APPLICATION FOR NEW COURSE

1. General Information.

a. Submitted by the College of: Engineering Today's Date: Sept 19, 2011

b. Department/Division: Electrical and Computer Engineering

c. Contact person name: Donald Colliver Email: dcolliver@uky.edu Phone: 859-257-3000x211

d. Requested Effective Date: ☒ Semester following approval OR ☐ Specific Term/Year[1]: _____

2. Designation and Description of Proposed Course.

a. Prefix and Number: EGR 649

b. Full Title: Power and Energy Experiences

c. Transcript Title (if full title is more than 40 characters): Power and Energy Experiences

d. To be Cross-Listed[2] with (Prefix and Number): _____

e. Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours[3] for each meeting pattern type.

_____ Lecture _____ Laboratory[1] _____ Recitation _____ Discussion _____ Indep. Study

_____ Clinical _____ Colloquium _____ Practicum _____ Research _____ Residency

_____ Seminar _____ Studio 84 Other – Please explain: facility visits, analysis and discussion (6hr/wk)

f. Identify a grading system: ☒ Letter (A, B, C, etc.) ☐ Pass/Fail

g. Number of credits: 3

h. Is this course repeatable for additional credit? YES ☐ NO ☒

If YES: Maximum number of credit hours: _____

If YES: Will this course allow multiple registrations during the same semester? YES ☐ NO ☐

i. Course Description for Bulletin: This course will provide unique experiences through visit to a variety of energy-related sites and presentations from topical experts. Each week there will be planned full day field trips to selected energy related sites such as: pumped storage site, coal mine, coal- and gas-fired and nuclear power plants, power operations center, wind farm, hydroelectric generation, landfill gas site, smart grid demonstration center, solar farm, high efficiency building, etc. More than simply tours, these visits will be prepared for through individual reading assignments and summarized by journals.

j. Prerequisites, if any: EGR-542, EGR-546, admittance in PEIK Certificate Pgm, and EGR-540 Concurrent; or consent of instructor

k. Will this course also be offered through Distance Learning? YES[4] ☐ NO ☒

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[1] Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

[2] The chair of the cross-listing department must sign off on the Signature Routing Log.

[3] In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. Laboratory meeting, generally, represents at least two hours per week for a semester for one credit hour. (from *SR 5.2.1*)

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l. Supplementary teaching component, if any: ☐ Community-Based Experience ☐ Service Learning ☐ Both

3. **Will this course be taught off campus?** YES ☐ NO ☒

4. **Frequency of Course Offering.**

a. Course will be offered (check all that apply): ☐ Fall ☒ Spring ☐ Summer

b. Will the course be offered every year? YES ☒ NO ☐

If NO, explain: _____

5. **Are facilities and personnel necessary for the proposed new course available?** YES ☒ NO ☐

If NO, explain: _____

6. **What enrollment (per section per semester) may reasonably be expected?** 20

7. **Anticipated Student Demand.**

a. Will this course serve students primarily within the degree program? YES ☒ NO ☐

b. Will it be of interest to a significant number of students outside the degree pgm? YES ☒ NO ☐

If YES, explain: Part of proposed Graduate Certificates in Power and Energy

8. **Check the category most applicable to this course:**

☐ Traditional – Offered in Corresponding Departments at Universities Elsewhere

☐ Relatively New – Now Being Widely Established

☒ Not Yet Found in Many (or Any) Other Universities

9. **Course Relationship to Program(s).**

a. Is this course part of a proposed new program? YES ☒ NO ☐

If YES, name the proposed new program: Proposed Graduate Certificate in Power and Energy

b. Will this course be a new requirement[5] for ANY program? YES ☒ NO ☐

If YES[5], list affected programs: Proposed Graduate Certificate in Power and Energy

10. **Information to be Placed on Syllabus.**

a. Is the course 400G or 500? YES ☐ NO ☒

If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in ***10.b***. You must include: (i) identification of additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See *SR 3.1.4.*)

b. ☒ The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from ***10.a*** above) are attached.

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[4] You must *also* submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.

[5] In order to change a program, a program change form must also be submitted.

