



Academic Affairs - Course Proposal

Form A

CALIFORNIA STATE UNIVERSITY, SACRAMENTO

Academic Unit: Computer Science		Department Chair: Du Zhang	
Type of Course Proposal: New <input checked="" type="checkbox"/> Change <input type="checkbox"/> Deletion <input type="checkbox"/>		Date: April 17, 2006	
Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		For Catalog Copy: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CCE: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<i>Conversion from CSC 1960 to permanent course</i>		Semester Effective: Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> 2006 <input type="checkbox"/>	
Prefix & No. CSC 1960	Title: Computer Game Design and Implementation	Units: 3	
Change to:			
Prefix & No. CSC 165	Title: Computer Game Architecture and Implementation	Units: 3	

JUSTIFICATION:

Computer games are one of the fastest growing segments of the computer field, and comprise complex hardware/software systems incorporating detailed mathematical and physics simulation models, real-time interactive graphics rendering and animation components, advanced data structures and algorithms, networking and distributed processing interfaces, artificial intelligence components, and optimization techniques, all of which are recognized topics in computer science. Many universities already offer courses identical or similar to the proposed course, and some have entire technical degree programs in this area. In addition, computer games have been recognized by the Association for Computing Machinery (ACM, the oldest and largest professional organization for computer scientists) as an important field having a significant impact on the design and implementation of a wide variety of non-gaming applications. Offering this as a permanent course is an important step toward keeping our Computer Science curriculum current, relevant and competitive.

NEW COURSE DESCRIPTION: (Not to exceed 80 words, and language should conform to catalog copy.)

See <http://www.csus.edu/acaf/univmanual/crspsl.htm> - Guidelines for Catalog Course Description

Architecture and implementation of computer game systems. Topics include game engine architecture; screen management and rendering control; geometric models; algorithms and data structures for spatial partitioning, occlusion and collision detection; real-time interactive 3D graphics and animation techniques; behavioral control for autonomous characters; simulation of physical phenomena; sound and music in games; optimization techniques; multi-player games and networking; game development tools and environments. Substantial programming and project work.

Note:	
Prerequisite: CSC 130, CSC 133, Math 30, Physics 11A.	
Corequisite:	
CAN (California Articulation Number):	
Graded: Letter <input checked="" type="checkbox"/> Credit/No Credit <input type="checkbox"/>	Instructor Approval? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Course Classification: 04	Title for SIS+ (not more than 25 characters) COMP GAME ARC+IMPLEMNTATN
Cross Listed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, with what course:
How Many Times Can This Course be Taken for Credit? Once	

FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

Description of the Expected Learning Outcomes: Describe outcomes using the following format: “Students will be able to: 1), 2), etc.” See the example at <http://www.csus.edu/acaf/example.htm>

Students will gain a thorough understanding of:

1. 3D game engine architecture
2. Algorithms and data structures used in computer games
3. Real-time processes in interactive graphics display generation
4. Simulation of physical phenomena such as gravity, friction, etc.
5. Practical application of AI principles for behavioral control of characters
6. Fundamentals of animation in 3D systems
7. Multi-player game organization and related networking issues

Students will gain a basic understanding of:

1. Application of software engineering principles to the design and implementation of games
2. Use of external tools for model creation
3. The 3D graphics pipeline and graphics APIs and their relationships to game architecture
4. 2D and 3D sound APIs
5. Optimization techniques for 3D game engines

Students will gain exposure to:

1. Intellectual property, economic, and legal issues in game development
2. Career paths in game development
3. History of game development
4. Game design issues (fair play, theme, balance, emotion, suspension of disbelief, etc.)

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre- and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

Laboratory and team projects, exams

For whom is this course being developed?

Majors in the Dept Majors of other Depts ___ Minors in the Dept ___ General Education ___ Other ___

Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes ___ No

If yes, identify program(s):

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes ___ No

If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). _____

The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures:

Date

Department Chair:

College Dean or Associate Dean:

CPSP (for school personnel courses ONLY)

**Associate Vice President
and Dean for Academic Programs**

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Jerri McAtee, at zip 6016. An electronic copy must also be sent to mcateeji@csus.edu.