Information for Engineering Students

Class of 2011

Academic Year 2007-08

College of Engineering
Bucknell University
Lewisburg, Pennsylvania 17837
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NOTICE OF NONDISCRIMINATORY POLICY RELATED TO STUDENTS:

Bucknell University admits students without regard to race, national or ethnic origin, religion, disability, or gender to all the rights, privileges, programs, and activities generally accorded or made available to students at Bucknell and does not discriminate on the basis of race, color, gender, sexual orientation, age, religion, national or ethnic origin, marital status, veteran status, or disability in the administration.

Bucknell University hereby gives notice to participants, beneficiaries, applicants and employees, including those with impaired vision or hearing, that it does not discriminate on the basis of handicap and that it is prepared to comply with the requirements of Section 504 of the Rehabilitation Act of 1973. Bucknell does not discriminate in admission or access to, or treatment or employment in, its programs and activities.

POLICY ON RELEASE OF INFORMATION ABOUT STUDENTS

1. Bucknell University communicates with the student directly and releases information about a student to others, including parents, only with the student's consent.

2. The university transmits bills and academic status reports (grade reports and official letters concerning academic standing) as directed in advance by the student.

3. The release by university personnel of other information, including communications to parents from academic deans, individual faculty members, the student's faculty adviser and staff members of the Office of the Dean of Students, requires the consent of the student prior to each release.

4. Exceptions to the above, as permitted by the Family Educational Rights and Privacy Act of 1974, are:
   (a) Directory information.
   (b) Release of information in an emergency where such information is necessary to the protection of health or safety.
   (c) Release of information to Bucknell staff members who have a legitimate educational need for the information.
   (d) In connection with financial aid for which the student has applied.
   (e) Under court order or subpoena.

NOTE

This is an unofficial publication of the College of Engineering and is valid for the incoming class of 2008 only. In the event of a conflict, the university catalog or other official university publication will prevail. This booklet of information has been assembled to help engineering students with questions related to academic programs and standing. The materials are grouped into the following sections:

* Academic Matters
* Academic Programs
* Counseling Careers and Graduate Studies
* Degree Requirements
* Changes in Degree Requirements

We hope you become familiar with this booklet and consult it often. Any suggestions you have for improving or expanding the coverage of this booklet should be sent to the Associate Dean of the College of Engineering.

ACADEMIC MATTERS

Academic Responsibility

Faculty and students are responsible for reading, understanding and following the university's policy on academic responsibility printed in the student handbook. If you have any questions consult with the Associate Dean of Engineering.

Attendance

When, in the judgment of an instructor, any student has been absent from a class or laboratory too frequently, the faculty member is expected to report this situation to the Associate Dean of Engineering with a recommendation of the appropriate action.

A student may be dismissed from the university for extensive cutting of classes.

Liberal Arts-Engineering Students

For the first five semesters of their programs, official academic matters for liberal arts-engineering ("five-year," AB-BS) students are handled by the Associate Dean of the College of Arts and Sciences. For the last five semesters, the Associate Dean of the College of Engineering handles them. Throughout the five years each liberal arts-engineering student will have the Associate Dean of Engineering and one faculty member in each college as academic advisors.
- **Biomedical Engineering**
  - **BS**
  - **BME/Chem-Bio Studies Minors**
  - Professor Tranquillo ‘08
  - Professor Cavanagh ‘09
  - Professor Ebenstein ‘10
  - Professor Kennedy ‘11
  - Professor King all classes

- **Chemical Engineering**
  - **BS**
  - **AB-BS**
  - Professor Snyder ‘08
  - Professor Jablonski ‘09
  - Professor Prince ‘10
  - Professor Gross ‘11
  - Professor King all classes

- **Civil and Environmental Engineering**
  - **BS**
  - **AB-BS**
  - Professor Higgins ‘08
  - Professor Crago ‘09
  - Professor R Ziemian ‘10
  - Professor Toole ‘11
  - Professor King all classes

- **Computer Science and Engineering**
  - **A/S**
  - **Engr**
  - **A/S**
  - Professor Zaccone ‘08
  - Professor Hyde ‘08
  - Professor Guatterry (Engr & A/S) ‘09
  - Professor Meng (Engr) ‘10
  - Professor Perrone (A/S) ‘10
  - Professor Wittie (Engr) ‘11

- **Electrical Engineering**
  - **BS**
  - **AB-BS**
  - Professor Lin ‘08
  - Professor Nickel ‘09
  - Professor Kelley ‘10
  - Professor Kozick ‘11
  - Professor Aburdene all classes 
  - Professor J Baish all classes +
  - transfer students
  - all classes 
  - and all Bio-Chemical Studies

- **Mechanical Engineering**
  - **BS**
  - **AB-BS**
  - Professor Shooter ‘08
  - Professor Sharma ‘09
  - Professor Stryker (A – L) ‘10
  - Professor C Ziemian (M – Z) ‘10
  - Professor Beninati ‘11
  - Professor J Baish all classes

**NOTE:** First-year students in the 5-year AB-BS program are given the same class year as the 4-year students. After completion of five semesters, their class year is shifted. Therefore, the 5-year students entering in the fall 2007 will have a class year of 2011 until January 2010, when their class year will be changed to 2012.

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5-year (AENG) first-year engineers are assigned to the Associate Dean of Engineering. Undecided first-year engineers will be assigned to one of five advisers representing the departments. This information is available in the Office of the Associate Dean of Engineering.

### General Education Requirement

The Accreditation Board for Engineering and Technology, which accredits undergraduate engineering programs, requires a general education component in each engineering program. The College of Engineering has prepared a list of courses that can meet the ABET criteria for acceptable general education courses. This list, which has been compiled with the assistance of the Engineering Curriculum Committee, the faculty, and the chairpersons of the involved departments, is not intended to reflect on the quality of these courses, but only to indicate the extent to which the individual courses satisfy the ABET criteria. Courses that instill cultural values are approved, while courses that develop personal or professional skills are not. Thus, approved courses that involve performance must also include theory or history of the subject.

The general education component lends perspective to the traditional engineering studies to promote an understanding of the impact of engineering solutions in a global and societal context. The general education component is also intended to broaden the intellectual and experiential horizons of the student, to develop creative and critical abilities, and to facilitate an understanding of the social problems faced by humankind in the past, present, and future.

Each of the engineering programs includes a general education component that aims to contribute to the following learning objectives:

- Integrate disciplinary knowledge and multiple perspectives,
- Encourage understanding of our natural and fabricated worlds,
- Develop international and multicultural perspectives,
- Foster creativity, personal reflection, and moral discernment,
- Nurture independent and collaborative learning, and
- Create a holistic, supportive community of mutual respect.

The general education requirement contributes to these objectives by providing broadened studies in humanities and social sciences, and developing global and societal perspectives. The humanities include: art, art history, Chinese, classics, dance, East Asian studies, English, French, German, Greek, history, humanities, Japanese, Latin, Latin American studies, music, philosophy, religion, Russian, Spanish, theatre, and some women’s studies. The social sciences include: anthropology, economics, education, some environmental studies, some geography, international relations, linguistics, management, political science, psychology, sociology, and some women’s studies. Humanities and social science courses that aid the development of global and societal perspectives focus on themes of human diversity across national borders.

To fulfill the general education requirement, engineering students must successfully complete approved courses in humanities and social sciences. Ordinarily, courses that instill cultural values are approved, while courses that develop personal or professional skills are not. Therefore, approved courses that involve performance must also include theory or history of the subject. Students will fulfill the general education component through a minimum of five approved humanities and social sciences courses, with the following distribution:

- A minimum of two courses in humanities; one must be a first-year course in English literature and composition, and
- A minimum of two courses in social sciences
At a minimum, one of the humanities or social sciences courses must satisfy the global and societal perspectives requirement. Of the five courses, two must be from a single department, or at least one course must be at the 200 level or above. Individual departments may have additional requirements.