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Signature Routing Log

General Information:

Course Prefix and Number: EGR 649

Proposal Contact Person Name: Donald Colliver Phone: 7-3000 x211 Email: dcolliver@uky.edu

INSTRUCTIONS:
Identify the groups or individuals reviewing the proposal; note the date of approval; offer a contact person for each entry; and obtain signature of person authorized to report approval.

Internal College Approvals and Course Cross-listing Approvals:

Reviewing Group	Date Approved	Contact Person (name/phone/email)	Signature
	/ /		
Power and Energy Institute of Kentucky (PEIK) Faculty Group (in College of Engineering–see cover letter)	9-19-2011	Larry Holloway / 3-8523 / holloway@engr.uky.edu	
Engineering Faculty	11/28/11	Richard J. Sweigard rsweigar@engr.uky.edu 7-8827	
	/ /		
	/ /		

External-to-College Approvals:

Council	Date Approved	Signature	Approval of Revision[6]
Undergraduate Council			
Graduate Council		Dr. Brian A. Jackson Digitally signed by Dr. Brian A. Jackson DN: cn=Dr. Brian A. Jackson, o=University of Kentucky, ou=Graduate School, email, c=US Date: 2012.01.26 16:02:18 -05'00'	
Health Care Colleges Council			
Senate Council Approval		University Senate Approval	

Comments:

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[6] Councils use this space to indicate approval of revisions made subsequent to that council's approval, if deemed necessary by the revising council.

Syllabus
University of Kentucky – College of Engineering
EGR 649-001 - Power and Energy Experiences
Spring 201X

Meeting Time: Friday 8:00-2:00 pm, F Paul Anderson Tower, Rm 255

Instructor: *Dr. Donald G. Colliver*, (859)257-3000x211, Rm. 211 C.E. Barnhart Bldg, dcolliver@uky.edu. Usually in Barnhart office 9-6 and it's open for visitation or consultation at any time. Will usually be able to see you but due to my erratic schedule an appointment is helpful. I regularly check my e-mail even while traveling, so you can always get me that way. Feel free to call at home before 9:00pm (number will be given in class). If I'm not home please leave a message.

Prerequisites: EGR-542, EGR-546, Admittance in PEIK Certificate program and concurrent EGR-540 or consent of instructor.

Course Objectives: This course is primarily intended to:

1) Provide students a close-up, on-site investigation of a number of different types of electrical power generation.
2) Introduce students to different types of energy storage and distribution control techniques.
3) Provide students with an opportunity to talk with a number of different individuals working in the power industry.
4) Prepare students to work in the power industry.

Learning Outcomes: A student who has successfully completed this course should be able to:

1) Understand and describe conventional and renewable electrical generation sources
2) Understand and describe electrical distribution systems
3) Understand and describe methods of controlling electrical power generation, distribution and storage
4) Understand and describe the policies and techniques of how and when electricity is generated, distributed, used and sold.

Course Description: This course will provide unique experiences through visit to a variety of energy-related sites and presentations from topical experts. Each week there will be planned full day field trips to selected energy related sites, including a pumped storage site, coal mine, coal- and gas-fired and nuclear power plants, power operations center, wind farm, hydroelectric generation, landfill gas site, smart grid demonstration center, solar farm, high efficiency building, etc. More than simply tours, these visits will be prepared for in the coursework and will be integrated into the design of the learning outcomes. Assignments will draw on what was learned during the scheduled field trips.

The Experiences class is a signature course for the Institute's Graduate Certificate. It is intended to provide students with unique exposure to industry personnel and facilities. Almost all sites are within a four hour drive of the University, permitting each trip to be done within a day. The students will have an extensive and unique exposure to electric power and energy sites and industry experts as a result of these explorations. As with other aspects of the PEIK design, the course is intended to be multipurpose: in addition to providing a special perspective on classroom material, the visits will also provide another communication channel between students, industry and teaching faculty and will serve to help market the program through videotapes of the visits as well as providing industry an opportunity to meet and possibly recruit students in the program for coops, internships and positions upon graduation.

