



# ***Undergraduate Advising Manual***

***University of Arkansas, Ralph E. Martin***

***Department of Chemical Engineering***

Revised: May 2020

**Table of Contents**

Introduction ..... 3

Programs of Study..... 3

Elective Options in Chemical Engineering..... 5

GNEG Introduction to Engineering Classes ..... 6

Humanities and Social Science Electives..... 6

Technical Electives ..... 6

Advanced Science/Chemical Engineering Elective Courses ..... 7

Courses Satisfying the ENGL 1013 and ENGL 1023 Exemption ..... 7

Transfer Credit Rules..... 8

Courses that do not Count toward Degree Requirements ..... 9

Student Advising ..... 9

Degree Check ..... 10

Requirements for Graduation..... 10

Appendices..... 12

## 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 identify, formulate, and solve complex engineering problems by applying principles of engineering, science and mathematics
- An ability to apply engineering design to produce solutions that meet specified needs with consideration for public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
- An ability to communicate effectively with a range of audiences
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

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 entry date and their choice of programs offered during their tenure at the university. The Fall 2020 program of study (with only minor modifications from the Fall 2015 program of study) is used by almost all of our students, and is shown as a listing of courses, course substitutions and as a course sequence diagram later in this document. This lesser used 132-hour program of study (initiated prior to Fall 2013) and the Fall 2013 128-hour program of study are 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:**

- Chemical engineering students 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 first-year students must participate in the First-year Engineering Program (FEP). FEP participation is waived for advanced transfer students that are able to take Chemical Engineering classes immediately upon entering the university, but the hours for GNEG 1111 and GNEG 1121 must then be replaced by 2 hours of non-remedial STEM (science, technology, engineering or math) classes in the 128-hour program of study. As an example, College Algebra, Trigonometry and Pre-calculus are considered as remedial classes in the College of Engineering and cannot be used as STEM replacements for GNEG 1111 and GNEG 1121.

The Fall 2020 suggested program of study containing additional elective options as chemical engineering and technical electives is shown as a listing of courses in Table 1 and as a course sequence diagram in Figure 1. 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 1. Fall 2015 (128-Hour) Suggested Program of Study

Fall—Year 1 MATH 2554, Calculus I CHEM 1103, University Chemistry I ENGL 1013, Composition I PHYS 2054, University Physics I GNEG 1111, Introduction to Engineering I 15 hours	Spring—Year 1 MATH 2564, Calculus II CHEM 1123, University Chemistry II CHEM 1121L, University Chemistry II Lab ENGL 1023, Composition II PHYS 2074, University Physics II GNEG 1121, Introduction to Engineering II 16 hours
Fall—Year 2 MATH 2584, Differential Equations 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	Spring—Year 2 MATH 2574, Calculus III 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
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	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
Fall—Year 4 CHEG 4163, Separation Processes	Spring—Year 4 CHEG 4332, CHEG Lab II (Senior Lab)

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

CHEG 4423, Auto Process Control  
 CHEG 4443, Chem Engr Design II  
 Advanced Science or CHEG elective, 3 hours  
 Advanced Science or CHEG elective, 3 hours  
 14 hours

