CGS Agenda Item: 12-09
Effective: Fall 2012

Eastern Illinois University

NEW/REVISED COURSE PROPOSAL FORMAT

(Approved by CAA on 4/13/06 and CGS on 4/18/06, Effective Fall 2006)

This format is to be used for all courses submitted to the Council on Academic Affairs and/or the Council on Graduate Studies.

Please check one: _X_ New course **___** Revised course

PART I: CATALOG DESCRIPTION

1. Course prefix and number, *such as ART 1000*: TEC 5533

2. Title (*may not exceed 30 characters, including spaces*): Biomass Gasification

3. Long title, if any (*may not exceed 100 characters, including spaces*):

4. Class hours per week, lab hours per week, and credit [*e.g., (3-0-3)*]: 3-0-3

5. Term(s) to be offered: _X_ Fall **_ X _** Spring **___** Summer **___** On demand

6. Initial term of offering: _ X _ Fall **_ _** Spring **___** Summer **Year:** _2012_

7. Course description: This course is for students who have a desire to study renewable energy focusing on gasification from biomass. Students will be able to design their own gasifier. No prior knowledge of biomass gasification is expected or assumed.

8. Registration restrictions: a. Equivalent Courses N/A

• **Identify any equivalent courses** (e.g., cross-listed course, non-honors version of an honors course). N/A

• Indicate whether coding should be added to Banner to restrict students from registering for the equivalent course(s) of this course. **___** Yes **_X_** No

b. Prerequisite(s)

• **Identify the prerequisite(s),** including required test scores, courses, grades in courses, and technical skills. Indicate whether any prerequisite course(s) MAY be taken concurrently with the proposed/revised course. N/A

• Indicate whether coding should be added to Banner to prevent students from registering for this course if they haven't successfully completed the prerequisite course(s). **___** Yes **_X_** No

If yes, identify the minimum grade requirement and any equivalent courses for each prerequisite course:

c. Who can waive the prerequisite(s)?

___ No one **___** Chair **___** Instructor **___** Advisor **___** Other (Please specify) N/A

d. Co-requisites (course(s) which MUST be taken concurrently with this one):
N/A

e. Repeat status: _X_ Course may not be repeated.

___ Course may be repeated once with credit.
Please also specify the limit (if any) on hours which may be applied to a major or minor. Eastern Illinois University Course Proposal Format 2

f. Degree, college, major(s), level, or class to which registration in the course is restricted, if any:
N/A
g. Degree, college, major(s), level, or class to be excluded from the course, if any:
N/A
9. Special course attributes [cultural diversity, general education (indicate component), honors, remedial, writing centered or writing intensive] N/A

10. Grading methods (check all that apply): **_X_** Standard letter **___** CR/NC **___** Audit **___** ABC/NC ("Standard letter"—i.e., ABCDF--is assumed to be the default grading method unless the course description indicates otherwise.)

Please check any special grading provision that applies to this course: N/A
___ The grade for this course will not count in a student's grade point average.
___ The credit for this course will not count in hours towards graduation.
If the student already has credit for or is registered in an equivalent course, check any that apply:
___ The grade for this course will be removed from the student's grade point average if he/she already has credit for or is registered in _____ (insert course prefix and number).
___ Credit hours for this course will be removed from a student's hours towards graduation if he/she already has credit for or is registered in _____ (insert course prefix and number).
11. Instructional delivery method: (Check all that apply.)

_ X _ lecture **___** lab **__ _** lecture/lab combined **___** independent study/research
___ internship **___** performance **___** practicum or clinical **___** study abroad
_ **X** _ Internet _ **X** _ hybrid **___** other (Please specify)
PART II: ASSURANCE OF STUDENT LEARNING
1. List the student learning objectives of this course:

a. If this is a general education course, indicate which objectives are designed to help students achieve one or more of the following goals of general education and university-wide assessment:
• EIU graduates will write and speak effectively.
• EIU graduates will think critically.
• EIU graduates will function as responsible citizens.
Not a general education course.
b. If this is a graduate-level course, indicate which objectives are designed to help students achieve established goals for learning at the graduate level:
• Depth of content knowledge
• Effective critical thinking and problem solving
• Effective oral and written communication
• Advanced scholarship through research or creative activity

Upon completion of this course the student will be able to:
1. Explain components and safety of a gasifier
2. Distinguish between various gasifier processes and systems
3. Identify and analyze biomass fuels, processing methods of biomass materials to be used in gasifiers, and their availability
4. Describe various systems use of syngas

5. Justify steps used to operate a gasifier
6. Troubleshoot a gasification process
7. Calculate energy conversion costs
8. Determine the most efficient gasifier process and biomass
9. Design a simple gasifier
10. Describe the environmental and economic impact of gasifiers at local and global levels

Graduate Level Learning Goals	Course Objectives
Depth of content knowledge	1-10
Effective critical thinking and problem solving	3, 6, 8, 9, 10
Effective oral and written communication	1, 2, 3, 4, 5, 10
Advanced scholarship through research or creative activity	3, 8, 9, 10

2. Identify the assignments/activities the instructor will use to determine how well students attained the learning objectives:

Objective	Assignments	Projects	Research Paper	Exams and Quizzes	Observation Checklist
1.(components and safety)		X		X	
2.(distinguish processes and systems)	X				
3.(identify, distinguish biomass fuels)	X		X		
4.(describe syngas use)				X	
5.(justify steps)	X			X	X
6.(troubleshoot)		X		X	
7.(calculate cost)			X	X	
8.(determine most efficient)			X	X	
9.(design a gasifier)		X			
10.(describe environ. and economic impacts)	X				

3. Explain how the instructor will determine students' grades for the course:
The average of points taken from:

- Projects 20%
- Papers 25%
- Completed assignments and participation in activities and discussions. 20%
- Exams and Quizzes 35%

4. For technology-delivered and other nontraditional-delivered courses/sections, address the following: a. Describe how the format/technology will be used to support and assess students' achievement of the specified learning objectives:
Participation in online discussions and submission of assignments on an internet based (WebCT) program. Virtual projects and videos will be used.
b. Describe how the integrity of student work will be assured: Self Regulated
c. Describe provisions for and requirements of instructor-student and student-student interaction, including the kinds of technologies that will be used to support the interaction (e.g., e-mail, web-based discussions, computer conferences, etc.): Threaded web-based discussions, related assignments, YouTube type videos, virtual projects, and email.

5. For courses numbered 4750-4999, specify additional or more stringent requirements for students enrolling for graduate credit. These include: a. course objectives;
b. projects that require application and analysis of the course content; and
c. separate methods of evaluation for undergraduate and graduate students.
N/A

6. If applicable, indicate whether this course is writing-active, writing-intensive, or writing-centered, and describe how the course satisfies the criteria for the type of writing course identified. (See Appendix *.) N/A

PART III: OUTLINE OF THE COURSE
Provide a week-by-week outline of the course's content. Specify units of time (e.g., for a 3-0-3 course, 45 fifty-minute class periods over 15 weeks) for each major topic in the outline. Provide clear and sufficient details about content and procedures so that possible questions of overlap with other courses can be addressed. For technology-delivered or other nontraditional-delivered courses/sections, explain how the course content "units" are sufficiently equivalent to the traditional on-campus semester hour units of time described above.

TEC 5533 TENTATIVE CLASS SCHEDULE

TOPIC	WEEK
Introductions and Expectations, Course Outline, Text(s), Overview of Gasification.	1
History of Gasification	2
Safety and Environmental Impacts, Tools and Equipment, Timeline, Planning	3
Gasification Processes and Systems	4 & 5
Biomass Materials, Availability, and Processing	6 & 7
Advantages and Disadvantages of Biomass Energy	8 & 9
Community and Global Concerns with Biomass Energy	10 & 11
Research in Biomass Energy	12, 13, & 14
Economics of Biomass Gasification	15

PART IV: PURPOSE AND NEED

1. **Explain the department's rationale for developing and proposing the course.**
   This course fits in the School of Technology's and University's mission to address renewable energy and integrative learning.

a. If this is a general education course, you also must indicate the segment of the general education program into which it will be placed, and describe how the course meets the requirements of that segment.
b. If the course or some sections of the course may be technology delivered, explain why.

2. Justify the level of the course and any course prerequisites, co-requisites, or registration restrictions.

a. **If the course is similar to an existing course or courses, justify its development and offering.**
N/A

b. **If the contents substantially duplicate those of an existing course, the new proposal should be discussed with the appropriate chairpersons, deans, or curriculum committees and their responses noted in the proposal. N/A**

b. Cite course(s) to be deleted if the new course is approved. If no deletions are planned, note the exceptional need to be met or the curricular gap to be filled.

4. Impact on Program(s):

a. For undergraduate programs, specify whether this course will be required for a major or minor or used as an approved elective.
b. For graduate programs, specify whether this course will be a core requirement for all candidates in a degree or certificate program or an approved elective.

If the proposed course changes a major, minor, or certificate program in or outside of the department, you must submit a separate proposal requesting that change along with the course proposal. Provide a copy of the existing program in the current catalog with the requested changes noted.

PART V: IMPLEMENTATION

1. Faculty member(s) to whom the course may be assigned:
Dr. Slaven, Dr. Liu, Dr. Cloward
If this is a graduate course and the department does not currently offer a graduate program, it must document that it employs faculty qualified to teach graduate courses.

2. Additional costs to students:
N/A
Include those for supplemental packets, hardware/software, or any other additional instructional, technical, or technological requirements. (Course fees must be approved by the President's Council.)

3. Text and supplementary materials to be used (Include publication dates):
Cheng, J. (Ed.)(2010). *Biomass to Renewable Energy Processes*. Boca Raton, FL: CRC Press, Taylor Francis Group.
Online sources such as www.biomassthermal.org

PART VI: COMMUNITY COLLEGE TRANSFER

If the proposed course is a 1000- or 2000-level course, state either, "A community college course may be judged equivalent to this course" OR "A community college course will not be judged equivalent to this course." A community college course will not be judged equivalent to

a 3000- or 4000-level course but may be accepted as a substitute; however, upper-division credit will not be awarded.

PART VII: APPROVALS

Date approved by the department or school: Nov. 17, 2011

Date approved by the college curriculum committee: March 21, 2012

Date approved by the Honors Council *(if this is an honors course):*

Date approved by CAA: CGS: