New Course: Introduction to Aesthetic Computing CAP 4403, Credits: 3
Prerequisite: COP 3530

Faculty who can teach this course: Small, Dobbins, Damkjer, Fishwick, Lok, Peters

Course Web Page (Spring 2004): http://www.cise.ufl.edu/~fishwick/aescomputing

Justification for Course:

Complements CAP 6402 (Aesthetic Computing), and provides an offering for undergraduates, especially those within the Digital Arts and Sciences programs. However, the course will not be limited to DAS students, and can be taken by anyone with a senior (4^{th} year) standing. This interdisciplinary nature of the course stresses the application of the arts, and more generally the field of aesthetics, to the discipline of computing.

Catalog Course Description:

Basic concepts of applying aesthetics to the representation of formal discrete structures found in computing, as well as to their operational behaviors.

Goal of Course:

To create a bridge between Fine Arts and Computer Science, under the auspices of the *Digital Arts and Sciences* (DAS) degree programs, to the extent that methodology in Fine Art is used to affect computing methodology. This goal is achieved through customized and personalized re-presentation of mathematical structural notation, beginning with content specified in XML, and proceeding to content specified for models frequently found in computing, such as finite state machines, data flow models, flow charts, and data structures.

Course Content Overview:

1. Regular multimedia-enhanced lectures in a CIRCA-equipped classroom
2. Three to Four Guest lectures from DW affiliated faculty within the University
3. Student Presentations if time permits, and if the class size is relatively small
4. Multimedia demonstrations (VHS. DVD. Internet)

Required Text:

Book: **Aesthetic Computing**, P. Fishwick, Editor, MIT Press, to be published in Spring 2005. An unpublished draft will be available for the Spring 2005 class.

Required Software:

None. Students will be given a list of available software for 2D and 3D design, or they can choose their own.

Attendance Policy:

Attendance is required and will be checked by the instructor.

Exam Makeup Policy:

Exams can be missed only in emergencies. The exam can be taken on the next possible date, after first signing a statement to the effect that the student has not seen the exam or discussed its contents with anyone prior to taking it.

Grading:

1. Homework (15%)
2. Attendance (5%)
3. Class presentation (15%)
4. Physical Project: a model made of material, such as wood, plexiglass, metal, cardboard (30%)
5. Virtual Project: using a 3D software standard such as VRML, Java3D, or 3DStudioMax (30%)
6. Class participation (5%)

Lecture Topics:

1. Connections and bridges between the arts and computing disciplines: left brain/right brain creativity exercises, and modes of thought and practice that often distinguish the Arts and Sciences.
2. Aesthetics and perception: the role of aesthetics in mathematics and computing. Overivew of human perception, capabilities of human vision and hearing
3. History of language and communication: concepts of language, including natural and artificial language notation. Grammars and schemas associated with language. Theories of language formation (Sapir/Whorf vs. Chomsky for example)
4. Semiotics: the theory of sign formation. Basic concepts from Saussure and Peirce on the creation of signs, and categories for signage.
5. Making connections: computational methods of analogy and metaphor, morphisms: the ways in which connections and mappings are constructed. Includes an overview of the mechanics of analogy and metaphor formation, and a review of mapping approaches found in discrete mathematics: set theory, relations and functions, morphisms.
6. Static and dynamic model structures in mathematics and computing: overview of key model types, including information models (found in database theory, entity-relation models and AI, semantic networks), geometry models (found in graphics and design, scene graphs), and dynamic models (finite state automata, Markov models, differential and difference equations, data flow models, Petri networks)
7. Methods of production as applied to formal modeling: applying multimedia production techniques to the creation of the physical and virtual models. This includes pre and post production phases.