

# NANOSYSTEMS ENGINEERING

Louisiana Tech University  
Curriculum as of 2016 to Current

Name \_\_\_\_\_

Date \_\_\_\_\_

CWID \_\_\_\_\_

Email \_\_\_\_\_@latech.edu

COURSE	PREREQUISITE	SCH	QTR	GRADE
NSE 202	CHEM 102, PHYS 201	3	W	R*
300	ENGR 122 or PHYS 104, MATH 243	3	Sp	R
302	CHEM 251, CHEM 253, NSE 201 or NSE 202	2	Sp	R*
406	NSE 302, ENGR 220, 221, 222, MATH 245	1	F	R*
407	NSE 406	1	W	R*
408	NSE 407	1	Sp	R*
410	MSE 404	3	F	R
490	CHEM 251	3	Sp	R*
CHEM 101	CHEM 100 (or by placement)	2		*
102	CHEM 101	2		*
103	CHEM 101 <sup>o</sup>	1		*
104	CHEM 103	1		*
250	CHEM 102	2		*
251	CHEM 250, 253 <sup>o</sup>	2		*
253	CHEM 102, 251 <sup>o</sup>	1		*
COMM 101	FYE 100 <sup>o</sup>	3		□
ELEN 334	MATH 244, ENGR 221, PHYS 202	3	F	R*
ENGL 101		3		
102	ENGL 101	3		
303	ENGL 102	3		
ENGR 120	MATH 240 <sup>o</sup> , CHEM 100 <sup>o</sup>	2		*
121	ENGR 120, MATH 241 <sup>o</sup> , CHEM 101 <sup>o</sup>	2		*
122	ENGR 121, MATH 242 <sup>o</sup>	2		*
220	ENGR 122, MATH 242, PHYS 201	3		R
221	ENGR 122, MATH 242, PHYS 201	3		R*
222	ENGR 122, MATH 242	3		R*
MATH 241	MATH 240 or placement by exam	3		*
242	MATH 241	3		*
243	MATH 242	3		*
244	MATH 243	3		*
245	MATH 244	3		*
MEEN 382	ENGR 221, MATH 241-244 GPA $\geq$ 2.0	2	F,W	R
MEMT 201	ENGR 122	2		R*
MSE 402	ELEN 334	3	W	R
404	MEMT 201, ELEN 334	3	W	R*
406	PHYS 202	3	Sp	R*
PHYS 201	MATH 241	3		*
202	PHYS 201, MATH 242	3		*
412	PHYS 202, MATH 244	3	F	R
<b>ELECTIVES</b>				
Fine Art (ART 290, KINE 280, MUGN 290, or THTR 290)		3		
BISC 130 or 225		3		
Directed Elective		3		R
Directed Elective		3		R
Directed Elective		3		R
Directed Elective		3		R
Directed Elective		3		R
Directed Elective		3		R
HIST		3		
Social Science		3		
Social Science		3		
<b>TOTAL SEMESTER HOURS</b>		<b>128</b>		

SUBSTITUTIONS		
COURSE	SCH	GRADE
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

ADDITIONAL COURSES		
COURSE	SCH	GRADE
1		
2		
3		
4		
5		

GPA	
Rubric GPA	_____
MATH 241-244 GPA	_____

NOTES	
* requires grade of "C" or higher	
<sup>o</sup> credit or registration in	
R course in rubric	
□ must be completed within first year of enrollment	
1 Directed electives must be selected in consultation with advisor.	
2 Petitions must be filed for substitutions.	
3 A student must have a minimum 2.0 GPA on all hours pursued in courses designated "R"	
4 BIEN concentration take BISC 225 and 226. All other students take BISC 130.	

