Undergraduate Advising Manual

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Department of Chemical Engineering

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Undergraduate Advising

Introduction
The Educational Objectives of our chemical engineering program are to prepare students for career and professional accomplishments after graduation, including:

- Successfully practicing as an engineer or in some other professional pursuit, including traditional or emerging fields of chemical engineering.
- Entering and successfully participating in a graduate or professional program that continues career development.

Our chemical engineering program prepares graduates to achieve these educational objectives through the development of their skills as outlined in our educational outcomes and taught in our curriculum. By the time of graduation, our students will attain the following educational outcomes:

- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in global, economic, environmental, and societal contexts
- a recognition of the need for, and an ability to engage in life-long learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The purpose of this document is to outline the undergraduate program of study, including pre- and co-requisites, as well as the other requirements for graduation, to serve as an advising tool for students and faculty.

Programs of Study
Students select their program of study based on their entry date and their choice of programs offered during their tenure at the university. For example, a student entering in Fall 2013 may elect to use the program appearing in the catalog in Fall 2013 (in its entirety) or any later revisions while the student is at the university (also in their entirety). Chemical Engineering has a 128 hour degree program (established in Fall 2013 and modified for Fall 2015), although it is possible to use the previous 132 hour program of study if you entered the university prior to Fall 2013. The optional four year, 132 hour suggested program of study is shown as a listing of courses, course substitutions and as a course sequence diagram in the Appendix.

The College of Engineering has several requirements and substitutions which may apply in all programs of study:

- The College of Engineering no longer allows students to use upper level humanities/social science electives as part of the degree program. Only upper level humanities/social science
electives taken (or transferred) prior to Fall 2012 or approved (by appeal to the College of Engineering) during the Fall 2012 semester may be used to satisfy the requirement. Upper level humanities/social science electives taken after the Fall 2012 semester will not count toward an Engineering degree. Engineering students entering the university in Fall 2012 or later may use only lower level humanities/social electives (one humanities course, one fine arts class, three social science classes including ECON 2143, Basic Economics, or ECON 2013, Macroeconomics) to complete the humanities/social elective requirements.

- All Engineering students entering the College of Engineering as Freshmen in Fall 2012 or later must participate in the Freshman Engineering Program (FEP). FEP participation is waived for advanced transfer students, but GNEG 1111 and GNEG 1121 must then be replaced by 2 hours of electives in the 128 hour program of study. Transfer students entering the program in Fall 2014 or later must use STEM (science, technology, engineering or math) classes to replace the hours for GNEG 1111 and GNEG 1121.

As was noted above, there are two 128 hour courses of study in Chemical Engineering, the Fall 2013 program and the Fall 2015 program. Since some of the courses in the Fall 2013 program no longer exist, participation in the 128 hour programs is governed by course offerings, as follows:

- If a student has completed CHEG 3143, Heat Transport, CHEG 3232 Chemical Engineering Laboratory II, and CHEG 3153, Non-equilibrium Mass Transfer, prior to Fall 2015, the student will follow the Fall 2013 program of study that contains these courses. CHEG 3143, CHEG 3153 and CHEG 3232 no longer exist in the chemical engineering curriculum.
- Conversely, if a student has not completed these courses, the student will most likely be using the Fall 2015 program of study.
- Students who have completed courses from the Fall 2013 program that are no longer in the Fall 2015 program (such as CHEG 2123, Introduction to Chemical Engineering II, and CHEG 2212, Chemical Engineering Laboratory I) will be given technical elective credit for these courses. Consult your advisor for specific course substitutions.

The Fall 2013 suggested program of study containing CHEG 2123, CHEG 2212, CHEG 3143, CHEG 3153 and CHEG 3232 is shown as a listing of courses in Table 1 and as a course sequence diagram in Figure 1. Note that all courses are not offered each semester and that certain pre- and co-requisites are required for most courses.

<table>
<thead>
<tr>
<th>Table 1. Fall 2013 (128 Hour) Suggested Program of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall—Year 1</td>
</tr>
<tr>
<td>MATH 2554, Calculus I</td>
</tr>
<tr>
<td>CHEM 1113, Engineering Chemistry I</td>
</tr>
<tr>
<td>ENGL 1013, Composition I</td>
</tr>
<tr>
<td>PHYS 2054, University Physics I</td>
</tr>
<tr>
<td>GNEG 1111, Introduction to Engineering I</td>
</tr>
<tr>
<td>15 hours</td>
</tr>
<tr>
<td>Spring—Year 1</td>
</tr>
<tr>
<td>MATH 2564, Calculus II</td>
</tr>
<tr>
<td>CHEM 1133, Engineering Chemistry II</td>
</tr>
<tr>
<td>CHEM 1131L, Engineering Chemistry II Lab</td>
</tr>
<tr>
<td>ENGL 1023, Composition II</td>
</tr>
<tr>
<td>PHYS 2074, University Physics II</td>
</tr>
<tr>
<td>GNEG 1121, Introduction to Engineering II</td>
</tr>
<tr>
<td>16 hours</td>
</tr>
<tr>
<td>Fall—Year 2</td>
</tr>
<tr>
<td>MATH 2574, Calculus III</td>
</tr>
<tr>
<td>CHEM 3603, Organic Chemistry I</td>
</tr>
<tr>
<td>Spring—Year 2</td>
</tr>
<tr>
<td>MATH 2584, Differential Equations</td>
</tr>
<tr>
<td>CHEM 3613, Organic Chemistry II</td>
</tr>
</tbody>
</table>
CHEM 3601L, Organic Chemistry I Lab
CHEG 2113, Intro to Chemical Engineering I
CHEG 2212L, Chemical Engineering Lab I
HIST 2003, HIST 2013 or PLSC 2003
16 hours

Fall—Year 3
CHEM 3813, Intro to Biochemistry or CHEM 4813H, Honors Biochemistry I
CHEG 3143, Heat Transport
CHEG 3232L, Chemical Engineering Lab II
CHEG 3323, Thermodynamics of Multicomp. Systems
CHEG 3253, Computer Methods
Humanities/Social Science Elective, 3 hours
17 hours

CHEG 3133, Thermodynamics of Single Comp 17 hours

Spring—Year 3
CHEG 3713, Materials Technology
CHEG 3333, Chemical Engr Reactor Design
CHEG 3153, Non-equilibrium Mass Transfer
ECON 2143, Basic Economics (ECON 2013 may be substituted)
Humanities/Social Science Elective, 3 hours
15 hours

Fall—Year 4
CHEG 4163, Equilibrium Stage Mass Transfer
CHEG 4413, Chem Engr Design I
CHEG 4813, Chemical Process Safety
Technical or Advanced Science Elective, 3 hours
Advanced Science elective—3 hours
15 hours

Spring—Year 4
CHEG 4332, Chemical Engineering Lab III
CHEG 4423, Auto Process Control
CHEG 4443, Chem Engr Design II
Advanced Science or Chemical Engineering elective—3 hours
Humanities/Social Science Elective, 3 hours
Humanities/Social Science Elective, 3 hours
17 hours
The Fall 2015 suggested program of study containing additional elective options as chemical engineering and technical electives is shown as a listing of courses in Table 2 and as a course sequence diagram in Figure 2. Once again, it should be noted that all of the courses are not offered each semester and that certain pre- and co-requisites are required for most courses.

Table 2. Fall 2015 (128 Hour) Suggested Program of Study

<table>
<thead>
<tr>
<th>Fall—Year 1</th>
<th>Spring—Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2554, Calculus I</td>
<td>MATH 2564, Calculus II</td>
</tr>
<tr>
<td>CHEM 1103, University Chemistry I</td>
<td>CHEM 1123, University Chemistry II</td>
</tr>
<tr>
<td>ENGL 1013, Composition I</td>
<td>CHEM 1121I, University Chemistry II Lab</td>
</tr>
<tr>
<td>PHYS 2054, University Physics I</td>
<td>ENGL 1023, Composition II</td>
</tr>
<tr>
<td>GNEG 1111, Introduction to Engineering I</td>
<td>PHYS 2074, University Physics II</td>
</tr>
<tr>
<td>15 hours</td>
<td>GNEG 1121, Introduction to Engineering II</td>
</tr>
<tr>
<td></td>
<td>16 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fall—Year 2</th>
<th>Spring—Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2574, Calculus III</td>
<td>MATH 2584, Differential Equations</td>
</tr>
</tbody>
</table>
CHEM 3603, Organic Chemistry I
CHEM 3601L, Organic Chemistry I Lab
CHEG 2113, Intro to Chemical Engineering
Humanities/Social Science Elective, 3 hours
HIST 2003, HIST 2013 or PLSC 2003
17 hours

Fall—Year 3
CHEM 3813, Intro to Biochemistry or
   CHEM 4813H, Honors Biochemistry I
CHEG 3144, Heat and Mass Transfer
CHEG 3323, Thermodynamics of
   Multicomp. Systems
ECON 2143, Basic Economics (ECON 2013
   may be substituted)
Humanities/Social Science Elective, 3 hours
16 hours

CHEM 3613, Organic Chemistry II
CHEM 3611L, Organic Chemistry II Lab
CHEG 2133, Fluid Mechanics
CHEG 2313, Thermodynamics of Single Comp
Humanities/Social Science Elective, 3 hours
17 hours

Spring—Year 3
CHEG 3713, Materials Technology
CHEG 3333, Chemical Engr Reactor Design
CHEG 3253, Computer Methods
CHEG 3233, CHEG Lab I (Junior Lab)
Humanities/Social Science Elective, 3 hours
Technical Elective, 3 hours
18 hours

CHEG 4163, Separation Processes
CHEG 4413, Chem Engr Design I
CHEG 4813, Chemical Process Safety
Advanced Science Elective, 3 hours
Technical elective, 3 hours
15 hours

CHEG 4163, Separation Processes
CHEG 4413, Chem Engr Design I
CHEG 4813, Chemical Process Safety
Advanced Science Elective, 3 hours
Technical elective, 3 hours
15 hours

Fall—Year 4
Spring—Year 4
CHEG 4163, Separation Processes
CHEG 4413, Chem Engr Design I
CHEG 4813, Chemical Process Safety
Advanced Science Elective, 3 hours
Technical elective, 3 hours
15 hours

CHEG 4332, CHEG Lab II (Senior Lab)
CHEG 4423, Auto Process Control
CHEG 4443, Chem Engr Design II
CHEG elective, 3 hours
Advanced Science or Technical elective, 3 hours
14 hours
Figure 2. Fall 2015 (128 Hour) Suggested Program of Study

It is realized that students progress through the curriculum at different rates. It is the responsibility of both the student and his/her advisor to carefully plan a student’s schedule of classes to balance course offerings with the required pre- and co-requisites.

Elective Options in Chemical Engineering

An undergraduate education in chemical engineering provides a firm foundation for many areas of specialization. Students may elect to take courses in areas of specialization as technical electives, upper level Chemistry/Physics electives or elective courses outside the Chemical Engineering curriculum. Courses in the following areas can strengthen the background of a student in a particular area of expertise:

Biotechnology/Biomedical Engineering
Chemical Process Safety
Environmental Engineering
Food Process Engineering
Materials Science and Engineering
Microelectronics
Nuclear Power Engineering  
Pre-medicine  
Simulation and Optimization  
Consult with your advisor for specific courses and their applicability to the Chemical Engineering program.

**GNEG Introduction to Engineering Classes**  
GNEG 1111/1121 or GNEG 1103 are required courses in the Chemical Engineering curriculum. However, many transfer students come to Chemical Engineering with advanced standing and, for them, the GNEG classes will be waived. In these cases, two hours of STEM-related courses will take the place of the waived GNEG classes. GNEG 1201 is not accepted for credit in Chemical Engineering.

**Humanities and Social Science Electives**  
The Requirements  
1. All students are required to take HIST 2003, HIST 2013 or PLSC 2003.  
2. Of the 15 hours of Humanities and Social Science Elective courses that remain, the Humanities/Social Science Elective requirement states that  
   a. THREE hours MUST be in HUMANITIES from the approved list of classes.  
   b. THREE hours MUST be in FINE ARTS from the approved list of classes.  
   c. NINE hours MUST be in SOCIAL SCIENCES from the approved list of classes. Since ECON 2143 or ECON 2013 is specifically required in the Chemical Engineering degree program, SIX additional hours are required.  
3. If the student entered the program prior to Fall 2012 and elects to use the old system for Humanities and Social Science Electives (with the previous requirement for both upper and lower level classes) or a hybrid of the old system and new system,  
   a. SIX hours MUST be in HUMANITIES or FINE ARTS from the approved list, and NINE hours MUST be in SOCIAL SCIENCES (again, ECON 2143 or ECON 2013 is specifically required in the Chemical Engineering degree program).  
   b. TWO or more academic departments MUST be included in each category. Note that ARCH 1003, ARHS 1003, ARTS 1003, COMM 1003, DANC 1003, DRAM 1003, HUMN 1003, LARC 1003 and MLIT 1003 are all part of the FINE ARTS (FNAR) Department.  
   c. If the student selects upper level courses from the SOCIAL SCIENCES only, three hours of the lower level humanities must be from FINE ARTS and three hours must be from other HUMANITIES.

**Approved Courses**  
A listing of the approved humanities/social science electives may be found on the College of Engineering web site at [http://catalog.uark.edu/undergraduatecatalog/academicregulations/universitycore/](http://catalog.uark.edu/undergraduatecatalog/academicregulations/universitycore/).

