Nanotechnology Curriculum Checklist **Student:**

Physics/Materials Emphasis

Course	Title	Credits	Grade	Term	Pre/Co-Req
Chem 0960	Gen. Chem. Eng. 1	3			
Chem 0970	Gen. Chem. Eng. 2	3			Chem 0960
Math 0220	Anal. Geo. & Calc. 1	4			
Math 0230	Anal. Geo. & Calc. 2	4			Math 0220
Math 0240	Anal. Geo. & Calc. 3	4			Math 0230
Math 0280	Mat. & Lin. Alg.	3			Math 0220
Math 0290	Diff. Eq.	3			Math 0230
Phys 0174	Phys. Sci. & Eng. 1	4			*Math 0220*
Phys 0175	Phys. Sci. & Eng. 2	4			Phys 0174, *Math 0230*
Phys 0477	Thermal Phys,Rel.&QM	4			Phys 0175, *Math 0240*
Phys 0481	Princ. Mod. Phys. 2	3			Phys 0479
Phys 0219	Lab Phys. Sci. & Eng.	2			Phys 0175
Phys	Upper Level Physics	3			
Phys	Upper Level Physics	3			Phys 0175, Math 0240, *Math 0290*
Engr 0011	Int. Eng. Analysis	3			
Engr 0012	Eng. Computing	3			Engr 0011
Engr 0020	Prob. & Statistics	3			
Engr 0022	Mat. Str. & Prop.	3			Phys 0175, Math 0230
Engr 0135	Statics & Mech. Matls 1	3			Math 0230, PHYS 0174
Engr 0240	Int. N'tech. and N'eng.	3			
Engr 0241 or Phys 1375 Chem 1630	Fab. & Des. In N'tech. Found. of Nanosci	3			
ECE 0101	Lin. Circ. & Sys. 1	4			Phys 0175, Engr 0012 *Math 0280, Math 0290*
ECE 0102	Microelectronic Cir.	4			ECE 0101
ECE 0310	Problem Solving C++	3			ENGR 0012
MEMS 0051	Intro. Thermodynamics	3			PHYS 0175, CHEM 0960
MEMS 1010	Exp. Meth. In MSE	3			
MEMS 1053	Struct. of Crystals	3			ENGR 0022
MEMS 1057	Micro/Nano Manuf.	3			
MEMS 1059	Phase Equilibria	3			ENGR 0022, MEMS 1051
MEMS 1063	Phase Transformation.	3			MEMS 1053, MEMS 1059
	Nanotech Prog. Elect.	3			
	Nanotech Prog. Elect.	3			
	Nanotech Prog. Elect.	3			
	Senior Design 1[+]	3			
	Senior Design 2[++]	3			
	Hum. Elective[‡]	3			
	Soc. Sci. Elective[‡]	3			
	Hum./Soc. Sci. El.[‡]	3			

	Hum./Soc. Sci. El. ‡	3			
	Hum./Soc. Sci. El. ‡ †	3			
	Hum./Soc. Sci. El. ‡	3			

Upper Level Physics: Physics courses with course numbers > 1000

+ A senior design course offered by one of the other SSOE engineering programs is required.

++ May be ENGR 1050 Product Realization, or with preapproval a senior design project arranged with a faculty mentor and taken as ENGSCI 1801. Students wishing to complete a two-term project with a faculty mentor may request approval for the second term to count as a program elective (ENGSCI 1802)

‡All humanities and Social Science electives must be from the SSOE approved list. Two courses need to be in single area (see SSOE guidelines).

† Writing intensive course

Italicized courses indicate co-requisites; courses must be taken prior to or concurrently.

Nanotechnology Curriculum Program Electives – Physics/Materials

Approved Nanotechnology Electives include:

CHEM 1130	Inorganic Chemistry
CHEM 1410	Physical Chemistry 1
CHEM 1420	Physical Chemistry 2
CHEM 1450	Molecular Modeling and Graphics
CHEM 1480	Intermediate Physical Chemistry
CHEM 1620	Atoms, Molecules & Materials
PHYS 0577	Modern Physical Measurements
PHYS 1370	Introduction to Quantum Physics 1
PHYS 1371	Introduction to Quantum Physics 2
PHYS 1375/CHEM 1630	Foundations of Nanoscience
BIOENG 1601	Principles and Properties of Complex Engineered Materials
BIOENG 1810	Biomaterals and Biocompatibility
ECE 1232	Introduction to Lasers and Optical Electronics
ECE 1238	Digital Electronics
ECE 1247	Semiconductor Device Theory
ECE 2295	Nanosensors
ENGR 1065	Nanomanufacturing and Nanomaterials for Photovoltaics
ENGR 1066	Introduction to Solar Cells and Nanotechnology
IE 1012	Manufacture of Structural Nano-Materials
MEMS 1447	Nanocharacterization
MEMS 1469	Materials Science of Nanostructures
MEMS 1477	Thin Film Processes and Characterization
MEMS 1480	Introduction to Microelectromechanical Systems
MEMS 1101	Ferrous Physical Metallurgy

Other appropriate courses may be approved as Nanotechnology Electives by the Program Director