This course proposal form should be completed when introducing a new course or a revision of an existing course. The proposal will be reviewed by the Committee on Curriculum, or, in the case of minor revisions, will be approved administratively by the Associate Provost for Instruction.

This Course Proposal must be completed according to the guidelines provided in Course Proposal Form – Instructions and Guidance. Please see the last page of Course Proposal Form – Instructions and Guidance, for instructions on how this Course Proposal should be submitted to the Committee on Curriculum for review.

Date: 11/19/2019

1. Course Information:

1.1 Course Prefix and Number: PSE 665
   Course Title: Fiber and Paper Properties
   (If a new or renumbered course, please check with the Registrar regarding the use or reuse of the course number)

1.2 □ This is a New Course.
   OR
   □ This is a Major Course Revision
   OR
   ☑ This is a Minor Course Revision

   If this is a Course Revision, please see Course Proposal Form – Instructions and Guidance to determine if your revision is major or minor. Indicate below the reason(s) for the revision.

   (Please check all that apply)

   □ Course Number/Division  □ Learning Outcomes  □ Institutional Resources
   □ Title  □ Concepts, Content  □ Semester Offered
   ☑ Credit hours  □ Catalog Description  □ Course Inactivation
   □ Pre- or Co-requisite(s)  □ Instructional Methods  □ Course Reactivation
   □ Format  □ General Education

1.3 General Education knowledge and skills area (if applicable): If none, check here □

   □ American History  □ Humanities  □ Other World Civilizations
   □ The Arts  □ Mathematics  □ Social Sciences
   □ Basic Communication  □ Natural Sciences  □ Western Civilization
2. Proposer Need Statement:

2.1 Describe why this course (or course revision) is needed to meet current or proposed goals and outcomes of the program or College, and, if a revision, provide an explanation of and justification for the revision. Increase in credit hours to reflect the amount of work performed by the students.

2.2 List the pre-requisite or co-requisite courses (taught within the home department or taught by another department) and explain their relationship to the proposed course. PSE 200 Introduction to Papermaking or approval of Instructor

2.3 Explain the impact of this course in meeting the goals and outcomes of other Departments/programs (if any). NA

2.4 If the proposed course is designed to fulfill SUNY General Education Requirements, the Associate Provost for Instruction must review this proposal to ensure that General Education Requirements will be met for the specified knowledge area (See Instructions and Guidance). Please provide an explanation of how this course fulfills SUNY General Education Requirements.

2.5 What are the staffing requirements (instructor, TA, Lab tech, etc.) for this course? If a new course, are there new staffing needs or are there adequate staff members already in place? If a revised course, are there additional staffing needs? No change

2.6 What Department (or extra-Department) resources are or will be made available to support the course or course revision? Classroom and lab

2.7 Anticipated Enrollment (enter where applicable)

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<th>Fall Semester:</th>
<th>Spring Semester:</th>
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2.8 Anticipated frequency of class meetings. 3 hours lecture, 3 hours lab
3. DETAILED COURSE DESCRIPTION

3.1 COURSE IDENTIFICATION AND FORMAT:

3.1.1 Course Prefix and Number: PSE 665
3.1.2 Course Name: Fiber and Paper Properties
3.1.3 Credit Hours: 4
3.1.4 Semester (check all that apply): Fall ☒ Spring ☐ Summer ☐
3.1.5 Format (check as appropriate): Lecture ☒ Online ☐ Lab ☒ Field ☐ Other ☐ (explain)
3.1.6 Contact hours per week: 6
3.1.7 Prerequisite(s) – if none, please enter “None” (Be specific, as Upper Division courses and Graduate courses will likely have some pre-requisite knowledge) PSE 202

3.2 SCOPE:

3.2.1 Level of Instruction (check one, or two if a shared resource course):
   Lower Division ☐ Upper Division ☐
   Beginning Graduate ☒ Advanced Graduate ☐

