

# NANOSYSTEMS ENGINEERING LOUISIANA TECH UNIVERSITY

*Revised Spring 2011*

Name \_\_\_\_\_

Date \_\_\_\_\_

Student ID \_\_\_\_\_

Email \_\_\_\_\_

COURSE	PREREQUISITE	SH	SCHED	GRADE
NSE 201	PHYS 201, CHEM 102	2	W _____	* _____
301	NSE 201, MSE 404	1	Sp _____	* _____
303	CHEM 251, 253; MSE 406 (Co-req)	1	Sp _____	* _____
406	NSE 301, NSE 303	1	F _____	_____
407	NSE 406	1	W _____	_____
408	NSE 407	1	Sp _____	_____
410	NSE 490, MSE 404, 406	3	F _____	_____
490	CHEM 251	3	Sp _____	* _____
MSE 404	MEMT 201, ELEN 334	3	W _____	* _____
406	PHYS 202	3	Sp _____	* _____
MEEN 382	ENGR 221, MATH 241-244 GPA ≥ 2.0	2	F _____	_____
ELEN 334	MATH 244, PHYS 202	3	F _____	* _____
MEMT 201	ENGR 122	2	F,W _____	* _____
CHEM 101	CHEM 100 (or by placement), ENGR 121 (Co-req), MATH 241 (Co-req)	2	_____	* _____
102	CHEM 101	2	_____	* _____
103	CHEM 101 (Co-req)	1	_____	* _____
104	CHEM 103	1	_____	* _____
250	CHEM 102	2	_____	* _____
251	CHEM 250, CHEM 253 (Co-req)	2	_____	* _____
253	CHEM 102, CHEM 251 (Co-req)	1	_____	* _____
ENGL 101	NONE	3	_____	_____
102	ENGL 101	3	_____	_____
210, 211, or 212	ENGL 102	3	_____	_____
303	ENGL 102	3	_____	_____
363	ENGL 303	3	_____	_____
ENGR 120	MATH 240**, CHEM 100**	2	_____	* _____
121	ENGR 120, MATH 241 (Co-req), CHEM 101 (Co-req)	2	_____	* _____
122	ENGR 121, MATH 242 (Co-req), PHYS 201 (Co-req)	2	_____	* _____
220	ENGR 122, PHYS 201, MATH 242	3	_____	* _____
221	ENGR 122, MATH 242	3	_____	* _____
222	ENGR 122, MATH 242	3	_____	* _____
MATH 241	MATH 240 (or by placement)	3	_____	* _____
242	MATH 241	3	_____	* _____
243	MATH 242	3	_____	* _____
244	MATH 243	3	_____	* _____
245	MATH 244	3	_____	* _____
PHYS 201	ENGR 122 (Co-req), MATH 242 (Co-req)	3	_____	* _____
202	PHYS 201, MATH 242	3	_____	* _____
412	PHYS 202	3	F _____	_____
<b>Engineering Concentration (minimum 12 SCH total)</b>		<b>12</b>		
1st course - concentration _____				
2nd course - concentration _____				
3rd course - concentration _____				
4th course - concentration _____				
5th course - concentration _____				
<b>ELECTIVES</b>				
ART (ART 290, MUGN 290, SPTH 290, or KINE 280) _____		3		
HIST _____ See note 4		3		
BISC 130 _____ See note 5		3		
BISC 131 _____		1		
Social Science _____ See note 1 and 4		3		
Social Science _____		3		
Social Science _____		3		
Directed Elective _____ See note 2		3		
Directed Elective _____		3		
<b>TOTAL SEMESTER HOURS</b>		<b>128</b>		

SUBSTITUTIONS	APPR	SH	GRADE
1			
2			
3			
4			
5			
6			
7			
ADDITIONAL COURSES		SH	GRADE

**NOTES**

\* Requires grade of "C" or better.  
 \*\* Credit or registration in

- Social Science electives must include at least two disciplines, selected from Economics, Geography, Political Science, Psychology, or Sociology.
- Directed electives must be selected in consultation with students advisor.
- Substitutions must be initialed by Program Chair. Put substitution number in the "grade" blank of the course being replaced.
- All students must complete an International Education Requirement. HIST 102, GEOG 205, and GEOG 210 are acceptable for this requirement.
- For students concentrating in Biomedical Engineering, BISC 225 and 226 are recommended.