**Technical Electives**  
Technical electives are part of each of the degree plans, as follows:  
- Three hours of technical electives are required in the Fall 2013 curriculum  
- Six hours of technical electives are required in the Fall 2015 curriculum
In general, any upper level (3XXX-level or above) course in the sciences, math or engineering may serve as a technical elective, with prior approval by your academic advisor. Technical electives can be chosen from the list of advanced science/chemical engineering elective classes, if desired. BIOL 213, BIOL 2213, BIOL 2323 and BIOL 2443 are 2XXX-level courses that can also serve as technical electives, and are also useful for students applying to medical school. INEG 2313, INEG 2333, INEG 2413 and INEG 2513 are statistics-oriented classes, and may be used for technical elective credit. Upper-level courses in non-technical areas such as business may also serve as technical electives with prior approval by your academic advisor. Finally, students who have completed chemical engineering courses from the Fall 2013 program that are no longer offered (such as CHEG 2123, Introduction to Chemical Engineering II, and CHEG 2212, Chemical Engineering Laboratory I) will be given technical elective credit for these courses. Consult your advisor for specific course substitutions. There is no specific list of approved technical electives.

Advanced Science/Chemical Engineering Elective Courses

Advanced science/chemical engineering elective courses are required in both of the 128 hour degree plans, as follows:

- Six hours of Advanced Science/Chemical Engineering elective courses are required in the Fall 2013 curriculum. A maximum of three hours of approved chemical electives may be used to satisfy this requirement.
- Six hours of Advanced Science/Chemical Engineering elective courses and three hours of Chemical Engineering elective courses are required in the Fall 2015 curriculum. Thus, at least three hours of Advanced Science electives (and no more than six hours) and at least three hours of approved chemical engineering electives (and no more than six hours) may be used to satisfy this requirement.

Table 3 shows the approved list of courses by category (Advanced Science or Chemical Engineering electives). Courses not on the list may satisfy the requirement with student appeal and approval by the Chemical Engineering faculty. Additional Chemical Engineering elective course offerings are planned.

Table 3. Approved List of Advanced Science/Chemical Engineering Elective Courses

<table>
<thead>
<tr>
<th>ADVANCED SCIENCE ELECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 2263, Analytical Chemistry Lecture (CHEM 2261 is not a required co-requisite for chemical engineering students)</td>
</tr>
<tr>
<td>CHEM 2261, Analytical Chemistry Laboratory</td>
</tr>
<tr>
<td>CHEM 3451L, Elements of Physical Chemistry Laboratory (note co-requisite of CHEM 3453)</td>
</tr>
<tr>
<td>CHEM 3453, Elements of Physical Chemistry (course not allowed with CHEM 3504 or CHEM 3514; CHEM 3451 is not a required co-requisite for chemical engineering students)</td>
</tr>
<tr>
<td>CHEM 3504, Physical Chemistry</td>
</tr>
<tr>
<td>CHEM 3514, Physical Chemistry II</td>
</tr>
<tr>
<td>CHEM 4211L, Instrumental Analysis Laboratory (note co-requisite of CHEM 4213)</td>
</tr>
<tr>
<td>CHEM 4213, Instrumental Analysis (CHEM 4211 is not a required co-requisite for chemical engineering students)</td>
</tr>
<tr>
<td>CHEM 4843H, Biochemistry II (must have CHEM 4813H to take this course)</td>
</tr>
<tr>
<td>CHEM 4853, Biochemical Techniques</td>
</tr>
<tr>
<td>FDSC 4304, Food Chemistry</td>
</tr>
<tr>
<td>PHYS 3113, Analytical Mechanics</td>
</tr>
</tbody>
</table>
- PHYS 3414, Electromagnetic Theory
- PHYS 3544, Optics
- PHYS 3613, Modern Physics
- PHYS 4073, Introduction to Quantum Mechanics
- PHYS 4333, Thermal Physics
- PHYS 462V, Modern Physics Laboratory
- PHYS 4734, Introduction to Laser Physics

CHEMICAL ENGINEERING ELECTIVES
Students may elect to take one course from the following list of upper level Chemical Engineering classes:
- CHEG 4273/5273, Corrosion Control
- CHEG 488V, 3 hours, lecture classes only (e.g., Polymer Theory and Practice, Petroleum Processing); research/special problems classes are not allowed in satisfying the upper level Chemistry/Physics/Chemical Engineering course requirement
- CHEG 5013, Membrane Separation and System Design
- CHEG 5033, Technical Administration
- CHEG 5043, Colloids and Surfaces
- CHEG 5113, Transport Processes I
- CHEG 5133, Advanced Reactor Design
- CHEG 5213, Advanced Chemical Engineering Calculations
- CHEG 5333, Advanced Thermodynamics
- CHEG 5353, Advanced Separations
- CHEG 5513, Biochemical Engineering Fundamentals
- CHEG 5733, Polymer Theory and Practice

