MEMO

September 26, 2008

TO: Dr. Valerie Taylor
    Professor & Department Head, Computer Science

FROM: Dr. Simon Sheather
       Professor & Department Head

SUBJECT: CPSC 666

The Department of Statistics supports the approval of CPSC 666, Pattern Analysis, to become a permanent course. We are happy to be able to help your department in this matter.
This request is submitted by the Department of Computer Science.

2. Course prefix, number and complete title of course: CPSC 666 Pattern Analysis

3. Course description (not to exceed 50 words): Introduction to methods for the analysis, classification and clustering of high dimensional data in Computer Science applications. Course contents include density and parameter estimation, linear feature extraction, feature subset selection, clustering, Bayesian and geometric classifiers, non-linear dimensionality reduction methods from statistical learning theory and spectral graph theory, Hidden Markov models, and ensemble learning.

4. Prerequisite(s): CPSC 206, MATH 222, MATH 411 (or equivalent) and Graduate Standing in CPSC, CECN, ELEN, CEEN (or permission of instructor) Cross-listed with: 

Cross-listed courses require the signature of both department heads.

5. Is this a variable credit course? Yes ☑ No If yes, from _______ to _______

6. Is this a repeatable course? Yes ☑ No If yes, this course may be taken _______ times. Will this course be repeated within the same semester? Yes ☑ No

7. Has this course been taught as a 489/689? Yes ☑ No If yes, how many times? 2 Indicate the number of students enrolled for each academic period it was taught. Fall 2006 (20), Fall 2007 (15)

8. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)
       b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

M.S. and PhD in Computer Science and Computer Engineering (CS department)

9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

10. Prefix | Course # | Title (excluding punctuation) | Lec. | Lab | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code |

| CPSC | 666 | PATTERN ANALYSIS | 0 | 0 | 0 | 0 | 31 | 1 | 0 | 2 | 0 | 0 | 0 | 6 | CPSC | - | 0 | 0 | 3 | 6 | 3 | 2 |

Approval recommended by: Donald G. Frascen 6/20/08

Head of Department Date

Head of Department (if cross-listed course) Date

Submitted to Coordinating Board by: Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201.
Curricular Services – 11/07

2 of 4 B14
COLLEGE OF ENGINEERING  
DEPARTMENT OF COMPUTER SCIENCE  
CONDENSED COURSE SYLLABUS  
(Use 15 weeks as a standard semester)  

Number and Name of Course:  CPSC 666 Pattern Analysis  

Hours:  Theory 3  Practice 0  Total 3  Credits 3  

Prerequisites:  CPSC 206, MATH 222, MATH 411 (or equivalent) and Graduate Standing in CPSC, CECN,  
ELEN, CEEN (or permission of instructor)  

Curricula requiring this course:  [X] None, it will be elective.  
1.  
2.  
3.  
4.  
5.  
6.  

Description of Course (Concise statement of purpose or design.)  
Introduction to methods for the analysis, classification and clustering of high-dimensional data in Computer Science applications. Course contents include density and parameter estimation, linear feature extraction, feature subset selection, clustering, Bayesian and geometric classifiers, non-linear dimensionality reduction methods from statistical learning theory and spectral graph theory, Hidden Markov models, and ensemble learning.  


Course Outline by Major Topics and Approximate Time for Each:  

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<th>HOURS</th>
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<tr>
<td>Introduction</td>
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<td>Density estimation</td>
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<td>Feature extraction</td>
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<td>Classification</td>
<td>6</td>
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<td>Clustering</td>
<td>6</td>
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<td>Manifold learning</td>
<td>5</td>
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<tr>
<td>Reproducing Kernel Hilbert spaces</td>
<td>5</td>
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<td>Spatio-temporal patterns</td>
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<tr>
<td>Ensemble learning</td>
<td>4</td>
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<tr>
<td>Grading: Midterm=15 %, Term Project=40 %, Assignments=30 %, Final=15% Total = 100%</td>
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<td>Total Hours</td>
<td>42</td>
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Date: 04-03-2008  
Course Supervisor: Ricardo Gutierrez-Osuna (rgutier@cs.tamu.edu; 5-2942; HRBB 520A)  

ABET Classification:  Science X Design Math Other  
Laboratory Requirements: YES or No  
Equipment Required: Computer Lab access to MATLAB
**Americans with Disabilities Act (ADA) Policy Statement**

The following ADA Policy Statement (part of the Policy on Individual Disabling Conditions) was submitted to the University Curriculum Committee by the Department of Student Life. The policy statement was forwarded to the Faculty Senate for information.

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, the legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Cain Hall or call 945-1637.

**Copyrights**

The handouts used in this course are copyrighted. By "Handouts" we mean all materials generated for this class, which include but are not limited to syllabi, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy such handouts, unless the author expressly grants permission.

**Scholastic Dishonesty**

As commonly defined, plagiarism consists of passing off as one's own the ideas, work, writings, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have the permission of the person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules [http://student-rules.tamu.edu/rule20.htm], under the section "Academic Misconduct".

**Academic Integrity Statement**

"An Aggie does not lie, cheat, or steal or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information please visit: http://www.tamu.edu/aggiehonor

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student: "On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."