**PURDUE UNIVERSITY**

REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE

(10000-40000 LEVEL)

**DEPARTMENT**: Engineering

**EFFECTIVE SESSION**: Fall 2011

**INSTRUCTIONS**: Please check the items below which describe the purpose of this request.

- [ ] New course with supporting documents
- [ ] Add existing course offered at another campus
- [ ] Expiration of a course
- [ ] Change in course number
- [ ] Change in course title
- [ ] Change in course credit/Type
- [ ] Change in course attributes (department head signature only)
- [ ] Change in instructional hours
- [ ] Change in course description
- [ ] Change in course requisites
- [ ] Change in semesters offered (department head signature only)
- [ ] Transfer from one department to another

**PROPOSED**:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>ECE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number</td>
<td>32400</td>
</tr>
<tr>
<td>Long Title</td>
<td>Introduction to Energy Systems</td>
</tr>
<tr>
<td>Short Title</td>
<td>Int Energy Systems</td>
</tr>
</tbody>
</table>

**EXISTING**:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th></th>
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<tbody>
<tr>
<td>Course Number</td>
<td></td>
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</tbody>
</table>

**TERMS OFFERED**

- [ ] Summer
- [ ] Fall
- [ ] Spring

**CAMPUS(ES) INVOLVED**

- [ ] Calumet
- [ ] Cool Ed
- [ ] Tech Statewide
- [ ] Ft. Wayne
- [ ] W. Lafayette
- [ ] Indianapolis

**CREDIT TYPE**

1. Fixed Credit: 3
2. Variable Credit: 0
3. Equivalent Credit: Yes

**COURSE ATTRIBUTES**: Check All That Apply

- [ ] 1. Pass/Not Pass Only
- [ ] 2. Satisfactory/Unsatisfactory Only
- [ ] 3. Repeatable
- [ ] 4. Credit by Examination
- [ ] 5. Special Fees
- [ ] 6. Registration Approval Type
- [ ] 7. Variable Title
- [ ] 8. Honors
- [ ] 9. Full Time Privilege
- [ ] 10. Off-Campus Experience

**SCHEDULE TYPE**

<table>
<thead>
<tr>
<th>Minutes Per Mfg</th>
<th>Meetings Per Week</th>
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<tbody>
<tr>
<td>75</td>
<td>2</td>
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</table>

<table>
<thead>
<tr>
<th>Weeks Offered</th>
<th>% of Credit Allocated</th>
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<tbody>
<tr>
<td>15</td>
<td>100</td>
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</table>

**COURSE DESCRIPTION**

In this course, fundamentals of electrical machines, power circuit analysis techniques, concepts including torque, speed, DC machine equivalent circuit, synchronous and asynchronous AC machines, rotating fields, application of electronics on electrical machines, smart grids and their applications in power engineering, use of composite materials in energy applications, and alternative energy methods including solar energy.

Pre-requirements: ECE 25500 Election Devices and Design Laboratory, PHYS 251 Heat, Electricity and Optics

Co-requirements: ECE 20800 Election Devices and Design Laboratory

**Signatures**

- Calumet Department Head: [Signature]
  Date: 3/2/11

- Calumet School Dean: [Signature]
  Date: 5/3/11

- Fort Wayne Department Head: [Signature]
  Date: 

- Fort Wayne School Dean: [Signature]
  Date: 

- Indianapolis Department Head: [Signature]
  Date: 

- Indianapolis School Dean: [Signature]
  Date: 

- North Central Department Head: [Signature]
  Date: 

- North Central Chancellor: [Signature]
  Date: 

- West Lafayette Department Head: [Signature]
  Date: 

- West Lafayette College/School Dean: [Signature]
  Date: 

- West Lafayette Registrar: [Signature]
  Date: 

**OFFICE OF THE REGISTRAR**
ECE 32400 Introduction to Energy Systems

Course Information:

Course Number and Title: ECE 32400 Introduction to Energy Systems
Credit Hours : 3

Course Description :

In this course, fundamentals of electrical machines, power circuit analysis techniques, concepts including torque, speed, DC machine equivalent circuit, synchronous and asynchronous AC machines, rotating fields, application of electronics on electrical machines, smart grids and their applications in power engineering, use of composite materials in energy applications, and alternative energy methods including solar energy.

Prerequisites:

ECE 25500 Introduction to Electronic Analysis and Design
PHYS 251 Heat, Electricity and Optics

Co-Prerequisites:

ECE 20800 Election Devices and Design Laboratory

Textbook :

- Lecture Notes prepared by Dr. Broglu

Coordinator :

Abdullah Broglu, Assistant Professor of Electrical Engineering

Schedule :

Two 75-minute lectures per week

Grading Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam (2)</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Project</td>
<td>20%</td>
</tr>
</tbody>
</table>
Grading Scale:

93-100% = A
90-92% = A-
87-89% = B+
83-86% = B
80-82% = B-
77-79% = C+
73-76% = C
70-72% = C-
60-69% = D
< 60% = F

Course Objectives:

To have fundamental understanding of common electrical machines and concepts, power circuit analysis techniques, application of electronics on electrical machines, smart grids in power engineering, use of composite materials in energy applications, and alternative energy methods.

Course Outcomes:

A student who successfully fulfills the course requirements will have demonstrated:

1. a basic knowledge of DC Machines [a,e]
2. a basic knowledge of AC machines [a,e]
3. an understanding of power circuit analysis techniques [a,e,k]
4. a basic knowledge of application of electronics on electrical machines [a,e,k]
5. a basic knowledge of smart grids [a,j]
6. a basic knowledge of alternative energy methods[a,j]

ABET Category:

Engineering science: 2 credits or 75%
Engineering design project: 1 credits or 25%

Course Policies:

Homework:

Homework is due before the start of the following class one week after it's assigned. Credit for late homework will diminish at the rate of 10% per day.

Attendance:

Regular attendance is critical for the successful completion of the course work. Attendance will be recorded.
Student Dishonesty:
Student dishonesty (cheating or plagiarizing) will not be tolerated. Students are encouraged to inform their academic advisors of instances of cheating or plagiarizing.

Plagiarism is another form of cheating. Students are guilty of plagiarism when they present someone else’s work as their own. Examples are: asking a friend to write an assignment paper for you, or including portions of material from a books, journal, or computer file, without giving appropriate credit to the author.

Penalties for student dishonesty can include a grade of “F” in the course. However, if a student believes she/he has been unjustly accused of dishonesty, he or she may follow the Grade Appeal Procedure to request a review of the case.

Policy Concerning Students with Disabilities:

If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb Union, Room 113, telephone number 481-6658) as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site for SSD at http://www.ipfw.edu/ssp/.