Courses Satisfying the ENGL 1013 and ENGL 1023 Exemption
Some students entering the University of Arkansas are exempted from ENGL 1013 and ENGL 1023 because of high ACT scores, but do not receive credit for the courses. Credit for ENGL 1013 and ENGL 1023 upon entering the university usually comes from AP or CLEP credit, or from the transfer of the classes from another university. The ENGL 1013/ENGL 1023 exemption can be satisfied by six hours of any non-remedial courses.

Transfer Credit Rules
Transfer credits from other institutions are evaluated by the Registrar’s Office, in conjunction with the Engineering Dean’s office and the Department of Chemical Engineering. Grades earned at other institutions are not used in calculating a student’s grade point average at the University of Arkansas. Several rules apply regarding transfer credit:
- No “D” grades are allowed for transfer credit without special appeal.
- No more than 68 hours of lower division (1XXX-, 2XXX-level) courses can be transferred.
- Courses that satisfy the State Minimum Core (SMC) at another institution of higher learning in Arkansas, typically shown as 299TT courses, are fully transferrable to the University of Arkansas, assuming a grade of “C” or better.
• There is no limit on the number of upper division (3XXX-level or above) courses that may be transferred to the University of Arkansas, but transfer students must also satisfy the Residence Requirement (see U of A catalog for more information).

• The Chemical Engineering Department has the final say on whether courses may transfer for credit to the University of Arkansas with one major exception—humanities/social electives. The transfer for credit for all lower and upper level humanities/social science electives must be approved by either the Registrar’s office, the home department at the U of A in which the course was taken (for example, the Economics Department for CHEG 299T transferring as ECON 2013 or ECON 2143) or a committee of the College of Engineering.

**Courses that do not Count toward Degree Requirements**
Remedial 0003 courses, MATH 1203, MATH 1213, MATH 1284, GNEG 1515 and ENGL 2003 cannot be counted toward the requirements for an Engineering degree. Co-op/internship classes (for example, GNEG 3801 or GNEG 3811) do not count for credit toward a degree in Chemical Engineering.

**Student Advising**
All Chemical Engineering students will be required to meet with their academic advisor prior to removal of the advising hold and being allowed to sign up for courses. Students on co-op may be allowed to satisfy this requirement by e-mail, at the discretion of the advisor.

The Advising Process:
1. To initiate the advising process, students are requested to copy the appropriate advising sheet (see Appendix), and simply “X” out the courses they have taken or are presently taking.
2. As a second step, the student is requested to list the humanities/social electives, advanced science/chemical engineering electives and technical electives that he/she has taken or is taking in the appropriate categories.
3. As a final step, the students are requested to “circle” the courses they plan to take in the next semester. If a student is to be advised in the Spring for both the summer and fall semesters, write an “S” in the appropriate circles for summer and an “F” in the appropriate circles for fall. The student (and advisor) should always be looking ahead to foresee potential pitfalls with courses that might occur in later semesters, and your advisor will often help you plan out schedules for several subsequent semesters. If a student does not know which courses to take or would like to discuss course offerings with his/her advisor, simply stop the process after placing an “X” in the courses that have been taken and after listing the humanities/social electives and technical electives that have been taken. As was noted above, it is the responsibility of both the student and his/her advisor to carefully plan the student’s schedule of classes to balance course offerings with the required pre- and co-requisites. This does not mean that pre- and co-requisites will _never_ be violated, but it does mean that significant efforts should and will be made to _avoid pre- and co-requisite violations_ because the pre- and co-requisites are carefully set by the faculty to facilitate student success in courses.
4. All students should also fill out or update the Employment, Research, Honors College, Study Abroad form (see Appendix), and all Honors students should complete the Honors forms (found at [http://engineering.uark.edu/academics/undergraduate-students/index.php](http://engineering.uark.edu/academics/undergraduate-students/index.php)) when appropriate. The Honors Advising Form is due in the Engineering Dean’s Office 15 months prior
to graduation. For more details on the Honors program and required forms, see the Departmental Honors Program Guidance Document, found on the Departmental website.

