**New Course Proposal**

**Department:** School of Computing  
**Date Initiated:** Nov 11, 2010  
**Contact Person:** Robert Kessler  
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1) **Course Title:** EAE:MGS Game Engineering II  
2) **Short Course Title:** EAE:MGS Game Eng II (23 char limit)  
3) **Course Number:** CS 6091  
4) **Desired First Offering Date:** Spring, 2011 (Sem, Year)  
5) **Credit Hours:** 3  
6) **Total # of times course can be taken for degree credit:** 1  
7) **Allow multiple enroll in term?** [ ] Yes [ X ] No  
8) **Cross listed or Meets with:** NONE  
9) **Component (choose one):** Lecture  
10) **Co- or Pre-requisite(s):** [ X ] Yes [ ] No. If so: Completion of CS 6090.  
11) **Course description:** This course is a continuation of Game Engineering I (CS6090) will also be project driven. Students will learn selected topics by dissecting given game engines and applying them to the game engine built in CS6090. Topics will include: high performance computing, GPU/parallel programming, low-level algorithm analysis, and cross platform development, and memory management.

Please attach any supporting material, including a syllabus from a previously taught special topics version of the course (and the semester/year the course was taught), as separate pages.

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**Step 1: Departmental Approval:**

Martin Berzins  
Please Print Name _______________________________  
Signature, Department Chair ______________________  
Date ______________________

**Step 2: College Curriculum Committee Approval:** (The CCC has reviewed the proposal and concurs with its recommendation.)

H. James de St. Germain  
Please Print Name _______________________________  
Signature, Curriculum Committee Chair ______________________  
Date ______________________

**Step 3: College Dean Approval:** (I have reviewed the curriculum proposal and am satisfied that all requirements have been met.)

Richard Brown  
Please Print Name _______________________________  
Signature, College Dean ______________________  
Date ______________________
Supporting Materials

Overview of EAE

Entertainment Arts and Engineering (EAE) is the overarching term we use to describe the interdisciplinary work between the School of Computing and the Department of Film and Media Arts in the areas of video games, computer animation, special effects, etc. A key feature of EAE is its interdisciplinary nature. Students from both departments work closely together throughout their academic careers. This partnership of engineer and artist reflects the state of the entertainment business world where artists and engineers constantly work together on a daily basis. In 2010, an undergraduate emphasis in EAE was approved for bachelor’s degrees in each department.

In the fall of 2010, we created a graduate version of EAE, focused on video games. We call this Entertainment Arts and Engineering: Master Games Studio (EAE:MGS). EAE:MGS is designed to provide master’s level students with an education to be successful in the game industry, both immediately and into the future as the industry continues to evolve. The academic experience includes an intense focus on industry application that incorporates both theory and research. There are three tracks - Game Engineering, Game Arts and Game Production. Students in the game engineering track are awarded the MS in Computing degree from the School of Computing, while students in the game arts and production tracks are awarded the MFA degree from the Department of Film and Media Arts.

EAE:MGS Game Engineering Sequence

The game engineering series is a set of three courses that will only have the EAE:MGS game engineering track students officially enrolled. In general, the series of courses will help the students to master the tools, techniques, and concepts to develop games software at a professional level.

Game Engineering I (CS6090)

Students will learn selected topics as applied to building a game engine. Topics will include: professional programming practices for games using C++, mathematics for games, data structures and algorithms for games, asset database systems, game pipeline processes, design patterns common to industry, and debugging systems used in the industry. Currently being offered Fall 2010 as special topics course: CS 6957.

Game Engineering II (CS6091)

This course is a continuation of Game Engineering I (GEI) will also be project driven. Students will learn selected topics by dissecting given game engines and applying them to the game engine built in GEI. Topics will include: high performance computing, GPU/parallel programming, low-level algorithm analysis, and cross platform development, and memory management.

Game Engineering III (CS6092)

This course is a continuation of Game Engineering II (GEII). Topics will include: code optimization, hardware, I/O devices, technical project management, game project architecture, industry standards and norms, shader programming, and networks for games.