The current list of approved social science, humanities and global and societal perspectives courses can be obtained in the Office of the Dean of Engineering. The list is updated annually by the Engineering Curriculum Committee.

The social science, humanities and global and societal perspectives course list provides guidance to engineering students in choosing his or her electives in this area. Students should read the course descriptions in the catalog and observe any prerequisites or restrictions. The list is intended to include all courses currently being offered or listed in the catalog. Because of continual changes in particular courses and the offerings of the university, the list will sometimes be incomplete or in error. Questions or concerns should be brought to the attention of Associate Dean of Engineering for review.

Courses not listed or not approved may be submitted to the Associate Dean of Engineering.

NOTES:

1. None of the courses with the following prefixes are approved as social science-humanities electives: ANBE, ASTR, BIOL, BICH, CENG, CHEM, CHEG, CSCI, ELEC, ENGR, GEOL, MATH, MCAN, MECH, MILS, PHYS.

2. Some courses whose numbers are not listed below may be evaluated and will be included in a revised list. Prior to pre-registration for each semester, a list of additions or changes to the list will be available in the College of Engineering.

3. The Engineering Curriculum Committee will evaluate new or changed courses after a course description and syllabus are submitted to the Associate Dean of Engineering.

4. Independent study, interdepartmental, and off-campus study courses must be submitted by the student for consideration.

5. Foreign language courses in the student's native language(s) are not approved for social science, humanities or global and societal perspectives course credit.

6. Credit by examination and/or advanced placement credit in foreign language courses cannot be accepted for social science, humanities or global and societal perspectives course credit.

Social Science, Humanities and Global and Societal Perspectives Course List 6/30/07
(Global and Societal Perspectives Courses noted by *)

Most current course list found at:
http://www.bucknell.edu/Offices_Resources/Offices/Registrar/Course_Information.html

Anthropology (ANTH) -- Social Science
Approved: 100* 109 127 200 219* 227 228 232 235* 245*
246* 247 249* 251* 252* 253 256 260 265 270
273 282* 283 287 303 314 329 400 410 446
Not approved: 201 319 320 325 326 330 351

Arabic (ARBC) -- Humanities
Approved: 101* 102*
Not Approved: 201 319 320 325 326 330 331 351

Art (ART) -- Humanities
Approved: 101 102 103 106 113 114 116 129 204 207* 208* 211
213 215* 218 219 221 225 264 267 271 272 273
275 300 302 314 315 323 325* 330 362 370
371 419
Not Approved: 112 120 130 131 150 229 230 231 234 237
238 243 247 250 251 255 263 264 335 336
340 345 346 347 348 435

Chinese (CHIN) -- Humanities
Approved: 101 102 103 104 201 202 203 204 301 302
Not Approved: 310 319 320

Classics (CLAS) -- Humanities
Approved: 131 132 141 161 215 217 218 220 221 222
223 224 226 231 232 233 234 235 237 238
239 241 242 243 247 250 332 350
Not Approved: 311 321 322 344 445

Dance (DANC) -- Humanities
Approved: 250 264*
Not Approved: 210 225 230 262 263 265 275 300 310 315
325 330 350 355 360

East Asian Studies (EAST) -- Humanities
Approved: 111 115 211 212 213 214 219 220 221 222 224
233 234* 240* 245* 246* 247 248* 249* 250 251
252* 253 254 255* 256* 257* 261* 262 266 267
268* 274* 277 278* 339* 340*
Not Approved: 321 322 369 370

Economics (ECON) -- Social Science
Approved: 103 104 221 222 227* 231 235* 236 237 240 252*
256 257 258* 265 266* 267 271 275* 276* 277* 278*
279* 280 305 311 312 313 317 318 319 324
326 327 328 330 333 334 336 338* 339 340*
357* 358 407
Not Approved: 201 301 302 331 335 337 341
Most current course list found at:
http://www.bucknell.edu/Offices_Resources/Offices/Registrar/Course_Information.html

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**Most current course list found at:**  
http://www.bucknell.edu/Offices_Resources/Offices/Registrar/Course_Information.html

### Music (MUSC) -- Humanities
- **Approved:** 100 103 104 105 108 109 111 120 167 204 205 206 215 221 222 223 224 225 226 228 229 242 250 251 261* 264* 265 267 268 269 270-298
- **Not Approved:** 101 102 106 107 115 116 117 119 132 136 141 152 170-198 201 202 209 210 211 234 235 236 237 238 243 244 245 246 259 260 262 269 304 350 362 370-398

### Philosophy (PHIL) -- Humanities
- **Approved:** 098 100 150 204 205 206 207 212 213 214 215 218 222 223 224 225 227 228 230 233 235 250 256 258 259 260 262 265 266 267 272 275 309 310 311 475 480
- **Not Approved:** 103 201 319 320 321 322 323

### Political Science (POLS) -- Social Science
- **Approved:** 140 150 170* 200 203 204 205 206 207* 208 209 210 211* 212 214* 215* 216* 217 218* 219* 220* 221* 222* 223* 224 225 226 227 228 230 233 234 235 236 237 238 239* 240 243 244 247 250 251 252 254 255 256 260 261 262 263 264 265 266* 268* 271 272 273* 274* 275* 276* 278 303 305 310* 311* 315 322 330* 333 338 340
- **Not Approved:** 201 208 320 325 326 327 328 329 330 343 346* 351 353* 360* 370 372 373 374 375 401 426*

### Psychology (PSYC) -- Social Science
- **Approved:** 100 203 204 207 209 210 212 228 231 232 233 234 242 301 304 305 306 307 310 316 318 325 330 333 338 370
- **Not Approved:** 215 250 252 266 290 291 292 293 294 295 296 297 298 299 309 317 319 324 329 343 349 352 360 366 369 370

### Religion (RELI) -- Humanities
- **Approved:** 100 105 110 115 125 180 200 201 202 206 207 208 209 210 212 214 216 217 218 220 221 222* 223 224 225 226 227 228 234 235 240 241 242 243 245* 246* 248 255 265 280
- **Not Approved:** 281 310

### Residential College (RESC)
- **Approved:** 150 219
- **Not Approved:** 115

### Russian (RUSS) -- Humanities
- **Approved:** 101 103 104 105 108 109 111 120 167 204 215 222 225 250 253 255 265 270 301 302* 311 312 321 322 325 340
- **Not Approved:** 106 201 204 209 280 295 350 390 393

### Sign Language, American (SIGN)
- **Not Approved:** 101 102

### Sociology (SOCI) -- Social Science
- **Approved:** 100 105 123 130 140 210 211 212 213 214 234 236 239 243 250 251 253 255 256 260 263 270 280 290* 303 305 310* 311* 315 322 330* 340 409 410 412 422 431 433 434 447 448
- **Not Approved:** 201 208 319 320 325 326 351 370 372 402 408 418

### Spanish (SPAN) -- Humanities
- **Approved:** 100 101 102 103 105 207 208 209 210 211 212 213 215 222 223 224 225 226 227 228 229 230 231 321 322 323 324 325 331 332 333 334 335 336 337 338 364 365 390 399 408 418 421 422* 423 424 435 436 446
- **Not Approved:** 290 295 301 361 362 365 390 399 410 461 462 464 465

### Theatre (THEA) -- Humanities
- **Approved:** 256 258 259 261
- **Not Approved:** 290 295 310 361 362 365 390 399 410 461 462 464 465

### University Course (UNIV)
- **Approved:** 215 219 222 223 228 233 239 243 245 246 252 254 255 256 258 270 271 272 273 275 276 277 278 280 285 293 310 320
- **Not Approved:** 260 274 290

### Women's Studies (WMST)
- **Approved:** 150 155 160 232* 251 255 273 335*
- **Not Approved:** 270 319 320 370 375 390 375

**Foundation Seminar Courses for Fall 2007**

Check with the Office of the Associate Dean of Engineering.
Normal Course Load

The normal course load is four course credits. All degree candidates, including seniors, are expected to be enrolled each semester as full-time students, carrying a minimum of 3.0 and a maximum of 4.5 course credits, regardless of the number of course credits previously earned or planned for the future.