The student brings the appropriate advising forms to a meeting with his/her academic advisor, who is best contacted by e-mail to set up an appointment. This subsequent meeting may be very short if the scheduling of classes is straight-forward, or may be a bit lengthy if the student is having trouble scheduling classes or needs to develop a plan for all of the semesters remaining in the degree plan. In general, this is not the best time to get into lengthy advising discussions, but this is a time to set up a time for later lengthy advising discussions. After discussing the class schedule and listing of Honors courses, the advisor will remove the advising hold, which will permit the student to sign up for classes after their appointed advising time. If the student is required to make changes to the schedule due to conflicts, the student should communicate this information to his/her advisor.

Degree Check
During the advising session prior to the start of a student’s final semester before graduation, the student should make arrangements with their advisor for a preliminary degree check, which ensures that the student is taking all of the required courses and will satisfy all requirements for graduation. Since many of our students can currently choose their program of study (128 hours, Fall 2013 or Fall 2015, or 132 hours), this choice must be made at the time of the preliminary degree check. The degree check is a course by course match of degree requirements with courses taken at the university, transfer courses and credit courses. It is also an opportunity to make sure that the student’s grade point average and other requirements are sufficient for graduation. The result of the degree check is a list of courses still required for graduation, and any questions regarding grade point average, transfer credit, etc. This information will be transmitted to the student by e-mail for follow-up, if necessary. The preliminary degree check is completed prior to the last semester so that the student will have an opportunity to complete any courses that may have initially been a surprise to the student. A final degree check is made by the student’s advisor, the Associate Dean in Engineering and the university just after graduation.

Requirements for Graduation
The Engineering Dean’s office will be making sure that each student meets the following graduation requirements. Consult the catalog for clarification and any additional requirements:

- The student’s overall cumulative grade point average must be ≥ 2.0
- The student’s cumulative grade point average in engineering courses presented for graduation must be ≥ 2.0
- The student’s cumulative grade point average in Chemical Engineering courses presented for graduation must be ≥ 2.0
- Of the courses taken on this campus and presented for graduation, <15% of the hours may be “D” grades. For student entering the College of Engineering in Fall 2014 or later, a maximum of six hours of “D” grades may be presented.
- The total hours taken must be ≥ the required hours (currently 128 or 132 hours in the Chemical Engineering Department, depending on degree plan)
- The student must complete the State Minimum Core (SMC):
- English (6 hours—ENGL 1013, ENGL 1023 or waived by ACT score with appropriate substitution of hours)
- Mathematics (3 hours)
- Science (8 hours)
- Humanities (3 hours)
- Fine Arts (3 hours)
- Social Science (9 hours, noting that 3 hours of ECON 2143 or 2013 is required in Chemical Engineering)
- U.S. History/American Government course

- The ENGL 1013 and ENGL 1023 Exemption must not be satisfied by remedial coursework
- No 0003 courses, MATH 1203, MATH 1213, MATH 1285, GNEG 1515, GNEG 1201 and ENGL 2003 are counted toward the requirements for an engineering degree
- No “D” grades are transferred into the University of Arkansas without special appeal
- No more than 68 hours of lower division (1XXX-, 2XXX-level) courses are transferred into the University of Arkansas
- The residence requirement is satisfied
- All departmental course requirements are satisfied
- The degree check has been made, and all subsequent requirements (courses, no “D” grades, etc.) have been met
APPENDICES
132-Hour Degree Plan
Although most of the students studying Chemical Engineering now use a 128 hour degree program (established in Fall 2013 and modified for Fall 2015), it is possible to use an earlier 132 hour program of study if you entered the university prior to Fall 2013. However, students using the 132 hour program of study should be aware of the following course substitutions:

- CHEM 3813, Introduction to Biochemistry, or CHEM 4813H, Honors Biochemistry I, may be substituted in place of MEEG 2003, Statics; CHEG 3713, Chemical Engineering Materials, may be substituted in place of MEEG 3013, Mechanics of Materials. Note that MEEG 2003 is a prerequisite for MEEG 3013.
- Two hours of free elective (along with six hours of upper level science, from the approved list) may be used to satisfy the requirement of eight hours of upper level science electives. For those students transferring from FEP, GNEG 1111 and GNEG 1121 will satisfy the free elective requirement since GNEG 1111, Introduction to Engineering I, and GNEG 1121, Introduction to Engineering II, are not requirements in the 132 hour program of study.
- CHEG 2221, Professional Practice Seminar, is no longer offered, and is replaced by one hour of free elective.

Please note the other program changes (that apply both to the 128-hour and 132-hour programs) noted earlier in the document.