Comments: \_\_\_\_\_  
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 \_\_\_\_\_

Advisor's Name \_\_\_\_\_

# NANOSYSTEMS ENGINEERING LOUISIANA TECH UNIVERSITY

## Biomedical Concentration

Name \_\_\_\_\_

Date \_\_\_\_\_

Student ID \_\_\_\_\_

Email \_\_\_\_\_

FRESHMAN YEAR										
Fall Quarter			Winter Quarter			Spring Quarter				
	Cr	Gr		Cr	Gr		Cr	Gr		
ENGR 120*	2		ENGR 121*	2		ENGR 122*	2			
<i>MATH 240*</i>	3		MATH 241*	3		MATH 242*	3			
<i>CHEM 100*</i>	2		CHEM 101*	2		CHEM 102*	2			
ENGL 101	3		CHEM 103*	1		CHEM 104*	1			
UNIV 100	1		BISC 225	3		PHYS 201*	3			
			BISC 226	1						
	11			12			11			

SOPHOMORE YEAR										
Fall Quarter			Winter Quarter			Spring Quarter				
	Cr	Gr		Cr	Gr		Cr	Gr		
<b>BIEN 202*</b>	1		<b>NSE 201*</b>	2		ENGR 222*	3			
or BIEN 203			<b>BIEN 203*</b>	1		MATH 245*	3			
ENGR 220*	3		or BIEN 202			HIST _____**	3			
MATH 243*	3		ENGR 221*	3		ENGL 210, 211 or 212	3			
MEMT 201*	2		MATH 244*	3						
PHYS 202*	3		ENGL 102	3						
	12			12			12			

JUNIOR YEAR										
Fall Quarter			Winter Quarter			Spring Quarter				
	Cr	Gr		Cr	Gr		Cr	Gr		
<b>BIEN 225*</b>	3		<b>MSE 404*</b>	3		<b>NSE 301*</b>	1			
<b>BIEN 230*</b>	2		<b>BIEN 301</b>	3		<b>NSE 303*</b>	1			
<b>ELEN 334*</b>	3		ENGL 303	3		<b>NSE 490*</b>	3			
CHEM 250*	2		CHEM 251*	2		<b>MSE 406*</b>	3			
			CHEM 253*	1		Social Science ***	3			
	10			12			11			

SENIOR YEAR										
Fall Quarter			Winter Quarter			Spring Quarter				
	Cr	Gr		Cr	Gr		Cr	Gr		
<b>NSE 406</b>	1		<b>NSE 407</b>	1		<b>NSE 408</b>	1			
<b>NSE 410</b>	3		ENGL 363	3		Directed Elective**	3			
<b>BIEN 430</b>	3		Directed Elective**	3		ART†	3			
<b>MEEN 382</b>	2		Social Science ***	3		Social Science ***	3			
<b>PHYS 412</b>	3									
	12			10			10			

Neither *MATH 240* nor *CHEM 100* counts toward the Nanosystems Engineering degree. Placement exams are available.

\* Grade of C or higher required before taking a course for which this one is a prerequisite.

\*\* Directed electives are chosen in consultation with advisor and approved by the Program Chair.

\*\*\* HIST 102, GEOG 205, or GEOG 210 count as the International Education Requirement (IER).

† ART 290, SPTH 290, MUGN 290, or KINE 280 counts as the Fine Arts Requirement.

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

# NANOSYSTEMS ENGINEERING LOUISIANA TECH UNIVERSITY

Chemical Concentration

Name \_\_\_\_\_

Date \_\_\_\_\_

Student ID \_\_\_\_\_

Email \_\_\_\_\_

FRESHMAN YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
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	
ENGL 101	Freshman Composition I	3		CHEM 103*	General Chemistry Lab	1		CHEM 104*	General Chemistry Lab	1	
UNIV 100	University Seminar	1		ENGL 102	Freshman Composition II	3		PHYS 201*	Physics for Engr & Sci. I	3	
		11				11				11	

SOPHOMORE YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
ENGR 220*	Statics and Mechs of Materials	3		<b>NSE 201*</b>	Nanosystems Engr.	2		ENGR 222*	Thermodynamics	3	
MATH 243*	Calculus III	3		ENGR 221*	Electrical Engr & Circuits I	3		MATH 245*	Differential Equations	3	
MEMT 201*	Engineering Materials	2		MATH 244*	Calculus IV	3		HIST _____**		3	
PHYS 202*	Physics for Engr & Sci II	3		ENGL 210, 211 or 212	Literature	3		Social Science ***		3	
		11				11				12	

JUNIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>ELEN 334*</b>	Solid State Electronics	3		<b>MSE 404*</b>	Micro/Nanomaterials	3		<b>NSE 301*</b>	Research Seminar	1	
<b>CMEN 202*</b>	Chemical Engr Calculations	3		<b>CMEN 332*</b>	Chem Engr Thermodyn II	3		<b>NSE 303*</b>	Nanosystems Engr Lab	1	
BISC 130	Biological Principles	3		CHEM 251*	Organic Chemistry	2		<b>NSE 490*</b>	Nanosystems Modeling	3	
BISC 131	Biological Principles Lab	1		CHEM 253*	Organic Chemistry Lab	1		<b>MSE 406*</b>	Micro/Nano Measurements	3	
CHEM 250*	Organic Chemistry	2		ENGL 303	Technical Writing	3		<b>CMEN 304*</b>	Transport Phenomena	3	
		12				12				11	

SENIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>NSE 406</b>	Senior Design I	1		<b>NSE 407</b>	Senior Design II	1		<b>NSE 408</b>	Senior Design III	1	
<b>NSE 410</b>	Nanosystems & Devices	3		ENGL 363	Scientific/Tech. Presentations	3		Directed Elective**		3	
<b>MEEN 382</b>	Basic Measurements	2		Directed Elective**		3		ART†	Fine Arts Appreciation	3	
<b>PHYS 412</b>	Solid State Physics	3		Social Science ***		3		Social Science ***		3	
<b>CMEN 402</b>	Chemical Reaction Engr	3									
		12				10				10	

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# NANOSYSTEMS ENGINEERING LOUISIANA TECH UNIVERSITY

## Electrical Concentration

Name \_\_\_\_\_

Date \_\_\_\_\_

Student ID \_\_\_\_\_

Email \_\_\_\_\_

FRESHMAN YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
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	
ENGL 101	Freshman Composition I	3		CHEM 103*	General Chemistry Lab	1		CHEM 104*	General Chemistry Lab	1	
UNIV 100	University Seminar	1		ENGL 102	Freshman Composition II	3		PHYS 201*	Physics for Engr & Sci. I	3	
		11				11				11	

SOPHOMORE YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
ENGR 220*	Statics and Mechs of Materials	3		<b>NSE 201*</b>	Nanosystems Engr.	2		ELEN 223*	Electrical Circuits II	3	
MATH 243*	Calculus III	3		ENGR 221*	Electrical Engr & Circuits I	3		ENGR 222*	Thermodynamics	3	
MEMT 201*	Engineering Materials	2		MATH 244*	Calculus IV	3		MATH 245*	Differential Equations	3	
PHYS 202*	Physics for Engr & Sci II	3		ENGL 210, 211 or 212	Literature	3		HIST _____**		3	
		11				11				12	

JUNIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>ELEN 224*</b>	Electrical Circuits III	3		<b>MSE 404*</b>	Micro/Nanomaterials	3		<b>NSE 301*</b>	Research Seminar	1	
<b>ELEN 334*</b>	Solid State Electronics	3		<b>ELEN 335*</b>	Electronic Circuits I	3		<b>NSE 303*</b>	Nanosystems Engr Lab	1	
BISC 130	Biological Principles	3		CHEM 251*	Organic Chemistry	2		<b>NSE 490*</b>	Nanosystems Modeling	3	
BISC 131	Biological Principles Lab	1		CHEM 253*	Organic Chemistry Lab	1		<b>MSE 406*</b>	Micro/Nano Measurements	3	
CHEM 250*	Organic Chemistry	2		ENGL 303	Technical Writing	3		<b>ELEN 336</b>	Electronic Circuits II	3	
		12				12				11	

SENIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>NSE 406</b>	Senior Design I	1		<b>NSE 407</b>	Senior Design II	1		<b>NSE 408</b>	Senior Design III	1	
<b>NSE 410</b>	Nanosystems & Devices	3		Directed Elective**		3		Directed Elective**		3	
<b>MEEN 382</b>	Basic Measurements	2		Social Science ***		3		ART†	Fine Arts Appreciation	3	
<b>PHYS 412</b>	Solid State Physics	3		Social Science ***		3		Social Science ***		3	
ENGL 363	Scientific/Tech. Presentations	3				10				10	

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# NANOSYSTEMS ENGINEERING LOUISIANA TECH UNIVERSITY

## Mechanical Concentration

Name \_\_\_\_\_

Date \_\_\_\_\_

Student ID \_\_\_\_\_

Email \_\_\_\_\_

FRESHMAN YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
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	
ENGL 101	Freshman Composition I	3		CHEM 103*	General Chemistry Lab	1		CHEM 104*	General Chemistry Lab	1	
UNIV 100	University Seminar	1		ENGL 102	Freshman Composition II	3		PHYS 201*	Physics for Engr & Sci. I	3	
		11				11				11	

SOPHOMORE YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
ENGR 220*	Statics and Mechs of Materials	3		<b>NSE 201*</b>	Nanosystems Engr.	2		ENGR 222*	Thermodynamics	3	
MATH 243*	Calculus III	3		ENGR 221*	Electrical Engr & Circuits I	3		MATH 245*	Differential Equations	3	
MEMT 201*	Engineering Materials	2		MATH 244*	Calculus IV	3		HIST _____**		3	
PHYS 202*	Physics for Engr & Sci II	3		BISC 130	Biological Principles	3		Social Science ***		3	
				BISC 131	Biological Principles Lab	1					
		11				12				12	

JUNIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>MEEN 350*</b>	Computer Aided Design	1		<b>MSE 404*</b>	Micro/Nanomaterials	3		<b>NSE 301*</b>	Research Seminar	1	
<b>ELEN 334*</b>	Solid State Electronics	3		MEMT 211*	Intermed. Strengths of Materials	2		<b>NSE 303*</b>	Nanosystems Engr Lab	1	
MEMT 203*	Dynamics	3		MEMT 313*	Fluid Mechanics	3		<b>NSE 490*</b>	Nanosystems Modeling	3	
CHEM 250*	Organic Chemistry	2		CHEM 251*	Organic Chemistry	2		<b>MSE 406*</b>	Micro/Nano Measurements	3	
ENGL 303	Technical Writing	3		CHEM 253*	Organic Chemistry Lab	1		<b>MEEN 353 or 361</b>	Heat Transfer or Advanced Mechanics of Materials	3	
		12				11				11	

SENIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>NSE 406</b>	Senior Design I	1		<b>NSE 407</b>	Senior Design II	1		<b>NSE 408</b>	Senior Design III	1	
<b>NSE 410</b>	Nanosystems & Devices	3		Directed Elective**		3		Directed Elective**		3	
<b>MEEN 382</b>	Basic Measurements	2		Social Science ***		3		ART†	Fine Arts Appreciation	3	
<b>PHYS 412</b>	Solid State Physics	3		ENGL 210, 211 or 212	Literature	3		Social Science ***		3	
ENGL 363	Scientific/Tech. Presentations	3									
		12				10				10	

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# NANOSYSTEMS ENGINEERING LOUISIANA TECH UNIVERSITY

## Microsystems Concentration

Name \_\_\_\_\_

Date \_\_\_\_\_

Student ID \_\_\_\_\_

Email \_\_\_\_\_

FRESHMAN YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
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	
ENGL 101	Freshman Composition I	3		CHEM 103*	General Chemistry Lab	1		CHEM 104*	General Chemistry Lab	1	
UNIV 100	University Seminar	1		ENGL 102	Freshman Composition II	3		PHYS 201*	Physics for Engr & Sci. I	3	
		11				11				11	

SOPHOMORE YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
ENGR 220*	Statics and Mechs of Materials	3		<b>NSE 201*</b>	Nanosystems Engr.	2		ENGR 222*	Thermodynamics	3	
MATH 243*	Calculus III	3		ENGR 221*	Electrical Engr & Circuits I	3		MATH 245*	Differential Equations	3	
MEMT 201*	Engineering Materials	2		MATH 244*	Calculus IV	3		Social Science ***		3	
PHYS 202*	Physics for Engr & Sci II	3		ENGL 210, 211 or 212	Literature	3		HIST _____ ***		3	
		11				11				12	

JUNIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>MSE 401*</b>	Microsystems Principles	3		<b>MSE 402</b>	Microfabrication Principles	3		<b>NSE 301*</b>	Research Seminar	1	
<b>ELEN 334*</b>	Solid State Electronics	3		<b>MSE 404*</b>	Micro/Nanomaterials	3		<b>NSE 303*</b>	Nanosystems Engr Lab	1	
BISC 130	Biological Principles	3		CHEM 251*	Organic Chemistry	2		<b>NSE 490*</b>	Nanosystems Modeling	3	
BISC 131	Biological Principles Lab	1		CHEM 253*	Organic Chemistry Lab	1		<b>MSE 405</b>	Nanosystems Principles	3	
CHEM 250*	Organic Chemistry	2		ENGL 303	Technical Writing	3		<b>MSE 406*</b>	Micro/Nano Measurements	3	
		12				12				11	

SENIOR YEAR											
Fall Quarter		Cr	Gr	Winter Quarter		Cr	Gr	Spring Quarter		Cr	Gr
<b>NSE 406</b>	Senior Design I	1		<b>NSE 407</b>	Senior Design II	1		<b>NSE 408</b>	Senior Design III	1	
<b>NSE 410</b>	Nanosystems & Devices	3		<b>MSE 407</b>	Advanced Microfabrication	3		Directed Elective**		3	
<b>MEEN 382</b>	Basic Measurements	2		Directed Elective**		3		ART†	Fine Arts Appreciation	3	
<b>PHYS 412</b>	Solid State Physics	3		Social Science ***		3		Social Science ***		3	
ENGL 363	Scientific/Tech. Presentations	3				10				10	

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