PHYS 510 ADVANCED IMAGE ANALYSIS TECHNIQUES (3)

Three hours of lecture in the lab per week.

Prerequisite: Admission to the Computer Science or Mathematics Graduate Program

Image processing course in the fundamentals of 2-D digital signal processing with emphasis in image processing techniques, image filtering design and applications. Programming exercises in Matlab (or Octave) will be used to implement the various processes, and their performance on synthetic and real images will be studied. Applications in medicine, robotics, consumer electronics and communications.

2. Mode of Instruction.

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<td>Seminar</td>
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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 a core course for MS in Computer Science and MS in Applied Mathematics.

Through this course, students will be able to

1. match, register, recognize, classify, and cluster, 2D data
2. analyze complex image configurations.
3. Demonstrate knowledge of image processing techniques
4. write original computer code for a image analysis.
5. use applications of 2-D analysis in algorithms
6. analyze scientific visualization processes.
7. organize and express ideas clearly and convincingly in oral and written forms.

This course is not designed to satisfy the University Writing or Language requirements.

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]

- 2-D digital signal processing
- image processing techniques,
- image filtering design and applications.
- programming to implement the various processes,
- performance on synthetic and real images
f) applications in medicine, robotics, consumer electronics and communications.

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


*Advanced Animation and Rendering Techniques*, Wall, Addison-Wesley, 1999, 0201544121

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
__________________________________________________________________
GE Committee Chair                                               Date
(If applicable)
__________________________________________________________________
Curriculum Committee Chair                                        Date
__________________________________________________________________
Dean                                                              Date

Effective Semester:_______________________________________________

NEWCRSFR 9/30/02
1. Course prefix, number, title, and units: _____COMP 566 (3)

2. Program Areas: ______ MATH AND COMPUTER SCIENCE

### Recommend Approval

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<th>Program Area/Unit</th>
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<th>NO (attach objections)</th>
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