WORKSHEET — Request for a New Course

** Place your pointer on the underlined fields and start typing to fill in text, ** or use an X or a number to fill in “check-box” or numbered fields.

Provide information requested below that is not contained in the syllabus.  
Please note the guidelines in the boxes.

Number (if known): EE 153V  X  Undergraduate  X  Graduate  ___ Professional

Title/subtitle: Electric Drives

Effective: Winter 2015  (Quarter and Year)

Offered: ___ Fall  ___ Winter  X  Spring  ___ Summer  ___ Once Only  ___ Other ___

Instructor(s): Roman Chomko

---

Hours per week per unit of credit may not be less than but may exceed those listed below.

- One unit for each hour per week (1:1) of colloquium, consultation, discussion, lecture, seminar, or workshop

- One unit for each three hours per week (1:3) of activity, clinic, extra reading, fieldwork, individual study, internship, laboratory, practicum, research (scheduled and outside), screening, term paper, thesis, tutorial, written work, and similar assigned problems

- One unit for each two to three hours per week (1:2-3) of studio

---

Units: 4

Activities and hours per week: Indicate below the number of hours per week that students will spend in the activities listed (leave blank those that do not apply).

- Activity  - Internship  - Seminar  - Studio
- Clinic  - Laboratory  - Term Paper
- Colloquium  - Lecture  - Thesis  - Tutorial
- Consultation  - Practicum  - Workshop
- Discussion  - Research (outside)  - Written Work
- Extra Reading  - Research (scheduled)  - Other:
- Field  - Screening (outside)
- Individual Study  - Screening (scheduled)

---

Prerequisite(s): EE 123 with a grade of "C-" or better; EE 116 with a grade of "C-" or better (or consent of instructor for graduate students)
WORKSHEET - Request for a New Course

Read the guidelines in this box before writing the Catalog description.
Write the description in the present tense and limit it to 50 words (do not count grading information, repeatability information, or a list of E-Z subtitles). If possible, do not use complete sentences. However, use sentences that contain more than a list of items or topics.

Examples:
Instead of "This course will introduce students to the history of . . .," use one of the following formats:
- Introduces the history of . . .
- An introduction to the history of . . .
- Introduction to the history of . . .

Instead of "Functions, equations, and graphs," use a format similar to one of the following examples:
- Explores functions, equations, and graphs . . .
- Topics include functions, equations, and graphs . . .
- A study of functions, equations, and graphs . . .

Catalog description: Topics include the study of electro-mechanical energy conversion; magnetic circuits and magnetic components; electric motors; direct current, induction and reluctance motor drives; design of feedback controllers; energy efficiency. Laboratory experiments will include computer modeling assignments.

Grading

X Letter Grade or petition for Satisfactory/No Credit (S/NC) __ Letter Grade only ___ In Progress (IP)
__ Letter Grade or S/NC; no petition required ___ S/NC only

The statements selected below will be added to the Catalog description by the Catalog office:

Grading statement (if required):

X Satisfactory (S) or No Credit (NC) grading is not available.
__ Graded Satisfactory (S) or No Credit (NC).
__ Normally graded Satisfactory (S) or No Credit (NC), but students may petition the instructor for a letter grade on the basis of assigned extra work or examination.
X May be taken Satisfactory (S) or No Credit (NC) with consent of instructor and graduate advisor.
__ May be taken Satisfactory (S) or No Credit (NC) by students advanced to candidacy for the Ph.D.
__ Students who submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade.
__ Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade.
__ Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade.
__ Other:

Repeatability statement (if required):

__ Course is repeatable.
__ Course is repeatable to a maximum of ___ units.
__ Course is repeatable as content changes.
__ Course is repeatable as content changes to a maximum of ___ units.
__ Course is repeatable as topics change.
__ Course is repeatable as topics change to a maximum of ___ units.
__ Other:

If the course is repeatable, may a student take more than one section of the course in a single quarter? __ Yes __ No

Cross-listing statement: Cross-listed with __NA__

Credit statement (to limit credit when course content overlaps):
Credit is awarded for only one of __

Other __

Breadth statement (for CPAC, ETST, FVC, HASS, or WMST courses only):
__ Fulfills the Humanities requirement for the College of Humanities, Arts, and Social Sciences.
WORKSHEET - Request for a New Course

__ Fulfills the Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.
__ Fulfills either the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.
__ See the Student Affairs Office in the College of Humanities, Arts, and Social Sciences.
__ Does not fulfill the Humanities or Social Sciences requirement for the College of Humanities, Arts, and Social Sciences.
__ Other: __

