

LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:	Senate
		10-67e.	AP 3/29/11	App-4/19/11

**Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee**

Contact Person Allen Partridge	Email Address allen.partridge@iup.edu
Proposing Department/Unit Communications Media	Phone 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.

**1. Course Proposals (check all that apply)**

New Course       Course Prefix Change       Course Deletion

Course Revision       Course Number and/or Title Change       Catalog Description Change

	COMM 446 3D Modeling & Animation for Games & Simulations
<i>Current Course prefix, number and full title</i>	<i>Proposed course prefix, number and full title, if changing</i>

**2. Additional Course Designations: check if appropriate**

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

This course is also proposed as an Honors College Course.

**3. Program Proposals**

New Degree Program       Program Title Change       Other

New Minor Program       New Track

<i>Current program name</i>	<i>Proposed program name, if changing</i>
-----------------------------	---

4. Approvals		Date
Department Curriculum Committee Chair(s)	<i>B. Anderson</i>	1-20-11
Department Chair(s)	<i>Kurt P. DeLoth</i>	1/20/11
College Curriculum Committee Chair	<i>Jay [unclear]</i>	2/16/11
College Dean	<i>Mary Ann Rafath</i>	2/18/11
Director of Liberal Studies *		
Director of Honors College *		
Provost *		
Additional signatures as appropriate: (include title)		
UWUCC Co-Chairs	<i>Gail S Seduist</i>	3-31-11

\* where applicable

**Received**  
FEB 23 2011

**RECEIVED**  
1/20/11  
*M. Sunealitis*



5	1	On-line discussions; bi-weekly projects.
6	1,2,3,4,5,6	Final project.
7	6	On-line discussions
8	6, 2, 3	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) Theory and History [4 hrs]
- 2) CGI Nomenclature [5 hrs]
  - a) Basic 3D concepts.
  - b) Fundamentals of Modeling.
  - c) History and Foundations.
  - d) Theory and Traditions.
- 3) Objects and Layout [5 hrs]
  - a) Box Modeling with Polygons
  - b) Spline Modeling Fundamentals
  - c) Point Clouds and Laser Scanning
- 4) Rigid-Body Modeling and Animation [6 hrs]
  - a) Working with segmented animations
  - b) Rigid Body Dynamics
  - c) Professional Standards and Workflow
- 5) Shadow and Light [5 hrs]
  - a) Rendering Concepts
  - b) Rendering Practice
  - c) Lighting a scene
  - d) Camera – Light relationships
  - e) Animated Light Effects
- 6) Surface Texturing [5 hrs]
  - a) Surfaces
  - b) Textures
  - c) Texture Maps
  - d) Real-Time Paint
  - e) Animated Surface Effects
- 7) Cameras and Rendering [4 hrs]
  - a) View Frustrums
  - b) Simulating Render Styles
  - c) Simulating Camera Effects
  - d) Animated Cameras

- 8) IK Fundamentals [4 hrs]
  - a) Understanding Forward Kinematics
  - b) Parent Child Hierarchies
  - c) Inverse Kinematics Applied
  - d) Influence and Mesh Deformation
- 9) Project Work / Evaluation & Assessment [4 hrs]
  - a) Application of concepts and skills acquired in previous units to projects.
- 10) Final project presentation and evaluation [2 hrs]

## V. Evaluation Methods

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

### **General Assignment Expectations/Rubrics:**

**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 – 50% (5 projects, each worth 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 course assignment folder on the P drive. Each creative assignment (including the final applied project) will be graded based on the criteria listed below. A rubric will be handed to students prior to each assignment.

**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. You are to produce a 3D modeling using the content discussed in your weekly classes. You are to label your CD appropriately and ensure that your content is working. No blank CD's will be accepted. You are to label your CD with a sharpie, inside of a CD case (not folded paper, just a CD, or covered in plastic). 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.*
- *Model: Model type 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?*
- *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:  $\geq 90\%$  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**

Luhta, Eric. (2009) How to Cheat in Maya 2010: Tools and Techniques for the Maya Animator. Sybex. (Recommended)

Kerlow, Victor I. (2009). The Art of 3-D Computer Animation and Effects, Fourth Edition London: John Wiley and Sons. (Required)

## **IX. Special resource requirements**

NA

## **X. Bibliography**

- Allen, Eric et al. (2008). *Body Language: Advanced 3D Character Rigging*. Sybex.
- Furniss, Maureen. (2008). *The Animation Bible: A Practical Guide to the Art of Animating from Flipbooks to Flash*. Abrams.
- Goldberg, Eric. (2008). *Character Animation Crash Course*. Silman-James Press.
- Koster, R., & Wright, W. (2004). *A theory of fun for game design*. Scottsdale, AZ: Paraglyph Press, Inc.
- LaMarre, Thomas. (2009). *The Anime Machine: A Media Theory of Animation*. University of Minnesota Press.
- Leslie, Esther. (2004). *Hollywood Flatlands: Animation, Critical Theory & the Avant-Garde*. Verso.
- 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.
- Prensky, Marc. (2004). *Digital game-based learning*. New York: Paragon House.
- Ratner, Peter. (2009). *3D Human Modeling and Animation*. Third edition. Wiley.
- Rils, J.O. (2003). *Simulation games and learning in production management*. New York: Springer.
- Rizzo, M. T. (2005). Virtual Angkor; Visualizing the past in 3D. *Screen Education*, 10-14.
- Williams, Richard. (2009). *The Animator's Survival Kit – Revised Edition: A Manual of Methods, Principles & Formulas for Classical, Computer, Games, Stop Motion and Internet Animators*. Second Edition. Faber & Faber.

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.

Zhuang, Yueting. (2009). *A Modern Approach to Intelligent Animation: Theory and Practice*. Springer Berlin Heidelberg.

## **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:
  - Rensselaer Polytechnic Institute: Animation II
  - University of Colorado, Denver: Introduction To 3D Graphics Processes and Techniques
  - Southern Methodist University: Introduction to 3D Animation
  - University of Georgia: Computer Animation for Dramatic Media
- 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. The resources are currently adequate to support this course.
- f. 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.