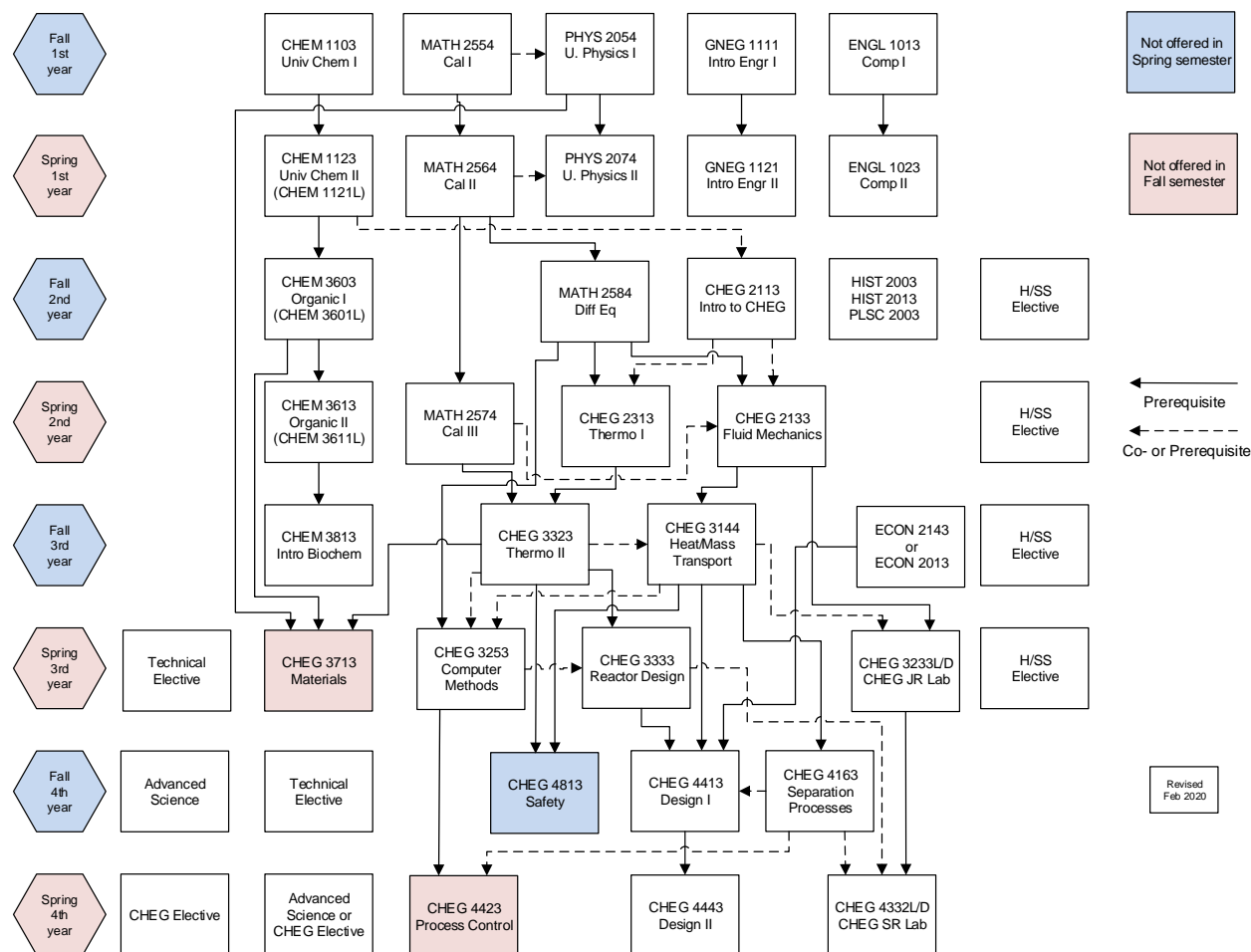


Figure 1. Fall 2020 (128-Hour) Suggested Program of Study

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
- Sustainability

Consult with your advisor for specific courses and their applicability to the Chemical Engineering program.

## GNEG Introduction to Engineering Classes

GNEG 1111/1111H and GNEG 1121/1121H 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. GNEG 1103, GNEG 1301H, GNEG 1311H, GNEG 1321H, GNEG 1322H (no longer offered), GNEG 1401H, GNEG 1411H, GNEG 1421H and GNEG 1422H (no longer offered) are suitable replacements for GNEG 1111/1111H and GNEG 1121/1121H.

## 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.

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/undergradcatalog/academicregulations/universitycore/>.

## Technical Electives

Six hours of technical electives are required in the Fall 2020 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 include undergraduate research or ChE Car

activities (CHEG 488V) or can be chosen from the list of advanced science/chemical engineering elective classes, if desired. BIOL 2013, BIOL 2213, BIOL 2323 and BIOL 2443 are 2XXX-level courses that can serve as technical electives and are also useful for students applying to medical school. INEG 2413 is an engineering economics class and INEG 3313 is a statistics-oriented class that may also 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. Consult your advisor for specific course substitutions. Co-op/internship classes (GNEG 3811) receive technical elective credit in Chemical Engineering and may be repeated for a total of three hours. There is no specific list of approved technical electives.

### Advanced Science/Chemical Engineering Elective Courses

Nine hours of Advanced Science/Chemical Engineering elective courses are required in the Fall 2020 curriculum. At least three hours of these course must be from the Science category. Table 2 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 2. Approved List of Advanced Science/Chemical Engineering Elective Courses  
SCIENCE CATEGORY

Course	Title	Comments
CHEM 2261	Analytical Chemistry Lab	
CHEM 2263	Analytical Chemistry	CHEM 2261 is not a required co-req for ChE students
CHEM 3203/3203H	Forensic Chemistry	
CHEM 3451	Elements Physical Chemistry Lab	Note co-req of CHEM 3453
CHEM 3453	Elements of Physical Chemistry	Course not allowed with CHEM 3504 or CHEM 3514; CHEM 3451 is not a required co-req for ChE students
CHEM 3504	Physical Chemistry	
CHEM 3514	Physical Chemistry II	
CHEM 4123	Advanced Inorganic Chemistry	
CHEM 4153L	Nanotechnology Lab	Students may not also receive credit for BENG 4753, BMEG 4103, MEEG 4323 or PHYS 4793
CHEM 4211	Instrumental Analysis Laboratory	Note co-req of CHEM 4213
CHEM 4213	Instrumental Analysis	CHEM 4211 is not a required co-req for ChE students
CHEM 4283/5283	Energy Conversion and Storage	
CHEM 4843H	Biochemistry II	Must have had CHEM 4813H or instructor permission to take this course
CHEM 4853	Biochemical Techniques	
FDSC 4304	Food Chemistry	Lab is a required part of the course
PHYS 3113	Analytical Mechanics	

