ESF Curriculum Proposal Form

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

Date: February 24, 2012
Department: SCME
Curriculum Title: Minor in Microscopy

XX *New curriculum and/or degree program* **OR** ☐ *Changes in existing curriculum(check all that apply):*

☐ new program title	☐ new courses added	☐ new accreditation
☐ revised courses	☐ change in total cr. hrs.	☐ new assessment plan
☐ new course sequence	☐ new program objectives	☐ other significant change

Justification Narrative:

please provide an explanatory narrative outlining the need or rationale for the new curriculum or program, or justifying the need to significantly change an existing curriculum (i.e. addressing emerging or changing societal demand, addressing changing technology, focusing on a new interdisciplinary body of knowledge, etc.)

The microscopy minor is available to all undergraduates at ESF and Syracuse University, who desire knowledge of methods and applications of light and electron microscopes for research and industry. The minor will prepare students to use light and electron microscopes for applications in biology, nanotechnology, environmental medicine, chemistry, materials science, engineering, pulp and paper and others. The scanning and transmission electron microscopes are used for a wide variety of applications in industry, medicine, research in all sciences; biology, chemistry and physics, nanotechnology, computer applications. These courses will enable students to understand the technology, methods, and interpretation of images for these applications. The minor will add this technical expertise to their major field of study.

Institutional Impact:

Anticipated Enrollment: 8 per semester Change from existing condition:

New Faculty or Staffing Requirements:	none
New Technology and Classroom Resource Demands:	none; two are shared resource courses with existing courses
New \Computing Resources Requirements:	none
New Accreditation Requirements:	none
New Assessment Requirements (explain & describe):	none

New Library Resources Requirements:	none
New Transportation Requirements:	none
New Forest Properties or Field Practicum Facilities Required:	None
Impacts on other Departments at ESF (please obtain and attach response from affected departments):	None, these courses will fill elective slots
Impacts on Admissions (particularly transfer requirements and articulation agreements; please obtain and attach response from Admissions if an impact is anticipated)	none
List courses taught outside the Department at ESF:	none
List courses taught outside the Department at SU: • Accessory Instruction credit hours at SU required per student in this curriculum: • Accessory Instruction credit hours required per semester by this curriculum • Change in Accessory Instruction needs over current programs and curricula	None

Catalog Curriculum Narrative:

Please provide a narrative description of the program, the broad program objectives and learning outcomes, and a curriculum course outline using the precise format proposed for/or currently used in the ESF catalog (if revising an existing program or curriculum proposal, please attach a copy of the original MS Word file with revisions shown in "track changes"):

Microscopy Minor

The microscopy minor is available to all undergraduates at ESF and Syracuse University, who desire knowledge of methods and applications of light and electron microscopes for research and industry. The minor will prepare students to use a variety of microscopes for applications in biology, nanotechnology, environmental medicine, chemistry, materials science, engineering, pulp and paper and others.

Admission requires junior status and GPA 2.75. To enroll in the minor, students must submit a petition to their advisor, the undergraduate curriculum coordinator in their home

department, and the minor coordinator in the NC Brown Center for Ultrastructure Studies in the SCME department with final approval by the Dean of Instruction.

The minor requires 12 credits of coursework: MCR 480 Fundamentals of Microscopy (3), MCR 484 Scanning Electron Microscopy (3), MCR 485 Transmission Electron Microscopy (3), and MCR 570 Industrial Applications of Electron Microscopy (3).

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 students in mid-program during implementation, impacts of changes in semester delivery of existing courses, addition of new courses within a particular semester, etc.

These courses are not required in any major at ESF. Students will choose these courses from elective slots. There is no need for a transition plan.

ESF Curriculum Proposal Form

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

Date: February 1, 2012
Department: Department of Paper and Bioprocess Engineering
Curriculum Title: Paper and Bioprocess Engineering: Sustainable Engineering Management

☐ *New curriculum and/or degree program* **OR** ☒ *Changes in existing curriculum(check all that apply):*

☐ new program title	☐ new courses added	☐ new accreditation
☐ revised courses	☐ change in total cr. hrs.	☐ new assessment plan
☐ new course sequence	☐ new program objectives	☐ other significant change

Change from program to option

Justification Narrative:

The Committee on Instruction previously approved a new program in Sustainable Engineering Management with options in Bioprocess Engineering and Paper Engineering to be offered at ESF. The program has also been certified by the Council of Graduate Studies as a Professional Science Masters (PSM) program. However, delays in the State Education Department have prevented the implementation of as a new program. Therefore, to facilitate the offering of the program, we propose to offer it under our existing MPS degree program as a new option in the Paper and Bioprocess Engineering program. The course narrative, requirements, and description remain the same as the previously approved program.

