For Minor Changes in existing curriculum (check all that apply):

- revised courses
- new course sequence
- new courses added
- change in total cr. hrs.
- new program objectives*
- new accreditation/assessment requirements

*See SUNY Guidelines

1. Rationale for Change

Please provide an explanatory narrative outlining the rationale for the change, and the impacts of this change on the learning outcomes of the curriculum:

BPE program has been accredited ABET subjected to the criteria with Chemical, Biochemical, Biomolecular and Similarly Named Engineering Programs. The curriculum design follows with a general chemical engineering curriculum with an emphasis on biological processes. The changes reflect the following

1). The flow and pre-requisite of the courses. BPE 421 Bioprocess Kinetics and Systems Engineering currently cover and/or needs molecular / cell biology, molecular kinetics, reaction equilibrium thermodynamics, biocatalysis, reaction engineering, and reactivity, biohazards and process safety. The course is overloaded with materials from 4 courses that are not currently offered.
Streamline the thermodynamics contents with PSE 361 and BPE 362, instead of the overlapping FCH 360 and PSE 360. Addition of BPE 321 Biomolecular Kinetics and BPE 225 Molecular Biology of Cell, to leave room for proper Bioreaction engineering coverage and reactivity hazard / biohazard / process safety coverage.

2). The comments from student exit (graduation and transfer out) interviews: BPE curriculum is too close to the Paper Engineering curriculum and not enough biological contents.
Addition of two courses aimed to strength the biological contents: BPE 321 and BPE 225.

3). Interaction with partners from other similar programs: too little background or courses with biological contents.
Addition of two courses aimed to strength the biological contents: BPE 321 and BPE s25.
4). The comments from student exit (graduation and transfer out) interviews: not clear why GNE 330 is there, which was offered by graduate students who have no professional engineering experience.

GNE 330 is removed from the curriculum and the contents are taught in other courses, such as BPE 132 and BPE 133.

5). Product design has become an important aspect of Chemical Engineering curriculum. BPE 450 is thus added to reflect the needs.

2. Institutional Impact:

Changes from existing condition:

Anticipated Enrollment or Enrollment Change: to increase

Faculty or Staffing Requirements: No change

Technology, Computing Resources, and Classroom Resource Demands: No change

Change in Accreditation Requirements: None

Changes to Assessment Plan: No

Library Resource Requirements: No change

3. Catalog Narrative:

Please attach to this proposal form a copy of the current catalog description in MS Word format, with revisions shown in “track changes”.

The bioprocess engineering program prepares students for work in the emerging careers as engineers in the bioprocessing and biofuels or biotechnology industry to produce energy and related chemical products from renewable resources filling positions that are typically filled by chemical engineers with additional training. Students in this The bioprocess engineering program master a variety of subjects that are normally found seeks to educate engineers versed in the chemical engineering program and supplement those studies with advanced courses specific to bioprocess engineering. The program focuses on the use of sustainable renewable biomass to replace petroleum in chemicals fields in, biologics / biopharmaceuticals, bioprocess, biotechnology, biochemical and bioenergy and industrial products, with a focus on developing products from sustainable sources in a sustainable manner or through the applications of green chemistry. The bioprocess engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org following the criteria of Chemical, Biochemical, Biomolecular and Similarly Named Engineering Programs since 2012 (https://www.aiche.org/abet-accredited-universities).
4. Curriculum Transition Plan:

Please provide a narrative description of your plan for transitioning from your existing curriculum to the proposed new curriculum. Please provide specific dates for implementing curriculum changes, overlap periods where old and new curricula may exist simultaneously, and final phase out of old curricula. Please also include impacts and mitigating considerations for transfer students and students in mid-program during implementation, impacts of changes in semester delivery of existing courses, addition of new courses within a particular semester, etc.

New courses will be made available when students are anticipated to have a need. Courses to be phased out gradually with the first year, so all students will be able to take their required courses to graduate.

We anticipated large number of transfer students, especially the large cohort of BUCT students coming for their last year of studies. New required courses, such as BPE 450, for the senior year, will be developed for the first year after the curriculum is in place.

For small groups of transfer students, the new courses and/or courses shifted semesters will be evaluated based on the individual needs and advisors will be trained to deal with these students’ needs individually.

5. Approval Signatures:

Signatures below, or attached letters, indicate that the affected departments, programs or units have been notified of this proposal and have had an opportunity to assess the impact of the proposal on their respective units. If departments did not respond to your notification, you may wish to document your effort to contact them.

Affected Academic Department(s) or Program(s):

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<th>Name of Chair/Program Director</th>
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<th>Department/Program 2</th>
<th>Name of Chair/Program Director</th>
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*If more/less than three Departments/Programs, please add/delete lines as appropriate.*
Other Units

Library Director

Computing and Network Services

Physical Plant

Forest Properties

Environmental Health and Safety

Admissions

Other

Office of the Provost

Signature below, or attached letter, indicates that the Provost either a) agrees that there is no need for additional resources from the College; or b) indicates willingness to provide the extra support to the department.

Provost Signature

Or letter attached ☐
6. Proposer Information and Department Chair Affirmation:

Contact Person:

Name: Shijie Liu ___________________________ Department: Paper and Bioprocess Engineering __
Email: sliu@esf.edu _______________________ Phone: 6885 __________________________

This proposal has been reviewed and approved by the sponsoring Department. Affected departments
have been notified and given the opportunity to provide feedback. Department resources are or will be
made available to support this curriculum revision, or a plan is in place to meet the resource needs as
identified in the Institutional Impacts section of this proposal (see Section 2, above).

Name: Bandaru V. Ramarao ___________________________ Date: __________
Department Chair (or designated curriculum representative)

Signature: ___________________________ Or letter attached ☐
Department Chair (or designated curriculum representative)
7. Final Approvals:

__________________________  ____________
Curriculum Committee       Date

__________________________  ____________
Faculty Governance          Date

__________________________  ____________
Provost                     Date