

## PROPOSAL TO THE SENATE COMMITTEE ON EDUCATIONAL POLICY

**TITLE:** Proposal for a Master of Science Degree in Bioenergy in the College of Agricultural, Consumer and Environmental Sciences with a concentration in Professional Science Masters.

**SPONSOR:** CABER (Center for Advanced BioEnergy Research)  
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### **BRIEF DESCRIPTION:**

This proposal is for the creation of a Master of Science degree with a major in Bioenergy in the College of Agricultural, Consumer and Environmental Sciences. This will be a non-thesis MS degree program (42 hours total) wherein the bioenergy major will consist of a core and elective program, in addition to the Professional Science Masters (PSM) graduate concentration. The core is made up of three components (Introductory Survey Course, Advanced Topics in Bioenergy Seminar and an Internship) together with elective courses in four areas of specialty. Details of the degree requirements are found in Appendix A, and a listing of available elective courses for bioenergy students is found in Appendix B. The PSM concentration will be required of all students in this program, and key features of the PSM concentration are found in Appendix C. This will be a three semester degree program. The proposed sequencing for the M.S. degree with the major in Bioenergy and concentration in PSM is shown in Appendix D. During the summer session there will be a required graduate internship that will be coordinated through the Center for Advanced BioEnergy Research (CABER) and will seek relevant advice from the CABER External Advisory Committee. This degree is expected to help prepare students to enter the bioenergy-related business world.

This program is scheduled to begin in Fall 2009 as an on-campus non-thesis, PSM program. It will be funded through student payment of tuition, with no tuition waivers allowed. It is anticipated that there will be 8-10 students entering the program in any one year with 5 students anticipated in the initial year. The target audience for this program will be students that anticipate positions as mid-level managers of bio-refineries who specifically require a combination of business training and a background in bioenergy. A web-based survey conducted by CABER in October 2007 suggests that there is considerable interest by industry in hiring graduates from such a program.

### **JUSTIFICATION:**

Education is the key for developing the human and social capital required to provide the resources to manage the transition towards a sustainable energy supply that addresses future energy needs and the challenges of global warming. The State of Illinois has considerable renewable energy potential that could result in jobs, keep energy dollars in State, reduce air pollution and soil erosion, and provide many other environmental benefits, at competitive costs. The University of Illinois can make major contributions to develop this potential. The University's Strategic Plan seeks "to position the State of Illinois as a recognized leader in research, education, and practices to promote sustainable utilization of energy, water, and land", in accordance with the University's land grant mission and Extension program.

The development of a bioenergy curriculum at the University of Illinois will bring together the multi-disciplinary teaching and training resources and creative educational tools to motivate and prepare a new generation of students for future challenges and job opportunities in bioenergy. There

is a growing demand for a well-educated scientific-technical workforce in bioenergy and related biosciences. A pool of skilled scientists, managers, engineers, socio-economists and technicians needs to be developed for the application of advanced and innovative methods of energy production. Education can play a bridging role for the transfer of knowledge from research to practical applications. Engaging students in practical activities and internships aids successful demonstration and implementation of new bioenergy technologies and strengthens the links to agriculture. Given the timeliness of bioenergy, this curriculum is expected to increase the attractiveness and competitiveness of the university for students and stakeholders utilizing these resources.

The University of Illinois has already developed an extensive platform for education in bioenergy. With the ability to add a Professional Science Masters graduate concentration to the degree program in bioenergy, we propose to further develop and integrate the educational and intellectual resources available at the University.

#### **BUDGETARY AND STAFF IMPLICATIONS:**

a. **Additional staff and dollars needed:** Program faculty are listed in Appendix E. Two months summer salary is requested for Jurgen Scheffran to prepare the introductory survey Course in bioenergy, called "Bioenergy Systems, ACES 409". CABER will absorb costs associated with the administration and delivery of this course and also the seminar course focusing on advanced topics in bioenergy Called "Advanced Bioenergy Topics, ACES 498".

b. **Internal reallocations** (e.g., change in class size, teaching loads, student-faculty ratio, etc.): Hans Blaschek, Director of CABER, will be responsible for directing the program, managing the student records/files, process admissions and certification of degrees.

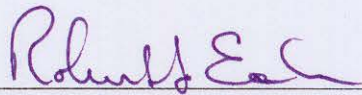
c. **Effect on course enrollment in other departments and explanations of discussions with representatives of those departments:** Given the low initial numbers of students (8-10) and the large number of potential courses that can be taken as electives, this should not be a problem. Evidence of collaboration among other units teaching courses is included in Appendix F.

d. **Impact on library, computer use, laboratory use, equipment, etc.:** We do not expect a significant impact on these resources given the low initial numbers of students.

**GUIDELINES FOR UNDERGRADUATE EDUCATION:** N/A

**EFFECTIVE DATE:** Upon approval.

**CLEARANCES:**

  
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Dean, College of ACES:

1-22-08  
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Date:

  
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Dean, Graduate College:

1/28/08  
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Date:

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Provost:

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Date:

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Chair, Senate Committee on Educational Policy

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Date:

Full proposal available  
for review in the Senate  
Office.

## **STATEMENT FOR PROGRAMS OF STUDY CATALOG:**

**Major:** Bioenergy

**Degrees Offered:** M.S.

**Graduate Concentration:** Professional Science Master's (M.S. only)

### **Graduate Degree Programs**

The Center for Advanced Bioenergy Research in the College of ACES offers a Master of Science with a Major in Bioenergy and a Concentration in Professional Science Master's. In addition to receiving training in the general field of bioenergy, students gain relevant professional experience in business and related topics through coursework and an internship.

### **Admission**

In addition to meeting the Graduate College admission requirements, applicants should have a baccalaureate degree in a recognized field of biological, physical, agricultural, socio-economic or engineering science. Graduate Record Examination (GRE) scores are required of all applicants, and the minimum recommended Test of English as a Foreign Language (TOEFL) score is 580 on the paper-based test (237 on the computer-based test). Applications are only accepted for the fall semester. Transfer credit may not be applied to this program due to the cohort nature of this program.

### **Degree Requirements—Master of Science**

The curriculum requires 42 graduate hours, consisting of a core and elective program, in addition to the required PSM concentration. The core part of the curriculum consists of two required courses Bioenergy Systems, ACES 409 (3 hours) and Advanced Bioenergy Topics ACES 498 (2 hours). In the elective part of the program, students choose 7-9 courses from their area of specialty from a designated list, and in consultation with their director of graduate study totaling 27 hours. The areas of specialty are Plants, Soils and Feedstocks; Production, Processing and Use; Environment, Economics and Policy & Law, and Tools and Methods. In addition, students must complete the 10 hours required for the PSM concentration, including a summer internship.

### **Financial Aid**

Financial aid in the form of fellowships, teaching and research assistantships, or tuition and fee waivers are not available for graduate students in this program.