ADDITIONAL COMMENTS	

Advisor: \_\_\_\_\_

# NANOSYSTEMS ENGINEERING CONCENTRATIONS

*Louisiana Tech University*

BIOMEDICAL ENGINEERING CONCENTRATION						
COURSE		SCH	GRADE			PREREQUISITE
BIEN 202 or 203 225 235 301 401 or 430	Biomedical Engineering Principles I	1	R			MATH 241
	Biomedical Engineering Principles II		R			MATH 241
	Biomedical Signals and Systems	3	R			ENGR 221, MATH 244
	Applied Biomaterials	3	R			MEMT 201
	Biomedical Fluid Mechanics & Energy Transfer	3	R			BIEN 202, ENGR 222, and 2.0 GPA in MATH 241-245
	Biomedical Mass Transport	3	R			BIEN 301, MATH 245
	Biomechanics		R			BIEN 235, 301, ENGR 220
Engr, Sci, or ENGL 363 300-level or higher		3	R			
		2	R			
<b>TOTAL</b>		<b>18</b>				

CHEMICAL ENGINEERING CONCENTRATION						
COURSE		SCH	GRADE			PREREQUISITE
CMEN 202 304 313 402	Chemical Engineering Calculations	3	R			MATH 241, ENGR 122o
	Transport Phenomena	3	R			CMEN 313, MATH 245, 2.0 GPA in MATH 241-245
	Unit Operations-Design II	3	R			CMEN 202, 213, ENGR 222, MATH 245
	Chemical Reactions Engineering	3	R			CMEN 202 and Senior Standing
Engr, Sci, or ENGL 363 300-level or higher		3	R			
		3	R			
<b>TOTAL</b>		<b>18</b>				

ELECTRICAL ENGINEERING CONCENTRATION						
COURSE		SCH	GRADE			PREREQUISITE
ELEN 223 224 335 336	Electrical Circuits II	3	R			ENGR 221
	Electrical Circuits III	3	R			ELEN 223, MATH 245o
	Electronic Circuits I	3	R			ELEN 224, 334
	Electronic Circuits II	3	R			ELEN 335
Engr, Sci, or ENGL 363 300-level or higher		3	R			
		3	R			
<b>TOTAL</b>		<b>18</b>				

MECHANICAL ENGINEERING CONCENTRATION						
COURSE		SCH	GRADE			PREREQUISITE
MEEN 350 353 or 361	Computer-Aided Modeling	1	R			ENGR 220, 2.0 GPA in MATH 241-244
	Heat Transfer	3	R			MATH 245, MEEN 350, ENGR 222
	Advanced Mechanics of Materials		R			MEEN 350, MEMT 211 or 212
MEMT 203 212 313	Dynamics	3	R			ENGR 220
	Intermediate Statics & Mechanics of Materials	3	R			ENGR 220, 2.0 GPA in MATH 241-243
	Elementary Fluid Mechanics	3	R			ENGR 222, MEMT 203, 2.0 GPA in MATH 241-244
Engr, Sci, or ENGL 363 300-level or higher		2	R			
		3	R			
<b>TOTAL</b>		<b>18</b>				

MICROSYSTEMS ENGINEERING CONCENTRATION						
COURSE		SCH	GRADE			PREREQUISITE
MSE 401 405 407 457	Fundamentals of Microfabrication Processes	3	R			PHYS 202, MATH 245
	Nanotechnology Principles	3	R			
	Advanced Microfabrication w/CAD	3	R			MSE 401
	Special Topics: Micro System Engineering	3	R			
Engr, Sci, or ENGL 363 300-level or higher		3	R			
		3	R			
<b>TOTAL</b>		<b>18</b>				

\* requires grade of "C" or higher

o indicates co-requisite

R-Course is in NSE Rubric

Reviewed June 2020

**NANOSYSTEMS ENGINEERING**  
Louisiana Tech University  
*Biomedical Engineering Concentration*

FRESHMAN YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 120	* Engr Problem Solving I	2	ENGR 121	* Engr Problem Solving II	2	ENGR 122	* Engr Problem Solving III	2
MATH 240	* Math for Engr & Science	3	MATH 241	* Calculus I	3	MATH 242	* Calculus II	3
CHEM 100	* General Chemistry	2	CHEM 101	* General Chemistry	2	CHEM 102	* General Chemistry	2
COMM 101	□ Principles of Comm Studies	3	CHEM 103	* General Chemistry Lab	1	CHEM 104	* General Chemistry Lab	1
FYE 100	Freshman Year Experience	1	ENGL 101	Freshmen Composition	3	PHYS 201	* Physics for Engr & Sci. I	3
						<b>BIEN 202</b>	<b>Biomedical Engr Principles I</b>	1
						or BIEN 203 (offered in Fall )		
		11			11			12