PHYS 3453	Electromagnetic Theory I	Mathematically rigorous	8
PHYS 3463	Electromagnetic Theory II	Mathematically rigorous	
PHYS 3544	Optics		
PHYS 360V	Modern Physics Lab		
PHYS 3613	Modern Physics		
PHYS 4073	Intro to Quantum Mechanics		
PHYS 4333	Thermal Physics		
PHYS 4613	Intro to Biophysics and Biophysical Techniques		
PHYS 4734	Intro to Laser Physics		
PHYS 4793	Nanotechnology Lab	Students may not also receive credit for BENG 4753, BMEG 4103, CHEG 4153 or MEEG 4323	

#### CHEMICAL ENGINEERING CATEGORY

- Any graduate Chemical Engineering class (excluding seminar or special topics involving research/library searches, etc.)—instructor permission is required. Note that some graduate lecture **classes** are offered as CHEG 588V, and these classes may serve as advanced science electives.
- Any senior level Chemical Engineering elective lecture class excluding research, co-op/internship, special problems or ChE Car

### 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 college or 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).



- To be eligible for graduation, all students must complete at least 30 hours of Chemical Engineering (CHEG) classes at the University of Arkansas, Fayetteville, that are required for the degree.
- 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/fine arts/social science 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 courses including (but not limited to) 0002/0003 courses, MATH 1203, MATH 1204, MATH 1213, MATH 1284, GNEG 1201, GNEG 1503, GNEG 1514/1515 and ENGL 2003 cannot be counted toward the requirements for an Engineering degree.

### 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 away from campus 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/fine arts/social science 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. 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/fine arts/social science 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/honors-program.php>) when appropriate. The Honors Advising Form is due in the Engineering Dean's Office prior to the

student reaching 100 hours of classes. For more details on the Honors program and required forms, consult Dr. Jamie Hestekin, the Honors advisor.

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 in UAConnect. 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. Students returning to the U of A after a long absence can choose their program of study based on when they were enrolled (128 hours, Fall 2013, Fall 2015 or Fall 2020; 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, allowable number of Ds 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 Senior Associate Dean of 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  $\geq 2.0$
- The student's cumulative grade point average in engineering courses presented for graduation must be  $\geq 2.0$
- The student's cumulative grade point average in Chemical Engineering courses presented for graduation must be  $\geq 2.0$
- For students entering the College of Engineering in Fall 2014 or later, a maximum of eight hours of "D" grades **taken on this campus and presented for graduation** may be presented for graduation. For students entering the College prior to Fall 2014, no more than 15% of the courses **taken on this campus and presented for graduation** may be "D" grades. NOTE: Beginning in Fall 2020, Chemical Engineering students will not be allowed to enroll in a Chemical

Engineering class that requires a Chemical Engineering prerequisite course unless they receive a C or above in that prerequisite course.

- The total hours taken must be  $\geq$  the required hours (currently 128 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 0002/0003 courses, MATH 1203, MATH 1204, MATH 1213, MATH 1285, GNEG 1515, GNEG 1201 or other remedial courses 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
- At least 30 hours of Chemical Engineering (CHEG) classes that are required for the degree must be completed at the University of Arkansas, Fayetteville
- The residence requirement is satisfied
- All departmental course requirements are satisfied
- The degree check has been made, and all subsequent requirements have been met

## **APPENDICES**

**Fall 2013, 128-Hour Degree Plan  
(cannot be used by students entering the program in Fall 2015 or later)**

There are three 128-hour programs of study in Chemical Engineering, the Fall 2013 program, the Fall 2015 program and the Fall 2020 program, which is just a slight modification of 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, and CHEG 3153, Non-equilibrium Mass Transfer, prior to Fall 2015, the student will most likely follow the Fall 2013 program of study that contains these courses. CHEG 2123 (Introduction to Chemical Engineering II), CHEG 2212 (Chemical Engineering Lab I), CHEG 3143, CHEG 3153 and CHEG 3232 (Chemical Engineering Lab II) no longer exist in the chemical engineering curriculum—CHEG 2123 and CHEG 2212 have been completely eliminated, CHEG 3143 and CHEG 3153 have been combined to form CHEG 3144 (Heat and Mass Transfer), and CHEG 3232 has been expanded to form CHEG 3233 (the new Chemical Engineering Lab I).
- Conversely, if a student has not completed CHEG 3143 and CHEG 3153, the student will most likely be using the Fall 2015/Fall 2020 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 and CHEG 2212) will be given technical elective credit for these courses. Consult your advisor for specific course substitutions.