### Optional 132 Hour Suggested Program of Study
May be Used by Students Entering the University prior to Fall 2013 
(numbers in parentheses (XXXX) are the more recent course numbers for the same courses)

<table>
<thead>
<tr>
<th>Fall—Year 1</th>
<th>Spring—Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2554, Calculus I</td>
<td>MATH 2564, Calculus II</td>
</tr>
<tr>
<td>CHEM 1123, University Chemistry II&lt;sup&gt;a&lt;/sup&gt;</td>
<td>ENGL 1023, Composition II</td>
</tr>
<tr>
<td>CHEM 1121L, University Chemistry II Lab&lt;sup&gt;a&lt;/sup&gt;</td>
<td>CHEG 1123 (2123), Intro to Chemical Engineering II</td>
</tr>
<tr>
<td>ENGL 1013, Composition I</td>
<td>CHEG 1212L (2212), Chemical Engineering Lab I</td>
</tr>
<tr>
<td>CHEG 1113 (2113), Intro to Chemical Engineering I</td>
<td>Humanities/Social Science Elective, 3 hours</td>
</tr>
<tr>
<td>HIST 2003, HIST 2013 or PLSC 2003</td>
<td>15 hours</td>
</tr>
<tr>
<td>17 hours</td>
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</tbody>
</table>

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<tr>
<th>Fall—Year 2</th>
<th>Spring—Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2574, Calculus III</td>
<td>MATH 3404 (2584), Differential Equations</td>
</tr>
<tr>
<td>CHEM 3603, Organic Chemistry I</td>
<td>CHEM 3613, Organic Chemistry II</td>
</tr>
<tr>
<td>CHEM 3601L, Organic Chemistry I Lab</td>
<td>CHEM 3611L, Organic Chemistry II Lab</td>
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<tr>
<td>PHYS 2054, University Physics I</td>
<td>PHYS 2074, University Physics II</td>
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<tr>
<td>CHEG 2221, Pro Practice Seminar&lt;sup&gt;b&lt;/sup&gt;</td>
<td>CHEG 2133, Fluid Mechanics</td>
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<tr>
<td>CHEG 2313, Thermodynamics of Single Comp</td>
<td>CHEG 3323, Thermo of Multicomp. Systems</td>
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<tr>
<td>16 hours</td>
<td>18 hours</td>
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<tr>
<th>Fall—Year 3</th>
<th>Spring—Year 3</th>
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<tbody>
<tr>
<td>CHEM elective—4 hours&lt;sup&gt;c&lt;/sup&gt;</td>
<td>CHEM elective—4 hours&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td>CHEM 3813, Intro to Biochemistry&lt;sup&gt;d&lt;/sup&gt;</td>
<td>CHEG 3713, Materials Technology in ChE&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>CHEG 3143, Heat Transport</td>
<td>CHEG 3333, Chemical Engr Reactor Design</td>
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<tr>
<td>CHEG 3232L, Chemical Engineering Lab II</td>
<td>CHEG 3153, Non-equilibrium Mass Transfer</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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<td>-------------</td>
<td>--------------------------------------------------</td>
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<tr>
<td>CHEG 3253</td>
<td>Chem Engr Computer Methods</td>
</tr>
<tr>
<td>Humanities/Social Science Elective, 3 hours</td>
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</tbody>
</table>

**Fall—Year 4**
- CHEG 4163, Equilibrium Stage Mass Transfer
- CHEG 4413, Chem Engr Design I
- CHEG 4813, Chemical Process Safety
- Technical Elective, 3 hours
- Humanities/Social Science Elective, 3 hours
- 15 hours

**Spring—Year 4**
- CHEG 4332, Chemical Engineering Lab III
- CHEG 4443, Chem Engr Design II
- ELEG 3903, Electric Circuits and Machines
- CHEG 4423, Auto Process Control
- Technical Elective, 3 hours
- Humanities/Social Science Elective, 3 hours
- 17 hours

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*a* Or CHEM 1133/CHEM 1131L  
*b* Now a free elective  
*c* The CHEM elective requirement may be satisfied with 6 hours of upper level chemistry, physics and chemical engineering classes (3 hours maximum for chemical engineering classes), and 2 hours of free elective  
*d* Or MEEG 2003  
*e* Or MEEG 3013
132 Hour Optional Suggested Program of Study
(May be Used by Students Entering the University prior to Fall 2013)
Advising Forms
2016-2017 Employment, Research, Honors College, Study Abroad—Ralph E. Martin Department of Chemical Engineering

Name: ____________________________ Student i.d.: ____________________________
e-mail: ____________________________ Expected graduation date: __________________

Plans after graduation:
Note: Ask your advisor for a degree check if you graduating next semester

Employment

__ Accepted permanent job. Company: ____________________________ Location: ____________________________
__ Seeking permanent employment. Restrictions: ____________________________
__ Seeking temporary employment. __ Co-op __ Internship __ Part-time
__ Had employment during May, 2015-May, 2016. __ Co-op __ Internship __ Part-time
Company: ____________________________ Location: ____________________________
__ Have had employment some time during academic career.