3.2.2 Relation to curriculum or to other ESF or Syracuse University courses:
   a. Is this a required course? No ☐ Yes ☒
   If Yes, please list the program(s) for which it is a requirement:
   b. Is this an elective course within your department? No ☐ Yes ☒
   c. Is enrollment in this course restricted? No ☐ Yes ☒
   If Yes, please explain:
   d. Are other ESF or SU courses similar or identical to this course? No ☐ Yes ☒
   If Yes, please identify the courses:
   e. Is this course a shared resource offering (i.e. is there a graduate or undergraduate concurrent offering)? No ☐ Yes ☒
   If Yes, what is the course number of the concurrent offering? PSE 465

3.3 STUDENT LEARNING OUTCOMES:

Identify the student learning outcomes associated with this course. After completing this course the student should be able to:

1. Discuss the various physical, optical, and chemical properties of papermaking fibers and paper
2. Understand and perform different paper testing procedures
3. Critically discuss the results of the determination of paper properties and suggest the measures which could be taken to improve the quality of paper
4. Know the relationships between the properties of papermaking fibers and non-fibrous additives and the quality of paper in relation to the manufacturing process used in the paper production
5. Explain the process of networking of fibers and the effects of non-fibrous additives on this process

6. Read, understand, and interpret data on paper properties and factors which influence paper quality

7. Perform independent research through resources and documentation on the properties of fibers, non-fibrous paper additives, and different paper grades

8. Synthesize the results obtained in investigations of paper quality and present these results in comparison with data from primary and secondary sources in research paper format

9. Present the results of independent research projects in oral presentations

3.4 MAJOR CONCEPTS, PROCESSES or TOOLS:

Identify the course content and themes (e.g. Table of Contents) consistent with the learning domains and outcomes.

This course is presented in three hours of lectures and three hours of laboratory per week. The course includes a detailed discussion of the physico-chemical and optical properties of fibers and nonfibrous paper additives, and their effect on the paper quality in relation to the paper manufacturing process. Structural, mechanical, and optical properties of paper are studied. Properties, advantages, and disadvantages of laboratory tests are discussed after a seminar-type oral presentation and demonstration of the test performed by individual students. Laboratory projects involve testing of different paper grades by students organized in teams. The results of paper testing are discussed in individual written reports. The selected results are summarized in a midterm and a final individual report, which are submitted in the form of a research paper supported by science citations selected by the student and presented orally in seminar-type discussion during class.

3.5 INSTRUCTIONAL METHODS:

Identify the methods used to meet the course outcomes, as well as the principal instructional methods. Lectures and discussion of current relevant literature which includes two independent research projects submitted as Literature Review and presented as in-class PPT presentations; team laboratory work with individual reports submitted in the form of peer-reviewed research papers (four reports); student performance is assessed based on four quizzes, two exams, final exam, lab performance including four reports, two independent research projects, and in-class participation

3.6 CATALOG DESCRIPTION

Provide the course description using the precise format to be included in the ESF catalog (i.e. course number and title; format; brief description; semester(s) offered; and pre-/co-requisites). Please do not exceed 1000 characters.

Three hours of lecture and three hours of laboratory per week. Advanced science course in evaluation, study, and discussion of the physical, optical, and chemical properties of fibers, nonfibrous paper additives, and paper. The interrelationships between fibers and nonfibrous paper additives, and manufacturing methods, and their effects on the final paper quality of paper are
discussed. Independent academic research required. Fall. Prerequisite: PSE202 Introduction to Papermaking

3.7 COURSE HISTORY:

Provide the dates of prior approval of this course, and its revision history. This course was taught at ESF as PSE665 Paper Properties until 2011. Last approved: 05/12/2011; 12/17/1975

3.7.1 Relationship to current ESF courses

This course is replacing a current ESF course YES NO

If NO, then proceed to section 4 below.