We feel that there is a need and a significant market for this type of program. This MPS program in Sustainable Engineering Management is intended for students who:

- have a B.S. degree in an appropriate STEM field and wish to extend their technical knowledge in this area together with obtaining professional skills characterized by the “plus” courses
- have worked in the industry and wish to return for a professional degree that incorporates business skills into the program.

We have identified these two groups as potential growth areas for the department. The MPS (PSM) degree program will serve primarily the indicated industries by providing engineers and scientists with additional business training. The courses are designed to meet both personal career objectives and industry needs, and may be especially suited for non-traditional students.

The Department of Paper and Bioprocess Engineering offers MPS degrees within its Paper and Bioprocess Engineering programs in a number of options and areas of study. The proposal adds the new option of Sustainable Engineering Management to the current program offered by the Department.

Institutional Impact:

Anticipated Enrollment: 10 per semester	Change from existing condition: +10
New Faculty or Staffing Requirements:	none
New Technology and Classroom Resource Demands:	none (The additional option uses existing courses and facilities)
New \Computing Resources Requirements:	none
New Accreditation Requirements:	The curriculum has already been certified by the Council of Graduate Studies as a PSM program. No additional accreditation is anticipated.
New Assessment Requirements (explain & describe):	The option is part of our existing MPS program and will use the existing assessment procedures.
New Library Resources Requirements:	none
New Transportation Requirements:	none
New Forest Properties or Field Practicum Facilities Required:	none
Impacts on other Departments at ESF (please obtain and attach response from affected departments):	none
Impacts on Admissions (particularly transfer requirements and articulation agreements; please obtain and attach response from Admissions if an impact is anticipated)	none
List courses taught outside the Department at ESF:	See attached curriculum option courses.
List courses taught outside the Department at SU: • Accessory Instruction credit hours at SU required per student in this curriculum: • Accessory Instruction credit hours required per semester by this curriculum • Change in Accessory Instruction needs over current programs and curricula	See attached curriculum option courses 0 0 0 (While no accessory instruction courses are required, there are courses at SU that can satisfy the plus course requirements for the option.)

Catalog Curriculum Narrative:

The option in Sustainable Engineering Management allows students to investigate a variety of science and engineering topics together with courses in business, management, policy, law, and other fields to form a Professional Science Master's program (PSM) recognized by the Council of Graduate Schools. The PSM concept is an innovative graduate degree designed to allow students to pursue advanced training in science or engineering while also developing skills in the areas of business, management, and other professional skills. The educational objectives of the MPS in Sustainable Engineering Management are to produce graduates who effectively practice engineering for the design and operation of systems and can also apply their knowledge of business, management, policy, and other areas to their particular area of Sustainable Engineering Management. More information about the PSM program can be found at www.sciencemasters.com and www.cgsnet.org.

Students in this option must complete a total of 36 credit hours. The topical core of the option consists of 21 credit hours of courses in their technical field. An additional 12 credits of courses in business, management, policy, law and other areas constitute the "plus" courses in the degree. An integrative experience (3 credit hours) in the form of an internship or research experience is also required. The selection of the "plus" courses as well as technical electives allows students to develop study plans tailored to their individual interests and strengths.

Bioprocess Engineering (M.P.S.)

This area of study encompasses both the use of renewable and sustainable resources (e.g., wood) for the production of chemicals, advanced materials, fuel, and energy, as well as the use of bioprocessing technology to produce such products. Such bioproducts extend to the production of energy from renewable resources including the use of gasification, co-firing of byproducts, anerobic digestion, solar, and the production of ethanol. Courses include chemical engineering, advanced chemistry, biotechnology, and bioengineering, building on a strong base of mathematics, chemistry, and biology. Graduates will have an understanding of the technical field of Bioprocess Engineering together with a background in business and management.

Paper Engineering (M.P.S.)

Studies in this area of study deal closely with processes involved in the manufacture of pulp and paper as well as the allied industries. Courses concerned with this subject are central to a student's program, extended and enriched with selected courses in chemistry, polymers, chemical engineering, process control, applied mathematics, and computer applications. Supporting this work is an experimental pulp and paper mill with two complete paper machines, a pressurized refiner and extensive auxiliary equipment. Graduates will have an understanding of the pulp, paper, and allied industries together with a background in business and management to understand the context of the industry in society.

The MPS option in Sustainable Engineering Management is intended for students who:

- have a B.S. degree in an appropriate STEM field and wish to extend their technical knowledge in this area together with obtaining professional skills characterized by the "plus" courses
- have worked in the industry and wish to return for a professional degree that incorporates business skills into the program.

