NANOENGINEERING

Plan of Study

Below is a sample plan of study that illustrates one way to achieve the program requirements. Any given student's plan of study may differ based on a variety of factors (e.g., advanced credit, placement exams, adding a minor). Enrolled students will work with their academic advisor; utilize the degree audit/planner to create a specific plan of study.

Course	Title	Hours
Freshman		
Fall		
PH 111	Physics I	4
PH 111L	Physics I Lab	0
MA 111	Calculus I	5
RHIT 100	Foundations for Rose-Hulman Success	1
EM 104	Graphical Communications	2
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Lab	1
	Hours	**16**
Winter		
PH 112	Physics II	4
PH 112L	Physics II Lab	0
MA 112	Calculus II	5
HUM H190	First-Year Writing Seminar	4
CHEM 113	General Chemistry II	3
CHEM 113L	General Chemistry II Laboratory	1
	Hours	**17**
Spring		
PH 113	Physics III	4
PH 113L	Physics III Lab	0
MA 113	Calculus III	5
ME 123 or CSSE 120	Computer Programming or Introduction to Software Development	4
NE 180	Engineering at the Nanoscale [1]	2
EM 103	Introduction to Design	2
	Hours	**17**
Sophomore		
Fall		
ES 213	Electrical Systems	3
ES 213L	Electrical Systems Lab	1
PH 235	Many-Particle Physics	4
Science, Engineering or Math Elective		4
200-Level Engineering Elective		4
	Hours	**16**
Winter		
NE 280	Introduction to Nanoengineering	4
PH 255	Foundations of Modern Physics	4
MA 221	Matrix Algebra & Differential Equations I	4
ECON S151 or ECON S152	Introduction to Microeconomics or Introduction to Macroeconomics	4
	Hours	**16**
Spring		
NE 380	Nanotechnology, Entrepreneurship & Ethics	4
PH 325	Adv Physics Laboratory I	4
MA 222	Matrix Algebra & Differential Equations II	4
Engineering Elective		4
	Hours	**16**
Junior		
Fall		
PH 316	Electric & Magnetic Fields	4
NE 320	Fundamentals of Thin Films: Fabrication and Applications	4
PH 405	Semiconductor Materials & Applications	4
HSSA Elective		4
	Hours	**16**
Winter		
MA 381 or MA 223	Introduction to Probability with Applications to Statistics or Engineering Statistics	4
PH 317	Electromagnetism	4
ENGL H290	Technical & Professional Communication	4
NE 406	Semiconductor Devices & Fabrication	4
	Hours	**16**
Spring		
PH 327	Thermodynamics & Statistical Mechanics	4
NE 415	NanoEngineering Design I	4
MDS 437	Introduction to MEMs: Fabrication & Applications	4
HSSA Elective		4
	Hours	**16**
Senior		
Fall		
NE 416	NanoEngineering Design II	4
NE 407	Nanoelectronic and Semiconductor Devices	4
NE 320	Fundamentals of Thin Films: Fabrication and Applications	4
HSSA Elective		4
	Hours	**16**
Winter		
NE 417	NanoEngineering Design III	4
300/400-Level Engineering Elective		4
HSSA Elective		4
PH 401	Introduction to Quantum Mechanics	4
	Hours	**16**
Spring		
HSSA Elective		4
HSSA Elective		4
Engineering Elective		4
Free Elective		4
	Hours	**16**
	Total Hours	**194**

[1] If students miss NE 180 Engineering at the Nanoscale in the freshmen or sophomore year, this requirement must be replaced with a 300 or 400-level NE course of at least 2 credits.

Notes:

NE course descriptions are listed under the Physics and Optical Engineering Department.