

# Engineering Online Undergraduate Engineering Programs

## North Carolina State University & Lenoir/Craven Community College



11/30/04

### 2+2 Engineering PROGRAM OVERVIEW

#### WHAT IS THE 2+2 ENGINEERING PROGRAM?

The 2+2 Engineering Program is an agreement between Lenoir/Craven Community College (LCC/CCC) and North Carolina State University (NCSU). This program provides you and other residents of eastern North Carolina the opportunity to start preparing for a career in engineering without leaving the immediate area. You take your first two years of engineering classes at the Havelock campus of LCC/CCC and then transfer to North Carolina State University to finish your engineering degree.

#### IS MATH IMPORTANT?

Yes, yes and yes! The key to successfully mastering your engineering courses is a strong foundation in mathematics. Your first semester of engineering courses will include Calculus I. To be successful in this class, you need a good foundation in College Algebra and Trigonometry. If you did not have these classes in high school, it will most likely be best for you to take them before entering Calculus I. This means it may take you longer than two years at LCC/CCC, but the time spent building your foundation will be well worth it. If you did not get the math foundation in high school, it is not too late. LCC/CCC has the classes available to fit whatever math level in which you are entering. To assess your math readiness, you are encouraged to take the SAT II - Level 2C exam.

#### HOW DOES THE PROGRAM WORK?

You apply and are accepted into the program at LCC/CCC. After meeting any math prerequisites, you start taking required courses for your selected engineering degree. Some of these courses will be LCC/CCC courses and some will be taken through distance education from NCSU Engineering Online. When you take a distance course, you will register separately for this class, pay tuition to the school offering this course, and you will have a separate transcript from this school. Once you have taken the initial courses, you will apply and then transfer to one of the engineering universities to finish your degree. As part of your transfer application to the engineering university, you will need to send a LCC/CCC transcript and transcripts from any university at which you took a course.

#### WILL I RECEIVE A DEGREE FROM LCC/CCC?

If you take just the courses required to transfer to a university as an engineering student at the junior level, you may not receive a degree from LCC/CCC before you transfer. Your LCC/CCC courses are directed towards your four-year engineering degree not towards a two-year Associates degree. If you want to take some extra courses, you can receive a Associates in Science degree from LCC/CCC.

#### HOW MUCH DOES THE PROGRAM COST?

At May 2003 tuition rates, a typical student would pay \$2,000 for 55 credit hours of LCC/CCC courses and \$1,600 for 15 credit hours of distance education classes.



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### WILL I TRANSFER AS A JUNIOR?

If you are studying Civil, Mechanical or Aerospace Engineering, then you may finish your first two years at LCC/CCC and then transfer to NCSU. You may have one or two extra classes to take at NCSU, but you **will** be ready to start your junior engineering classes. If you are studying one of the other fields of engineering, then you may need to transfer after three semesters instead of four. Talk with the 2+2 Director and work out a transfer plan **before** you start.

### WHAT IS REQUIRED TO TRANSFER?

The university you are transferring to, not LCC/CCC, sets transfer requirements. If you take a class at another institution or one outside of your plan of study, always check with your advisor so you can insure it will transfer. Specific requirements for NCSU can be found at their website (<http://www.engr.ncsu.edu/students/docs/transferreq.html>). For a fall or summer transfer, NCSU requires a complete transfer application by April 1. November 1 for spring transfer. General requirements for transfer to NCSU are as follows:

1. 30 credit hours or more of transferable college-level courses
2. 3.0 or higher cumulative GPA on all transferable college-level courses (will reviewed GPA between 2.5 – 2.9 on a case-by-case basis).
3. Two college-level English composition courses (ENG 111 **and** ENG 112 or ENG 113 or ENG 114)
4. College-level chemistry course with lab (CHM 151)
5. Strong performance in all NCSU distance engineering classes taken
6. Calculus I and Calculus II (MAT 271 & MAT 272) with at least a 2.5 GPA in the last two calculus or higher college mathematics classes taken.
7. Calculus-based physics-I (PHY 251)

### WHAT IS REQUIRED FOR GRADUATION?

Graduation requirements will vary between the different fields of engineering, so the key is to plan ahead. Study the requirements now and map out a plan to meet them. The key requirements to pay attention to for NCSU are as follows:

1. Meet all class requirements from your specific course of study  
See "<http://www.engr.ncsu.edu/students/curricula/index.html>" **and attached summary**
2. Meet Humanities & Social Science Elective Requirements  
See "<http://www.engr.ncsu.edu/students/hss/index.html>" **and attached handout**
3. Meet Foreign Language Proficiency Requirement  
2 years high school of the same language with a B (85.0%) average or better each year;  
Or 3 years high school of the same language with a C (78.0%) average or better each year;  
Or 2 semesters of college foreign language (SPA 111/112 at LCC/CCC).
4. Meet Physical Education Requirement  
Fitness and Wellness Elective (1 hr) -> NCSU PE 101-PE 109. At LCC/CCC: PED 110  
Physical Education Elective (1 hr) -> NCSU PE \*\*\* Any LCC/CCC activity based PED class

### HOW DO I GET STARTED?

The best way to insure a smooth transfer from LCC/CCC to one of the engineering schools is to have a plan and start early. Establish contact with the 2+2 program early in your senior year and they will help you. Take the SAT II - Level 2C exam in January or May. Depending on your math background, you may want to attend LCC/CCC the summer right after you graduate to be ready for calculus in the fall. If you have questions or just want to talk to someone about the program, contact Bill Fortney (252-444-3357 or 252-233-6864 / [wbfortne@ncsu.edu](mailto:wbfortne@ncsu.edu)).

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### NC STATE UNIVERSITY **2+2 Engineering**

College Of Engineering

#### TYPICAL PLAN FOR 2+2 COMMUNITY COLLEGE STUDENTS

##### Mechanical Engineering

11/30/2004

#### FIRST YEAR - FALL

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 111	English	3
MA141	MAT 271	Calculus I	4
CH 101 & 102	CHM 151	General Chemistry I	4
E101	EGR 150	Intro To Engineering	1
* See Note		HSS Elective	3
PE ***	PED ***	Any Activity PE	1
<b>TOTAL HOURS</b>			<b>16</b>

#### FIRST YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 112/114	English	3
PY 205	PHY 251	Physics I	4
MA 241	MAT 272	Calculus II	4
CSC 112	CSC 136	FORTTRAN	3
PE 101-109	PED 110	Fit and Well for Life	2
<b>TOTAL HOURS</b>			<b>16</b>

#### SECOND YEAR - FALL

NCSU Class	CC Class	SUBJECT	
MA 242	MAT 273	Calculus III	4
PY 208	PHY 252	Physics II	4
MAE 206	Distance	Statics	3
MSE 200	Dist MSE 201	Materials Science & Engr	3
* See Note		HSS Elective	3
<b>TOTAL HOURS</b>			<b>17</b>

#### SECOND YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
MAE 208	DISTANCE	Dynamics	3
MAE 314	DISTANCE	Solid Mechanics	3
MA 341	MAT 285	Differential Equations	3
* See Note		HSS Elective	3
* See Note		HSS Elective	3
E 115	Distance	Intro To Computing Envr	1
GC 211	NONE	Intro To Graphics	
<b>TOTAL HOURS</b>			<b>16</b>

\*1 All HSS electives must be selected from approved College Of Engineering list. See attached.

#### TYPICAL PLAN FOR 2+2 COMMUNITY COLLEGE STUDENTS

##### Civil Engineering

11/30/2004

#### FIRST YEAR - FALL

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 111	English	3
MA141	MAT 271	Calculus I	4
CH 101 & 102	CHM 151	General Chemistry I	4
E101	EGR 150	Intro To Engineering	1
* See Note		HSS Elective	3
PE ***	PED ***	Any Activity PE	1
<b>TOTAL HOURS</b>			<b>16</b>

#### FIRST YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 112/114	English	3
PY 205	PHY 251	Physics I	4
MA 241	MAT 272	Calculus II	4
CSC 116	CSC 148	Java	3
PE 101-109	PED 110	Fit and Well for Life	2
<b>TOTAL HOURS</b>			<b>16</b>

#### SECOND YEAR - FALL

NCSU Class	CC Class	SUBJECT	
MA 242	MAT 273	Calculus III	4
PY 208	PHY 252	Physics II	4
CE 214	Dist MAE 206	Statics	3
MSE 200	Dist MSE 201	Materials Science & Engr	3
* See Note		HSS Elective	3
<b>TOTAL HOURS</b>			<b>17</b>

