Nikou, Roshan

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AnyForm User: www.uky.edu
AnyForm Document: http://www.research.uky.edu/gs/GCInvestigatorReport.html
AnyForm Server: www.uky.edu (/www/htdocs/AnyFormTurbo/AnyForm.php)
Client Address: 128.163.153.93

College/Department/Unit: = EE 614
Category:_       = New
Date_for_Council_Review: = 4/12/07
Recommendation_is:_ = Approve
Investigator:  = Bill Smith
E-mail_Address = bsmith@engr.uky.edu
1__Modifications:   = The only modification is a typo.  On item 13, this
course is applicable to graduate degrees in Electrical Engineering.
2__Considerations:  =
3__Contacts:   = I spoke with YuMing Zhang, course coordinator.  There were
no issues with the proposal.
4__Additional_Information:   = The course has been previously taught at an
EE 699.


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APPLICATION FOR NEW COURSE

1. Submitted by College of Engineering   Date 11/22/05

   Department/Division offering course Electrical and Computer Engineering

2. Proposed designation and Bulletin description of this course

   a. Prefix and Number EE 614   b. Title* Adaptive Control

       *NOTE: If the title is longer than 24 characters (including spaces), write
       A sensible title (not exceeding 24 characters) for use on transcripts   Adaptive Control

   c. Lecture/Discussion hours per week 3   d. Laboratory hours per week 0

   e. Studio hours per week 0   f. Credits 3

   g. Course description

   Real-time parameter estimation; deterministic self-tuning regulators; stochastic & predictive self-tuning regulators

   model-reference systems; auto-tuning; gain scheduling; practical issues; design and simulation projects.

   h. Prerequisites (if any)

   EE 611

   i. May be repeated to a maximum of _____ (if applicable)

4. To be cross-listed as

       Prefix and Number   Signature, Chairman, cross-listing department

5. Effective Date Spring 2007   (semester and year)

6. Course to be offered   ☐ Fall   ☑ Spring   ☐ Summer

7. Will the course be offered each year?   ☑ Yes ☐ No
   (Explain if not annually)

8. Why is this course needed?

   This course is needed because it is a standard course in other major schools.

9. a. By whom will the course be taught? Dr. Yu-Ming Zhang

   b. Are facilities for teaching the course now available?   ☑ Yes ☐ No
       If not, what plans have been made for providing them?

APPLICATION FOR NEW COURSE

10. What enrollment may be reasonably anticipated?   10

11. Will this course serve students in the Department primarily?   ☑ Yes   ☐ No

Will it be of service to a significant number of students outside the Department? If so, explain.   ☑ Yes   ☐ No

Students in ME control group may also take this course.

Will the course serve as a University Studies Program course?   ☐ Yes   ☑ No

If yes, under what Area? _____

12. Check the category most applicable to this course

☑ traditional; offered in corresponding departments elsewhere;

☐ relatively new, now being widely established

☐ not yet to be found in many (or any) other universities

13. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky?   ☐ Yes   ☑ No

14. Is this course part of a proposed new program: If yes, which?   ☐ Yes   ☑ No

15. Will adding this course change the degree requirements in one or more programs?* If yes, explain the change(s) below   ☐ Yes   ☑ No

16. Attach a list of the major teaching objectives of the proposed course and outline and/or reference list to be used.

17. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.   ☐

18. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales.   ☐

19. Within the Department, who should be contacted for further information about the proposed course?

Name   Dr. Yu-Ming Zhang   Phone Extension   257-6262 ext.223

*NOTE: Approval of this course will constitute approval of the program change unless other program modifications are proposed.

APPLICATION FOR NEW COURSE

Signatures of Approval:

_____ _____
Department Chair   11/22/0_ Date

_____ _____
Dean of the College   3/23/07 Date

___21___   ___0___   ___10/07/2005___
In favor   Against   Date of Notice to the Faculty

_____ _____
*Undergraduate Council   Date

_____ _____
*University Studies   Date

_____ _____
*Graduate Council   Date

_____ _____
*Academic Council for the Medical Center   Date

_____ _____
*Senate Council (Chair)   Date of Notice to University Senate

*If applicable, as provided by the Rules of the University Senate

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ACTION OTHER THAN APPROVAL

Rev 3/04

EE 699 - ADAPTIVE CONTROL

Spring 2002

INSTRUCTOR:

YuMing Zhang
210E CRMS
257-6262 Ext. 223
Email: ymzhang@engr.uky.edu

OFFICE HOURS:

M-F: 2:00 -4:00

TEXTBOOKS: Astrom and Wittenmark, *Adaptive Control*, Second Edition. Addision Wesley, 1995 (Required)

COURSE WEBSITE:

http://www.engr.uky.edu/~ymzhang/AdaptiveSystems/AdaptiveSystems.html

GRADING:

HW/Quiz	100 pts.	The grading scale will be
Test 1	100 pts.	
Test 2	100 pts.	A: 90%-100%
Projects	300 pts.	B: 80%-89%
		C: 70%-79%
Total.........	600 pts.	E: less than 70%

TENTATIVE PLAN

1. Self-Tuning Regulators (Chapters 1, 2, 3, 4): What Is Adaptive Control, Real-Time Parameter Estimation, Deterministic Self-Tuning Regulators, Stochastic and Predictive Self-Tuning Regulators
   Lecture: 1/10/02-2/19/02   Test 1: 2/21/02

2. Model-Reference Adaptive Systems (Chapter 5) and Practical Systems and Issues (Chapters 8, 9, 11): Model-Reference Adaptive Systems, Auto-Tuning, Gain Scheduling, Practical Issues and Implementation
   Lecture: 2/26/02-4/11/02   Test 2: 4/16/02

3. Design and Simulation Projects: 2/26/02-4/25/02

OUTCOMES

1. Identification of model structure and parameters.
2. Recursive estimation of model parameters.
3. Design of self-tuning regulators.
4. Design of model-reference adaptive control systems.
5. Understanding of practical issues associated with the implementation of adaptive control systems.
6. Simulation studies of adaptive control systems.

ADAPTIVE CONTROL

TEXTBOOK: Astrom and Wittenmark, *Adaptive Control,* Second Edition, Addision Wesley, 1995
(Required)

COURSE OUTLINE

1. Self-Tuning Regulators: What Is Adaptive Control, Real-Time Parameter Estimation, Deterministic Self-Tuning Regulators, Stochastic and Predictive Self-Tuning Regulators.

2. Model-Reference Adaptive Systems and Practical Systems and Issues: Model-Reference Adaptive Systems, Auto-Tuning, Gain Scheduling, Practical Issues and Implementation.

3. Design and Simulation Projects.

MAJOR TEACHING OBJECTIVES

1. Understand major structure and parameter identification methods.
2. Master major recursive parameter estimation algorithms.
3. Be capable of designing self-tuning regulators.
4. Be able to design model-reference adaptive control systems.
5. Understand practical issues associated with the implementation of adaptive control systems.
6. Use simulation method to examine the performances of adaptive control systems.