SOPHOMORE YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 222	* Thermodynamics	3	ENGR 221	* Electrical Engr & Circuits I	3	ENGR 220	* Statics and Mechs of Materials	3
MATH 243	* Calculus III	3	MATH 244	* Calculus IV	3	MATH 245	* Differential Equations	3
MEMT 201	* Engineering Materials	2	<b>NSE 202</b>	<b>* Intro. to Nanosystems Engr</b>	3	<b>NSE 300</b>	<b>Intro. to Programming for Engr &amp;</b>	3
PHYS 202	* Physics for Engr & Sci II	3	ENGL 102	Freshmen Composition II	3	<b>BIEN 235</b>	<b>Applied Biomaterials</b>	3
<b>BIEN 203</b>	<b>Biomedical Engr Principles II</b>							
	or BIEN 202 (offered in Spring)							
		11			12			12

JUNIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
<b>BIEN 225</b>	<b>Biomedical Signals &amp; Systems</b>	3	<b>BIEN 301</b>	<b>Fluid Mech. &amp; Energy Transfer</b>	3	<b>NSE 302</b>	* <b>Nanomanufacturing</b>	2
<b>ELEN 334</b>	* <b>Solid State Electronics</b>	3	<b>MSE 402</b>	<b>MEMS/NEMS</b>	3	<b>NSE 490</b>	* <b>Nanosystems Modeling</b>	3
CHEM 250	* Organic Chemistry	2	<b>MSE 404</b>	* <b>Micro/Nanomaterials</b>	3	<b>MSE 406</b>	* <b>Micro/Nano Measurements</b>	3
BISC 225	Human Anatomy & Physiology	3	CHEM 251	* Organic Chemistry	2	<b>BIEN 401</b>	<b>Biomed. Mass Transport</b>	3
			CHEM 253	* Organic Chemistry Lab	1	or <b>BIEN 430 Biomechanics in Fall</b>		
		11			12			11

SENIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
<b>NSE 406</b>	* <b>Senior Design I</b>	1	<b>NSE 407</b>	* <b>Senior Design II</b>	1	<b>NSE 408</b>	<b>Senior Design III</b>	1
<b>NSE 410</b>	<b>Nanosystems &amp; Devices</b>	3	Directed Elective◇		3	Fine Art Appreciation		3
MEEN 382	Basic Measurements	2	Social Science**		3	History Elective		3
<b>PHYS 412</b>	<b>Solid State Physics</b>	3	Social Science**		3	Directed Elective◇		2
ENGL 303	Technical Writing	3						
		12			10			9

Neither MATH 240 nor CHEM 100 count towards the nanosystems engineering degree.

\* Requires grade of "C" or higher.

◇Directed electives are chosen in consultation with advisor and approved by the Program Chair. Eng. or Sci. 300 or 400 level courses or ENGL 363.

Courses in **bold** are typically offered only once per year.

\*\*Social Science electives can be selected from Anthropology, Criminal Justice, Economics, Geography, International Studies, Interdisciplinary, Political Science, Psychology, and Sociology.

†Humanities electives can be selected from Classical Studies, Communications, Foreign Languages, History, Literature, Philosophy, Religious Studies, Interdisciplinary.

□ Must be completed within first year of enrollment.

# NANOSYSTEMS ENGINEERING

Louisiana Tech University  
Chemical Engineering Concentration

FRESHMAN YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 120	* Engr Problem Solving I	2	ENGR 121	* Engr Problem Solving II	2	ENGR 122	* Engr Problem Solving III	2
MATH 240	* Math for Engr & Science	3	MATH 241	* Calculus I	3	MATH 242	* Calculus II	3
CHEM 100	* General Chemistry	2	CHEM 101	* General Chemistry	2	CHEM 102	* General Chemistry	2
COMM 101	□ Principles of Comm Studies	3	CHEM 103	* General Chemistry Lab	1	CHEM 104	* General Chemistry Lab	1
FYE 100	Freshman Year Experience	1	ENGL 101	Freshman Composition	3	PHYS 201	* Physics for Engr & Sci I	3
		11			11			11