#### SECOND YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
CE 215	Dist MAE 208	Dynamics	3
CE 313	Dist MAE 314	Solid Mechanics	3
MA 341 or MA 305	MAT 285	Differential Equations or Lin Alg	3
EC205	ECO251	Microeconomics	3
* See Note		HSS Elective	3
E 115	Distance	Intro To Computing Envr	1
MA 302	NONE	Num Apps to Diff Eq	
GC 120	NONE	Intro To Graphics	
<b>TOTAL HOURS</b>			<b>16</b>

\*1 All HSS electives must be selected from approved College Of Engineering list. See attached.

# Engineering Online Undergraduate Engineering Programs

## North Carolina State University & Lenoir/Craven Community College



**NC STATE UNIVERSITY**  
College Of Engineering

# 2+2 Engineering

### TYPICAL PLAN FOR 2+2 COMMUNITY COLLEGE STUDENTS Electrical & Computer Engineering

5/20/2004

#### FIRST YEAR - FALL

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 111	English	3
MA141	MAT 271	Calculus I	4
CH 101 & 102	CHM 151	General Chemistry I	4
E101	EGR 150	Intro To Engineering	1
* See Note		HSS Elective	3
PE ***	PED ***	Any Activity PE	1
<b>TOTAL HOURS</b>			<b>16</b>

#### FIRST YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 112/114	English	3
PY 205	PHY 251	Physics I	4
MA 241	MAT 272	Calculus II	4
CSC 116	CSC 148	Java	3
PE 101-109	PED 110	Fit and Well for Life	2
<b>TOTAL HOURS</b>			<b>16</b>

#### SECOND YEAR - FALL

NCSU Class	CC Class	SUBJECT	
MA 242	MAT 273	Calculus III	4
PY 208	PHY 252	Physics II	4
* See Note		2-HSS Electives	6
ECE 206	Distance	Organization of Micro	
ECE 200	Distance	Intro to ECE Lab	
CSC 216	none	Advanced JAVA	
<b>TOTAL HOURS</b>			<b>14</b>

#### SECOND YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
<b>Begin At NCSU This Semester</b>			
<b>TOTAL HOURS</b>			

\*1 All HSS electives must be selected from approved College Of Engineering list. See attached.

### TYPICAL PLAN FOR 2+2 COMMUNITY COLLEGE STUDENTS Aerospace Engineering

5/20/2004

#### FIRST YEAR - FALL

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 111	English	3
MA141	MAT 271	Calculus I	4
CH 101 & 102	CHM 151	General Chemistry I	4
E101	EGR 150	Intro To Engineering	1
* See Note		HSS Elective	3
PE ***	PED ***	Any Activity PE	1
<b>TOTAL HOURS</b>			<b>16</b>

#### FIRST YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
1/2 of ENG 101	ENG 112/114	English	3
PY 205	PHY 251	Physics I	4
MA 241	MAT 272	Calculus II	4
CH 201	CHM 152	General Chemistry II	4
PE 101-109	PED 110	Fit and Well for Life	2
<b>TOTAL HOURS</b>			<b>17</b>

#### SECOND YEAR - FALL

NCSU Class	CC Class	SUBJECT	
MA 242	MAT 273	Calculus III	4
PY 208	PHY 252	Physics II	4
MAE 206	Distance	Statics	3
MSE 201	Di+B45stance	Materials Science & Engr	3
* See Note		HSS Elective	3
<b>TOTAL HOURS</b>			<b>17</b>

#### SECOND YEAR - SPRING

NCSU Class	CC Class	SUBJECT	
MAE 208	DISTANCE	Dynamics	3
MAE 314	DISTANCE	Solid Mechanics	3
MA 341	MAT 285	Differential Equations	3
* See Note		HSS Elective	3
CSC 112	CSC 136	Fortran	3
E 115	Distance	Intro To Computing Envr	1
MAE 261	NONE	Vehicle Perf	
<b>Must Take MAE 261 Summer-II @ NCSU Before fall transfer</b>			
GC 211	NONE	Intro To Graphics	
<b>TOTAL HOURS</b>			<b>16</b>

\*1 All HSS electives must be selected from approved College Of Engineering list. See attached.