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

#### Fall 2013 (128-Hour) Suggested Program of Study

Fall—Year 1	Spring—Year 1
MATH 2554, Calculus I	MATH 2564, Calculus II
CHEM 1113, Engineering Chemistry I	CHEM 1133, Engineering Chemistry II
ENGL 1013, Composition I	CHEM 1131L, Engineering Chemistry II Lab
PHYS 2054, University Physics I	ENGL 1023, Composition II
<u>GNEG 1111</u> , Introduction to Engineering I	PHYS 2074, University Physics II
15 hours	<u>GNEG 1121</u> , Introduction to Engineering II
	16 hours
Fall—Year 2	Spring—Year 2
MATH 2574, Calculus III	MATH 2584, Differential Equations
CHEM 3603, Organic Chemistry I	CHEM 3613, Organic Chemistry II
CHEM 3601L, Organic Chemistry I Lab	CHEM 3611L, Organic Chemistry II Lab
CHEG 2113, Intro to Chemical Engineering I	CHEG 2123, Intro to Chemical Engineering II
CHEG 2212L, Chemical Engineering Lab I	CHEG 2133, Fluid Mechanics
<u>HIST 2003</u> , HIST 2013 or PLSC 2003	<u>CHEG 2313</u> , Thermodynamics of Single Comp
16 hours	17 hours
Fall—Year 3	Spring—Year 3
CHEM 3813, Intro to Biochemistry or CHEM 4813H,	CHEG 3713, Materials Technology
Honors Biochemistry I	CHEG 3333, Chemical Engr Reactor Design

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

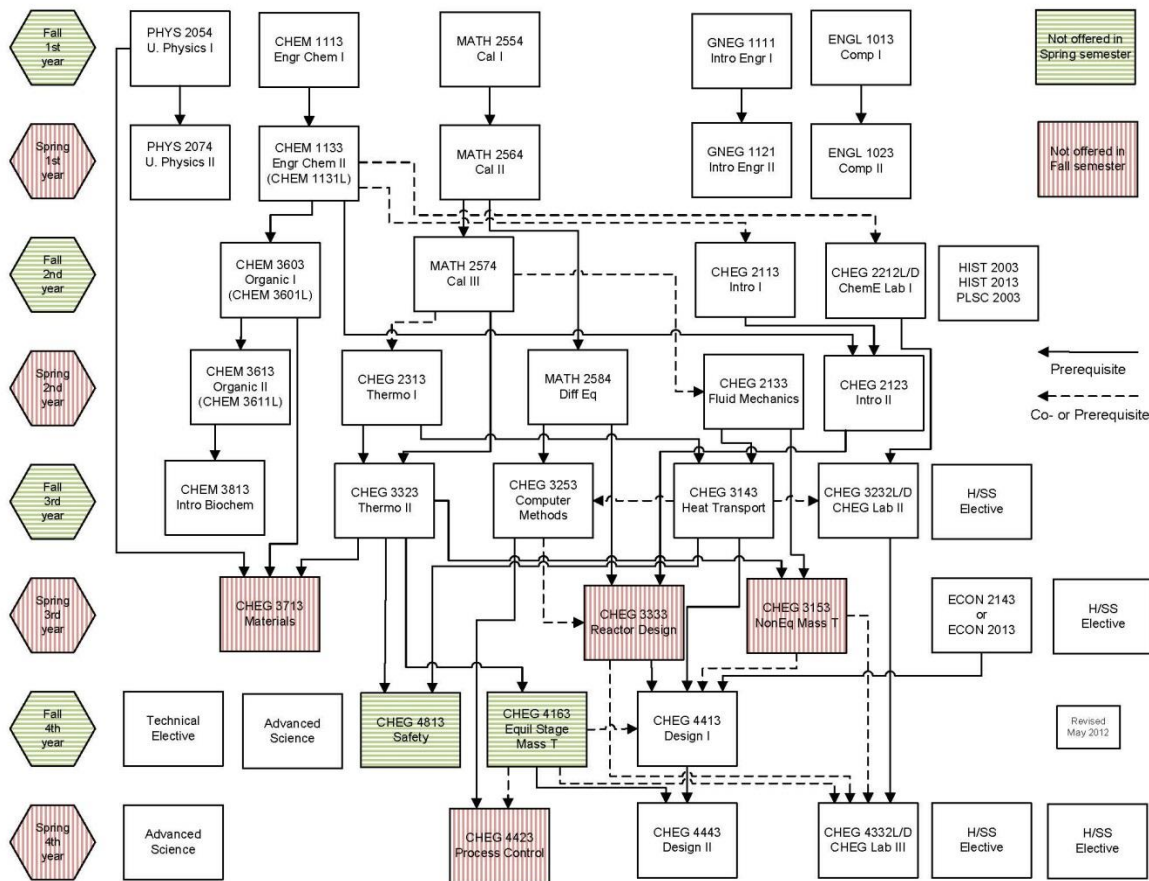
CHEG 3153, Non-equilibrium Mass Transfer  
 ECON 2143, Basic Economics (ECON 2013  
 may be substituted)  
 Humanities/Social Science Elective, 3 hours  
 15 hours