Text: There is no required textbook. We will use a number of websites for the weekly reading assignments such as:
http://www.ieeexplore.ieee.org/Xplore/dynhome.jsp
http://spectrum.ieee.org/energy
http://www.ieee-pes.org/publications/ieee-power-energy-magazine

Grading:

- 60% Class attendance; 10% Class participation, 15% Papers and Quizzes, 10% Journal, 5% Final Journal Submittal
- A= >90; B=80-89; C=70-79; E= <70

Attendance and Class Participation: Attendance is not required but makes up a large part of the grade. Students need to notify the professor of absences prior to class when possible. Excused absences are defined by the University in Section 5.2.4.2 of the *University Senate Rules*. Excused absences outside of those defined by these rules will rarely be granted. Students will be allowed to make up course material missed during an excused absence but will not be allowed to make up work missed during unexcused absences. Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (859-257-2754).

Class participation is considered to be asking questions, interacting with the site/tour leaders and actively participating in the discussions. Disruptive behavior such as non-attentive talking between yourselves during leaders' presentations, texting, or sleeping, etc will not be accepted and will result in negative points being earned in the "class participation" category.

Homework/Quizzes: Reading assignments will be given prior to each class/tour. A short (3-4 pages) paper or a quiz will be required before the start of each tour. Proper attribution must be given for any sources used in papers. These references shall be sufficient to easily find the source of the material used.

Journal: A journal entry for each tour is to be completed and turned in at the beginning of the next class meeting. The journal is to include a description of what was seen and an overview of how it works. It should include drawings, sketches and/or pictures. The journal entry should be at least two pages with 1" margins, double-spaced, 12-point text plus any drawings, pictures, etc. Pictures submitted shall have a specific title describing the entry. Any rights for pictures submitted in the journal are given to the University of Kentucky for any further use. Therefore any pictures used in the journal shall be taken by the author. Illustrations can be from websites if proper attribution is given.

Final Exam:
There will be no final exam. Instead an electronic (submitted via CD or thumb drive) and a paper copy of the complete journal must be turned in at the start (or before) the scheduled final exam time as defined by the University website for the scheduled meeting time of the class. The journal will not be accepted by email. The electronic copy shall be in Word (not .pdf) format. The final exam location will be in the room assigned for the class.

Cell Phone Use
Cell phones must be turned off and stowed during the on-site part of the tours. They may not be used for any reason, including texting during this time. Phone usage is permitted during travel time.

Academic Integrity, Cheating and Plagiarism:
Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for the first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: www.uky.edu/Ombud. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Students Rights and Responsibilities* (see www.uky.edu/StudentAffairs/Code/part2.html) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own work, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of book, a paper from a friend or some file, a picture, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with the instructor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Classroom and Learning Accommodations:
If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2 Alumni Gym, 257-2754, email address jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

Schedule: WE WILL MEET THE BUS IN FRONT OF THE MAIN BUILDING.

Meeting Date

1 January 14: Class Introduction
2 January 21: Coal-fired boiler generation, scrubber; EKPC Spurlock, Maysville, KY
3 January 28: Open cycle gas fired turbine, medium head hydo; KU Brown, Burgin, KY
4 February 4: Supercritical coal fired boiler, ash pond; KU Trimble 2, Wises Landing, KY
5 February 11: Low head hydro, transformer manufacturing; KU Falls of the Ohio, KREC, Louisville
6 February 18: Buffalo Mountain Wind Farm, Oak Ridge, TN
7 February 25: Solar PV; UK Digital Village and UK Solar Decathlon House
8 March 3-4: Raccoon Mtn Pumped Storage, TVA Control Center, Sequoyah Nuclear Plant; Chattanooga and Soddy-Daisy, TN
9 March 11: Open
March 18: UK Spring Break
10 March 25: Carbon Capture and Storage; AEP CCS, New Haven, WV
11 April 1: Duke Smart-Grid Envision Center, Landfill gas generator; Erlanger and KY
12 April 8: Ft Knox Energy Management System; FT Knox, KY
13 April 15: Maintenance Center, Winchester
14 April 22: Strip mine, coal mine reclamation, reclaimed site; Starfire/Guy Cove Coal Mine, Hazard
15 April 29: Last Day of Class