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### NCSU COLLEGE OF ENGINEERING

**HUMANITIES & SOCIAL SCIENCES REQUIREMENTS WITH COMMUNITY COLLEGE (CC) COURSE #S**  
 One course from each of the seven categories below must be taken before finishing at NCSU. Some of these courses will be taken after you transfer. All of the courses must be completed for a letter grade; none of the seven courses may be taken as pass/fail or credit only grading. To satisfy the last requirement, take one course marked with a \*

<p><b>LITERATURE</b>  <u>CC's ENG. 231, 232, 233, 241, 242, 243</u>                      Select one course from the approved list of "Literature."</p>	_____ (3cr.)
<p><b>HISTORY, PHILOSOPHY, OR RELIGION</b>  <u>CC's HIS 121*, 122*, 131, 132, 236, 252, PHI 215 OR REL 110*, 211*, 212*</u>                      Select one course from the approved lists: "History," "Philosophy," or "Religion."</p>	_____ (3cr.)
<p><b>VISUAL &amp; PERFORMING ARTS OR HISTORY</b>  <u>CC's ART 114*, 115*, 116, MUS 110, 112 OR HIS 121*, 122*, 131, 132, 236, 252</u>                      Select one course from the approved lists: "Visual &amp; Performing Arts" or history"  <i>NOTE: BME, CEM, ENE &amp; TE majors must choose GC 120. → Take at NC State</i></p>	_____ (3cr.)
<p><b>SOCIAL SCIENCES</b>  <u>CC's POL 120, 130, 210, SOC 210, 213, 220, 230, 252, GEO 111, PSY 150, 241, 237, 263, ANT 240, BUS 115</u>                      Select one course from the approved list of "Social Sciences" (anthropology, politics &amp; government, sociology, cultural geography, psychology, or linguistics).  <i>NOTE: ENE majors must choose PS 336 or PS 320. → Take at NC State</i></p>	_____ (3cr.)
<p><b>INTRODUCTORY ECONOMICS</b>  <u>CC's ECO 251 AS FIRST CHOICE; ECO 252 AS 2<sup>ND</sup> CHOICE FOR ANY MAJOR EXCEPT CEM.</u>                      Select an introductory economics course: EC 205 (recommended), EC 201, or ARE 201.  <i>Transfer or AP credit for EC 202 can count here.</i></p>	_____ (3cr.)
<p><b>SCIENCE, TECHNOLOGY, &amp; SOCIETY</b>  <u>CC's HUM 110</u>                      Select one course from the approved list of "Science, Technology, and Society."  <i>NOTE: BE majors must choose from MDS 201, 302, 304, 320; PHI 322 → Take at NC State</i>  <i>IE &amp; IEF majors must choose from MDS 201, 214, 302, 303, 304, 320, 322, 325 → Take at NC State</i></p>	_____ (3cr.)
<p><b>OTHER HUMANITIES &amp; SOCIAL SCIENCES</b>                      Select an additional course from <b>any</b> of the <i>Approved COE Humanities &amp; Social Sciences</i> to complete the <i>total of seven courses</i>.  <i>NOTE: AE, ME &amp; BSE majors choose from MDS 302, 304, 320, PHI 275, 314 =====&gt;TAKE</i>  <i>MSE majors choose from MDS 201, 302, 304, 320, 325, PHI 275, 314, or 321=====&gt;CC PHI 240</i>  <i>ENE majors choose from ARE 309, 336, MDS 201, 303, 410 or PHI 322</i>  <i>CEM majors choose from EC 301, 304, 336, 348, 372</i></p>	_____ (3cr.)
<b>The following requirement must also be satisfied:</b>	<b>Total = 21 credit hours</b>
<p><b>NON-ENGLISH SPEAKING CULTURE</b>                      At least one of the seven courses selected above <b>must</b> focus on a <i>non-English speaking culture (denoted by an asterisk)</i> -- OR -- Select an additional course to satisfy this requirement.</p>	_____ course from above (3cr.) -- OR -- _____ (3cr.)

NOTE: Foreign Language Proficiency is also required for graduation from all departmental degree programs.