

UNIVERSITY FACULTY SENATE FORMS

Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: Douglas J. Buttrey phone number 831-2034

Department: Chemical Engineering email address dbuttrey@udel.edu

Date: November 27, 2010

Action: Remove Chemical Engineering Mini-Minor Requirement
(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

Effective term 11F
(use format 04F, 05W)

Current degree BChE
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed change leads to the degree of: BChE
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed name: No change of name
Proposed new name for revised or new major / minor / concentration / academic unit (if applicable)

Revising or Deleting:

Undergraduate major / Concentration: Deleting special breadth requirement for CHEG
(Example: Applied Music – Instrumental degree BMAS)

Undergraduate minor: Deleting "mini-minor" requirement
(Example: African Studies, Business Administration, English, Leadership, etc.)

Graduate Program Policy statement change: _____
(Must attach your Graduate Program Policy Statement)

Graduate Program of Study: _____
(Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

Graduate minor / concentration: _____

Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.

List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?
(Be aware that approval of the curriculum is dependent upon these courses successfully passing through

the Course Challenge list. If there are no new courses enter "None")

Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education: <http://www.ugs.udel.edu/gened/>

The proposed change has no impact on the 10 goals of undergraduate education.

Identify other units affected by the proposed changes:

(Attach permission from the affected units. If no other unit is affected, enter "None")

There is no direct affect on other units as a result of this change. It simply loosens a constraint on the choices of breadth courses available to the students.

Describe the rationale for the proposed program change(s):

(Explain your reasons for creating, revising, or deleting the curriculum or program.)

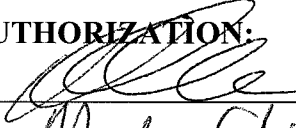
The new university requirements on breadth require that breadth courses have different rubrics. The existing 3-course ~~mini-minor~~ requirement as a part of the breadth requirement (only) for chemical engineering demands that three breadth courses be taken with the same rubric. The original idea behind this was to encourage students to explore one breadth area enough to consider going further to pursue a full minor. Meeting these two conflicting constraints is very difficult for the students. Most students find that the only "easy" way to fulfill the mini-minor is to select Economics as the area of focus. This de facto steering of student choice was unintended. After struggling with the students on this during advisement, we have decided that it is in the best interest of the students to remove the mini-minor, while retaining a requirement already in place demanding that two breadth courses must be upper level. *Deletion shown in red.*

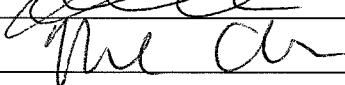
Program Requirements:

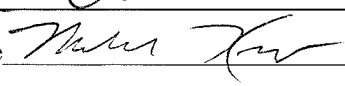
(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and **include a side-by-side comparison** of the credit distribution before and after the proposed change.)

The curriculum sequence is unchanged by removal of the mini-minor constraint.

ROUTING AND AUTHORIZATION: (Please do not remove supporting documentation.)

Department Chairperson  Date 11/29/2010

Dean of College  Date 12/8/10

Chairperson, College Curriculum Committee  Date 12/10/2010

Chairperson, Senate Com. on UG or GR Studies _____ Date _____

Chairperson, Senate Coordinating Com. _____ Date _____

Secretary, Faculty Senate _____ Date _____

Date of Senate Resolution _____ Date to be Effective _____

Registrar _____ Program Code _____ Date _____

Vice Provost for Academic Affairs & International Programs _____ Date _____

Provost _____ Date _____

Board of Trustee Notification _____ Date _____

DEGREE: BACHELOR OF CHEMICAL ENGINEERING
MAJOR: CHEMICAL ENGINEERING

CURRICULUM

CREDITS

Superior figures indicate year (1 = freshman, 2 = sophomore, 3 = junior, 4 = senior) and semester (F = fall, S = spring) in which the course should be taken.

UNIVERSITY REQUIREMENTS

<u>ENGL 110</u>	Critical Reading and Writing (minimum grade C-)	3 ^{1F}
<u>First Year Experience</u> (FYE)		0-4
<u>Breadth Requirements</u>		12
<u>Discovery Learning Experience</u> (DLE)		3
<u>Multi-cultural Course(s)</u>		3

MAJOR REQUIREMENTS

Breadth Requirements

21

The College of Engineering requires 21 total credits, which includes 9 additional credits above and beyond the 12 University Breadth Requirement credits. Coursework may include courses from the University Breadth Requirement list and the College of Engineering Supplemental Course list. See College of Engineering Breadth Requirements for a detailed description. For timely progress toward degree completion, 3 credits must satisfy the University Multicultural Requirement. All courses must be passed with a minimum grade of C-. Additionally, three of the Breadth Requirement courses (minimum of nine credits) must be in the same department or program, and at least one of these three courses must be above the introductory level. Courses classified as Mathematics, Natural Sciences, and Technology in the University Breadth Requirement list may not be used to fulfill this requirement.

