George Mason University
Graduate Course Approval/Inventory Form

Please complete this form and attach a copy of the syllabus for new courses. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. Complete the Coordinator Form on page 2, if changes in this course will affect other units.

Please indicate:  ____X___ NEW  ____ MODIFY  ____ DELETE

Local Unit:  ECE  Graduate Council Approval Date:

Course Abbreviation:  ECE  Course Number:  836

Full Course Title:  Special Topics in Detection and Estimation Theory

Abbreviated Course Title (24 characters max.): Spec Top in Det & Est Theory

Credit hours:  3  Program of Record:  ECE

Repeatable for Credit?  _X_ D=Yes, not within same term  Up to hours
                   ___ T=Yes, within the same term  Up to hours
                   ___ N=Cannot be repeated for credit

Activity Code (please indicate):  ____X_ Lecture (LEC)  ____ Lab (LAB)  ____ Recitation (RCT)
                               ____ Studio (STU)  ____ Internship (INT)  ____ Independent Study (IND)  ____ Seminar (SEM)

Catalog Credit Format  3:3:0  Course Level:  GF(500-600)  ____ GA(700+)  ____

Maximum Enrollment:  20  For NEW courses, first term to be offered:  Fall 2004

Prerequisites or corequisites:  ECE 734

Catalog Description (35 words or less)  Please use catalog format and attach a copy of the syllabus for new courses.: Advanced topics in detection, estimation, and signal processing in areas of current research interest. Topics may include special estimation, speech recognition, array processing, SAR, underwater acoustics, or higher order spectra.

For MODIFIED or DELETED courses as appropriate:
Last term offered:  Previous Course Abbreviation:  Previous number:

Description of modification:

APPROVAL SIGNATURES:
Submitted by:  Janos Gertler  email:  jgertler@gmu.edu
Department/Program:  Date:  
College Committee:  Date:  
Graduate Council Representative:  Date:  
**GEORGE MASON UNIVERSITY**

Course Coordination Form

**Approval from other units:**

Please list those units outside of your own who may be affected by this new, modified, or deleted course. Each of these units must approve this change prior to its being submitted to the Graduate Council for approval.

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Graduate Council approval: ____________________________ Date: __________

Graduate Council representative: ______________________ Date: __________

Provost Office representative: _________________________ Date: __________
ECE 836/IT836

Special Topics in Detection and Estimation Theory

The course covers various topics in detection and estimation that are of current research interest.

**Course Outline:** The detailed course outline will vary in different semesters. The following course outline is for Fall 2004. The following topics will be covered.

1. The radar-sonar problem: detection and estimation. A sequence of target, interference and channel modules will be developed; slowly fluctuating targets, singly-spread targets (Doppler or range), doubly spread targets. Ambiguity functions and scattering functions. Reference: H.L. Van Trees, *Detection, Estimation and Modulation Theory, Part III*, Wiley Interscience, 2001; Chapters 8-14 (3 weeks).


4. Application of Reduced Rank Processing to STAP (2 weeks).


**Instructor:** Dr. Harry Van Trees

**Prerequisites:** Detection and Estimation theory (ECE 734/IT 830) and Optimum Array Processing I (ECE 754/IT 837).

**Grading:** Homework (50%), Class participation (10%), Project presented near the end of the term (40%).