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



Fall 2013 (128-Hour) Suggested Program of Study

**132-Hour Degree Plan**  
**(for some students returning to campus after a long absence)**



Although most of the students studying Chemical Engineering now use a 128-hour degree program (established in Fall 2013 and modified for Fall 2015 and Fall 2020), 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)

Fall—Year 1

MATH 2554, Calculus I

CHEM 1123, University Chemistry II<sup>a</sup>

CHEM 1121L, University Chemistry II Lab<sup>a</sup>

ENGL 1013, Composition I

CHEG 1113 (2113), Intro to Chemical Engineering I

HIST 2003, HIST 2013 or PLSC 2003

17 hours

Spring—Year 1

MATH 2564, Calculus II

ENGL 1023, Composition II

CHEG 1123 (2123), Intro to Chemical Engineering II

CHEG 1212L (2212), Chemical Engineering Lab I

Humanities/Social Science Elective, 3 hours

15 hours

Fall—Year 2

MATH 2574, Calculus III

CHEM 3603, Organic Chemistry I

CHEM 3601L, Organic Chemistry I Lab

PHYS 2054, University Physics I

CHEG 2221, Pro Practice Seminar<sup>b</sup>

CHEG 2313, Thermodynamics of Single Comp

16 hours

Spring—Year 2

MATH 3404 (2584), Differential Equations

CHEM 3613, Organic Chemistry II

CHEM 3611L, Organic Chemistry II Lab

PHYS 2074, University Physics II

CHEG 2133, Fluid Mechanics

CHEG 3323, Thermo of Multicomp. Systems

18 hours

Fall—Year 3

CHEM elective—4 hours<sup>c</sup>

CHEM 3813, Intro to Biochemistry<sup>d</sup>

CHEG 3143, Heat Transport

CHEG 3232L, Chemical Engineering Lab II

Spring—Year 3

CHEM elective—4 hours<sup>d</sup>

CHEG 3713, Materials Technology in ChE<sup>e</sup>

CHEG 3333, Chemical Engr Reactor Design

CHEG 3153, Non-equilibrium Mass Transfer

CHEG 3253, Chem Engr Computer Methods  
Humanities/Social Science Elective, 3 hours  
 18 hours

