

# BIOMEDICAL AND HEALTH SCIENCES ENGINEERING, A.S.-B.S.

This is a suggested course plan. It is highly recommended that you meet regularly with your academic advisor to determine your course selection and progress toward graduation.

Students who transfer to UNC under the Comprehensive Articulation Agreement (CAA) have all lower-level General Education requirements completed, but must complete these requirements through transfer or UNC coursework: Global Language, Research and Discovery, Lifetime Fitness, Communication Beyond Carolina, Campus Life Experience, and, where applicable, Supplemental General Education. Students who do not transfer in under the CAA should work closely with their advisor to determine which requirements apply to them for the IDEAs in Action General Education curriculum (<http://catalog.unc.edu/undergraduate/ideas-in-action/>).

This catalog also includes a complete list of requirements for the Biomedical and Health Sciences Engineering B.S. degree (<http://catalog.unc.edu/undergraduate/programs-study/biomedical-health-sciences-engineering-major-bs-/#requirements-text>).

## North Carolina Community College UGETC Curriculum

Code	Title	Hours
UGETC	English composition (ENG 111 + ENG 112 = UNC ENGL 105) <sup>2</sup>	6
UGETC	Humanities/Fine Arts/Communication (2 courses from at least 2 different disciplines; see UGETC list below)	6
UGETC	Social and Behavioral Sciences (2 courses from at least 2 different disciplines; see UGETC list below)	6
MAT 271	Calculus I (UNC MATH 231 + MATH 129P + MATH 110P) <sup>1,2</sup>	4
MAT 272	Calculus II (UNC MATH 232) <sup>1,2</sup>	4
PHY 251	General Physics I (UNC PHYS 118) <sup>1,2</sup>	4
PHYS 252	General Physics I (UNC PHYS 119) <sup>1</sup>	4
<b>Total Hours</b>		<b>34</b>

## Additional General Education Courses

Code	Title	Hours
XXX 111	Foreign Language Level 1	3
XXX 112	Foreign Language Level 2	3
XXX 211	Foreign Language Level 3 <sup>3</sup>	3
CHM 151	General Chemistry (UNC CHEM 101/101L) <sup>1,2</sup>	4
<b>Total Hours</b>		<b>13</b>

## Other Required Hours

Code	Title	Hours
ACA 122	College Transfer Success (UNC GENR --)	1
MAT 273	Calculus III (UNC MATH 233) <sup>1</sup>	4
MAT 285	Differential Equations (UNC MATH 383) <sup>1</sup>	3

Take two of:		8
BIO 111	General Biology I (UNC BIOL 101/101L + BIOL 103) <sup>1</sup>	
CHM 152	General Chemistry II (UNC CHEM 102/102L) <sup>1</sup>	
CHM 251	Organic Chemistry I (UNC CHEM 261/262L) <sup>1</sup>	
<b>Total Hours</b>		<b>16</b>

Code	Title	Hours
<b>Total Community College Hours</b>		<b>63</b>

<sup>1</sup> Required in the major.

<sup>2</sup> Prerequisite for admission into the major.

<sup>3</sup> All NC Community College Language courses numbered 211 are approved to transfer to UNC-Chapel Hill as a course that completes the GLOBE-LANG IDEAs in Action requirement.

## UNC-Chapel Hill

### Summer Session Prior to Semester 5

Code	Title	Hours
Take any remaining courses not completed at the NCCC to fulfill additional requirements.		3-11

BIOL 101 & 101L	Principles of Biology and Introductory Biology Laboratory <sup>1, H, F</sup>	
CHEM 102 & 102L	General Descriptive Chemistry II and Quantitative Chemistry Laboratory II <sup>1, H, F</sup>	
CHEM 261	Introduction to Organic Chemistry I <sup>1, H</sup>	
<b>Total Hours</b>		<b>3-11</b>