The Associate Dean of the student's college must approve exceptions for more course credits, or overloads. Such approval will be given only when the student previously has demonstrated superior performance and mastery of the material in a normal course load.

Drop/Add Courses

Students may add and drop courses, subject to space availability, during the first two weeks of the semester.

Students may withdraw from a course during the usual two-week drop/add period by filing a completed Drop/Add form with the registrar. If another course is not added, the remaining course load must be no less than the minimum required three courses credits and normal progress toward the degree will be considered. Reducing the course load to three course credits requires the approval of the faculty adviser and Associate Dean.

After the two-week drop/add period, all course withdrawals must be approved by the student's Associate Dean. In unusual circumstances dropping a course may be approved through the fourth week of the semester if the student is still carrying three course credits; in two semesters, as exceptions to this four-week limit, dropping a course may be permitted through the ninth week of the semester. The grade of "W" is assigned for all such approved course withdrawals after the first two weeks of the semester.

Calculation of Grade Point Average

In order to graduate, engineering students must satisfy two grade point requirements:

1. Every candidate for a bachelor's degree must have a cumulative grade point average of 2.0. In addition, every candidate for an engineering degree or for the combination degree of bachelor of science in one of the branches of engineering and bachelor of arts must have a cumulative grade point average of 2.0 for all courses in the College of Engineering.

2. Grading System - The performance of a student in each course is evaluated on the grade report by the use of the following symbols:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Superior achievement</td>
</tr>
<tr>
<td>A-</td>
<td>Superior achievement</td>
</tr>
<tr>
<td>B+</td>
<td>High pass</td>
</tr>
<tr>
<td>B</td>
<td>Pass</td>
</tr>
<tr>
<td>B-</td>
<td>Low Pass</td>
</tr>
<tr>
<td>C+</td>
<td>Passing work; no grade assigned</td>
</tr>
<tr>
<td>C</td>
<td>Pass</td>
</tr>
<tr>
<td>C-</td>
<td>Incomplete work</td>
</tr>
<tr>
<td>D</td>
<td>Failing work; no grade assigned</td>
</tr>
<tr>
<td>F</td>
<td>Failing work</td>
</tr>
<tr>
<td>P</td>
<td>Passing work</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete work</td>
</tr>
</tbody>
</table>

3. Students who have not earned the minimum grade point average required are either subject to dismissal from the university or, if the average is close to the minimum, are placed on "university grade point warning." Students on warning are required to attend the Bucknell summer session and to earn sufficiently high grades so as to reduce significantly their grade point deficits before the beginning of the next academic year.

4. Engineering students who have not met the minimum grade point average in all courses in the College of Engineering are placed on "engineering grade point warning," and may be required to attend the Bucknell summer session to earn sufficiently high grades so as to reduce significantly their engineering grade point average deficit or may be subject to dismissal from the engineering degree programs. Minimum engineering grade point averages are: 1.80 at the start of the third semester, 1.90 at the start of the fourth semester, and 2.00 at the start of the fifth and subsequent semesters.

5. Students who have a credit deficiency will be notified by the Associate Dean of Engineering that they are not in good academic standing, and will be placed on "credit warning." Such credit deficits will need to be made up during the following summer at Bucknell or elsewhere.

Several important points to note:

a. Grades earned in college courses taken at other institutions do not affect Bucknell GPAs.

b. Failing grades are not replaced by the subsequent grade in a repeated course. Both the "F" and the second grade count in the GPA computation.

c. A student cannot repeat for credit a course in which advanced placement credit or a grade of D or higher was received.

d. A 4-year student must complete 13 courses at Bucknell; a 5-year student must complete 17 courses at Bucknell.

e. Every candidate for a degree in the College of Engineering must earn credits for 34 courses, including four half courses. Every candidate for the combined degree of Bachelor of Science in one of the branches of engineering and bachelor of arts must earn credit for 42 courses.

Requirements for Good Academic Standing

To be in good academic standing and to be eligible for continued enrollment, a student must normally pass a minimum number of courses and achieve a minimum cumulative GPA as follows:

<table>
<thead>
<tr>
<th>Beginning of Semester</th>
<th>Minimum Number of Courses Passed</th>
<th>Grade Point Average</th>
<th>Engineering Grade Point Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>4</td>
<td>*</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>6</td>
<td>*</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>7</td>
<td>*</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>8</td>
<td>29.5</td>
<td>2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*Students must have earned within one (1) course credit of the credits required for their curriculum.

In exceptional circumstances, the definition of "normal" progress toward the degree may, at the discretion of the Associate Dean of Engineering, be altered to allow a student to extend his or her undergraduate career to nine semesters.
Summer School

The summer school at Bucknell offers courses in the six-week session. The session for the summer of 2007 begins on Monday, June 9, 2008. Student inquiries about summer school courses at Bucknell should be directed to the Office of the Director of Summer School. Generally, preliminary listings of courses are available in January and the summer catalog is usually available just prior to spring break.

Bucknell students who are not in good academic standing may be required to attend Bucknell summer school to improve their standing. Grades obtained at other institutions are not transferred and therefore cannot affect the student's grade point average.

Students planning to attend summer school elsewhere must obtain prior approval of their course selection. A copy of the form "Permission for Transfer Credit" may be obtained from the Registrar's Office, the Office of the Associate Dean of Engineering, or at website http://www.departments.bucknell.edu/registrar/forms.asp. This form should be completed prior to taking the summer school course to ensure acceptance of the credit at Bucknell.

Change of Major

The procedure to be followed by a student to change his or her major depends on the change.

Within the College of Engineering: The student should consult with the chairperson of the new major department to work out a program to satisfy the requirements of the new engineering major. Then the student should obtain the "Change of Engineering Degree Program" form from the Office of the Associate Dean of Engineering, obtain the necessary signatures, and return the forms to the Office of the Associate Dean of Engineering.

From the College of Engineering to the College of Arts and Sciences: In order to transfer between the two colleges, a student must meet with the Associate Dean of Engineering and discuss the transfer with his or her engineering adviser and department chairperson. Then the student should obtain and complete an "Application for Transfer between Colleges of the University." A meeting should then be arranged through the College of Arts and Sciences' Dean's Office to discuss the new major. Students should recognize that restrictions may be placed on transfers into certain programs due to limitations on faculty size and facilities in a given department.

Prior to matriculation as a student at Bucknell, any accepted student can request to be re-evaluated by the Office of Admissions as an applicant to the College of Engineering. If the student qualifies for admission to the College of Engineering and the degree program (or undecided category) specified, he or she will be admitted to the College of Engineering providing:

1. The College enrollment target of 175 students has not been reached or exceeded, and
2. The enrollment target in the degree program (or undecided category) has not been reached or exceeded.

Requests will be reviewed by the Office of Admissions in the order in which they are received.

After the matriculation of students for a given year, applications for transfer to the College of Engineering will be considered at the end of each semester based on the space available in each degree program. Students who apply to transfer to the College of Engineering will be subject to a review of their academic performance at Bucknell for entrance into any engineering program.

If a student would like to transfer during his/her first semester, or is denied transfer prior to matriculation, the student should enroll, at a minimum, in ENGR 100 and MATH 201 during their first semester, enrollment in PHYS 211 is also recommended. A minimum of a B- will be required in both ENGR 100 and MATH 201 for entrance into any engineering program. Students who elect to take ENGR 100, MATH 201 and PHYS 211 and meet or surpass the minimum B- grade in all three classes will be given priority should enrollment space within the programs be limited. The grade requirements do not apply to students with AP math credit and/or AP physics credit. If a student meets these requirements, transfer into a specific degree program will be authorized providing:

1. The degree program has 34 or fewer first year majors (19 in the BME program), or
2. The degree program has 35 or more first-year majors and the department and Dean elect to accept additional majors (does not apply to the BME program at this time).

Once admitted subsequent transfers into programs that would not have accepted transfer students due to enrollments will not be authorized. Selection for transfer approval will be based on GPA if enrollment limits prevent transfer of all eligible applicants.

If a student has not taken both ENGR 100 and MATH 201 by the end of the first semester and would like to apply to the College of Engineering, they may apply at the end of the second semester. During the second semester the student should enroll, at a minimum, in a math or science course required by the degree program of interest, and an engineering course in that discipline. At the end of the semester the student’s academic record will be reviewed by the appropriate department chair and Associate Dean of Engineering. If the student’s academic record is satisfactory, transfer into a specific degree program will be authorized providing:

1. It is still possible for the student to graduate in a total of 8 semesters and the student has discussed a tentative course plan to complete the specified degree with the Associate Dean of Engineering.
2. The degree program has 34 or fewer first year majors (14 in the BME program, with priority given to students in the College of Engineering), or
3. The degree program has 35 or more first-year majors and the department and Dean elect to accept additional majors (does not apply to the BME program at this time).

Once admitted subsequent transfers into programs that would not have accepted transfer students due to enrollments will not be authorized. Selection for transfer approval will be based on GPA if enrollment limits prevent transfer of all eligible applicants.

The Associate Dean of Engineering and the appropriate department chair will evaluate students who wish to apply for transfer to the College of Engineering following their second semester on a case-by-case basis.
Administrative Policy on Enrollment Restrictions

A student who withdraws for approved health reasons, as certified by the Director of the Student Health Services or the Director of Psychological Services, and approved by the Associate Dean of Engineering, must submit a request for readmission to the Director of Admissions by July 1 for the fall semester and by December 1 for the spring semester. Further, the student also must submit a request for return to the appropriate health director (i.e., Student Health Services or Psychological Services) not less than two months before the beginning of the semester. This request must be accompanied by a statement from the attending physician or psychologist for review by the appropriate director.

Readmission in such instances requires, at a minimum, clearance by the appropriate Bucknell health director and may require approval of the Associate Dean of Engineering.

Readmission

A student who has been dropped by the university for academic reasons must wait at least one year before applying for readmission, must provide convincing evidence of being able to complete degree work satisfactorily, and must earn six quality points in two 6-week summer school courses at Bucknell.

Premedical Preparation

Any student considering pursuing a career in medicine or dentistry should inform his or her engineering faculty adviser as early as possible. This is particularly important since completion of the premed requirements is most readily accomplished by beginning that work in the first term of the first year. Any student who expresses an interest in this possibility should also contact Professor Margaret Kastner. The premedical requirements can be completed in any one of the engineering degree programs but the timing is very tight. Therefore, it is imperative that the student begins planning as early as possible.

Prelaw Preparation

Bucknell does not offer a prelaw major as such, and most law schools appear to believe that diversified undergraduate education is far more beneficial in providing a firm footing for later study of law.

The Association of American Law Schools stresses certain fundamental skills and abilities that should be developed and refined on the undergraduate level. The quality of a student's education can be measured by his: "(1) comprehension and expression in words, (2) critical understanding of the human institutions and values with which the law deals, and, (3) creative power in thinking." . . . What the law schools seek in their entering students is not accomplishment in mere memorization, but accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." All law schools expect applicants to have a firm command of the basic verbal and written communication skills.

Any student who expresses an interest in preparing to study law should contact the prelaw adviser at the Career Development Center.
Transfer Students

All incoming transfer students are provided with a "Degree Progress Report" (an official evaluation of credits) by the registrar's office after the final transcript is received. Frequently a student will have questions regarding the meaning of this document and the following information may be helpful.

Quantitative credits transferred: Generally speaking, course work from other colleges is transferable as long as it represents work that would be permitted if the student had been at Bucknell. However, courses in mathematics at a level lower than our introductory calculus course and language courses, which are repetitious of high school work under our language placement formula, are not transferable.

Most students transfer to Bucknell from schools that employ the semester hour credit system in which 120-128 semester hours of credit are required for a degree. This means that the student typically would take 15-16 semester hours each semester for a normal full-time load. For transfer purposes, one of our courses is equivalent to four semester hours of work. In determining the number of Bucknell credits which the transfer student will receive, therefore, the number of transferable semester hours is totaled and divided by four, with any fractions being rounded down to the nearest half credit.

Major requirements: The applicability of courses elected at another institution toward the major is often not clear and the student is usually directed on the "Degree Progress Report" to check with the adviser and the department of his/her chosen major. After consultation between the student and the adviser, the adviser should send a memorandum through the department chairperson to the Dean's Office indicating the number of credits that are applicable toward the major and those specific course requirements for the major that are considered as having been fulfilled.

Grade requirements: All students admitted to advanced standing will be held to the standards applicable to continuing students (See "Requirements for Good Academic Standing.")

Modification of Degree Requirements: Any request for modification of degree requirements such as substitutions of courses or waiver of requirements must be approved by the appropriate department chairperson and the Associate Dean of Engineering before becoming effective.

Special problems: Special problems or questions regarding transfer students should be referred to the Office of the Associate Dean of Engineering.

Participation in Commencement Ceremonies

A student who is within two courses of meeting the requirements for graduation at the end of spring semester and who has made arrangements with the Associate Dean of Engineering to complete the courses within one year may participate in the commencement ceremonies before receiving a diploma. The registrar should be consulted to determine eligibility in the individual case.

ACADEMIC PROGRAMS

Five-Year Program in Liberal Arts and Engineering

A student may combine any one of the Bachelor of Arts majors with the study of chemical, civil, electrical, or mechanical, or computer science and engineering. A student who is interested in a combination of liberal arts and engineering should be urged to consult with the Associate Dean of Engineering as early as possible in his or her career at Bucknell.

The Writing Requirement

In fulfilling the university writing requirement, each undergraduate degree candidate must successfully complete one course designated W1 (to be taken before the W2 courses) and two courses designated W2 among the courses required for the degree. The W1 course must be completed in the first year. The two W2 courses are usually taken during the last three years. However, one of the W2 courses may be taken during the first year. Lists of W1 and W2 courses are distributed each semester with the Schedule of Classes. See the 2007-08 university catalog for a detailed description of the Writing Program.

Non-Traditional Study

Credit toward an undergraduate degree may be awarded for non-traditional study provided prior approval has been obtained from the chairperson of an appropriate department. Copies of the regulations and procedures may be obtained from the Office of the Associate Dean.

The Academic Minor

Academic minors are offered by departments in the College of Arts and Sciences and are available to all students, including engineering students. Details of the requirements for each minor may be obtained from the Office of the Dean of the College of Arts and Sciences.

The following stipulations pertain to a minor:

1. Courses may not be double counted in majors and minors; however, corequisite or major-related courses may be counted toward a minor.
2. Courses in a minor may also satisfy distribution requirements.
3. Students in one-degree program may do a minor in another degree program.
4. There is no minor in business, accounting, or any engineering discipline with the exception of biomedical engineering.
5. No substitution of courses required for a minor is permitted.

In order to declare a minor, the student should obtain a Declaration of Minor card from the Office of the Dean of Arts and Sciences, fill it out and have it signed by the head of the department offering the minor. The completed and signed card should be returned to that office no later than three weeks into the last semester of the senior year.
Off-Campus Study

As noted in the university catalog there are several opportunities for students to study off-campus. The Junior Year Abroad program has been used by several engineering students to combine work toward an undergraduate engineering degree with study in a foreign country. Any engineering student interested in this possibility should discuss this interest with the Associate Dean of Engineering as early as possible.

