

APPLICATION FOR NEW COURSE

1. General Information.

- a. Submitted by the College of: Engineering Today's Date: February 9, 2011
- b. Department/Division: Electrical and Computer Engineering
- c. Contact person name: Aaron Cramer Email: cramer@engr.uky.edu Phone: 7-9113
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- d. Requested Effective Date: Semester following approval OR Specific Term/Year¹: _____

2. Designation and Description of Proposed Course.

- a. Prefix and Number: EGR 546
- b. Full Title: Electric Power System Fundamentals
- c. Transcript Title (if full title is more than 40 characters): _____
- d. To be Cross-Listed² with (Prefix and Number): EE 546
- e. Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours³ for each meeting pattern type.

45 Lecture _____ Laboratory¹ _____ Recitation _____ Discussion _____ Indep. Study _____
_____ Clinical _____ Colloquium _____ Practicum _____ Research _____ Residency _____
_____ Seminar _____ Studio _____ Other – Please explain: _____

- 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: Introduction to power transmission basics, power system components, power flow, fault analysis and protection, control, stability, and economic operation of the power grid. This course will also introduce modern trends such as distributed generation, communications, and cybersecurity.
- j. Prerequisites, if any: Graduate or engineering standing and EE 221, EE 305, or equivalent
- k. Will this course also be offered through Distance Learning? YES⁴ NO
- 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.

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)

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

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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? 25

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: _____

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 Undergraduate and Graduate Certificates in Power and Energy

b. Will this course be a new requirement⁵ for ANY program? YES NO

If YES⁵, 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.

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

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Signature Routing Log

General Information:


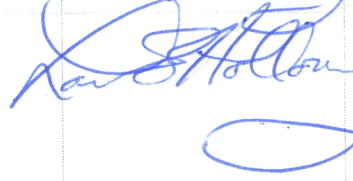
Course Prefix and Number: EGR/EE 546

Proposal Contact Person Name: Aaron Cramer Phone: 7-9113 Email: cramer@engr.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
Electrical and Computer Engineering Faculty	3-24-11	Larry Holloway / 3-8523 / holloway@engr.uky.edu	
Power and Energy Institute of Kentucky (PEIK) Faculty Group (in College of Engineering—see cover letter)	3 2-15-11	Larry Holloway / 3-8523 / holloway@engr.uky.edu	
Engineering Faculty	12/16/11	Richard Sweigard / rsweigard@engr.uky.edu / 7-8827	Richard Sweigard
		/ /	
		/ /	

External-to-College Approvals:

Council	Date Approved	Signature	Approval of Revision ⁶
Undergraduate Council	2/28/2012	Sharon Gill	
Graduate Council	4/9/12	Brian Jackson	
Health Care Colleges Council			
Senate Council Approval		University Senate Approval	

Comments:

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

EE 599-008, EE 699-005, EGR 599-007

Electric Power System Fundamentals

Fall 2010

Instructor: Dr. Aaron Cramer
Office Address: 687B Anderson Tower
Email: cramer@engr.uky.edu
Office Phone: 257-9113

Office hours: Tuesday, Wednesday, Thursday,
and by appointment
11AM to 12:00 PM

Course Description:

Introduction to power transmission basics, power system components, power flow, fault analysis and protection, control stability, and economic operation of the power grid. This course will also introduce modern trends such as distributed generation, communications, and cybersecurity.

Prerequisites:

Graduate or engineering standing and EE 221, EE 305, or equivalent

Student Learning Outcomes:

After completing this course, the student will be able to:

1. Perform basic calculations associated with the steady-state operation of balanced three-phase circuits.
2. Solve problems involving the basic principles of transformers, transmission lines, and the power-flow problem.
3. Perform basic fault analysis and have some knowledge of system protection.
4. Solve basic problems involving power system control, including economic dispatch, and power system stability.
5. Describe modern trends, including distributed generation and smart grid application.

Required Materials:

Text: *Power System Analysis and Design*, 4th ed., SI ed., J. Duncan Glover, Mulukutla S. Sarma, and Thomas J. Overbye, Cengage Learning, 2010.

Supplemental Text: *Power System Analysis*, John J. Grainger and William D. Stevenson, Jr., McGraw-Hill, 1994.

Course Assignments

Homework, Quizzes, 3 Exams, and 1 Final Exam

Summary Description of Course Assignments

In addition to Homework, Quizzes, and Exams, Graduate Students will be required to complete a presentation.

Course Grading

Expectations for graduate students beyond the expectations for undergraduates (400G and 500 courses only)

Grading scale for undergraduates:

90 - 100% = A

80-89% = B

etc..

Grading scale for graduate students (no D for Grad Students):

90-100% = A

82 - 89% = B

etc.

Final Exam Information

Final exam: Friday, December 17, 2010 at 1:00 pm

Mid-term Grade (for 100-400 level courses, and for undergraduates in 500 level courses)

Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/Registrar/AcademicCalendar.htm>)

Course Policies:

Submission of Assignments:

Homework will be assigned approximately every second Friday. It will cover the material covered during the week and will be due the following Friday. Late homework assignments will only be accepted at the discretion of the instructor under extraordinary circumstances. Absent students should submit homework assignments to the instructor via email before the start of class.

Quizzes will be given approximately every second Friday and will cover the material covered the previous week. Quizzes can only be made up if the absence is considered excused under university rules.

Graduate students are expected to select a relevant journal paper in consultation with the instructor, to read and carefully critique the technical content, and to prepare a 20-minute presentation describing the paper's claims, methodology, and

the student's critique. These presentations will be scheduled at the end of the semester.

Attendance Policy.

Please see Senate Policy for attendance and excused absences.

Excused Absences:

Students need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

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).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Verification of 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.

Academic Integrity:

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 a 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: <http://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 *Student Rights and Responsibilities* (available online <http://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 be 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, 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 a book, a paper from a friend or some file, 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 an instructor or tutor, 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 the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Accommodations due to disability:

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.

Tentative Course Schedule

Week	Monday	Wednesday	Friday
1	No class	1.3	2.1-2.3, Quiz 1, HW 1 assigned
2	2.4-2.5	2.6-2.7	3.1-3.2, HW 1 due
3	No class	3.3-3.5	3.6-3.8, Quiz 2, HW 2 assigned

4	5.1	5.2	5.3-5.4, HW 2 due
5	5.5-5.7	6.4	6.7, Quiz 3
6	7.1-7.2	Exam 1	7.3-7.4, HW 3 assigned
7	7.5	8.1	8.2, HW 3 due
8	8.3-8.5	8.6-8.8	9.1, Quiz 4, HW 4 assigned
9	9.2-9.3	9.4	9.5, HW 4 due
10	10.1-10.2	Exam 2	10.3-10.4
11	10.5-10.6	10.7-10.8	10.9-10.11, Quiz 5, HW 5 assigned
12	10.12-10.14	11.1-11.3	11.4-11.5, HW 5 due
13	Presentations	Exam 3	Presentations
14	Presentations	No class	No class
15	Presentations	Presentations	Presentations
16	13.1-13.2	13.3, 13.5	13.6