ChBE CAREER ELECTIVES
(replacing 6 hours of APPROVED (APP) electives from 2010 UG Catalog)

Students must take 6 hours of classes aimed at enhancing their career objectives. It is encouraged that these 6 hours be related to each other in some way, but any combination of these classes (from one or multiple categories) totaling 6 hours is acceptable. Tracks are provided as suggestions that lead to a focus in particular areas. These classes can be used towards a minor or double major at UA.

The courses listed below and on the next page are all pre-approved as CAREER electives; numbers in parentheses are the course credit hours. See the undergraduate catalog for course descriptions, pre- and co-requisites and frequency of offerings. Other classes may be allowed to fill the CAREER electives slots, but requires filling out the “career electives approval” form, signed by your advisor. Course numbers are accurate as of May 2012, but are subject to change.

**BUSINESS TRACK**
- AC 210 (4) Intro to Accounting
- COM 121 (3) Hons. Critical Decision Making
- COM 123 (3) Critical Decision Making
- COM 123 (3) Public Speaking
- COM 352 (3) Business & Prof. Communication
- EC 110 (3) Principles of Microeconomics
- EC 111 (3) Principles of Macroeconomics
- EN 319 (3) Technical Writing
- Fi 302 (3) Business Finance
- GBA 171, 172 (15 ea) STEM MBA class
- GBA 271, 272, 371, 372 (15 ea) STEM
- GES 418 (3) Engr Management
- MGT 300 (3) Organizational Theory & Behavior
- MKT 300 (3) Marketing
- PHL 292 (3) Intro to Ethics
- PHL 221 (3) Honors Intro to Ethics
- ST 260 (3) Statistical Data Analysis

**CHEMISTRY TRACK**
- any chemistry > 200 level, including:
  - CH 223 (4) Chemical Equilibria and Analyses
  - CH 340 (3) Elem. Physical Chemistry
  - CH 341 (3) Physical Chemistry I
  - CH 343 (1) Elem. Physical Chem. Lab
  - CH 396, 398, 399\(^c\) Research
  - CH 405 (3) Medicinal Chemistry
  - CH 413 (4) Inorganic Chemistry
  - CH 424 (4) Instrumental Analysis
  - CH 461 (3) Biochemistry I
  - CH 462 (3) Biochemistry II
  - CH 497, 498, 499\(^c\) Research

**COMPUTER-BASED HONORS (CBH) / UNDERGRADUATE RESEARCH / HONORS CO-OP**
- BSC 398, 399\(^c\) Biology Research
- CBH 101, 102\(^c\) (4) Freshman Seminar
- CBH 201\(^c\) (3) Sophomore Seminar
- CHE 491, 492\(^c\) ChE UG Research
- CHE 498, 499\(^c\) Honors Res./Co-op
- CH 396, 398, 399\(^c\) Chem. Research
- CH 497, 498, 499\(^c\) Chem. Research
- UA 155, 156\(^c\) Freshman Research and Creative Opps (Emerging Scholars)
- PH 495, 496\(^c\) Physics Research
- GES 255 (3) Engineering Statistics I
- GES 257 (3) Engineering Statistics II
- GES 400 (3) Engineering Statistics
- MA 237 (3) Intro Linear Alg and Matrix Theory
- MA 257 (3) Linear Algebra
- MA 300 (3) Intro to Scientific Computing
- MA 301 (3) Discrete Mathematics
- MA 310 (3) Mathematical Modeling
- MA 343 (3) Applied Differential Equations II
- MA 451 (3) Matrix and Vector Analysis
- MA 453 (3) Theory of Probability
- MA 453 (3) Theory of Probability
- MA 453 (3) Theory of Probability
- MA 453 (3) Theory of Probability
- ME 349 (3) Engineering Analysis

**GEOLOGY TRACK**
- GE 101 (4) The Dynamic Earth
- GE 105 (4) Sustainable Earth
- GE 210 (4) Mineralogy
- GE 306 (3) Hydrogeology

**GRAD SCH (SCHOLARS PROGRAM)**
- MA 343 (3) Applied Differential Equations II

**PRE-LAW**
- CHE 512 (3) Polymer Materials Engr.
- CHE 518 (3) Tissue Engineering
- CHE 538 (3) Electronic Materials
- CHE 540\(^d\) (3) Health and Safety
- CHE 545 (3) Biochemical Engineering
- CHE 580\(^e\) (3) Health and Safety
- CHE 580 (3) Health and Safety

**AS299 (3) Pre-Law Seminar**
- CHE 580 (3) Electronic Materials
- CHE 540 (3) Health and Safety
- CHE 545 (3) Biochemical Engineering
- CHE 540 (3) Health and Safety
- CHE 545 (3) Biochemical Engineering
- CHE 540 (3) Health and Safety
- CHE 545 (3) Biochemical Engineering

\(^a\) Note: These 6 hours must be in addition to classes used for HI/SB, HU/L/FA, ENG, ADV SCI, BIOCHEM and CHE Electives.

Refer to the undergraduate catalog for information about minors in each field.

\(^b\) For Dual CH/CHE BS degrees, the Career electives should be Chemistry courses (see Dual CH/CHE Flowsheet)

\(^c\) Undergraduate Research/independent study classes can count for a maximum of 6 hours towards the BS ChE degree.

\(^d\) Most research classes have variable credit. Negotiate credit hours with your research director.

\(^e\) A maximum of 6 hours of CBH research can be used to fill Career electives, Advanced Science elective (depending on topic), or ChE elective (if CBH project is with a ChBE professor)

\(^f\) For BS/MS Scholars program, approved electives should be graduate level. Apply to the ChBE graduate coordinator.

\(^g\) ChE 440/540 is a required course in the 2013 curriculum and cannot be used as a career elective.
### ChBE CAREER ELECTIVES\(^a\) (continued)

(replacing 6 hours of APPROVED (APP) electives from 2010 UG Catalog)

<table>
<thead>
<tr>
<th>ENVIRONMENTAL ENGINEERING</th>
<th>PHYSICS</th>
<th>FUNDAMENTAL ENGINEERING (FE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 271 (4) Intro to Glaciers (study abroad)</td>
<td>any PH &gt; 200-level, including:</td>
<td>AEM 201 (3) Statics</td>
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<tr>
<td>CE 320 (3) Intro to Environmental Engr</td>
<td>PH 253 (3) Intro to Modern Physics</td>
<td>AEM 205 (3) Honors Statics</td>
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<tr>
<td>CE 422 (3) Solid and Hazardous Waste Mgmt</td>
<td>PH 301 (3) Mechanics</td>
<td>AEM 264 (3) Dynamics</td>
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<tr>
<td>CE 424 (3) Water and Wastewater Treatment</td>
<td>PH 302 (3) Intermediate Mechanics</td>
<td>ECE 225 (3) Electric Circuits</td>
</tr>
<tr>
<td>CE 425 (3) Air Pollution Engineering</td>
<td>PH 331 (3) Electricity and Magnetism</td>
<td>ECE 320 (3) Fundamentals of Elec. Engr.</td>
</tr>
<tr>
<td>CE 470 (4) Water Resources in the Alps</td>
<td>PH 333 (3) Optics</td>
<td>GE 225 (3) Soc., Tech. &amp; Envir. (Spain)</td>
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<tr>
<td>GY 101 (4) Atmosph Process/Patterns</td>
<td>PH 411 (3) Biophysics</td>
<td>MTE 271 (3) Engr Materials: Structure &amp; Props</td>
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<tr>
<td><strong>ADDITIONAL ChE ELECTIVES</strong></td>
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<td>MTE 487 (3) Corrosion Science</td>
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<td>CHE 412/512 (3) Polymer Materials Engr</td>
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<tr>
<td>CHE 418/518 (3) Tissue Engineering</td>
<td><strong>PRE-MED / PRE-HEALTH/BIOLOGY/BIOTECH</strong></td>
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<tr>
<td>CHE 438/538 (3) Electronic Materials</td>
<td>AS299 (3) Pre-Health Seminar</td>
<td>BSC 425 (2) Human Physiology Laboratory</td>
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<tr>
<td>CHE 440/540(^b) (3) Health &amp; safety</td>
<td>BSC 115 (1) Biology I Laboratory</td>
<td>BSC 435 (4) Immunology</td>
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<tr>
<td>CHE 445/545 (3) Biochemical Engr</td>
<td>BSC 116 (3) Principles of Biology II</td>
<td>BSC 441 (3) Developmental Biology</td>
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<tr>
<td>CHE 225, 325, 425(^c) (1) ChE Honors Forum</td>
<td>BSC 117 (1) Biology II Laboratory</td>
<td>BSC 442 (4) Integrated Genomics</td>
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<tr>
<td><strong>FOREIGN LANGUAGES(^d)</strong></td>
<td>BSC 118(^e) (4) Honors General Biology I</td>
<td>BSC 444 (3) General Virology</td>
</tr>
<tr>
<td>CHE 101, 102 (4) Elementary Chinese 1 &amp; 2</td>
<td>BSC 120 (4) Honors General Biology II</td>
<td>BSC 449 (3) Endocrinology</td>
</tr>
<tr>
<td>CHE 201, 202 (3) Intermediate Chinese 1 &amp; 2</td>
<td>BSC 215 (4) Human Anatomy &amp; Physiology I</td>
<td>BSC 450 (3) Fundamentals of Biochemistry</td>
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<tr>
<td>FR 101, 102, 103 (4) Intro. French 1 &amp; 2</td>
<td>BSC 216(4) Human Anatomy &amp; Physiology II</td>
<td>BSC 451 (3) Molecular Biology</td>
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<tr>
<td>FR 201, 202 (3) Intermediate French 1 &amp; 2</td>
<td>BSC 242 (4) Microbiology and Man</td>
<td>BSC 465 (3) Principles of Toxicology</td>
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<tr>
<td>GN 101, 102, 103 (4) Intro German 1 &amp; 2</td>
<td>BSC 300 (3) Cell Biology</td>
<td>BSC 469 (3) Histology of Vertebrates</td>
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<tr>
<td>GN 201, 202 (3) Intermediate German 1 &amp; 2</td>
<td>BSC 310 (3) Microbiology</td>
<td>BSC 496 (3) Bioremediation</td>
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<tr>
<td>IHP 105(^f) (3) Hon Culture &amp; Human Experience</td>
<td>BSC 312 (2) Microbiology Lab</td>
<td>CHS 330 (3) Issues in Contemp. Medicine</td>
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<tr>
<td>IHP 155(^f) (3) Hon Culture &amp; Human Experience</td>
<td>BSC 315 (3) Genetics</td>
<td>CHS 425 (3) Biostatistics</td>
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<tr>
<td>IT 101, 102 (4) Intro Italian 1 &amp; 2</td>
<td>BSC 385 (3) General Ecology</td>
<td>CHE 225, 325, 425(^g) (1) ChE Honors Forum</td>
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<tr>
<td>IT 201, 202 (3) Intermediate Italian 1 &amp; 2</td>
<td>BSC 398, 399(^h) Biology Research</td>
<td>CHE 418 (3) Tissue Engineering</td>
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<tr>
<td>JA 101, 102 (4) Elementary Japanese 1 &amp; 2</td>
<td>BSC 424 (3) Human Physiology</td>
<td>PHL 223 (3) Medical Ethics</td>
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<tr>
<td>JA 201, 202 (3) Intermediate Japanese 1 &amp; 2</td>
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<td>UH 330 (3) Intro to Clinical Medicine</td>
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<tr>
<td>SP 101, 102, 103 (4) Intro Spanish 1 &amp; 2</td>
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</tr>
<tr>
<td>SP 201, 202 (3) Intermediate Spanish 1 &amp; 2</td>
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</table>

\(^a\) Note: These 6 hours must be in addition to classes used for HI/SB, HU/L/FA, ENG, ADV SCI, BIOCHEM and CHE Electives.

Refer to the undergraduate catalog for information about minors in each field, as well as pre- and co-requisites.

\(^b\) Other foreign languages are approved- see your advisor.

\(^c\) One of these two classes may count, but not both.

\(^d\) BSC 118 can be used to count for 3 hours of BSC 114; the additional hour of lab can be used for Career Electives; however, on DegreeWorks, it will not appear explicitly as a Career elective (instead, the required hours for Career electives will be decreased to 5 if you take BSC 118).

\(^e\) Students can take ChE honors forum more than once for credits. Topics and instructors rotate each semester.

\(^f\) Undergraduate Research/independent study classes can count for a maximum of 6 hours towards the BS ChE degree. Most research classes have variable credit. Negotiate credit hours with your research director.

\(^g\) CHE 440/540 is a required course in the 2013 curriculum and cannot be used as a career elective.

THE FOLLOWING CLASSES ARE **NOT** APPROVED AS CAREER ELECTIVES: CS 102, CS 285, CSM 204, GES 100