Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person	Email Address
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Proposing Department/Unit	Phone
Communications Media	724-762-3608

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

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1. Course Proposals (check all that apply)

__X__ New Course _____Course Prefix Change _____Course Deletion

_____Course Revision _____Course Number and/or Title Change _____Catalog Description Change

	COMM 406
	3D Game & Simulation Design & Development
Current Course prefix, number and full title	*Proposed course prefix, number and full title, if changing*

2. Additional Course Designations: check if appropriate

_____ This course is also proposed as a Liberal Studies Course. _____ Other: (e.g., Women's Studies,

_____ This course is also proposed as an Honors College Pan-African)

Course.

	_____Catalog Description Change	_____Program Revision
3. Program Proposals	_____Program Title Change	_____Other
_____New Degree Program		
_____New Minor Program	_____New Track	

Current program name	*Proposed program name, if changing*

4. Approvals		Date
Department Curriculum Committee Chair(s)	B. Dawson	1-20-11
Department Chair(s)	Mark P. Druett	1/20/11
College Curriculum Committee Chair	Jay Sto	2/16/11
College Dean	Mary Ann Rafath	2/18/11
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
Additional signatures as appropriate:		
(include title)		
UWUCC Co-Chairs	Gail Sechrist	4/1/11

* where applicable

1

SYLLABUS OF RECORD

I. Catalog Description

COMM 406   3D Game & Simulation Design & Development

3 class hours
0 lab hours

Prerequisites: 9 COMM credits, Junior standing or instructor permission

3 credits
(3c-0l-3cr)

Examines the theory and development of 3D digital games and simulations from a Communications Media perspective. Learners will be exposed to topics, such as the logical structure of 3D games and simulations, 3D game technology, and the process of 3D digital game development. Learners will also be exposed to the history and organizational structure of the 3D game industry as well as its theory and history.

II. Course Outcomes:

By the end of this course, learners will be able to:

1. Apply four simulation/game design principles to the development of a simulation or game.
2. Develop a contextual understanding of how game and simulation theory applies to the field of Communications Media.
3. Utilize the basic hardware and software used to produce and design interactive 3D digital games.
4. Produce sound, video, photographs, 3D modeling, 3D animation, and graphics in digital 3D games.
5. Explain how 3D digital games and simulations are produced and its effects in society.
6. Plan and deliver a 3D game solution.

III. Student Outcomes Assessment Matrix:

Department Objectives	Course Outcomes	Assessment Techniques
1	1	Final project; bi-weekly projects.
2	6	On-line discussion forum.
3	5	Bi-weekly projects; on-line discussions.
4	4,5,3	Bi-weekly projects, Final project.
5	5	On-line discussions; bi-weekly projects.

6	6, 2, 3	Final projects.
7	4	On-line discussions
8	6	Final project

IV. Course Outline

Students will use the required course text book as a resource while they are in the process of developing and designing their course projects. The book will be used to guide students at various stages of game development but will not necessarily be read in a linear fashion.

1) History of 3D Computer Games and Simulations [4]
2) Fundamental Design & Development Concepts for 3D Games [4]
3) Business & Marketing of 3D Games & Simulations [2]
4) 3D Game Development Techniques
   a) Terrains [1.5]
   b) Texturing Terrains [1.5]
   c) Collision Systems [2]
   d) Physics [1.5]
   e) Maps & Environment Design [1.5]
   f) Characters [3]
   g) Basic animation [1.5]
   h) FK / IK & Dynamic morphing [1.5]
   i) Motion Capture & Blending [1.5]
   j) Tokens & object collision response [1.5]
   k) Still Obstacles & Traps [1.5]
   l) Puzzles & Mini game design [1.5]
   m) NPC Design & Development [1.5]
   n) Projectiles & Weapons [1.5]
   o) Audio environments [1.5]
   p) Artificial vision & World Cognizance [1.5]
   q) UI Design & Development [1.5]
   r) FileIO & Database integration [1.5]
5) Group evaluation & Assessment [3]
6) Final Project Presentation and Evaluation Session [2]

V. Evaluation Methods

General Assignment Expectations/Rubrics:

<u>Your grade will be based on the scores you receive from the following:</u>

6	6, 2, 3	Final projects.
7	4	On-line discussions
8	6	Final project

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V. Evaluation Methods

General Assignment Expectations/Rubrics:

Your grade will be based on the scores you receive from the following:

Online Discussion Forum – 14%
Online Discussion Forum: Students are to participate in online discussion every week. Students are expected to post and respond to questions posted by the instructor and students. Online discussions will be evaluated on the quality and consistency of participation. Students are to initiate and participate in online discussions and attempt to make connections between topics whenever possible. A rubric with the criteria for evaluation will be distributed prior to grading. Each weekly online discussion topic will represent 1% of your final grade.

Bi-Weekly Projects – 5 @ 10%
Bi-Weekly Projects: Students are to produce one creative assignment every two weeks. Assignments will be due prior to class and must be uploaded to the course assignment folder on the P drive. Each creative assignment (including the final applied project) will be graded according to a rubric that will be handed to students prior to each assignment. Projects are assigned based on the 3D Techniques found in Item 4 in the course outline. Each week students learn about / create sample projects in one or two of the subcategories defined in Item 4 above.

Final Applied Project – 36%
Final Applied Project: The final applied project is to be given to the instructor at finals, in the beginning of the class. Students are to produce a 3D game prototype using the content discussed and practiced in weekly classes. Final projects are presented as both a demonstration of game play, and a short video record of the game. All materials are submitted to the professor in digital format, as complete deliverables (with no unsupplied file dependencies.) A rubric detailing the criteria by which the students will be graded will be given on the first week of classes.

Evaluation of bi-weekly projects and the final project are based on the following;
  - *Time In: Was the assignment in by the due date?*
  - *Format: Is formatting correct? Proper file names, extensions, locations, temporal and spatial compression, rates, key frames, channels.*
  - *Components: Object types are correct? Model efficiency acceptable? Model geometry clean? Elements correctly placed? Rotations correct? Layers correct? Naming conventions applied? Details correct? Size relationships correct? Parts fit properly? Scale correct?*
  - *Surfacing: Colors appropriate? Color divisions named? Surfaces correct? Specularity Correct? Diffusion Correct? Luminosity set properly?*
  - *Transparency correct? Textures applied correctly? Scale correct?*
  - *Texturing standards applied? Blends correct? Alphas correct? Projections correct? Procedurals correct? Gradients correct? Image matching accomplished? Texture seams well done? Aesthetic level of textures? Do textures exhibit proper sense of scale to object? etc.*
  - *Hierarchy: Hierarchical structure for each object correct? Elements rotate correctly? Elements positioned correctly in layout? Layout structure named properly? Pivot points set correctly for each layer? Layer parenting correct? Targeting relationships correct? Structure position and rotation locks correctly set?*
  - *Layout: Does the layout of all elements look good? Layout keyframes efficient? All object relationships established correctly? Master scene files*

used correctly? Scene files named properly? Scene Editor correct?
- *Naming conventions followed? Scale correct? etc.*
- *Camera: Shot well composed? Camera aesthetically pleasing? Camera movement style accomplished well? Technical aspects acceptable? Does the camera convey scale properly?*
- *Lighting: Illumination of scene acceptable? Lighting aesthetically pleasing?*
- *Technical aspects of lighting correct and proper? Shadows correct? shadow blending correct? Does the lighting convey the appropriate mood?*
- *Mechanics: Animation of each object correct? Scale properly conveyed by the animation? Timing of animation correct? Ease in - Ease out correct? Graphs correct for animation? Keyframes properly set? Graphs clean and organized?*
- *Movement correct for scene? Cyclic motion properly set? Proxy animation correct? Primary and secondary movement accomplished well? Scale of items appropriately exhibited by the animation?*
- *Game play is engaging, appropriate for the mood or atmosphere.*
- *Game challenge is sufficient to engage the player, escalates over time and provides significant interaction & longevity*
- *Game experience is satisfying and consistent. Conforms to plausible standards given the aesthetic world of the game, or deviates with cause or motive.*
- *Cameras are elastic / appropriately softened to ease game play experience.*
- *Characters are engaging and appropriate to the work.*
- *NPC's display sufficient intelligence / world cognizance to merit engaged interaction.*
- *Traps or puzzles are sufficiently masked and require significant engagement from the user to resolve the obstacles.*
- *UI is relevant and maintains the mimetic qualities / experience of the game.*
- *Rendering: Overall aesthetic level of final rendering. Additional included*
- *Materials well done? Are additional materials distracting or helpful? At what level did final work accomplish the assignment goal? Portfolio level of resulting movie?*

VI. Grading Scale

Grading Scale: A: ≥90% B: 80-89% C: 70-79% D: 60-69% F: <60%

VII. Attendance Policy

Although there is no formal attendance policy for this class, student learning is enhanced by regular attendance and participation in class discussions.