H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

## Semester 5


Code	Title	Hours
BMME 201	Computer Methods in Biomedical Engineering (Summer Only) <sup>1</sup>	3
	or COMP 116 Introduction to Scientific Programming	
BMME 205	Biomedical Mechanics <sup>1</sup>	4
BMME 207	Biomedical Electronics (Fall Only) <sup>1</sup>	4
BMME 298	Biomedical Engineering Design and Manufacturing I <sup>1</sup>	2
MATH 383L	First Course in Differential Equations Laboratory <sup>1</sup>	1
LFIT --	Lifetime Fitness	1
<b>Total Hours</b>		<b>15</b>

**Semester 6**


Code	Title	Hours
BMME 209	Materials Science of Biomaterials <sup>1</sup>	4
BMME 301	Human Physiology : Electrical Analysis (Spring only) <sup>1</sup>	4
BMME 398	 Biomedical Engineering Design and Manufacturing II <sup>1, H</sup>	2
BMME ---	Gateway Elective 1 <sup>1</sup>	3
BMME ---	Gateway Elective 2 <sup>1</sup>	3
<b>Total Hours</b>		<b>16</b>

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

**Semester 7**

Code	Title	Hours
BMME ---	Gateway Elective 3 <sup>1</sup>	3
BMME ---	Specialization Elective 1 <sup>1</sup>	3
STEM Elective <sup>1</sup>		3
BMME 302	Human Physiology: Mechanical Analysis (Fall only) <sup>1</sup>	4
BMME 697	 BME Senior Design: Product Development (Fall only) <sup>1, 2</sup>	3
<b>Total Hours</b>		<b>16</b>

**Semester 8**

Code	Title	Hours
BMME ---	Specialty Elective 2 <sup>1</sup>	3
BMME ---	Specialty Elective 3 <sup>1</sup>	3
BMME ---	Specialty Elective 4 <sup>1</sup>	3
BMME 698	 Biomedical Engineering Senior Design: Product Implementation and Strategy (Spring only) <sup>1, 2</sup>	3
Elective or IDEAs in Action Requirement		0-3
<b>Total Hours</b>		<b>12-15</b>

<sup>1</sup> Required in the major.

<sup>2</sup> IDEAs In Action Requirements: BMME 697 fulfills COMMBEYOND, BMME 698 fulfills RESEARCH.

**UGETC Course List (A.S. Curriculum)**

Code	Title	Hours
<b>English Composition (two courses)</b>		<b>6</b>
ENG 111	Writing & Inquiry <sup>1</sup>	
ENG 112	Writing/Research in the Disciplines <sup>1</sup>	
<b>Humanities/Fine Arts (two courses from at least two different disciplines)</b>		<b>6</b>
ART 111	Art Appreciation (UNC GENR 111)	
ART 114	Art History Survey I (UNC ARTH 151)	
ART 115	Art History Survey II (UNC ARTH 152)	
COM 120	Introduction to Interpersonal Communication (UNC COMM 120), OR	
COM 231	Public Speaking (UNC COMM 113)	
DRA 111	Theatre Appreciation (UNC DRAM 116)	

ENG 231	American Literature I (UNC ENGL 128) <sup>2</sup>	
ENG 232	American Literature II (UNC ENGL 128) <sup>2</sup>	
ENG 241	British Literature I (UNC ENGL 120) <sup>2</sup>	
ENG 242	British Literature II (UNC ENGL 121) <sup>2</sup>	
MUS 110	Music Appreciation (UNC MUSC 141)	
MUS 112	Introduction to Jazz (UNC MUSC 145)	
PHI 215	Philosophical Issues (UNC PHIL 101) <sup>2</sup>	
PHI 240	Introduction to Ethics (UNC PHIL 160) <sup>2</sup>	
<b>Social/Behavioral Science (two courses from at least two different disciplines)</b>		<b>6</b>

