

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

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.]*

COMP 566. GEOMETRY AND COMPUTER GRAPHIC (3)

Three hours of lecture in the lab per week.

Prerequisite: Admission to the Computer Science or Mathematics Graduate Program

Algorithms for geometric analysis and retrieval of 3D shapes from large 3D databasescommon in several fields, including computer graphics, computer-aided design, molecular biology, paleontology, and medicine. The focus of study will be recent methods for matching, registering, recognizing, classifying, clustering, segmenting, and understanding 3D data.

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 Computer Science majors.

Through this course, students will be able to

1. match, register, recognize, classify, cluster, and segment, 3D data
2. analyze complex geometric configurations.
3. create dynamic simulations.
4. write original computer code for a graphic simulation.
5. use applications of 3D shape 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**
If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Mathematics & Sciences)	
C (Fine Arts, Literature, Languages & Cultures)	
D (Social Perspectives)	
E (Human Psychological and Physiological Perspectives)	

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

1. matching, registering, recognizing, classifying, clustering, segmenting, and understanding 3D data
2. Advanced Rendering Techniques.
3. Scientific Visualization and Shape Analysis
4. Dynamics and Algorithmic Methods.
5. Geometric methods, transformations, deformations.

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

Geometric Tools for Computer Graphics (The Morgan Kaufmann Series in Computer Graphics and Geometric Modeling) Philip J. Schneider, David H. Eberly, Morgan Kaufmann; 2002, ISBN: 1558605940

Beyond the Third Dimension: Geometry, Computer Graphics, and Higher Dimensions, Thomas F. Banchoff, Scientific American Library Series, W H Freeman & Co., 1996, ISBN: 0716760150

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

7. List Faculty Qualified to Teach This Course.

Computer Science faculty.

8. Frequency.

- a. Projected semesters to be offered: Fall ☒ Spring ☒ 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.

Proposer of Course

Date