The MPS (PSM) degree program will serve primarily the indicated industries by providing engineers and scientists with additional business training. The courses are designed to meet both personal career objectives and industry needs, and may be especially suited for non-traditional students.

Expected Background

Students entering the MPS program should have a B.S. degree in a science or engineering related field. In terms of coursework, students should have the necessary prerequisites to take the courses that are required for the degree or be prepared to take these courses in prior to taking the required courses. In general, students should have taken as part of their undergraduate program at least two semesters of calculus, two semesters of general chemistry, a semester of physics, and a semester of biology. Additional chemistry, biology, and computer science courses, while not required, would be helpful.

Program Objectives

The educational objectives of the MPS in Sustainable Engineering Management are to:

1. Produce graduates who effectively practice engineering for the design and operation of systems in their particular area of Sustainable Engineering Management.

2. Produce graduates who can apply their knowledge of business, management, policy, and other areas to their particular area of Sustainable Engineering Management.

3. Produce graduates who successfully obtain professional positions requiring a strong understanding of the knowledge and skills of the engineering profession.

4. Produce graduates who are prepared to advance in the engineering profession and be successful in employment and academic opportunities.

Assessment

The assessment of this option will be based on our current assessment practices of our current MPS program in the department.

Paper and Bioprocess Engineering: Sustainable Engineering Management Option Requirements (Area of Study: Bioprocess Engineering)

Core Courses — 12 credits

- *Bioprocess Microbiology (BPE 501)** [Required]
- *Bioseparations (BPE 620)** [Required]
- *Bioreaction Engineering (BPE 542)** [Required]
- Principles of Mass and Energy Balances (ERE 570) [Required]

Engineering Elective Courses — 6 credits

- Fluid Mechanics (PSE 570)
- Transport Phenomena (BPE 535)
- Unit Process Operations (BPE 635)
- Process Dynamics & Control (PSE 677)
- Thermodynamics (PSE 561)
- Engineering Design Economics (PSE 680)
- Engineering Design (PSE 681)
- *Bioprocess Plant Design (BPE 681)**
- Water Pollution Engineering (ERE 643)
- Air Pollution Engineering (GNE 661)
- Biomass Energy (BPE 641)
- Other courses with approval

Science Elective Courses — 3 credits

- Energy Systems (ESC 525)
- Renewable Energy (ESC 535)
- Energy Markets and Regulation (ESC 622)
- Other courses with approval

"Plus" Courses — 12 credits

(Graduate-level courses in business, management, policy, law from the approved list of "plus" courses or their equivalent)

Professional Experience/Synthesis Course — 3 credits

- *Professional Experience/Synthesis (BPE 898)**
- Research in Bioprocess Engineering (BPE 798)

TOTAL — **36 credits**

**Note: Course is part of the Advanced Certificate in Bioprocessing*.

Paper and Bioprocess Engineering: Sustainable Engineering Management Option Requirements (Area of Study: Paper Engineering)

Core Courses 12 credits

- Pulping and Bleaching Processes (PSE 650) [Required]
- Fiber and Paper Processes (PSE 665) [Required]
- Papermaking Processes (PSE 668) [Required]
- Principles of Mass & Energy Balances (PSE 570) [Required]

Engineering Courses 6 credits

- Fluid Mechanics (PSE 570)
- Transport Phenomena (BPE 535)
- Process Dynamics & Control (PSE 677)
- Thermodynamics (PSE 561)
- Engineering Design Economics (PSE 680)
- Engineering Design (PSE 681)
- Water Pollution Engineering (ERE 643)
- Air Pollution Engineering (GNE 661)
- Other courses with approval

Science Elective Courses 3 credits

- Colloid and Interface Science Applications in Papermaking (PSE 667)
- Paper Pigment and Barrier Coating (PSE 666)
- Functional and Nano Additives (PSE 669)
- Management in the Paper Industry (PSE 656)
- Biorenewable Fibrous and Nonfibrous Products (PSE 638)
- Equipment Troubleshooting and Maintenance (PSE 637)
- Recycling (PSE 552)
- Other courses with approval

"Plus" Courses 12 credits

- Management in the Paper Industry (PSE 656) [Required]
- (Graduate-level courses in business, management, policy, law from the approved list of "plus" courses or their equivalent)

Professional Experience/Synthesis Course 3 credits

- Professional Experience/Synthesis (PSE 898)
- Research in Paper Science and Engineering (PSE 798)