If the course content overlaps or duplicates the content of another course, describe the overlap or duplication: __NA__

If the course affects degrees, minors, and/or programs, list the affected degrees, etc. and explain how they are affected: __

If the course affects the prerequisites and/or descriptions of other courses, list the affected courses and explain how they are affected: __NA__

Justification for establishing the course (insert or attach):

There is an ever-growing, substantially renewed industrial interest in robotic and automation systems, renewable (green) energy electric systems, automotive electric vehicle systems, drive-by-wire systems, etc. It is the subject of electric drives that addresses these issues. This course is needed because it will be used as part of the MSOL online degree program that the BCOE ECE department intends to offer. This V version of the course involves the following six components: a) a course management system, e.g., UCR's iLearn (BlackBoard) system, which UCR has been using for many years and with which most UCR faculty are already familiar; b) for online consultation with TAs and faculty, a web-based meeting system that includes shared desktop, audio, and possibly video communication. c) Remotely available online video recordings of classroom lectures (e.g., Flash 7.0+) with accompanying presentation graphics (e.g., PowerPoint slides). d) Remotely proctored exams, for which we will initially follow UCLA's policies and protocols. e) Lectures are online and would be a direct 1:1 "contact" as in a regular course. For the consultation, faculty members should be available for 1 hour/week to interact with the student via Skype (or other). f) In the evaluation, homework and other assignments are submitted via e-mail (or within iLearn). All exams are proctored. For remotely proctored exams, UCR intends to initially follow UCLA's policies and protocols.

Syllabus (insert or attach and include the information below): __Attached__

Course requirements Midterm Exam, Final Exam, Homework, Laboratory Reports

If an activity selected above under "Activities and Hours" does not involve faculty contact (e.g., extra reading, individual study, and outside research), describe the activity and explain how it will be evaluated.

If one of the activities selected above is consultation hours, explain how these hours will be implemented and monitored.

For further information about course guidelines, see the General Rules and Policies Governing Courses of Instruction at senate.ucr.edu/Committees/courses/guidelines.pdf
EE 153V Electric Drives
SYLLABUS

Semester: Spring 2015
Units: 4, Lecture: 3 hours, Laboratory: 3 hours
Prerequisite(s): EE 123 with a grade of “C-“ or better; EE 116 “Engineering Electromagnetics” with a grade of “C-“ or better (or consent of instructor for graduate students)
Lab: Sect 021 TBD

Teaching Assistant(s): TBA

CATALOG DESCRIPTION

Topics include the study of electro-mechanical energy conversion; magnetic circuits and magnetic components; electric motors; direct current, induction and reluctance motor drives; servomechanism analysis and design of feedback controllers; energy efficiency; drive-by-wire, robotic and industrial automation systems.

TOPICS

- Magnetic Circuits, Applications and Design (includes transformers)
- Principles of Electric Machines
- DC, AC and Reluctance Electric Motors (principles of operation and, both single and three-phase)
- Design of Feedback Controllers
- Energy Efficiency in Electric Drives
- Applications of Electric Drives (Drive-By-Wire Systems, Robotics, Industrial Automation Systems)

HOMEWORK

Homework will be assigned every other week. Discussion of homework problems with the instructor, TAs, and/or classmates is highly encouraged. Nevertheless, all homework must be completed independently. Most homework assignments will require computer modeling exercises.

No late homework will be accepted.

LABORATORY EXPERIMENTS

Labs will contain computer modeling assignments.
WORKSHEET - Request for a New Course

Discussion of lab experiments with the instructor, TAs, and/or other students is encouraged. Lab work will be done in groups of two. It is allowed to submit a single lab report per group.

You are expected to read the lab descriptions, and complete the pre-lab before scheduled lab session. Wiring up the hardware and completing the required programs is encouraged. Open lab hours will be announced by the end of the first week of the quarter.

Each lab report is due one week after each experiment. Guidelines for the lab report must be followed. The emphasis will be placed on 1) the proper operation of the circuit designs, 2) the neatness of the implementation. It is required to keep a lab notebook by each student individually. Note that the lab reports (to be actually graded) and notebooks (for your own records) are independent of each other.

EXAMS

Midterm: approximately the 5th week
Final: TBD

All exams are open book, open notes, closed friends. Communication gadgets must be off (including laptops), and lecture notes’ sharing is strongly prohibited. Make-up exams are possible only under circumstances of sickness or personal emergency.

GRADING POLICY

Letter grade (4 units) is required:

Homework: 10%
Experiments: 30%
Midterm: 25%
Final: 35%

TEXTBOOKS AND REFERENCES
