REQUEST TO COLLEGE CURRICULUM COMMITTEE FOR CURRICULAR IMPROVEMENTS

DEPARTMENT: CHP  PROPOSED EFFECTIVE SEMESTER: Spring '18  COLLEGE: CEAS

PROPOSED IMPROVEMENTS

Academic Program
☐ New degree*
☐ New major*
☐ New curriculum*
☐ New concentration*
☐ New certificate
☐ New minor
☐ Revised major
☐ Revised minor
☐ Admission requirements
☐ Graduation requirements
☐ Deletion ☐ Transfer
☐ Other (explain**)

Substantive Course Changes
☐ New course
☐ Pre or Co-requisites
☐ Deletion (required by others)
☐ Course #, different level
☐ Credit hours
☐ Enrollment restriction
☐ Course-level restriction
☐ Prefix ☐ Title and description
☐ Other (explain**)

Misc. Course Changes
☐ Title
☐ Description (attach current & proposed)
☐ Deletion (not required by others)
☐ Course #, same level
☐ Variable credit
☐ Credit/no credit
☐ Cross-listing
☐ COGE reapproval
☐ Other (explain**)


Title of degree, curriculum, major, minor, concentration, or certificate: BSE in Paper Engineering

Existing course prefix and #:  Proposed course prefix and #:  Credit hours:

Existing course title:  Proposed course title:

Existing course prerequisite & co-requisite(s):
Proposed course prerequisite(s)
If there are multiple prerequisites, connect with "and" or "or". To remove prerequisites, enter "none."

Proposed course co-requisite(s)
If there are multiple corequisites, they are always joined by "and."

Proposed course prerequisite(s) that can also be taken concurrently:
Is there a minimum grade for the prerequisites or corequisites?
The default grades are D for undergraduates and C for graduates.

Major/minor or classification restrictions:
List the Banner 4 character codes and whether they should be included or excluded.

For 5000 level prerequisites & corequisites: Do these apply to: (circle one) undergraduates graduates both

Specifications for University Schedule of Classes:
a. Course title (maximum of 30 spaces):
b. Multi-topic course: ☐ No ☐ Yes
c. Repeatable for credit: ☐ No ☐ Yes
d. Mandatory credit/no credit: ☐ No ☐ Yes
e. Type of class and contact hours per week (check type and indicate hours as appropriate)
1. ☐ Lecture 3. ☐ Lecture/lab/discussion
2. ☐ Lab or discussion 4. ☐ Seminar or ☐ studio
5. ☐ Independent study
6. ☐ Supervision or practicum

CIP Code (Registrar's use only):

Chair/Director

Chair, College Curriculum Committee

Dean

Curriculum Manager: Return to dean ☐ Date  Forward to:  Date

Chair, COGE/ PEB / FS President

FOR PROPOSALS REQUIRING GSC/USC REVIEW:

☐ Approve ☐ Disapprove  Chair, GSC/USC  Date

☐ Approve ☐ Disapprove  Provost  Date

Revised May 2007. All previous forms are obsolete and should not be used.
1. Explain briefly and clearly the proposed improvement.

   **Renaming the 'Emphasis in Paper Engineering' as 'Emphasis in Process Engineering' in Paper Engineering**

2. Rationale. Give your reason(s) for the proposed improvement. (If your proposal includes prerequisites, justify those, too.)

   The emphasis name will be different from the degree's name and also will reflect the content of the emphasis courses.

3. Effect on other colleges, departments or programs. If consultation with others is required, attach evidence of consultation and support. If objections have been raised, document the resolution. Demonstrate that the program you propose is not a duplication of an existing one.

   None

4. Effect on your department's programs. Show how the proposed change fits with other departmental offerings.

   None

5. Effects on enrolled students: Are program conflicts avoided? Will your proposal make it easier or harder for students to meet graduation requirements? Can students complete the program in a reasonable time? Show that you have considered scheduling needs and demands on students' time. If a required course will be offered during summer only, provide a rationale.

   No effect

6. Student or external market demand. What is your anticipated student audience? What evidence of student or market demand or need exists? What is the estimated enrollment? What other factors make your proposal beneficial to students?