TOTAL **36 credits**

"Plus" Course List

SUNY ESF

EST 608 Advocacy & Conflict Resolution
EST609 Collaborative Governance Processes
EST650 Environ Perception & Behavior
EST 645 Mass Media & Environmental Affairs
FOR 688 Natural Resource Agencies & Administration
FOR 533 Natural Resource Managerial Economics
FOR 670 Resource & Environ Economics
FOR 770 Ecological Economics
FOR 687 Environmental Law & Policy
FOR 689 Natural Resource Law & Policy
ERE 543 Construction Estimating
ERE 653 Construction Planning & Scheduling
ERE 654 Construction Project Management
ERE 676 Management in the Paper Industry
ERE 690 Engineering Design Economics
EST 635 Public Participation & Decision
FOR 560 Principles of Management
FOR 694 Writing for Scientific Publication
ENS 606 Environmental Risk Perception
EST 612 Environmental Policy & Governance
FOR 665 Natural Resources Policy
FOR 753Advanced Natural Resource Policy
ERE 519 Green Entrepreneurship
APM 510 Statistical Analysis
APM 595 Statistics for Engineers
APM 625Sampling Techniques
APM 658 Operations Research
EST 605 Qualitative Methods
EST 640 Environmental Thought & Ethics

SUNY Learning Network

EDF 715 Management Practice and Techniques	Buffalo State
EDF 688 Leadership in Organizations	Buffalo State
MLS 536 Problem Solving Procedures	Plattsburgh
MBA 502 -- Principles of Economics	Oswego
MBA 516--International Business	Oswego

Oswego State University MBA Program

MBA 501 -- Accounting
MBA 502 -- Principles of Economics (online-SLN)
MBA 503 -- Principles of Management
MBA 504 -- Quantitative Analysis
MBA 505 -- Operations Management
MBA 506 -- Legal Environment of Business
MBA 507 -- Financial Management

MBA 513--Managerial Finance
MBA 514--Marketing Management
MBA 516--International Business (online-SLN)
MBA 530--Employment Law
MBA 531--Management Economics
MBA 539--Managerial Accounting
MBA 540--Materials Management
MBA 568--Project Management
MBA 572--Taxation of Corporations, Partnerships, Estates, and Trusts
MBA 580—Entrepreneurship

Syracuse University MBA Program
MBC 601 Economic Foundations of Business
MBC 602 Economics for International Business
MBC 603 Creating Customer Value
MBC 604 Managing the Marketing Mix
MBC 606 Information Technology for Decision Support
MBC 607 Understanding Financial Statements
MBC 608 Creating Financial Statements
MBC 609 Accounting for Managerial Decisions
MBC 616 Operations Management
MBC 617 Supply Chain Management
MBC 618 Competitive Strategy
MBC 619 Corporate Strategy
MBC 627 Financial Markets and Institutions
MBC 628 Fundamentals of Financial Management
MBC 629 Legal and Ethical Aspects of Management
MBC 630 Behavior in Organizations
MBC 631 Financial Accounting
MBC 632 Managerial Accounting
MBC 633 Managerial Finance
MBC 635 Operations and Supply Chain Management
MBC 636 Marketing Management
MBC 638 Data Analysis and Decision Making
MBC 639 Leadership in Organizations
MBC 642 Strategic Human Resource Management
MBC 643 The Legal, Natural, and Ethical
MBC 645 Strategic Management

Syracuse University - Sustainable Enterprise Partnership
BUA/ECS 650: Managing Sustainability: Purpose, Principles, and Practice
BUA/ECS 651: Strategic Management and the Natural Environment
BUA/ECS 759: Sustainability-Driven Enterprise

Curriculum Transition Plan:

The existing options in the graduate program will continue. This proposal adds an additional option of Sustainable Engineering Management to the current options being offered. We expect the first students to be able to enroll in the program beginning with the Fall

While we anticipate that the majority of these students will be self-funding, the Syracuse Pulp and Paper Foundation through the Joachim Endowment is prepared to offer a limited number of graduate assistantships to students to pursue this option.

ESF Curriculum Proposal Form

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

Date: February 1, 2012
Department: FNRM
Curriculum Title: Economics Minor

X *New curriculum and/or degree program* **OR** ☐ *Changes in existing curriculum(check all that apply):*

☐ new program title	☐ new courses added	☐ new accreditation
☐ revised courses	☐ change in total cr. hrs.	☐ new assessment plan
☐ new course sequence	☐ new program objectives	☐ other significant change

Justification Narrative:

The minor in economics provides a program of courses designed for students who wish to extend their knowledge beyond an introductory economics course required of all majors at ESF. Completing this minor will enhance a student's understanding of how individuals with limited resources make choices concerning the optimal management of natural resources.