SOPHOMORE YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 220	Statics and Mechs of Materials	3	ENGR 221	* Electrical Engr & Circuits I	3	ENGR 222	* Thermodynamics	3
MATH 243	* Calculus III	3	MATH 244	* Calculus IV	3	MATH 245	* Differential Equations	3
PHYS 202	* Physics for Engr & Sci II	3	<b>NSE 202</b>	* <b>Intro. to Nanosystems Engr</b>	3	<b>NSE 300</b>	* <b>Intro. to Programming for Engr &amp;</b>	3
CMEN 202	* Chemical Engr Calculations	3	MEMT 201	* Engineering Materials	2	ENGL 102	Freshman Composition II	3
		12			11			12

JUNIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
CHEM 250	* Organic Chemistry	2	CHEM 251	* Organic Chemistry	2	CMEN 304	Transport Phenomena	3
History Elective		3	CHEM 253	* Organic Chemistry Lab	1	MSE 406	* Micro/Nano Measurements	3
<b>ELEN 334</b>	* <b>Solid State Electronics</b>	3	<b>CMEN 313</b>	<b>Unit Operations-Design II</b>	3	<b>NSE 490</b>	* <b>Nanosystems Modeling</b>	3
BISC 130	Biological Principles	3	<b>MSE 402</b>	<b>MEMS/NEMS</b>	3	<b>NSE 302</b>	* <b>Nanomanufacturing</b>	2
			<b>MSE 404</b>	* <b>Micro/Nanomaterials</b>	3			
		11			12			11

SENIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
<b>NSE 406</b>	* <b>Senior Design I</b>	1	<b>NSE 407</b>	* <b>Senior Design II</b>	1	<b>NSE 408</b>	<b>Senior Design III</b>	1
<b>NSE 410</b>	<b>Nanosystems &amp; Devices</b>	3	Social Science**		3	Directed Elective $\diamond$		3
<b>CMEN 402</b>	<b>Chemical Reaction Engineering</b>	3	Directed Elective $\diamond$		3	Fine Art Appreciation		3
MEEN 382	Basic Measurements	2	ENGL 303	Technical Writing	3	Social Science**		3
<b>PHYS 412</b>	<b>Solid State Physics</b>	3						
		12			10			10

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Political Science, Psychology, and Sociology.

$\diamond$  Humanities electives can be selected from Classical Studies, Communications, Foreign Languages, History, Literature, Philosophy,

Religious Studies, Interdisciplinary.

□ Must be completed within first year of enrollment.

# NANOSYSTEMS ENGINEERING

Louisiana Tech University  
Electrical Engineering Concentration

FRESHMAN YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 120	* Engr Problem Solving I	2	ENGR 121	* Engr Problem Solving II	2	ENGR 122	* Engr Problem Solving III	2
MATH 240	* Math for Engr & Science	3	MATH 241	* Calculus I	3	MATH 242	* Calculus II	3
CHEM 100	* General Chemistry	2	CHEM 101	* General Chemistry	2	CHEM 102	* General Chemistry	2
COMM 101	Principles of Comm Studies	3	CHEM 103	* General Chemistry Lab	1	CHEM 104	* General Chemistry Lab	1
FYE 100	Freshman Year Experience	1	ENGL 101	Freshman Composition	3	PHYS 201	* Physics for Engr & Sci I	3
		11			11			11

SOPHOMORE YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 220	Statics and Mechs of Materials	3	ENGR 221	* Electrical Engr & Circuits I	3	ENGR 222	* Thermodynamics	3
MATH 243	* Calculus III	3	MATH 244	* Calculus IV	3	ELEN 223	Electrical Circuits II	3
MEMT 201	* Engineering Materials	2	<b>NSE 202</b>	* <b>Intro. to Nanosystems Engr.</b>	3	MATH 245	* Differential Equations	3
PHYS 202	* Physics for Engr & Sci II	3	ENGL 102	Freshman Composition II	3	<b>NSE 300</b>	* <b>Intro. to Programming for Engr &amp;</b>	3
		11			12			12

JUNIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
CHEM 250	* Organic Chemistry	2	CHEM 251	* Organic Chemistry	2	ELEN 336	Electronic Circuits II	3
ELEN 224	Electrical Circuits III	3	CHEM 253	* Organic Chemistry Lab	1	<b>MSE 406</b>	* <b>Micro/Nano Measurements</b>	3
ELEN 334	* Solid State Electronics	3	ELEN 335	Electronic Circuits I	3	<b>NSE 302</b>	* <b>Nanomanufacturing</b>	2
BISC 130	Biological Principles	3	<b>MSE 402</b>	* <b>MEMS AND NEMS</b>	3	<b>NSE 490</b>	* <b>Nanosystems Modeling</b>	3
			<b>MSE 404</b>	* <b>Micro/Nanomaterials</b>	3			
		11			12			11

SENIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
<b>NSE 406</b>	* <b>Senior Design I</b>	1	<b>NSE 407</b>	* <b>Senior Design II</b>	1	<b>NSE 408</b>	<b>Senior Design III</b>	1
<b>NSE 410</b>	<b>Nanosystems &amp; Devices</b>	3	Social Science**		3	Fine Art Appreciation		3
MEEN 382	Basic Measurements	2	History Elective		3	Social Science**		3
<b>PHYS 412</b>	<b>Solid State Physics</b>	3	Directed Elective ◊		3	Directed Elective ◊		3
ENGL 303	Technical Writing	3						
		12			10			10

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Courses in **bold** are typically offered only once per year.

\*\*Social Science electives can be selected from Anthropology, Criminal Justice, Economics, Geography, International Studies, Interdisciplinary,

Political Science, Psychology, and Sociology.

†Humanities electives can be selected from Classical Studies, Communications, Foreign Languages, History, Literature, Philosophy, †

Religious Studies, Interdisciplinary.

**NANOSYSTEMS ENGINEERING**  
Louisiana Tech University  
*Mechanical Engineering Concentration*

FRESHMAN YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 120	* Engr Problem Solving I	2	ENGR 121	* Engr Problem Solving II	2	ENGR 122	* Engr Problem Solving III	2
MATH 240	* Math for Engr & Science	3	MATH 241	* Calculus I	3	MATH 242	* Calculus II	3
CHEM 100	* General Chemistry	2	CHEM 101	* General Chemistry	2	CHEM 102	* General Chemistry	2
COMM 101	Principles of Comm Studies	3	CHEM 103	* General Chemistry Lab	1	CHEM 104	* General Chemistry Lab	1
FYE 100	Freshman Year Experience	1	ENGL 101	Freshman Composition	3	PHYS 201	* Physics for Engr & Sci I	3
		11			11			11

SOPHOMORE YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 220	* Statics and Mechs of Materials	3	ENGR 221	* Electrical Engr & Circuits I	3	ENGR 222	* Thermodynamics	3
MATH 243	* Calculus III	3	MATH 244	* Calculus IV	3	MATH 245	* Differential Equations	3
MEMT 201	* Engineering Materials	2	<b>NSE 202</b>	* <b>Intro. to Nanosystems Engr</b>	3	<b>NSE 300</b>	* <b>Intro. to Progr. for Engr &amp; Sci</b>	3
PHYS 202	* Physics for Engr & Sci II	3	ENGL 102	Freshman Composition II	3	History Elective		3
		11			12			12

JUNIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
CHEM 250	* Organic Chemistry	2	CHEM 251	* Organic Chemistry	2	<b>MSE 406</b>	* <b>Micro/Nano Measurements</b>	3
<b>MEEN 350</b>	* <b>Computer Aided Modeling</b>	1	CHEM 253	* Organic Chemistry Lab	1	<b>NSE 302</b>	* <b>Nanomanufacturing</b>	2
<b>ELEN 334</b>	* <b>Solid State Electronics</b>	3	MEMT 212	Intermediate Statics & Mech of Mat.	3	<b>NSE 490</b>	* <b>Nanosystems Modeling</b>	3
MEMT 203	Dynamics	3	<b>MSE 402</b>	* <b>MEMS and NEMS</b>	3	MEEN 353	Heat Transfer or	3
BISC 130	Biological Principles	3	<b>MSE 404</b>	* <b>Micro/Nanomaterials</b>	3	<b>or MEEN 361 Advanced Mechanics of Materials</b>		
		12			12			11

SENIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
<b>NSE 406</b>	* <b>Senior Design I</b>	1	<b>NSE 407</b>	* <b>Senior Design II</b>	1	<b>NSE 408</b>	* <b>Senior Design III</b>	1
<b>NSE 410</b>	* <b>Nanosystems &amp; Devices</b>	3	ENGL 303	Technical Writing	3	Fine Art Appreciation		3
MEMT 313	Dynamics	3	Social Science**		3	Social Science**		3
MEEN 382	Basic Measurements	2	Directed Elective◊		2	Directed Elective◊		3
<b>PHYS 412</b>	* <b>Solid State Physics</b>	3						
		12			9			10

Neither MATH 240 nor CHEM 100 count towards the nanosystems engineering degree.