Graduate Credit

Seniors may take up to two courses for graduate credit during their senior year, provided they have a cumulative GPA of at least 3.0. Prior approval must be obtained on a form, which is available in the Office of Graduate Studies in Marts Hall.

COUNSELING, GRADUATE STUDY AND CAREERS

Psychological Services

The counselors at Psychological Services offer a wide range of services to a student who may be experiencing academic difficulty, psychological difficulty, or uncertainty about a career choice. In addition, extensive libraries of career information are maintained there and in the Career Development Center.

Career Counseling

The Career Development Center makes available career counseling assistance to all Bucknell students. As early as the first year the office helps students to explore career options open to them and to develop strategies for successful placement.

Registration with the Career Development Center is voluntary. Assistance is available for issues such as: self-assessment and career decision-making, the development of job search tools, preparing for interviews, resources for conducting employment and graduate school research, and internship and full-time employment leads. As of July 1998 the Career Development Center moved to full service partnership with JobTrak®; a job listing database that targets employers to Bucknell students and alumni. This service makes it easier and faster to learn of job opportunities.

Graduate Studies

Bucknell's graduate program leads to the degrees of master of science in chemical, civil, electrical, or mechanical engineering. Each graduate program is individually tailored to meet the needs, preparation, and goals of the student.

Undergraduate students who have completed three years in the chemical, civil, electrical, or mechanical engineering program at Bucknell, earned a cumulative grade point average of at least 2.8, and who show aptitude for graduate student, may apply for admission to the integrated 3-2 program. This program permits selected students to complete all requirements for both a bachelor of science degree and a master of science degree in five years. Those students who are selected receive a full tuition scholarship for the fifth year.

Traditional master's degree programs are offered in addition to the special 3-2 program. Assistantships are available. Information can be obtained from the Office of the Associate Dean of Engineering or the Director of Graduate Studies.

In additional to formal master's degree programs, the regular undergraduate student who has arranged to complete all undergraduate degree requirements may, with prior approval, take up to two courses for graduate credit. An application for graduate credit by undergraduate students may be obtained from the Office of Graduate Studies or the Office of the Registrar.

Most graduate programs require an applicant to take the Graduate Record Examination (GRE) and, in certain instances, an Advanced Test in a particular area. Application forms for the GRE's may be acquired in the Office of the Associate Dean of Engineering.

Bachelor of Science in Management / Bachelor of Science in Engineering – Dual Degree Graduation Requirements

First-year engineering students (Class of 2011) now have a new educational option, a 5-year joint degree – BS in Engineering / BS in Management for Engineers. Students admitted to this program will earn a single combined degree consisting of a full BS degree in any one of the six engineering disciplines, augmented by a Bachelor of Management for Engineers degree in management. If you have questions about this program, contact the Office of the Associate Dean of Engineering.
1. FOUNDATION SEMINAR
   One course required of all students in their first year. Foundation Seminars on appropriate topics may count toward the Broadened Perspectives requirement; or, in some cases, Foundation Seminars may count toward the Disciplinary Breadth requirement.

2. DISCIPLINARY BREADTH*
   a. Humanities - four courses (no more than two in one department)
   b. Social Sciences - two courses (in different departments)

3. Natural Sciences and Mathematics - engineers will meet requirement in their major

4. BROADENED PERSPECTIVES FOR THE 21ST CENTURY**
   Foundation Seminars and Disciplinary Breadth courses also may double-count as Broadened Perspectives courses if they address the relevant topics in a significant way.
   a. Perspectives on the Natural and Fabricated Worlds - One course
      ENGR100 satisfies this requirement.
   b. Perspectives on Human Diversity - One course
      Courses address themes of human diversity either within or across national borders; may also count as a humanities, social science and/or soc-hum course.

5. DISCIPLINARY DEPTH
   A department, interdepartmental or college major.

6. CAPSTONE EXPERIENCE
   Capstone course in the senior year; does not count as disciplinary breadth; may count as Soc-Hum, if approved.

Note: The departmental, interdepartmental or college major may include courses in Category I and II.

*The Disciplinary Breadth requirements may be fulfilled by any courses in the appropriate division. (Note that two of the courses in natural sciences must have laboratories.
**Courses which fulfill the Broadened Perspectives requirement are published each semester and distributed with the Schedule of Classes.
The requirements for the degree of Bachelor of Science in Biomedical Engineering for the class of 2011 are:

**FIRST-YEAR**

First Semester – ENGR100; MATH 201; PHYS 211; First-year course in English literature and composition.................................................4.00
Second Semester – CHEM 221; MATH 202; PHYS 212; Elective..........................4.00

**SOPHOMORE YEAR**

First Semester – BMEG 210; MATH 226*; CHEM 211; MATH 211; Elective……..4.50
Second Semester – BIOL 206; CHEM 212; CHEM 231; MATH 212…………..4.00

**JUNIOR YEAR**

First Semester – BIOL 205; CHEM 343; BMEG 220*; BMEG 205; Elective……4.50
Second Semester – BMEG 300; BMEG 350; BMEG 408*; ENGR 240; Elective….4.50

**SENIOR YEAR**

First Semester – BMEG 400; BMEG 401; BMEG 409*; Two Electives…………..4.50
Second Semester – BMEG 402; Three Electives........................................4.00

The 10 elective courses are distributed as follows:

- Five social science and humanities courses selected from the list of approved courses provided in "Information for Engineering Students Handbook" (published by the College of Engineering) to fulfill the General Education Component required of all engineering students. These courses must be distributed as follows: 1) minimum of two courses in humanities; one must be a first-year course in English literature and composition or creative writing, or a Foundation Seminar in English literature; 2) minimum of two courses in social sciences. Two of these five electives must be taken in one department OR at least one elective must be taken at the 200+ level in any department. One of the five courses must satisfy the global and societal perspectives requirement.
- One approved 200+ level engineering course from the list published by the program.
- One approved 300+ level engineering course from the list published by the program.
- One BMEG engineering elective course from the list published by the program.
- One approved physiology course taken at the 200+ level.
- One course in any department or program of the university provided that the prerequisites are satisfied.

*Half course

Three courses in each student’s program must fulfill the university writing requirement (see the university catalog).

**MINOR IN BIOMEDICAL ENGINEERING**

Engineering students not pursuing the bachelor of science in biomedical engineering may choose to pursue a minor in biomedical engineering. This minor is attained through a judicious use of electives that combine the study of the basic biological sciences with their area of technological interest. To complete the biomedical engineering minor, engineering students must successfully complete at least four courses from select courses as prescribed by the biomedical engineering program. The minor in biomedical engineering requirements are:

- One 400+ level biomedical engineering course. Current courses include:
  - BMEG 471/472 Advanced topics in Biomedical Engineering
  - BMEG 440/ELEC 410 Biomedical Signal Processing and Instrumentation
  - BMEG 441/ELEC 411 Neural Signals and Systems

- Three courses from the following:

  **Engineering**
  - CHEG 452 Biochemical Engineering

  **Biology or Chemistry**
  - BIOL 205 Introduction to Molecules and Cells
  - BIOL 206 Organismal Biology
  - BIOL 207 Genetics
  - BIOL 221 Human Physiology
  - BIOL 312 Comparative Vertebrate Anatomy
  - BIOL 314 Comparative Neuroanatomy
  - BIOL 318 Comparative Physiology
  - BIOL 322 Physiological Mechanisms
  - BIOL 323 Microanatomy
  - BIOL 324 Sensory Physiology
  - BIOL 325 Principles of Genetics
  - BIOL 326 Cytogenetics
  - BIOL 327 Molecular Biology
  - BIOL 328 Endocrinology
  - BIOL 340 Biochemical Methods (CHEM 358)
  - BIOL 343 Neuroscience
  - BIOL 348 Immunobiology
  - BIOL 352 Cell Biology
  - BIOL 365 Introduction to Microscopy
  - CHEM 340 Biological Physical Chemistry
  - CHEM 351 Biochemistry I
  - CHEM 352 Biochemistry II
  - CHEM 358 Biochemical Methods (BIOL 340)
BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

The requirements for the degree of Bachelor of Science in Chemical Engineering for the class of 2011 are:

FIRST-YEAR
First Semester -- ENGR 100; First-year course in English literature and composition as prescribed below; MATH 201; PHYS 211..........................4.00
Second Semester -- CHEM 221; CHEG 200; ENGR 215*; MATH 202; Elective; CHEG 101**........................................4.50

SOPHOMORE YEAR
First Semester -- CHEM 211; ENGR 240; ENGR 211*; MATH 211; Elective........4.50
Second Semester -- CHEG 210; CHEM 231; ENGR 233; CHEG 102**; CHEM 210..................4.00

JUNIOR YEAR
First Semester -- CHEM 341; CHEG 300; CHEG 302*; Two Electives........4.50
Second Semester -- CHEG 310; CHEG 315*; Three Electives; CHEG 103**............4.50

SENIOR YEAR
First Semester -- CHEG 320; CHEG 400; Two Electives.............................4.00
Second Semester -- CHEG 330; CHEG 410; Two Electives; CHEG 104**..........4.00

Three courses in each student’s program must fulfill the university writing requirement. The following sequence of courses emphasizes design across the curriculum and develops the professional skills of communication, problem-solving, team work, and self-directed learning:
CHEG 200, ENGR 233, CHEG 300, CHEG 315, CHEG 400, and CHEG 410.

The 12 elective courses shown above are distributed as follows:

- Five social science and humanities courses selected from the list of approved courses provided in "Information for Engineering Students Handbook" (published by the College of Engineering) to fulfill the General Education Component required of all engineering students. These courses must be distributed as follows:
  1. A minimum of two courses in humanities; one must be a first-year course in English literature and composition or creative writing, or a Foundation Seminar in English;
  2. A minimum of two courses in social sciences.

- Two courses selected from the list of approved technical electives published by the department which may be found on the department web page.
- One approved biological-science elective selected from the list of approved biological-science electives published by the department which may be found on the department web page.
- Two additional courses in chemical engineering.
- Two unrestricted electives in any department or program of the university.

*Half credit course
**No credit

BSCM ‘11 (6/30/07)

BACHELOR OF ARTS/MANAGEMENT FOR ENGINEERS-BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

The requirements for the degree of Bachelor of Arts-Bachelor of Science in Chemical Engineering for the class of 2012 are:

FIRST-YEAR
First Semester-- ENGR 100; MATH 201; PHYS 211; First-year course in English literature and composition as prescribed below; ........................................4.00
Second Semester -- CHEM 221; CHEG 101**; MATH 202; ENGR 240; ENGR 215*; Elective..........................4.50

SOPHOMORE YEAR
First Semester -- CHEM 211; CHEG 200; ENGR 211*; Elective; MATH 211........4.50
Second Semester -- CHEM 212; CHEG 102**; ENGR 233; CHEM 231; CHEG 210; ..................4.00

JUNIOR YEAR
First Semester -- CHEM 341; CHEG 300; CHEG 302*; Two Electives................4.50
Second Semester -- CHEG 103**; CHEG 310; CHEG 315*; Three Electives......4.50

SUB-SENIOR YEAR
First Semester -- CHEG 320; ELEC 105; Two Electives.............................4.00
Second Semester -- CHEG 104**; CHEG 330; Three Electives.....................4.00

SENIOR YEAR
First Semester -- CHEG 400; Three Electives..........................4.00
Second Semester -- CHEG 410; Three Electives..........................4.00

Three of the courses above must fulfill the university’s writing requirement. An approved W1 course must be taken during the first year. CHEG 400 and CHEG 410 are approved W2 courses.

The elective courses shown above must include the following:

- Five social science and humanities courses selected from the list of approved courses provided in “Information for Engineering Students Handbook” (published by the College of Engineering) to fulfill the General Education Component required of all engineering students. These courses must be distributed as follows:
  1. A minimum of two courses in humanities; one must be a first-year course in English literature and composition or creative writing, or a Foundation Seminar in English;
  2. A minimum of two courses in social sciences.

- Two courses selected from the list of approved technical electives published by the department which may be found on the department web page.
- One approved biological-science elective selected from the list of approved biological-science electives published by the department which may be found on the department web page.
- Two additional courses in chemical engineering.
- Two unrestricted electives in any department or program of the university.

- See “Academic Programs” for additional requirements.

*Half credit course
**No credit

ACHE ‘12 (6/30/07)
BACHELOR OF SCIENCE IN CIVIL ENGINEERING

The requirements for the degree of Bachelor of Science in Civil Engineering for the class of 2011 are:

FRESHMAN YEAR
First Semester -- ENGR 100; MATH 201; PHYS 211; Elective: First-year course in English literature and composition .................................................................4.00
Second Semester -- ENGR 101* ENGR 220; MATH 202; GEOL 150; Elective.........4.50

SOPHOMORE YEAR
First Semester -- ENGR 208; CHEM 201; MATH 211; MATH 226*; Elective.................4.50
Second Semester -- ENGR 222; ENGR 242; MATH 222*; Science Elective:
CHEM/PHYS (200 level or above) or BIOL; Elective..........................4.50

JUNIOR YEAR
First Semester -- CENG 300; CENG 340; CENG 350; ENGR212*; Elective............4.50
Second Semester -- CENG 320; CENG 330; CENG Elective; Technical Elective.........4.00

SENIOR YEAR
First Semester -- CENG 490; CENG Elective; Technical Elective; Elective...............4.00
Second Semester -- CENG 491; Two CENG Electives; Elective..........................4.00

The 14 elective courses shown above are distributed as follows:

- One science elective; chemistry, physics (200 level or higher), or biology course approved by the department.
- Students must fulfill the General Education Component through a minimum of five approved humanities and social science courses, with the following distribution:
  1. A minimum of two courses in humanities; one must be a first-year course in English literature and composition, and
  2. A minimum of two courses in social sciences.
  At a minimum, one of the humanities or social science courses must satisfy the global and societal perspectives requirement. Of the five courses, two must be from a single department, or at least one course must be at the 200-level or above.
- Two unrestricted electives.
- Four civil engineering electives.
- Two technical electives; one must be either ENGR 200 or ELEC 105; the other must be an approved course which is usually in either civil engineering, computer science, engineering, mathematics or science.

Three courses in each student's program must fulfill the university writing requirement.

*Half-credit course

BSCE ’11 (6/30/07)

BACHELOR OF ARTS/MANAGEMENT FOR ENGINEERS-BACHELOR OF SCIENCE IN CIVIL ENGINEERING

The requirements for the degree of Bachelor of Arts-Bachelor of Science in Civil Engineering for the class of 2012 are:

FRESHMAN YEAR
First Semester -- ENGR 100; PHYS 211; MATH 201; Elective: First-year course in English literature and composition .................................................................4.00
Second Semester -- ENGR 220; MATH 202; ENGR 101*; GEOL 150; Elective.........4.50

SOPHOMORE YEAR
First Semester -- CHEM 201; MATH 211; MATH 226*; ENGR 208; Elective...........4.50
Second Semester -- ENGR 222; MATH 222*; Science Elective CHEM/PHYS
(200 level or above) or BIOL; Two Electives.................................4.50

JUNIOR YEAR
First Semester -- CENG 300; CENG 340; CENG 350; ENGR212*; Two Electives..........4.50
Second Semester -- CENG 320; Two CENG Electives; Elective..........................4.00

SUB-SENIOR YEAR
First Semester -- CENG 350; Technical Elective; Two Elective..........................4.00
Second Semester -- CENG 320; Two CENG Electives; Elective..........................4.00

SENIOR YEAR
First Semester -- CENG 490; CENG Elective; Two Electives...........................4.00
Second Semester -- CENG 491; CENG Elective; Technical Elective; Elective........4.00

The 22 elective courses shown above include:

- One science elective; chemistry, physics (200 level or higher), or biology course approved by the department.
- Students must fulfill the General Education Component through a minimum of five approved humanities and social science courses, with the following distribution:
  1. A minimum of two courses in humanities; one must be a first-year course in English literature and composition, and
  2. A minimum of two courses in social sciences.
  At a minimum, one of the humanities or social science courses must satisfy the global and societal perspectives requirement. Of the five courses, two must be from a single department, or at least one course must be at the 200-level or above.
- Eight courses selected to satisfy departmental and interdepartmental or college major.
- Two unrestricted electives.
- Four civil engineering electives.
- Two technical electives; one must be either ENGR 200 or ELEC 105; the other must be an approved course which is usually in either civil engineering, computer science, engineering, mathematics or science.

Three courses in each student's program must fulfill the university writing requirement.

Arts and Sciences courses included above may be used to satisfy the Bachelor of Arts requirements.

Note: Three of the courses described above must be from the Humanities Division, two must be from the division of Social Sciences Division and one must meet the "Perspectives on Human Diversity" requirement.

*Half-credit course

ABCE ’12 (6/30/07)
BACHELOR OF SCIENCE IN COMPUTER SCIENCE AND ENGINEERING

The requirements for Bachelor of Science in Computer Science and Engineering for the class of 2011 are:

FRESHMAN YEAR
First Semester - ENGR 100; First-year course in English literature and composition; MATH 201; PHYS 211..............................4.00
Second Semester - CSCI 203; MATH 202; PHYS 212; Elective..........................4.00

SOPHOMORE YEAR
First Semester - CHEM 201**; CSCI 204; MATH 211; Elective..........................4.00
Second Semester - CSCI 206; ENGR 220; MATH 222*; MATH 241; Elective........4.50

JUNIOR YEAR
First Semester - CSCI 204; MATH 211; Two Electives..............................4.00
Second Semester - CSCI 206; MATH 222*; MATH 241; Elective.....................4.50

SENIOR YEAR
First Semester - CSCI 208; CSCI 311; ELEC 101; MATH 226*; Elective..............4.50
Second Semester - CSCI 240*; CSCI 315; ENGR 139; ELEC 245; One computer science elective..........................4.50

The seven elective courses shown are distributed as follows:
1. One laboratory course in natural sciences.
2. Five approved social science and humanities courses (in addition to the first-year course in English literature and composition) distributed as follows:
   - A minimum of two courses in the humanities; (one could be the required first-year course in English literature and composition) and
   - A minimum of two courses in the social sciences; one must be ECON 103.
   Two of these six courses (including the English literature and composition course) must be from the same department OR at least one course must be at the 200-level or above. A minimum of one of these five courses must satisfy the global and societal perspectives requirement. Lists of approved social science courses, humanities courses, and courses that contain global and societal perspectives are published by the College of Engineering.
3. One course in any department or program of the university, provided the prerequisites are satisfied.

*Half credit course
**See department policy for use of AP credit in chemistry

Three courses in each student’s program must fulfill the university writing requirement.

BCSE ‘11 (6/30/07)

BACHELOR OF ARTS/MANAGEMENT FOR ENGINEERS-BACHELOR OF SCIENCE IN COMPUTER SCIENCE AND ENGINEERING

The requirements for the Computer Science and Computer Engineering major for the class of 2012 are:

FRESHMAN YEAR
First Semester - ENGR 100; PHYS 211; MATH 201; First-year course in English literature and composition ........................................................4.00
Second Semester - CSCI 203; MATH 202; PHYS 212; Elective..........................4.00

SOPHOMORE YEAR
First Semester - CSCI 204; MATH 211; Two Electives..........................4.00
Second Semester - CSCI 206; MATH 222*; MATH 241; ENGR 220; Elective........4.50

JUNIOR YEAR
First Semester - CSCI 208; CSCI 311; CHEM 201**; MATH 226*; Elective........4.50
Second Semester - CSCI 240*; CSCI 315; ENGR 139; Two Electives...............4.50

SENIOR YEAR
First Semester - CSCI 320; ELEC 101; Two Electives..........................4.00
Second Semester - CSCI Elective; ELEC 245; Two Electives......................4.00

The fifteen elective courses shown are distributed as follows:
1. One laboratory course in the Natural Sciences.
2. Five approved social science and humanities courses (in addition to the first-year course in English literature and composition) distributed as follows:
   - A minimum of two courses in the humanities; (one could be the required first-year course in English literature and composition) and
   - A minimum of two courses in the social sciences; one must be ECON 103.
   Two of these six courses (including the English literature and composition course) must be from the same department OR at least one course must be at the 200-level or above. A minimum of one of these five courses must satisfy the global and societal perspectives requirement. Lists of approved social science courses, humanities courses, and courses that contain global and societal perspectives are published by the College of Engineering.
3. Eight courses selected to satisfy the Bachelor of Arts degree requirements including a Capstone course in the senior year, and a departmental, interdepartmental or college major.
4. Two courses in any department or program of the university, provided the prerequisites are satisfied.
5. See “Academic Programs” for additional information.

Note: Three of the courses described in #4, #5 & #6 above must be from the Humanities Division, two must be from the division of Social Sciences Division and one must meet the "Perspectives on Human Diversity" requirement. MATH 203, MATH 204, and MATH 214 are equivalent to MATH 201, MATH 202, and MATH 211, respectively.

*Half credit course
**See department policy for use of AP credit in chemistry

ACSE ‘12 (6/30/07)
**BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING**

The requirements for the degree of Bachelor of Science in Electrical Engineering for the class of 2011 are:

**FRESHMAN YEAR**
First Semester -- ENGR 100; PHYS 211; MATH 201; Elective.................................4.00
Second Semester -- ELEC 120; MATH 202; PHYS 212; Elective.................................4.00

**SOPHOMORE YEAR**
First Semester -- MATH 211; CHEM 201; CSCI 203; ELEC 225*; Elective.........................4.50
Second Semester -- MATH 212; ENGR 220; ELEC 247; ELEC 226*; Elective.........................4.50

**JUNIOR YEAR**
First Semester -- ELEC 320; ELEC 350; ENGR 240; Elective or ELEC 471..........................4.00
Second Semester -- ELEC 340; ELEC 351; ELEC 390; ENGR138*; Elective.........................4.50

**SENIOR YEAR**
First Semester -- ELEC 480; ELEC 491; ELEC 400*; Elective; Elective or ELEC 471...........4.50
Second Semester -- ELEC 420; Elective; Elective; Elective.................................4.00

The 10 elective courses shown above are distributed as follows:
1. Five approved social science and humanities courses to meet the Engineering General Education Component requirement. Those courses will be distributed as follows:
   - A minimum of two courses in humanities; one must be a first-year course in English literature and composition. That course is shown above in the first semester of first year but may be taken the second semester of the first year.
   - A minimum of two courses in the social sciences.
   - One of the social science and humanities courses must satisfy the global and societal perspectives requirement.
2. One course at the 200 level or above in the natural sciences (physics, chemistry, biology or BIOL 121, 122, GEOL 103, 150).
3. At least one other course in electrical engineering.
4. Three courses in any department or program of the university, provided the prerequisites are satisfied. It is recommended that students intending to attend graduate school should also choose at least one of these courses; MATH 343, MATH 345, MATH 362.

*Half course; all others are one-credit courses

Three courses in each student’s program must fulfill the university writing requirement.

Electrical Engineering students who wish to pursue graduate studies in Bioengineering or who wish to acquire the biology and chemistry needed in preparation for work or further study in the life sciences are encouraged to take the minor in chemical and biological studies. These students will be excused from the ENGR 240 requirement.