VIII. Required textbooks, supplemental books and readings

Goldstone, Will. (2009). Unity Game Development Essentials. Packt Publishing. (Required)

Gibson, D. (2009). Games and Simulations in Online Learning: Research and Development Frameworks. (Recommended)

Gee, J.P. (2008). Good Video Games and Good Learning: Collected Essays on Video Games, Learning and Literacy (New Literacies and Digital Epistemologies) (Recommended)

Koster, R. Theory of Fun for Game Design (Recommended)

IX. Special resource requirements

N/A

X. Bibliography

Allen, Eric et al. (2008). Body Language: Advanced 3D Character Rigging. Sybex.

Anderson, J. R. (2005). The relationships between student perceptions of team dynamics and simulation game outcomes. *Journal of Education for Business, 81*(2), 85-90.

Banks, J. (1998). *Handbook of simulation: Principles, methodology, advances, applications, and practice.* New York: Wiley and Sons.

Dean, P. (2006). Rules of play: game design fundamentals. *Convergence: The Journal of Research into New Media Technologies, 12*(1), 99-101.

Dorfman, L., & Ghosh, N.K. (1996). *Developing games that learn.* Upper Saddle River, NJ: Prentice Hall.

Fishwick, P. (1995). Simulation model design and execution: Building digital worlds. New York: Prentice Hall.

Foster, A. (2005, September 30). The avatars of research. *The Chronicle of Higher Education, 52*(6), pp. 35-36.

Fullerton, T., Swain, C., & Hoffman, S. (2004). *Game design workshop: designing, prototyping, and playtesting games.* Manhasset, NY: CMP Books.

García-Carbonell, A., Rising, B., Montero, B., & Watts, F. (2001). Simulation/gaming and the acquisition of communicative competence in another language. *Simulation & Gaming, 32*(4), 481.

Humphreys, S. (2003). Online multi-user games. *Australian Journal of Communication, 30*(1), 79-91.

Koster, R., & Wright, W. (2004). *A theory of fun for game design.* Scottsdale, AZ: Paraglyph Press, Inc.

Lee, K., Park, N., Jin, S., & Kang, S. (2005). Effects of narrative on feelings of presence in computer-game playing. *Conference Papers -- International Communication Association.* 1-42.

Mayer, I. & Veeneman, W. (2003). *Games in a world of infrastructures: Simulation-games for*

research, learning, and intervention. New York: Eburon Publishers.

McCrea, C. (2006). The state of play. *Metro.* 148, 192-194.

Ross, Sheldon. (2006). Simulation, (4th ed.). Academic Press.

Rossi, J. (2006). Can Sims save your life? *Training and Development, 60*(2), 12-13.

Williamson, B., & Facer, K. (2004). More than 'just a game': the implications for schools of children's computer games communities. *Education, Communication & Information, 4*(2/3), 255-270.

Course Analysis Questionnaire

A. Details of the Course

   A1. This course is one of the required courses for students in the BS in Games, Simulations & Digital Animation Program. This course is not intended to be a Liberal Studies course.

   A2. This course does not require changes in any other course in the department. A program revision of the BS in Games, Simulations & Digital Animation will include this course among the core requirements.

   A3. This course has been offered as COMM 481 in Fall 2007 and Fall 2008.

   A4. This course is not intended to be dual level.

   A5. This course is not to be taken for variable credit.

   A6. Similar courses are offered at the following institutions, among others:
   Rennselaer Polytechnic Institute: Advanced Digital 3D Projects (and several more)
   University of Colorado, Denver: Introduction to Computer Simulation
   Southern Methodist University: New Media Platforms
   University of Georgia: Video Game Design & Programming

   A7. No professional society, accrediting authority, law or other external agency recommends or requires the content or skills of this proposed course.

B. Interdisciplinary Implications

   B1. This course will be taught by one instructor.

   B2. The content of this course does not overlap with any other at the university.

   B3. This course is not cross-listed.

   B4. This course will not be offered through continuing education.

C. Implementation

C1. No new faculty member is required to teach this course. Dr. Partridge has been teaching this course as a special topic in previous years. In addition a second faculty member with specialization in computer animation & games has been hired. This course will be counted as one preparation and three hours of equated workload.

C2. Other resources:
   a. Current space allocations are adequate to offer this course.
   b. No special equipment is needed for this course beyond the extant animation facilities.
   c. No laboratory supplies are necessary for this course.
   d. Library holdings should be enhanced as identified in the supplemental documents.
   e. There are no additional travel funds required for this course.

C3.   No further grant funds are necessary to provide supplementary materials.

C4. This course will be offered annually.

C5. One section will be offered at a time.

C6. Up to 20 students can be accommodated in this class based on our current classroom configuration and software license availability.

C7. No professional society recommends enrollment limits or parameters for this course.

C8. This course does not involve extensive use of distance education.

D. Miscellaneous

No additional information is necessary.