\* Requires grade of "C" or higher.

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Courses in **bold** are typically offered only once per year.

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**NANOSYSTEMS ENGINEERING**  
Louisiana Tech University  
*Microsystems Engineering Concentration*

FRESHMAN YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 120 *	Engr Problem Solving I	2	ENGR 121 *	Engr Problem Solving II	2	ENGR 122 *	Engr Problem Solving III	2
MATH 240 *	Math for Engr & Science	3	MATH 241 *	Calculus I	3	MATH 242 *	Calculus II	3
CHEM 100 *	General Chemistry	2	CHEM 101 *	General Chemistry	2	CHEM 102 *	General Chemistry	2
COMM 101	Principles of Comm Studies	3	CHEM 103 *	General Chemistry Lab	1	CHEM 104 *	General Chemistry Lab	1
FYE 100	Freshman Year Experience	1	ENGL 101	Freshman Composition	3	PHYS 201 *	Physics for Engr & Sci I	3
		11			11			11

SOPHOMORE YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 220	Statics and Mechs of Materials	3	ENGR 221 *	Electrical Engr & Circuits I	3	ENGR 222 *	Thermodynamics	3
MATH 243 *	Calculus III	3	MATH 244 *	Calculus IV	3	MATH 245 *	Differential Equations	3
MEMT 201 *	Engineering Materials	2	<b>NSE 202 *</b>	<b>Intro. to Nanosystems Engr</b>	3	<b>NSE 300</b>	<b>Intro. to Programming for Engr &amp;</b>	3
PHYS 202 *	Physics for Engr & Sci II	3	ENGL 102	Freshman Composition II	3	History Elective		3
		11			12			12

JUNIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
CHEM 250 *	Organic Chemistry	2	CHEM 251 *	Organic Chemistry	2	<b>MSE 405</b>	<b>Nanotechnology Principles</b>	3
<b>MSE 401 *</b>	<b>Fund. Microfabrication Processes</b>	3	CHEM 253 *	Organic Chemistry Lab	1	<b>MSE 406 *</b>	<b>Micro/Nano Measurements</b>	3
<b>ELEN 334 *</b>	<b>Solid State Electronics</b>	3	<b>MSE 402</b>	<b>MEMS and NEMS</b>	3	<b>NSE 302 *</b>	<b>Nanomanufacturing</b>	2
BISC 130	Biological Principles	3	<b>MSE 404 *</b>	<b>Micro/Nanomaterials</b>	3	<b>NSE 490 *</b>	<b>Nanosystems Modeling</b>	3
			Directed Elective $\diamond$		3			
		11			12			11

SENIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
<b>NSE 406 *</b>	<b>Senior Design I</b>	1	<b>NSE 407 *</b>	<b>Senior Design II</b>	1	<b>NSE 408</b>	<b>Senior Design III</b>	1
<b>NSE 410</b>	<b>Nanosystems &amp; Devices</b>	3	<b>MSE 407</b>	<b>Advanced Microfab. w/CAD</b>	3	<b>MSE 457</b>	<b>Spec. Topics: Micro Sys. Engr.</b>	3
ENGL 303	Technical Writing	3	Social Science**		3	Fine Art Appreciation		3
MEEN 382	Basic Measurements	2	Directed Elective $\diamond$		3	Social Science**		3
<b>PHYS 412</b>	<b>Solid State Physics</b>	3						
		12			10			10

Neither MATH 240 nor CHEM 100 count towards the nanosystems engineering degree.

\* Requires grade of "C" or higher.

$\diamond$ Directed electives are chosen in consultation with advisor. 300 or 400 level courses or ENGL 363.

Courses in **bold** are *typically* offered only once per year.

\*\*Social Science electives can be selected from Anthropology, Criminal Justice, Economics, Geography, International Studies, Interdisciplinary, Political Science, Psychology, and Sociology.

†Humanities electives can be selected from Classical Studies, Communications, Foreign Languages, History, Literature, Philosophy, Religious Studies, Interdisciplinary.