Institutional Impact:

Anticipated Enrollment: 1-2 per semester Change from existing condition: N/A

New Faculty or Staffing Requirements:	None
New Technology and Classroom Resource Demands:	None
New \Computing Resources Requirements:	None
New Accreditation Requirements:	None
New Assessment Requirements (explain & describe):	None
New Library Resources Requirements:	None
New Transportation Requirements:	None

New Forest Properties or Field Practicum Facilities Required:	None
Impacts on other Departments at ESF (please obtain and attach response from affected departments):	Impact on other departments will be minimal
Impacts on Admissions (particularly transfer requirements and articulation agreements; please obtain and attach response from Admissions if an impact is anticipated)	None
List courses taught outside the Department at ESF:	ERE430, ESC422
List courses taught outside the Department at SU:	ECN301, ECN311, ECN437,FIN301,
• Accessory Instruction credit hours at SU required per student in this curriculum:	3 to 9
• Accessory Instruction credit hours required per semester by this curriculum	3
• Change in Accessory Instruction needs over current programs and curricula	N/A

Catalog Curriculum Narrative:

Economics Minor

Economics analyzes how people with limited resources make choices and provides the fundamentals for good decision-making. The minor in economics provides students with common microeconomic models and tools that can be used to analyze optimal management and policy decisions in natural resources management.

The Economics minor totals 15 credits. Required courses are FOR207 Introduction to Economics (3) and ECN301 Intermediate Microeconomic Theory (3) or ECN311 Intermediate Math Microeconomics (3). In addition, students must choose from the following directed electives (a minimum of 9 credits): FOR333 Natural Resources Managerial Economics (3); FOR454 Renewable Energy Finance and Analysis (3); FOR495 Undergraduate Teaching Assistant (must be in association with FOR207 or FOR333) (3); FOR670 Resource and Environmental Economics (3) or ECN437 Resource and Environmental Economics (3); ESC422 Energy Markets and Regulation (3); ERE430 Engineering Decision Analysis (3) or FIN301 Essentials of Finance (3). It is the responsibility of the student to meet any prerequisites associated with courses in the minor.

Admission to the minor requires students to have an accumulative grade point average of 2.5 or better after one semester at ESF (or as a transfer student with the same standing), and permission of the Department of Forest & Natural Resources Management Chair and Undergraduate Education Coordinator (via petition).

Curriculum Transition Plan:

Not applicable.

To: Kelley J. Donaghy, Executive Chair, ESF Faculty Governance

From: Gregory L. Boyer, Chair, Chemistry Department

Re: revision of graduate summer defense policy

At our Feb. 24, 2012 faculty meeting, the Chemistry faculty unanimously voted to propose that the following change regarding graduate program defenses be made to the ESF catalog:

Examinations

Students who wish to complete the doctoral candidacy examination, defense of thesis or dissertation should request formation of their examining committee guided by the schedule provided by the Office of Instruction and Graduate Studies.

To ensure the integrity of the examination process, ~~oral examinations will generally take place during the academic year and~~ all members of the examination committee appointed by the ~~dean~~ Dean of Instruction and Graduate Studies will be present at the oral examination. Students must complete the oral examination within six months from the appointment of the examination committee or the student will be required to request the assignment of a new examination committee. Exceptions may be granted by the ~~dean~~ Dean of Instruction and Graduate Studies.

The examination policy to discourage summer defenses and to require that all committee members be present at oral defenses was adopted by the faculty several years ago. However, we maintain that the current wording, which attempts to limit defenses to the academic year, has no **academic** benefit in the case where the student and committee members wish to hold a defense during the summer months. In support of the proposed change, we note that:

- ESF graduate education and research takes place throughout the calendar year
- Current catalog wording creates the embarrassing impression that graduate education and research is not a year-round undertaking at ESF
- Organizing a committee, including a chair, during the summer can be a challenge because some faculty members are travelling or otherwise not available. However, scheduling a defense during the academic year is also a challenge because of teaching and travel schedules of faculty.
- The current crush of defenses at the end of the academic year may lead to insufficient preparation of the defense document or to insufficient review of that document by the committee. Faculty may give the document a better review when not delivering classes.
- Faculty with academic year appointments who will not serve on summer defense committees should make that position clear to graduate students who request that they be on their committees.
- Last summer (2011), approximately 30 students requested summer defenses. Thanks to Dean Shannon's appeal to the major professors of those students to serve as chairs of other defense committees, nearly all of those defenses were scheduled.