   No change

7. Effects on resources. Explain how your proposal would affect department and University resources, including faculty, equipment, space, technology, and library holdings. Tell how you will staff additions to the program. If more advising will be needed, how will you provide for it? How often will course(s) be offered? What will be the initial one-time costs and the ongoing base-funding costs for the proposed program? (Attach additional pages, as necessary.)

   No effect

8. General education criteria. For a general education course, indicate how this course will meet the criteria for the area or proficiency. (See the General Education Policy for descriptions of each area and proficiency and the criteria. Attach additional pages as necessary. Attach a syllabus if (a) proposing a new course, (b) requesting certification for baccalaureate-level writing, or (c) requesting reapproval of an existing course.)

   Not Applicable

9. List the learning outcomes for the proposed course or the revised or proposed major, minor, or concentration. These are the outcomes that the department will use for future assessments of the course or program.

   No change in learning outcomes of the program.

10. Describe how this curriculum change is a response to assessment outcomes that are part of a departmental or college assessment plan or informal assessment activities

    Result of internal assessment

11. (Undergraduate proposals only) Describe, in detail, how this curriculum change affects transfer articulation for Michigan community colleges. For course changes, include detail on necessary changes to transfer articulation from Michigan community college courses. For new majors or minors, describe transfer guidelines to be developed with Michigan community colleges. For revisions to majors or minors, describe necessary revisions to Michigan community college guidelines. Department chairs should seek assistance from college advising directors or from the admissions office in completing this section. 

    Not Applicable
Catalog Copy for Paper Engineering (cumulative for all the changes)

Paper Engineering

First Semester (17 hours)

- General Education Credits: 3 hours
  Pre-engineering requirement
- CHEM 1100 - General Chemistry I Credits: 3 hours
- Pre-engineering requirement
- CHEM 1110 - General Chemistry Laboratory I Credits: 1 hour
- Pre-engineering requirement
- IEE 1020 - Technical Communication Credits: 3 hours
- Pre-engineering requirement
- MATH 1220 - Calculus I Credits: 4 hours
  or
- MATH 1700 - Calculus I, Science and Engineering Credits: 4 hours
  Pre-engineering requirement
- PAPR 1000 - Introduction to Pulp and Paper Manufacture Credits: 3 hours

Second Semester (16 hours)

- General Education Credits: 2 hours
- CHEG 1810 - Introduction to Chemical Engineering Computation Credits: 2 hours
- Pre-engineering requirement
- CHEM 1120 - General Chemistry II Credits: 3 hours
- Pre-engineering requirement
- CHEM 1130 - General Chemistry Laboratory II Credits: 1 hour
- Pre-engineering requirement
- MATH 1230 - Calculus II Credits: 4 hours
  or
- MATH 1710 - Calculus II, Science and Engineering Credits: 4 hours
  Pre-engineering requirement
- PAPR 2040 - Stock Preparation and Papermaking Credits: 4 hours
  Pre-engineering requirement
Third Semester (19 hours)

- CHEM 3750 - Organic Chemistry I Credits: 3 hours
- CHEM 3760 - Organic Chemistry Lab I Credits: 1 hour
- ECON 2010 - Principles of Microeconomics Credits: 3 hours
- Pre-engineering requirement
- EIE 2610 - Engineering Statistics Credits: 3 hours
- PAPR 2550 - Physics I Lab Credits: 4 hours
- PHYS 2050 - University Physics I Credits: 4 hours
- Pre-engineering requirement
- PHYS 2060 - University Physics I Laboratory Credits: 1 hour
- Pre-engineering requirement

Fourth Semester (20 hours)

- Emphasis Elective Credits: 4 hours
- CHEG 2611 - Environmental Engineering I Credits: 3 hours
- Pre-engineering requirement
- CHEG 2660 - Material and Energy Balance Credits: 4 hours
- MATH 2720 - Multivariate Calculus and Matrix Algebra Credits: 4 hours
- Pre-engineering requirement
- PHYS 2070 - University Physics II Credits: 4 hours
- PHYS 2080 - University Physics II Laboratory Credits: 1 hour

Fifth Semester (18 hours)