BSEE ‘11 (6/30/07)

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**BACHELOR OF ARTS/MANAGEMENT FOR ENGINEERS-BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING**

The requirements for the degree of Bachelor of Arts-Bachelor of Science in Electrical Engineering for the class of 2012 are:

**FRESHMAN YEAR**
First Semester -- ENGR 100; PHYS 211; MATH 201; Elective.................................4.00
Second Semester -- ELEC 120; MATH 202; PHYS 212; Elective.................................4.00

**SOPHOMORE YEAR**
First Semester -- MATH 211; CHEM 201; CSCI 203; ELEC 225*; Elective.........................4.50
Second Semester -- MATH 212; ENGR 220; ELEC 247; ELEC 226*; Elective.........................4.50

**JUNIOR YEAR**
First Semester -- ELEC 320; ELEC 350; ENGR 240; Elective or ELEC 471..........................4.00
Second Semester -- ELEC 340; ELEC 351; ELEC 390; ENGR 138*; Elective.........................4.50

**SUB-SENIOR YEAR**
First Semester -- ENGR 240; ENGR 231*; Three Electives or Two Electives & ELEC 471.........4.50
Second Semester -- ELEC 390; Three Electives.................................................................4.00

**SENIOR YEAR**
First Semester -- ELEC 480; ELEC 491; ELEC 400*; Elective; Elective or ELEC 471...........4.50
Second Semester -- Senior Design; Elective; Elective; Elective.................................4.00

The 18 elective courses shown above are distributed as follows:
1. Five approved social science and humanities courses to meet the Engineering General Education Component requirement. Those courses will be distributed as follows:
   - A minimum of two courses in humanities; one must be a first-year course in English literature and composition. That course is shown above in the first semester of first year but may be taken the second semester of the first year.
   - A minimum of two courses in the social sciences.
   - One of the social science and humanities courses must satisfy the global and societal perspectives requirement.
2. One course at the 200 level or above in the natural sciences (physics, chemistry, biology or BIOL 121, 122, GEOL 103, 150).
3. At least one other course in electrical engineering.
4. Three courses in any department or program of the university, provided the prerequisites are satisfied. It is recommended that students intending to attend graduate school should also choose at least one of these courses; MATH 343, MATH 345, MATH 362.
5. Eight courses selected to satisfy the Bachelor of Arts degree requirements including a capstone course in the senior year, and a departmental, interdepartmental or college major.
6. See “Academic Programs” for additional requirements.

*Half course; all others are one-credit courses

Three courses in each student’s program must fulfill the university writing requirement.

ABEE ‘12 (6/30/07)
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The requirements for the degree of Bachelor of Science in Mechanical Engineering for the class of 2011 are:

**FRESHMAN YEAR**
First Semester -- First-year course in English literature and composition; MATH 201; ENGR 100; Elective ................................................................. 4.00
Second Semester -- ENGR 220; MATH 202; ENGR 214; Elective ................................................................. 4.00

**SOPHOMORE YEAR**
First Semester -- MATH226*; ENGR240; MATH 211; MECH 213; Elective .................................................. 4.50
Second Semester -- MECH 216; MECH 202*; MATH 212; MECH 252; Elective .................................................. 4.50

**JUNIOR YEAR**
First Semester -- MECH 313; MECH 355; MECH 353; ELEC 105 ................................................................. 4.00
Second Semester -- MECH 302; MECH 312; MECH 392; Elective ................................................................. 4.00

**SENIOR YEAR**
First Semester -- MECH 401*; MECH 403; MECH 405; Two electives .................................................. 4.50
Second Semester -- MECH 402*; Four Electives ................................................................. 4.50

The 12 elective courses shown above are distributed as follows:

- One course in physics (PHYS 211) which must be taken in the first two years.
- One course in chemistry (CHEM 201 or CHEM 211 or CHEM 221) which must be taken in the first two years.
- Select any TWO full-credit courses, one of which must be in chemistry or physics at the 200+ level, the other of which must be from the following list or any full-credit 300-level courses in astronomy, biology, chemistry, geology or physics (except 336) for which prerequisites have been satisfied: ASTR 201, BIOL 121; BIOL 122; BIOL 205; BIOL 208; BIOL 221; CHEM 202; CHEM 206; CHEM 211; CHEM 212; CHEM 231; GEOL 103; GEOL 150; GEOL 201; GEOL 205; GEOL 210; GEOL 214; GEOL 217; PHYS 212; PHYS 221; PHYS 222; PHYS 235.
- Five approved social science and humanities courses with the following distribution:
  1. A minimum of two courses in the humanities; one must be a first-year course in English literature and composition
  2. A minimum of two courses in the social sciences.

Two of these five courses must be from the same department OR at least one course must be at the 200-level or above. A minimum of one of these five courses must satisfy the global and societal perspectives requirement. Lists of approved social science courses, humanities courses, and courses that contain global and societal perspectives are published by the College of Engineering.

- One 400-level or equivalent courses in any department of the College of Engineering.
- One 400-level course in the Department of Mechanical Engineering or, with permission of the department, a course required for the expected fulfillment of a minor.
- One course in any department or program of the university.

*Half-credit course; all others are one-credit courses.
Three courses in each student’s program must fulfill the university writing requirement.

BSME ’11 (6/30/07)

BACHELOR OF ARTS-BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

The requirements for the degree of Bachelor of Arts-Bachelor of Science in Mechanical Engineering for the class of 2012 are:

**FRESHMAN YEAR**
First Semester -- ENGR 100; MATH 201; First-year course in English literature and composition; Elective ................................................................. 4.00
Second Semester -- ENGR 220; MATH 202; Elective; Elective ................................................................. 4.00

**SOPHOMORE YEAR**
First Semester -- ENGR 240; MATH 211; MATH226* Elective; Elective .................................................. 4.50
Second Semester -- ENGR 214; MATH 212; MECH 252; Elective .................................................. 4.00

**JUNIOR YEAR**
First Semester -- MECH 213; MECH 353; Elective; Elective .................................................. 4.00
Second Semester -- MECH216; MECH 202*; Elective; Elective; Elective .................................................. 4.50

**SUB-SENIOR YEAR**
First Semester -- ELEC 105; MECH 313; MECH 355; Elective .................................................. 4.00
Second Semester -- MECH 302; MECH 312; MECH 392; Elective .................................................. 4.00

**SENIOR YEAR**
First Semester -- MECH 401*; MECH 403; MECH 405; Elective; Elective .................................................. 4.50
Second Semester -- MECH 402*, Elective, Elective; Elective; Elective; Elective .................................................. 4.50

The 19 elective courses shown above are distributed as follows:

- One course in physics (PHYS 211) which must be taken in the first two years.
- One course in chemistry (CHEM 201 or CHEM 211 or CHEM 221) which must be taken in the first two years.
- Select any TWO full-credit courses, one of which must be in chemistry or physics at the 200+ level, the other of which must be from the following list or any full-credit 300-level courses in astronomy, biology, chemistry, geology or physics (except 336) for which prerequisites have been satisfied: ASTR 201, BIOL 121; BIOL 122; BIOL 205; BIOL 208; BIOL 221; CHEM 202; CHEM 206; CHEM 211; CHEM 212; CHEM 231; GEOL 103; GEOL 150; GEOL 201; GEOL 205; GEOL 210; GEOL 214; GEOL 217; PHYS 212; PHYS 221; PHYS 222; PHYS 235.
- Five approved social science and humanities courses with the following distribution:
  1. A minimum of two courses in the humanities; one must be a first-year course in English literature and composition and
  2. A minimum of two courses in the social sciences.

Two of these five courses must be from the same department OR at least one course must be at the 200-level or above. A minimum of one of these five courses must satisfy the global and societal perspectives requirement. Lists of approved social science courses, humanities courses, and courses that contain global and societal perspectives are published by the College of Engineering.

- One course in any department or program of the university.

*Half-credit course; all others are one-credit courses.
Three courses in each student’s program must fulfill the university writing requirement.

ABME ’12 (6/30/07)