If YES, then provide below the number and name of the course to be deactivated and removed from the catalog once this course proposal has been approved:

Course Number (of the course to be replaced)
Course Name (of the course to be replaced)

If the course to be replaced is used by departments other than the department sponsoring this proposal, please indicate below which departments are affected and the date they were notified about the course replacement.

Department: Date of Notification:
Department: Date of Notification:
Department: Date of Notification:
Department: Date of Notification:
4. Institutional Impacts:

This section pertains to forecasting institutional resource needs to support the course or course revision. Provide clear statements regarding the needs and current availability (or absence) of resources. Note that, if this is a course revision, only the impacts of the revision should be included.

Staffing needs: No change

Classroom resources (e.g. physical facilities in a laboratory, lecture hall, flexible space, academic computing): No changes

Technology Resources:

Computing Resources (software licensing, hardware, access):

Library Resources (subscriptions, services):

Transportation Requirements (budget, fees, fleet vehicles):

Forest Properties or Field Practicum Facilities:
5. Health and Safety Considerations:

Will any of the conditions or situations outlined below be present in association with the course? Yes / No

5.1. Will substances with any of the following properties be used during instruction: flammability, toxicity, corrosivity, reactivity, registered pesticide, legally controlled, or other characteristics with the potential to cause harm or injury? ☑ / ✗

5.2. Will any physical hazards be present during instruction? (e.g., machines that need safety guards; razor blades or syringes; compressed gases, etc.). ☑ / ✗

5.3. Will any biological hazards be present during instruction? (e.g., handling animals (rabies or hantavirus); cultures or stocks of infectious agents (fungal spores, viruses, bacteria, etc.). ☑ / ✗

5.4. Will any radiation hazards be present during instruction? (e.g., radioisotopes, X-rays, ultraviolet rays, lasers, etc.). ☑ / ✗

5.5. Will any electrical equipment that, due to its design, location, or method of use, pose any threat to safety during instruction? (Give considerable thought to electrical use outdoors, or any potentially wet location.). ☑ / ✗

5.6. Will there be any personal safety issues related to the class? (e.g., due to time of day or location, at the end of any organized class exercise, will students be in danger of physical assault, etc.). ☑ / ✗

5.7. Will any students be driving official state or research sponsored land or water vehicles during any class or instructional exercise? ☑ / ✗

5.8. Will any type of personal protective equipment be necessary during class exercises? (e.g., hard-hats, eye/face protection, hearing protection, hand/foot protection, lab coat, visibility clothing, etc.) ☑ / ☑

If the answer was “Yes” to any of the HEALTH AND SAFETY questions, please explain:

For lab and field courses to which all answers are “no”, you should explain that here, also. Normally, we would expect some safety precautions for such courses. 5.8—From time to time gloves and eye protection are needed.
6. Coordination and Consultation

Emails/letters, as noted below and attached to this proposal, or signatures below, 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.

**Affected Academic Department(s) or Program(s) – other than the sponsoring department:**

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[if more than three Departments/Programs, please continue on a separate page]

**Other Units:**

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<th>Associate Provost for Instruction &amp; Dean of the Graduate School (for Gen Ed courses only)</th>
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7. Proposer Information and Sponsoring Department Chair Affirmation:

Contact Person:

Name: Biljana Bujanovic_______________________________ Department: PBE_______________________

Email: bbujanovic@esf.edu_______________________________ Phone: X6907___________________________

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 the course, or a plan is in place to meet the resource needs as identified in the Institutional Impacts section of this proposal (see Section 4, above).

Name: Bandaru V. Ramarao_______________________________________________________
Date: ________

Department Chair (or designated curriculum representative)

Signature:_________________________________________________________ Or letter attached □

Department Chair (or designated curriculum representative)

8. Approvals:

__________________________________________________ ____________ ______
Curriculum Committee        Date

__________________________________________________ ____________ ______
Faculty Governance        Date

__________________________________________________ ___________ _______
Provost        Date