Core Courses

<u>CHEG 112</u>	Introduction to Chemical Engineering	3 ^{1S}
<u>CHEG 231</u>	Chemical Engineering Thermodynamics	3 ^{2F}
<u>CHEG 320</u>	Engineering Economics and Risk Assessment	3 ^{3S}
<u>CHEG 325</u>	Chemical Engineering Thermodynamics	3 ^{2S}
<u>CHEG 332</u>	Chemical Engineering Kinetics	3 ^{3F}
<u>CHEG 341</u>	Fluid Mechanics	3 ^{3F}
<u>CHEG 342</u>	Heat and Mass Transfer	3 ^{3S}
<u>CHEG 345</u>	Chemical Engineering Laboratory I	3 ^{3S}
<u>CHEG 401</u>	Chemical Process Dynamics and Control	3 ^{4F}
<u>CHEG 432</u>	Chemical Process Analysis (DLE)	3 ^{4S}
<u>CHEG 443</u>	Mass Transfer Operations	3 ^{4F}
<u>CHEG 445</u>	Chemical Engineering Laboratory II	3 ^{4F}
<u>CHEM 111</u>	General Chemistry	3 ^{1F}
<u>CHEM 112</u>	General Chemistry	3 ^{1S}
<u>CHEM 220</u>	Quantitative Analysis	3 ^{2F}
<u>CHEM 221</u>	Quantitative Analysis Laboratory	1 ^{2F}
<u>CHEM 331</u>	Organic Chemistry	3 ^{3F}

<u>CHEM 332</u>	Organic Chemistry	3 ^{3S}
or <u>CHEM 527</u>	Introductory Biochemistry	
<u>CHEM 333</u>	Organic Chemistry Laboratory I (lecture only)	1 ^{3F}
<u>CHEM 444</u>	Physical Chemistry	3 ^{2S}
<u>CHEM 445</u>	Physical Chemistry Laboratory I	1 ^{2S}
The student has the option of taking two credits of <u>CHEM 333</u> Organic Chemistry Laboratory (laboratory and lecture) and not taking <u>CHEM 445</u> Physical Chemistry Lab I.		
<u>CISC 106</u>	General Computer Science for Engineers	3 ^{1F}
<u>EGGG 101</u>	Introduction to Engineering (FYE)	2 ^{1F}
<u>MATH 242</u>	Analytic Geometry and Calculus B	4 ^{1F}
<u>MATH 243</u>	Analytic Geometry and Calculus C	4 ^{1S}
<u>MATH 305/CHEG 305</u>	Applied Mathematics for Chemical Engineering	3 ^{2S}
<u>MSEG 302</u>	Materials Science for Engineers	3 ^{2F}
<u>PHYS 207</u>	Fundamentals of Physics I	4 ^{1S}
<u>PHYS 208</u>	Fundamentals of Physics II	4 ^{2F}

TECHNICAL ELECTIVES

The student must take four General Technical Electives (12 credits) and three Chemical Engineering Electives (9 credits) OR, upon approval by her/his academic advisor, take three General Technical Electives (9 credits) and four Chemical Engineering Electives (12 credits). In either case the student must complete a minimum of 21 credits of General Technical and Chemical Engineering Elective courses.

General Technical Electives

12-9

The purpose of the technical electives is to advance the scientific or engineering background of the chemical engineers. The technical electives program consists of a minimum of twelve credits taken from the College of Engineering and the College of Arts and Sciences (see below). At least three of these courses (nine credits) must be at the intermediate level (generally 300-600). Students should select their technical electives in the spring of sophomore year to avoid scheduling conflicts. Students should formulate an academic plan for their technical and Chemical Engineering electives with the assistance of their academic advisor.

The technical elective program is under constant review by the faculty. An updated list is available in the department office, and a formal mechanism exists to make substitutions coupled with the Chemical Engineering Technical Electives to obtain a technical concentration.

Chemical Engineering Electives

9-12

The curriculum provides three Chemical Engineering Electives in the senior year. In addition, the student can exchange one of the General Technical Electives provided in the senior year for a Chemical Engineering Elective after consultation with the academic advisor. These courses are intended to provide some flexibility in selecting a Chemical Engineering program at the advanced level. Students should decide with the assistance of their advisor if they should conduct a program of independent research and then choose their course elective(s). Chemical

Engineering Electives are defined as follows: any Chemical Engineering course numbered 466 to 474; UNIV 401/UNIV 402 Senior Thesis (directed by a Chemical Engineering faculty); any 600- or 800-level course in Chemical Engineering. Courses at the 600 and 800-level are graduate courses open, with the consent of the instructor, to students with senior standing.

CREDITS TO TOTAL A MINIMUM OF

126

CONCENTRATIONS

The General Technical Electives and the Chemical Engineering Electives can be coupled to provide a more intense concentration in an area of interest. The grouping below is an example of this approach.

CHEMISTRY

CHEM 457

Inorganic Chemistry

CHEM 527

Introductory Biochemistry

CHEG 606

Introduction to Catalysis

CHEG 616

Chemistry and Physics of Surfaces and Interfaces

CHEG 617

Colloid Science and Engineering