ECON 2143 or ECON 2013  
 16 hours

---

 18
 

---

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

---

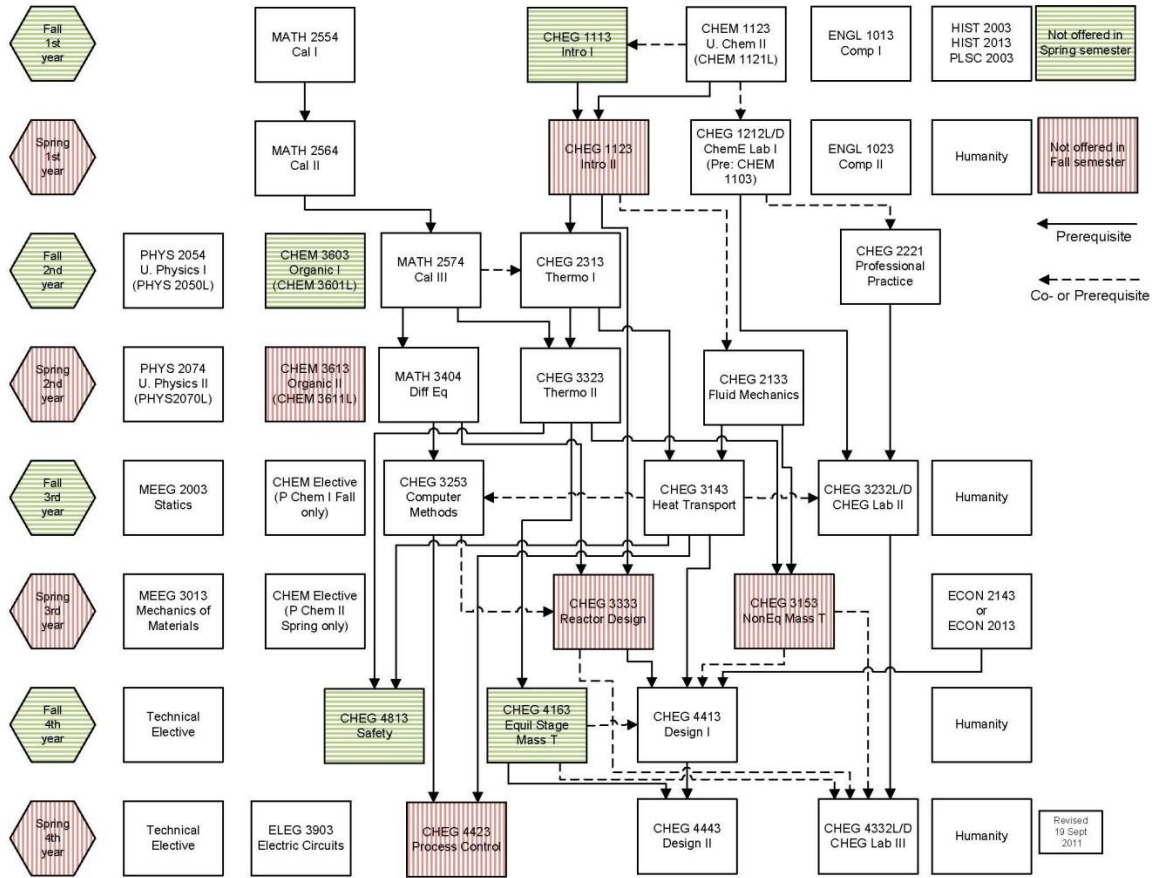
<sup>a</sup>Or CHEM 1133/CHEM 1131L

<sup>b</sup>Now a free elective

<sup>c</sup>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

<sup>d</sup>or MEEG 2003

<sup>e</sup>or MEEG 3013



132-Hour Optional Suggested Program of Study  
 (May be Used by Students Entering the University prior to Fall 2013)

