
		Capstone Research I: Introduction and Literature Review	3
		Capstone Research II: Team Research and Project Review	3
		Capstone Research III: Team Research and Final Report	3
		Capstone Research III: Team Research and Final Report (Honors)	3
		Current Topics in Nanoscale Science and Engineering	1-6
		Independent Study and Research	1-6

## NANOSCALE ENGINEERING

LOWER DIVISION		UPPER DIVISION	
Course Title	Cr	Course Title	Cr
Nanotechnology Survey	3	Thermodynamics and Kinetics of Nanomaterials	3
Societal Impacts of Nanotechnology	3	Electronic, Optical and Magnetic Properties of Nanomaterials	3
Economic Impacts of Nanotechnology	3	Mechanics of Nanomaterials	3
Disruptive Nanotechnologies	3	Fluid Mechanics and Transport Processes	3
Chemical Principles of Nanoscale Science and Engineering I	4	Micro and Nanomaterials Processing Technology	4
Chemical Principles of Nanoscale Science and Engineering II	4	Fundamentals of Nanoelectronics	4
Physical Principles of Nanoscale Science and Engineering I	4	Thin Film and Nanomaterials Characterization	4
Physical Principles of Nanoscale Science and Engineering II	4	Industrial Nanomanufacturing	3
Biological Principles of Nanoscale Science and Engineering I	4	Nanoelectronic IC Fabrication Processes	3
Introduction to Nanoengineering Design and Manufacturing	3	Micro and Nano Devices and Circuits	3
Introduction to Nanoengineering Design and Manufacturing (Honors)	3	Nanoscale Optical and Optoelectronic Devices	3
Introduction to Computer Programming for Engineers	3	Applications of Fields and Waves to Nanoscale Systems	3
Introduction to Computer Programming for Engineers (Honors)	3	Nanoelectronic Devices	3
Introduction to Nanoengineering Electronics	3	Introduction to Solar Cell Nanotechnology	3
Introduction to Nanoengineering Electronics (Honors)	3	Introduction to Fuel Cell Nanotechnology	3
		Renewable & Alternate Energy Nanotechnologies	3
		Nanoscale Chemical and Biological Sensors	3
		Advanced Materials Processing for NEMS/MEMS	4
		Interfacial Engineering in Nanobiological Systems	3
		NEMS/MEMS for Chemical and Biological Sensors	3
		BioMEMS and BioNEMS	3
		Nanobiological Systems	3
		Nanoscale patterning	3
		Light Optics for Nanoengineering	3
		Charged Particle Optics for Nanoengineering	3
		Electron Beam Pattern Generation	3
		Nanophotonics	3
		Magnetic Nanostructures	3
		Organic Semiconductors	3
		Analysis of Thin Film and Interfaces	3
		Nanoscale Polymer Science & Engineering	3
		Nanoscale Interfacial Engineering	3
		Modeling of Nanomaterials and Systems	3
		Capstone Research I: Introduction and Literature Review	3
		Capstone Research II: Team Research and Project Review	3
		Capstone Research III: Team Research and Final Report	3
		Capstone Research III: Team Research and Final Report (Honors)	3
		Current Topics in Nanoscale Science and Engineering	1-6
		Independent Study and Research	1-6

**External Review:** Baccalaureate proposals and some others must provide two external reviews of the proposed program, conducted by recognized experts following the form in Appendix D. The purpose of external review is to provide expert validation of the curriculum and to provide external expertise in developing a program proposal. A campus must generally meet all of the following requirements to receive a waiver of the external review.

To request a waiver, check all the conditions below that apply (type an 'x' between the brackets) and submit any additional documentation to support the request. Please note that System Administration may request additional information as deemed necessary. [*Additional documentation provided in Appendix A.2*]

- The campus has specific degree authorization at the baccalaureate level in the program discipline; i.e. approval does not require degree authorization or Master Plan Amendment.*
- The program has sufficient faculty leadership already in place. (Identify the program head, credentials, and percentage of time dedicated to the program.)*
- The program is situated in a department (or interdisciplinary center or inter-departmental group) with a minimum of four full-time faculty in the proposal subject, including a department chairperson, experienced in teaching at the baccalaureate level in the discipline area.*
- The program will be reviewed by a college/school curriculum committee, dean or director, and an all-campus educational policy committee.*
- The proposal is not a significant academic departure for the campus or a change in campus mission.*
- No part of the instruction will be offered by a non-degree granting entity.*
- The program does not call for new or experimental pedagogical formats or modes of delivery.*
- The program does not lead to licensure and is not designed to articulate with licensure programs.*
- The program will be subject to regular review by a nationally recognized accrediting body.*

Please note that although all the conditions above do apply, no waiver of the external review is being requested