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Employment Dates</th>
<th>Type of Employment</th>
</tr>
</thead>
</table>

Research

__ Have research experience. __REU __ Research at U of A __ Other

Location of Research ____________________________ Mentor ____________________________ Dates of Research Activity ____________________________

__ Received SURF/Honors College grant(s). When?: ____________________________
__ Did research during May, 2015-May, 2016. Mentor: ____________________________
__ Seeking research opportunity. __REU __ Research at U of A __ Other

Honors College Activity

__ Member of Honors College __ Plan to graduate with Honors

Honors Courses completed (list, including AP classes):

__ Submitted Honors Advising form, if within 15 months of graduation

Honors thesis project:

Study Abroad

Location ____________________________ Dates ____________________________ Received Travel Grant ____________________________
University of Arkansas
Ralph E. Martin Department of Chemical Engineering
Fall 2015 (128 hour) plan
Name: ____________________________  ID: ____________  Semester: ________________
“X” out the courses you have passed, or are taking; circle the classes you are planning to take

Fall 1st year

CHEM 1103  Univ Chem I

MATH 2554  Cal I

PHYS 2054  U. Physics I

ENGL 1013  Comp I

Not offered in Spring semester

Spring 1st year

CHEM 1123  Univ Chem II (CHEM 1121L)

MATH 2564  Cal II

PHYS 2074  U. Physics II

ENGL 1023  Comp II

Not offered in Fall semester

Fall 2nd year

CHEM 3603  Organic I (CHEM 3601L)

MATH 2574  Cal III

CHEG 2113  Intro to CHEG

HIST 2003  HIST 2013

PLSC 2003

HSS Elective

Spring 2nd year

CHEM 3613  Organic II (CHEM 3611L)

MATH 2584  Diff Eq

CHEG 2133  Fluid Mechanics

HIST 2003  HIST 2013

PLSC 2003

HSS Elective

Fall 3rd year

CHEG 3713  Materials

CHEG 3253  Computer Methods

CHEG 3333  Reactor Design

CHEG 3144  Heat/Mass Transport

ENGL 1013  Comp I

ENGL 1023  Comp II

HSS Elective

Spring 3rd year

Technical Elective

CHEG Elective

CHEG 4013  Safety

CHEG 4413  Design I

CHEG 4163  Separation Processes

HSS Elective

Fall 4th year

Advanced Science

Technical Elective

CHEG 4423  Process Control

CHEG 4443  Design II

CHEG 4332LD  CHEG SR Lab

HSS Elective

Spring 4th year

CHEG Elective

CHEG 4813  Safety

CHEG 4413  Design I

CHEG 4163  Separation Processes

HSS Elective

History/HSS Electives (18 hr)
1. HIST 2003, 2013 or PLSC 2003
2. Hum: ________________________________
3. Fine Arts: ___________________________
4. Soc Sci 1: ECON 2143 or ECON 2013
5. Soc Sci 2: ___________________________

Technical Elective (6 hr)
1. ________________________________
2. ________________________________

Advanced Science/CHEG Electives (9 hr)
1. ________________________________ (AS)
2. ________________________________ (AS/CHEG)
3. ________________________________ (CHEG)
History/HSS Electives (18 hr)
1. HIST 2003, 2013 or PLSC 2003
2. Hum: ________________________________
3. Fine Arts: ___________________________
4. Soc Sci 1: ECON 2143 or ECON 2013
5. Soc Sci 2: ____________________________

Technical Elective (3 hr)
1. ________________________________

Advanced Science/CHEG Electives (6 hr)
1. ________________________________
2. ________________________________
Name: ____________________________  ID: ____________  Semester: ____________

“X” out the courses you have passed, or are taking; circle the classes you are planning to take.

**HSS Electives (18 hr)**
1. HIST 2003, 2013 or PLSC 2003
2. Hum 1: ____________________________
3. Hum 2: ____________________________
4. Soc Sci 1: ECON 2143 or ECON 2013
5. Soc Sci 2: ____________________________

**Technical Electives (6 hr)**
1. ____________________________
2. ____________________________

**Upper Level Chem/Physics (8 hr)**
1. ____________________________
2. ____________________________
3. ____________________________