

NEW COURSE PROPOSAL

PROGRAM AREAS BIOLOGICAL AND PHYSICAL SCIENCES, MATH AND COMPUTER SCIENCE

- 1. Catalog Description of the Course.** *[Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of ___ units); time distribution (Lecture ___ hours, laboratory ___ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]*

PHYS 546 PATTERN RECOGNITION (3)

Three hours of lecture in the lab per week.

Prerequisite:

New and emerging applications of pattern recognition - such as data mining, web searching, multimedia data retrieval, face recognition, and cursive handwriting recognition - require robust and efficient pattern recognition techniques. Statistical decision making and estimation are regarded as fundamental to the study of pattern recognition. The course addresses the issue of analyzing pattern content by feature extraction and classification. The principles and concepts underpinning pattern recognition, and the evolution, utility and limitations of various techniques (including neural networks) will be studied. Programming exercises will be used to implement examples and applications of pattern recognition processes, and their performance on a variety of diverse examples will be studied.

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment
Lecture	<u>3</u>	<u>1</u>	<u>24</u>
Seminar	<u> </u>	<u> </u>	<u> </u>
Laboratory	<u> </u>	<u> </u>	<u> </u>
Activity	<u> </u>	<u> </u>	<u> </u>

- 3. Justification and Learning Objectives for the Course.** (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*

The course is an elective course for MS in Computer Science and MS in Applied Mathematics. Pattern recognition is crucial to a number of new and emerging applications - such as data mining, web searching, multimedia data retrieval, face recognition, and cursive handwriting recognition. The course includes statistical decision making and estimation.

Through this course, students will be able to

1. Discuss pattern recognition problems and techniques
2. analyze analyzing pattern content by feature extraction and classification
3. Demonstrate knowledge of principles and concepts underpinning pattern recognition
4. write original computer code to implement pattern recognition algorithms .
5. use statistical analysis in pattern recognition
6. analyze scientific visualization processes.

- 4. Is this a General Education Course** **YES** **NO**

- 5. Course Content in Outline Form.** *[Be as brief as possible, but use as much space as necessary]*

- a) analyzing pattern content by feature extraction and classification
- b) principles and concepts underpinning pattern recognition, and the evolution, utility
- c) limitations of various techniques (including neural networks)
- d) programming to implement examples and applications of pattern recognition processes

- e) performance analysis

6. References. *[Provide 3 - 5 references on which this course is based and/or support it.]*

Pattern Classification, Richard O. Duda and Peter E. Hart and David G. Stork., Wiley Interscience, 2000, 0471056693

7. List Faculty Qualified to Teach This Course.

Physics Faculty

8. Frequency.

- a. Projected semesters to be offered: Fall X Spring X Summer

9. New Resources Required.

- a. Computer (data processing), audio visual, broadcasting needs, other equipment

Use of existing computer labs.

- b. Library needs

none

- c. Facility/space needs

none

10. Consultation.

Attach consultation sheet from all program areas, Library, and others (if necessary)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

Geoff Dougherty 10/31/1003

Proposer of Course

Date

Approvals

Program Coordinator	Date
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GE Committee Chair (If applicable)	Date
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Curriculum Committee Chair	Date
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Dean	Date
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Effective Semester: _____

California State University Channel Islands
New Course Proposal Consultation Sheet

1. Course prefix, number, title, and units: _____COMP 566 (3)

2. Program Areas: _____MATH AND COMPUTER SCIENCE

Recommend Approval

Program Area/Unit	Program/Unit Coordinator	YES	NO (attach objections)	Date
Art				
Business & Economics				
Education				
ESRM				
Humanities				
Liberal Studies				
Mathematics & CS				
Sciences				
Library*				
Information Technology*				

* If needed