

# Chemical Engineering (BS) and Paper Science & Engineering (BS) (Dual Major) (15PSEBS-15PSENDM)

Semester Display Effective Date: 1.2013

## FRESHMAN YEAR

Fall Semester	Credit		Spring Semester	Credit
CH 101 Chemistry, A Molecular Science <sup>3</sup> CH 102 General Chemistry Lab <sup>3</sup> E 101 Introduction to Engr & Prob Solv <sup>1</sup> E 115 Intro to Computing Environ ENG 101 Academic Writing and Research <sup>1</sup> MA 141 Calculus I <sup>3</sup> HES_*** Health & Exercise Studies Course*	3 1 1 1 4 4 1		CH 201 Chemistry, A Quant Science <sup>1</sup> CH 202 Quantitative Chemistry Lab <sup>1</sup> EC 205 Economics (or EC 201 or ARE 201)* MA 241 Calculus II <sup>3</sup> PY 205 Physics Engr & Scientists I <sup>3</sup> PY 206 Physics for Engineers & Scientists I Lab PSE 201 Pulping & Papermaking Technology <sup>1</sup>	3 1 3 4 3 1 3
	<b>15</b>			<b>18</b>

## SOPHOMORE YEAR

Fall Semester	Credit		Spring Semester	Credit
CH 221 Organic Chemistry I <sup>4</sup> CH 222 Organic Chemistry I Lab <sup>4</sup> CHE 205 Chemical Proc Princ <sup>1</sup> MA 242 Calculus III <sup>1</sup> PSE 212 Paper Properties <sup>1</sup> HES_*** Health & Exercise Studies Course	3 1 4 4 4 1		CH 223 Organic Chemistry II <sup>4</sup> CH 224 Organic Chemistry II Lab <sup>4</sup> CHE 225 Chemical Proc Systems <sup>1</sup> MA 341 Applied Differential Eq <sup>1</sup> PY 208 Physics for Engr & Scientists II PY 209 Physics for Engineers & Scientists II Lab PSE 371 Pulping Process Analysis <sup>1</sup>	3 1 3 3 3 1 3
	<b>17</b>			<b>17</b>

## JUNIOR YEAR

Fall Semester	Credit		Spring Semester	Credit
CH 315 Quantitative Analysis CHE 311 Transport Processes I <sup>1</sup> CHE 315 Chem Process Thermo <sup>1</sup> PSE 211 Pulp & Paper Internship <sup>2</sup> PSE 322 Wet End/Polymer Chemistry GEP Requirement*	4 3 3 1 4 3		CHE 312 Transport Processes II CHE 316 Thermo of Chem & Phase Eq PSE 332 Wood & Pulping Chemistry PSE 360 Pulp & Paper Unit Proc. II GEP Requirement*	3 3 3 3 3
	<b>18</b>			<b>15</b>

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**SENIOR YEAR**

Fall Semester	Credit		Spring Semester	Credit
PSE 415 Paper Industry Strat. Proj. Analy. PSE 417 Process Design & Analy. Lab PSE 425 Bioenergy & Biomaterials Engr PSE 475 Process Control GEP Requirement* GEP Requirement*	3 3 3 3 3 3		PSE 416 Project Design and Analysis PSE 465 Paper Physics & Product Design PSE 472 Paper Process Analysis GEP Requirement* GEP IP Requirement*	3 3 3 3 2-3  <b>14-15</b>
	<b>18</b>			

**FIFTH YEAR**

Fall Semester	Credit		Spring Semester	Credit
CHE 330 CHE Lab I CHE 446 Design & Analysis Chem Reac CHE 450 CHE Design I ECE 331 Intro Elect Circuits <b>or</b> MSE 201 Intro Material Sci Engr.	4 3 3 3			
	<b>13</b>			

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Minimum Credit Hours Required for Graduation* <sup>I,J,K</sup> :	145
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**Major/Program requirements and footnotes:**

<sup>1</sup> Minimum grade of C- required.  
<sup>2</sup> There is one required internship in industry. PSE 211 should be taken the first semester upon returning from that internship.  
<sup>3</sup> Grade of C (2.0) or higher required.  
<sup>4</sup>CH 225/226 may substitute for CH 221/222 and CH 227/228 may substitute for CH 223/224.

**\*General Education Program (GEP) requirements and GEP Footnotes:**  
To complete the requirements for graduation and the General Education Program, the following category credit hours and co-requisites must be satisfied.  
University approved GEP course lists for each of the following categories can be found at <http://oucc.ncsu.edu/gep-courses>.

**A. Mathematical Sciences** (6 credit hours – one course with MA or ST prefix)  
*Fulfilled as part of the Major requirements.*

**B. Natural Sciences** (7 credit hours – include one laboratory course or course with a lab)  
*Fulfilled as part of the Major requirements.*

**C. Humanities** (6 credit hours selected from two different disciplines/course prefixes)  
*Choose from the University approved GEP Humanities course list.*

**D. Social Sciences** (6 credit hours selected from two different disciplines/course prefixes)  
*Choose from the University approved GEP Social Sciences course list in a discipline other than Economics. Economics 205 (or EC 201 or ARE 201), taken as part of the Major requirements, satisfies 3 credit hours needed to fulfill the GEP Social Sciences Requirement.*

**E. Health & Exercise Studies** (2 credit hours – at least one 100-level Health & Exercise Studies Course)  
*Choose from the University approved GEP Health & Exercise Studies course list.*

**F. Additional Breadth** - (3 credit hours to be selected from the following checked University approved GEP course lists)

**XX** Humanities/Social Sciences/Visual and Performing Arts

**G. Interdisciplinary Perspectives** (5-6 credit hours)

*Choose from the University approved GEP Interdisciplinary Perspectives course list.*

**H. Introduction to Writing** (4 credit hours satisfied by completing ENG 101 with a C- or better)

The following **Co-Requisites** must be satisfied to complete the General Education Program requirements:

**I. U.S. Diversity(USD)**

*Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite.*

**J. Global Knowledge(GK)**

*Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite.*

**K. Foreign Language proficiency** - Proficiency at the FL\_102 level is required for graduation.