ECO 251	Principles of Microeconomics (UNC GENR 119) <sup>3</sup>
ECO 252	Principles of Microeconomics (UNC GENR 119) <sup>3</sup>
HIS 111	World Civilizations I (UNC GENR 113)
HIS 112	World Civilizations II (UNC GENR 113)
HIS 131	American History I (UNC HIST 127)
HIS 132	American History II (UNC HIST 128)
POL 120	American Government (UNC POLI 100)
PSY 150	General Psychology (UNC PSYC 101)
SOC 210	Introduction to Sociology (UNC SOCI 101)

**Mathematics (select two courses)** **8**

MAT 171	Precalculus Algebra (UNC MATH 110P)
MAT 172	Pre-calculus Trigonometry (UNC MATH 130 + MATH 110P)
MAT 263	Brief Calculus (UNC MATH 152 + MATH 110P)
MAT 271	Calculus I (UNC MATH 231 + MATH 129P + MATH 110P)
MAT 272	Calculus II (UNC MATH 232 + MATH 110P)

**Natural Sciences (select 8 SCH from the following courses):** **8**

AST 151/151A	General Astronomy I and Lab (UNC ASTR 101/100L)
BIO 110	Principles of Biology (UNC GENR 116)
BIO 111 & 112	General Biology I & II (UNC BIOL 101/101L + BIOL 103 + BIOL 104)
CHM 151 & 152	General Chemistry I & II (UNC CHEM 101/101L + CHEM 102/102L)
GEL 111	Introduction Geology (UNC GEOL 101/101L)
PHY 110/110A	Conceptual Physics and Lab (UNC PHYS 101)
PHYS 151 & 152	College Physics I & II (UNC PHYS 114 + PHYS 115)
PHYS 251 & 252	General Physics I & II (UNC PHYS 118 + PHYS 119)

**Total Hours** **34**

IDEAs In Action Requirements not covered by the North Carolina Comprehensive Articulation Agreement that could be completed at the Community College:

COM 231 (UNC COMM 113) can fulfill COMMBEYOND; COM 120 (UNC COMM 120), CHM 251<sup>2</sup> (UNC CHEM 261 + CHEM 262L) or CHM 252<sup>2</sup> (UNC CHEM 262 + CHEM 262L) can fulfill RESEARCH, and PED 110 (LFIT 998) can fulfill LIFE-FIT.

<sup>1</sup> Students who complete both ENG 111 and 112 receive credit for UNC ENGL 100 + ENGL 105.

<sup>2</sup> Course may have prerequisite(s). Consult the North Carolina Community College Combined Course Library (<https://www.ncccommunitycolleges.edu/academic-programs/combined-course-library/>) for most current information.

<sup>3</sup> ECO 251 + 252 = UNC ECON 101 + UNC GENR 119.

## **Additional Resources**

### **Applying to Carolina**

- The Office of Undergraduate Admissions (<https://admissions.unc.edu/apply/types-of-applications/transfer/>) provides information about the application process for transfer students.

### **Advising and Community College Course Selection**

- For UGETC, Pre-Major, Elective, or GEC course options, please refer to the Comprehensive Articulation Agreement transfer course list (<https://www.nccommunitycolleges.edu/academic-programs/college-transferarticulation-agreements/comprehensive-articulation-agreement-caa/>).
- Students should work with their community college academic advisor to ensure appropriate course selection for AA/AS degree completion.

### **Additional Resources**

- To find out how your N.C. community college coursework will transfer to UNC, please view the transfer credit list ([https://tes.collegesource.com/publicview/TES\\_publicview01.aspx?rid=ff81c5a2-3ec7-4b31-a7fb-04e2fd5f0345&aid=ca8ebc64-42ca-4a2d-b16b-f8f68bbb6767](https://tes.collegesource.com/publicview/TES_publicview01.aspx?rid=ff81c5a2-3ec7-4b31-a7fb-04e2fd5f0345&aid=ca8ebc64-42ca-4a2d-b16b-f8f68bbb6767)) for your community college campus.