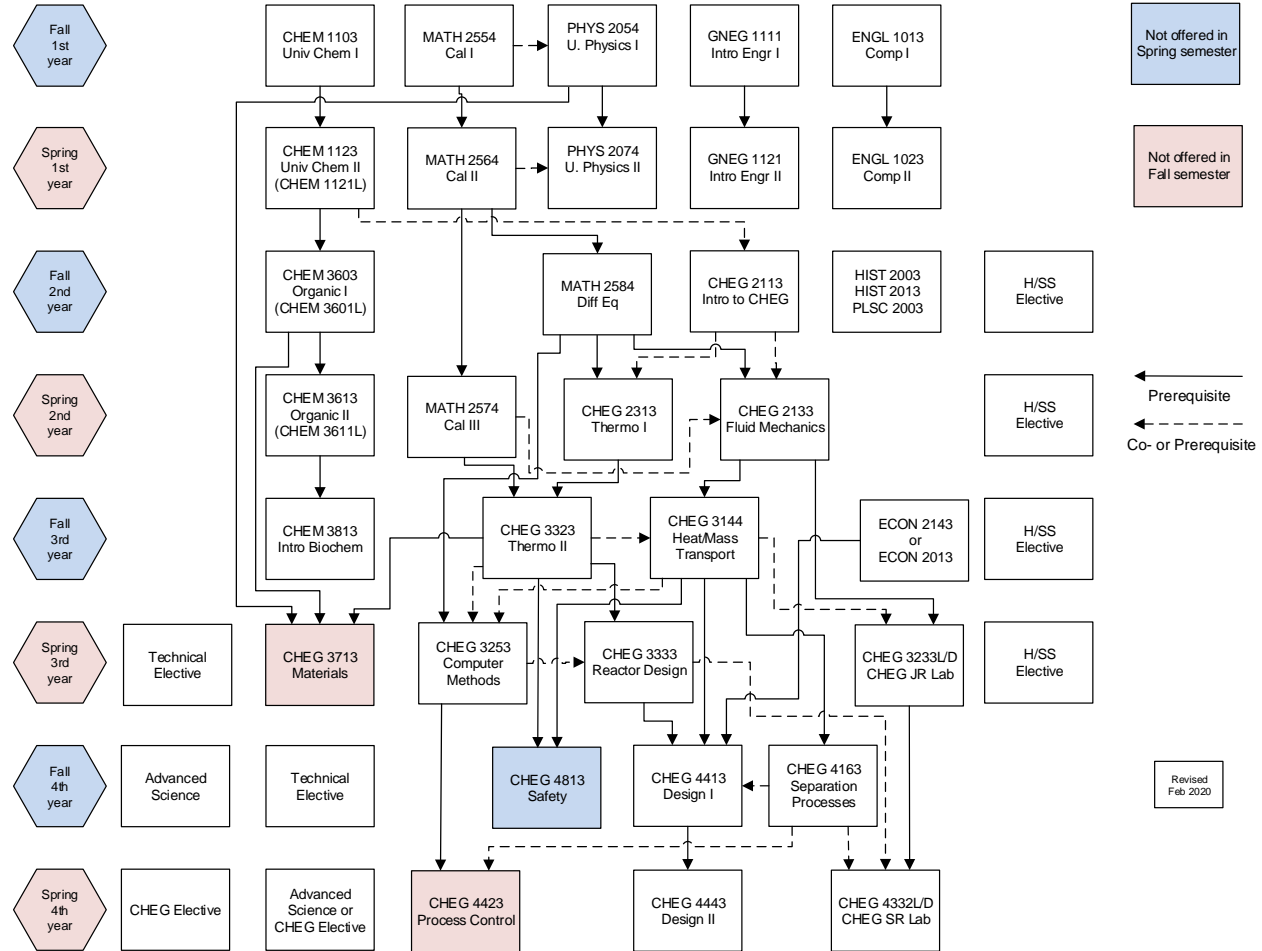
## **Advising Forms**



**University of Arkansas**  
**Ralph E. Martin Department of Chemical Engineering**  
**Fall 2020 (128 hour) plan**

Name: \_\_\_\_\_ ID: \_\_\_\_\_ Semester: \_\_\_\_\_

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



**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: \_\_\_\_\_
6. Soc Sci 3: \_\_\_\_\_

**Technical Elective (6 hr)**

1. \_\_\_\_\_
2. \_\_\_\_\_

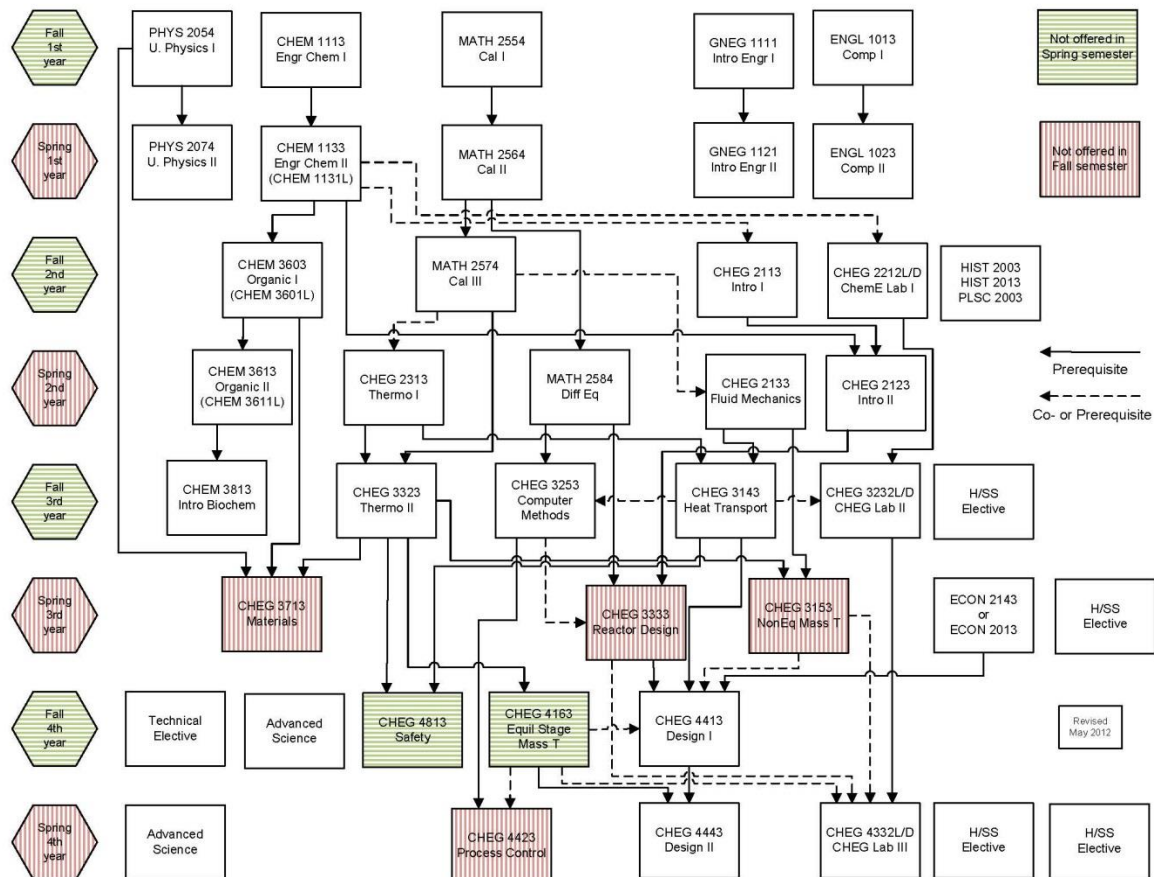
**Advanced Science/CHEG Electives (9 hr)**

