ESF Course Proposal
Committee on Curriculum - ESF Faculty Governance
Office of Instruction & Graduate Studies

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: August 28, 2017

1. Course Information:

1.1 Course Prefix and Number: RMS 622
Course Title: Composite Materials for Sustainable Construction
(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. This is a course needed for the graduate option in Wood Science in the RMS graduate program.

• RMS graduate options in wood science have the overall objective of having students look at the broad environmental implications of the construction process and the use of wood as a material, to be efficient and environmentally responsible in their use of materials, and to integrate current technology to a practicum, thesis or dissertation, as appropriate for their graduate degree.

• This course supports students in their development of knowledge and understanding the structure and physical properties of sustainable and renewable materials as used for engineered sustainable composites, performance-enhancing treatments, and mechanical properties of renewable composites.

• Presenting this course with an RMS graduate number and title better presents our graduate program and will facilitate student recruitment and program growth.

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. RMS 387/587.

2.3 Explain the impact of this course in meeting the goals and outcomes of other Departments/programs (if any). None

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. NA

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? Same as for RMS 422

2.6 What Department (or extra-Department) resources are or will be made available to support the course or course revision? Same as for RMS 422

2.7 Anticipated Enrollment (enter where applicable)

<table>
<thead>
<tr>
<th>Fall Semester:</th>
<th>Spring Semester:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summer Semester:</th>
</tr>
</thead>
</table>

2.8 Anticipated frequency of class meetings. 2 lectures, 1 lab per week
3. DETAILED COURSE DESCRIPTION

3.1 COURSE IDENTIFICATION AND FORMAT:

3.1.1 Course Prefix and Number: RMS 622
3.1.2 Course Name: Composite Materials for Sustainable Construction
3.1.3 Credit Hours: 3
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: 3
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) RMS 387/587

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? RMS 422

3.3 STUDENT LEARNING OUTCOMES:

Identify the student learning outcomes associated with this course. 1. Select composite materials for structural applications;
2. Describe test methods used for composites;
3. Specify composites maintenance programs;
4. Select adhesives and finishes for composite systems;
5. Specify preservatives used on composites;
6. Identify and design to prevent failures in service;
7. Apply life-cycle analysis to modern composites.
8. Characterize current and potential future raw materials as furnish and engineered components for sustainable composites;

9. Characterize current and potential future glues and adhesives for sustainable composites, including those with beneficial environmental performance profiles;

10. Characterize current and potential future physical and biological performance enhancing preservatives and related compounds contributing to the production and use of sustainable engineered composites

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 is a materials science course that relates the structure of composite materials to performance in construction systems. Physical and mechanical properties are related to chemical makeup and manufacturing processes. Multiphase materials based on polymers, metals, ceramics and wood fiber are tested and evaluated according to ASTM and other standards.

The student will be able to select materials based on structural needs and specify them for various applications. The environmental implications and life-cycle analysis will be covered. Sustainability issues and renewability of materials are major focal areas. Hands-on testing serves to demonstrate theoretical concepts. The student will be able to integrate the materials, their properties, uses and environmental implications of the use of such materials into a comprehensive evaluative paper.

3.5 INSTRUCTIONAL METHODS:

Identify the methods used to meet the course outcomes, as well as the principal instructional methods. Lecture, demonstrations, examinations, quizzes, laboratory exercises.

Research and preparation of a literature survey report on a current topic related to the manufacture, specification, use or performance of composite materials for sustainable construction, and present the topic as a comprehensive paper and class presentation in the context of engineered composites for sustainable construction.

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. RMS 622 Composite Materials for Sustainable Construction (3)

Two hours of lecture, three hours of laboratory per week. Properties, manufacture and design of multiphase materials. Applications and testing for service in sustainable construction systems and life-cycle analysis. Evaluation of current practices and materials. Spring.

Prerequisite(s): GNE 271, Statics, and RMS 387 or RMS 587, Renewable Materials for Sustainable Construction

3.7 COURSE HISTORY:
Provide the dates of prior approval of this course, and its revision history. New course for the graduate program in Sustainable Construction Management and Wood Science (SCMWS) presented as a shared resource course with CME 422, approved 2014. Submitted for change in prefix from CME to RMS August 28, 2017.

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)  CME 622
Course Name (of the course to be replaced)  Composite Materials for Sustainable Construction

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:  NA  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.

<table>
<thead>
<tr>
<th>Staffing needs:</th>
<th>Shared resource course with an existing course, RMS 422, so no additional resources are needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom resources (e.g. physical facilities in a laboratory, lecture hall, flexible space, academic computing):</td>
<td>RMS 422 classroom, Room 159 Baker, and lab, Wood Products Engineering Laboratory</td>
</tr>
<tr>
<td>Technology Resources:</td>
<td>None</td>
</tr>
<tr>
<td>Computing Resources (software licensing, hardware, access):</td>
<td>None</td>
</tr>
<tr>
<td>Library Resources (subscriptions, services):</td>
<td>None</td>
</tr>
<tr>
<td>Transportation Requirements (budget, fees, fleet vehicles) :</td>
<td>None</td>
</tr>
<tr>
<td>Forest Properties or Field Practicum Facilities:</td>
<td>None</td>
</tr>
</tbody>
</table>
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: Demonstrations of wood testing will use testing equipment equipped with guards; students will be provided with safety glasses.

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.
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:

NA
Department/Program 1

Name of Chair/Program Director

Chair Signature

Date

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

Other Units:

Associate Provost for Instruction & Dean of the Graduate School (for Gen Ed courses only)

Date

Or letter attached □

Registrar

Date

Or letter attached □

Library Director

Date

Or letter attached □

Computing and Network Services

Date

Or letter attached □

Physical Plant

Date

Or letter attached □

Forest Properties

Date

Or letter attached □

Environmental Health and Safety

Date

Or letter attached □
7. Proposer Information and Sponsoring Department Chair
Affirmation:

Contact Person:
Name: Robert Meyer ________________________________
Department: PBE ________________________________
Email: rwmeyer@esf.edu ________________________________
Phone: 6838 ________________________________

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: Gary M. Scott ________________________________
Date: _______ ________________________________
Department Chair (or designated curriculum representative)
Signature: ____________________________________________ Or letter attached ☑
Department Chair (or designated curriculum representative)

8. Approvals:

_____________________________________________ Date
Curriculum Committee ___________________________

_____________________________________________ Date
Faculty Governance _____________________________

_____________________________________________ Date
Provost _____________________________