- General Education Credits: 4 hours
- General Education Credits: 3 hours
- Emphasis Elective Credits: 4 hours
- CHEG 3110 - Unit Operations in Chemical Engineering I Credits: 3 hours
- PAPR 3030 - Pulping and Bleaching Credits: 4 hours

Sixth Semester (16 hours)

- General Education Credits: 3 hours
- Emphasis Elective Credits: 3 hours
- CHEG 3120 - Unit Operations in Chemical Engineering II Credits: 3 hours
- MATH 3740 - Differential Equations and Linear Algebra Credits: 4 hours
- PAPR 3330 - Carbohydrate and Lipid Chemistry Credits: 3 hours
• OR
  • CHEM 3770 Organic Chemistry II Credits: 3 hours

Seventh Semester (15 hours)

• CHEG 4830 - Process Control I Credits: 4 hours
• CHEM 4300 - Physical Chemistry I Credits: 3 hours
• CHP 3100 - Work Experience/Co-op Credits: 1 hour
• PAPR 4400 - Seminar Credits: 1 hour
• PAPR 4600 - Plant Economics and Project Design Credits: 3 hours
• PAPR 4850 - Research Design Credits: 3 hours

Eighth Semester (14 hours)

• Emphasis Elective Credits: 3 hours
• Emphasis Elective Credits: 3 hours
• CHEG 4811 - Unit Operations Lab: Fluid Flow and Heat Transfer Credits: 1 hour
• PAPR 4300 - Surface and Wet End Science Credits: 3 hours
• CHEG 4400 or GPS 4400PAPR-4400 - Seminar Credits: 1 hour
• PAPR 4860 - Independent Research Credits: 3 hours

Areas of Emphasis

Emphasis in Process Paper-Engineering (17 hours minimum)

Required Electives (4 hours)

• PAPR 2420 - Coating Credits: 4 hours

Elective Courses (choose 13 hours minimum):

• CHEG 3200 - Chemical Engineering Thermodynamics Credits: 3 hours
• CHEG 3810 - Computer Modeling and Simulation - Chemical Processes Credits: 1 hour
• Preferred Elective
• CHEG 4100 - Chemical Reaction Engineering Credits: 3 hours
• CHP 3100 - Work Experience/Co-op Credits: 1 hour
• ECE 2100 - Circuit Analysis Credits: 4 hours
• GPS 5100 - Printability Analysis Credits: 3 hours
• IEE 3100 - Engineering Economy Credits: 3 hours
• (Another course in IEE, MGMT, or COM can be substituted for IEE 3100 with approval of the advisor.)
• ME 2560 - Statics and Mechanics of Materials Credits: 34 hours
• Preferred Elective
• CHEGPAPR 4840 - Process Control
• STAT 3670 - Statistical Design and Analysis of Experiments Credits: 4 hours
• Preferred Elective

Emphasis in Environmental Engineering and Sustainable Processes (17 hours minimum)

Required Electives (39 hours)

• CHEG 3611 - Advanced Topics in Environmental Engineering Credits: 3 hours
• CHEG 444061+ — Energy Management Engineering Sustainable Chemical Process Development Credits: 3 hours

Elective Courses (choose 148 hours minimum):

• CHP 3100 - Work Experience/Co-op Credits: 1 hour
• PAPR 3531 - Wastewater Treatment Systems Credits: 3 hours
• PAPR 2420 - Costing Credits: 4 hours
• ECON 3190 - Environmental Economics Credits: 3 hours
• BIOS 2320 - Microbiology and Infectious Diseases Credits: 4 hours
• CHEG 3200 - Chemical Engineering Thermodynamics Credits: 3 hours
• CHEG 4100 - Chemical Reaction Engineering Credits: 3 hours
• CHEG 4440 — Energy Management Engineering Credits: 3 hours
• sCHEM 2250 - Quantitative Analysis Credits: 3 hours
• CHEM 2260 - Quantitative Analysis Laboratory Credits: 1 hour
• CHEM 3550 - Introductory Biochemistry Credits: 3 hours
• CHEM 3560 - Introductory Biochemistry Laboratory Credits: 1 hour
• IEE 3100 - Engineering Economy Credits: 3 hours