1. \_\_\_\_\_ (AS)
2. \_\_\_\_\_ (AS/CHEG)
3. \_\_\_\_\_ (AS/CHEG)

**University of Arkansas**  
**Ralph E. Martin Department of Chemical Engineering**  
**Fall 2013 (128 hour) plan**

Name: \_\_\_\_\_ ID: \_\_\_\_\_ Semester: \_\_\_\_\_

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



### 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: \_\_\_\_\_
6. Soc Sci 3: \_\_\_\_\_

### Technical Elective (3 hr)

1. \_\_\_\_\_

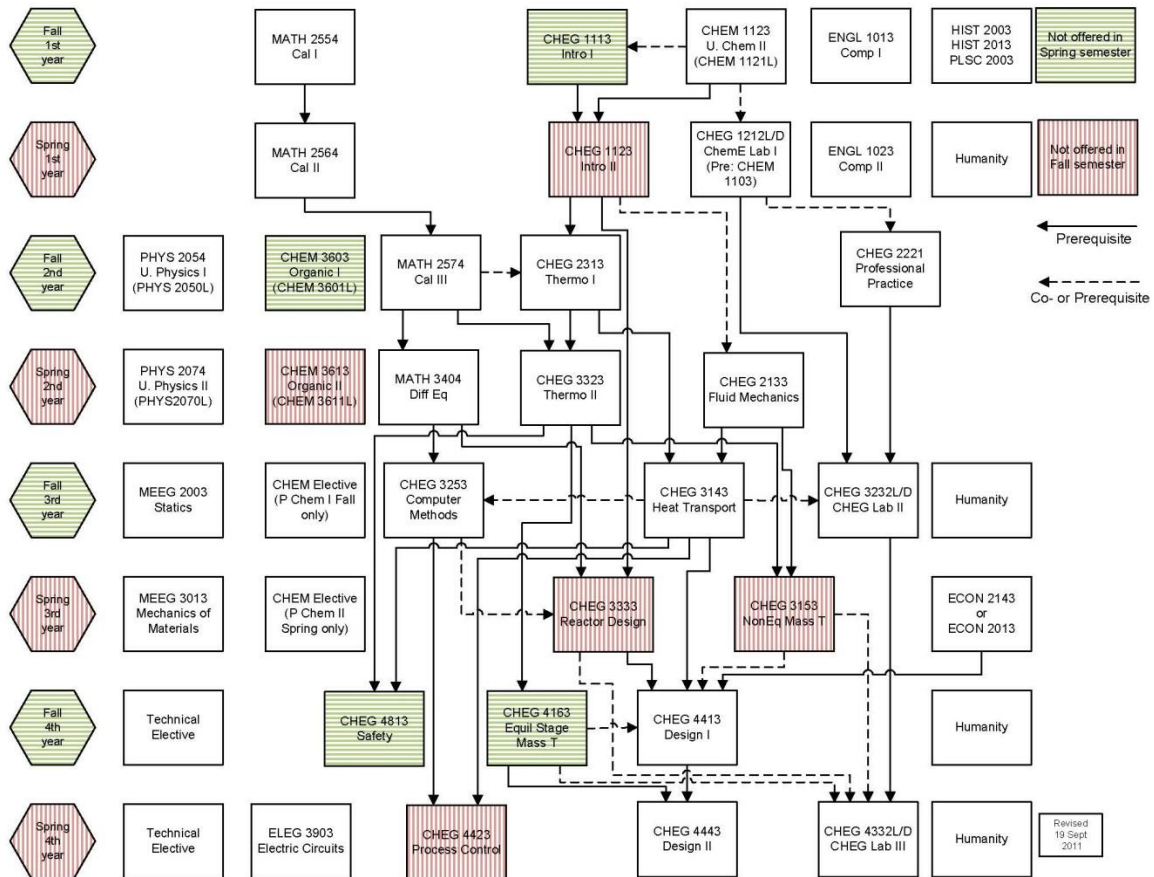
### Advanced Science/CHEG Electives (6 hr)

1. \_\_\_\_\_
2. \_\_\_\_\_

**University of Arkansas**  
**Ralph E. Martin Department of Chemical Engineering**  
**Optional 132 hour plan (option for students entering prior to Fall 2013)**

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: \_\_\_\_\_
6. Soc Sci 3: \_\_\_\_\_

**Technical Electives (6 hr)**

1. \_\_\_\_\_
2. \_\_\_\_\_

**Upper Level Chem/Physics (8 hr)**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_



The Honors Advising Form, Honors Graduation Certification Form, Honors Thesis Submission Process, Step-by-Step Instructions, Submission Agreement, Guidelines and Submission Policies are found at <http://engineering.uark.edu/academics/undergraduate-students/honors-program.php>.