



## COURSE OUTLINE

### DIGITAL MEDIA ARTS

DMA 120  
Course Number

3D Modeling 1  
Course Title

3  
Credits

1 lecture/4 studio hours  
Hours: lecture/laboratory/other (specify)

**Catalog description:**

Development of visual problem-solving abilities using computers as art and design tools. Students create and manipulate three-dimensional forms and scenes, their colors, surface textures, lighting and cameras to design effective compositions in virtual 3-D space. Useful for graphic arts, communications, interior design and architectural professions, prepares students for Animation I and 3-D Modeling II. Windows-based PC computers, scanners, printers and current professional software are used.

**Prerequisites:** N/A

**Co-requisites:** N/A

**Required texts/other materials:**

- Text: Maya 8 for Windows and Macintosh, 2007 By Robinson/Stein, Peachpit ISBN#: 0321476751
- Removable storage media.

**Last revised:** 2007

**Course coordinator:** Sarah Sweeney, e-mail: [sweeneys@mccc.edu](mailto:sweeneys@mccc.edu), tel. X 3457

**Course Instructors:** Yevgeniy Fiks, e-mail: [fiksy@mccc.edu](mailto:fiksy@mccc.edu), tel. x 3543

**Information resources:**

Digital files from the instructor's files.

**Other learning resources:**

Open Lab Hours

## **Course goals:**

At the conclusion of the course, the student should:

1. Be capable of visualizing and expressing an idea graphically using the computer as a medium of expression.
2. Understand concepts of 3-D graphics.
3. Learn the skills of Polygonal and NURBS modeling, texture mapping, lighting, and rendering.
4. Be able to use the tools and commands of Maya software effectively.
5. Demonstrate an understanding of basic design principles and a variety of design elements as they relate to computer graphic problems.

## **Course-specific General Education goals and objectives.**

See attached

## **Units of study in detail.**

### **Unit 1 " Hybrid Toy (Primitives, Booleans and Deformers)"**

The student will be able to:

- Demonstrate ability to manage Maya files properly (network, hard drive, and external storage).
- Demonstrate ability to use various display modes and view ports.
- Demonstrate ability to create a simple model by using primitive shapes, deformers, and Boolean combinations.
- Demonstrate ability to use manipulate shapes at the object and component levels.
- Demonstrate ability to conceptualize and articulate visually his/her idea in a composition.
- Discuss his/her work during a critique and critically evaluate and justify his/her own artistic and vocational practice.

### **Unit 2 " Polygonal Modeling "**

The student will be able to:

- Demonstrate ability to communicate a message visually with clarity.
- Demonstrate ability to create organic models using Polygons.
- Demonstrate ability to use the extrusion and smoothing techniques.
- Demonstrate ability to edit polygonal models on the points, edges, and faces levels.
- Demonstrate understanding of the materials and textures, including using Bump and Color maps.
- Demonstrate ability to use a scanner to acquire textures maps.
- Discuss his/her work during a critique and critically evaluate and justify his/her own artistic and vocational practice.

### **Unit 3 " Environment (Materials, Lights and Cameras)"**

The student will be able to:

- Demonstrate ability to conceptualize and articulate visually his/her idea in a series of rendered images.
- Design using the following principles of two-dimensional design: Balance, Unity, and Focal Point.
- Demonstrate ability to use computer-generated lights effectively and to understand the difference between different light types.
- Demonstrate ability to use materials and textures effectively, including Materials library.
- Demonstrate ability to use cameras effectively.
- Demonstrate ability to use various scene elements to construct a compelling visual narrative.
- Discuss his/her work during a critique and critically evaluate and justify his/her own artistic and vocational practice.

### **Unit 4 " NURBS Part 1"**

The student will be able to:

- Demonstrate ability to use various NURBS techniques, including Revolve, Loft, and Planar.
- Demonstrate understanding of the difference between NURBS and Polygons.
- Demonstrate understanding of the benefits and disadvantages of NURBS.
- Demonstrate ability to apply materials/textures to NURBS models.
- Demonstrate ability to use Layers effectively.
- Design using the following principles of two-dimensional design: Balance, Unity, and Focal Point.
- Discuss his/her work during a critique and critically evaluate and justify his/her own artistic and vocational practice.

### **Unit 5 " Constructed Reality (NURBS Part 2)"**

The student will be able to:

- Demonstrate ability to conceptualize and articulate an idea visually in a series of images.
- Design using the following principles of two-dimensional design: Balance, Unity, and Focal Point.
- Demonstrate ability to use various NURBS techniques.
- Demonstrate ability to composite a computer-generated model with a photograph effectively.
- Discuss his/her work during a critique and critically evaluate and justify his/her own artistic and vocational practice.

### **Unit 6 " Utopian Architecture"**

The student will be able to:

- Demonstrate ability to combine various 3-D modeling tools and techniques to create a complex 3-D environment.
- Demonstrate ability to conceptualize and articulate an idea visually in a series of images.
- Design using the following principles of two-dimensional design: Balance, Unity, and Focal Point.
- Learn to conceptualize a layout on paper before attempting in on the computer.
- Discuss his/her work during a critique and critically evaluate and justify his/her own artistic and vocational practice.

## **Evaluation of student learning:**

Instructional modes to be used are: Integrated lecture and laboratory, studio assignments with specifications and limitations set by the instructor, demonstrations by the instructor, and discussions and critiques of student work.

The student is responsible for his or her regular attendance, participation in classroom discussions and critiques of student work, and for including his or her work to be discussed and evaluated. Diligent work on assignments is essential.

Evaluation of progress and grades are determined by the instructor, based upon the following considerations: attendance, participation, and estimate of quality of class work and homework assignments (by instructor).

Values of quality, aesthetics, etc., are based upon the instructor's judgement of the work produced, the effort employed, and the total result achieved. To receive full credit, all assignments are due on time. A late assignment will be accepted one class period after due date with a reduced letter grade. After one missed class period, late assignments will receive the grade of "F".

The grade of "A" will be earned by students who demonstrate mastery of the essential elements of the material presented, as well as demonstrating excellence in aesthetics and originality in completing course objectives with at least 90% accuracy.

The grade of "B" will be earned by students who demonstrate more than adequate mastery of the essential elements of the material presented and acceptable knowledge of the course content. Achievement will be demonstrated when all of the specific course objectives are fulfilled with at least 80% accuracy.

The grade of "C" will be earned by students who demonstrate adequate mastery of the essential elements of the material presented. Achievement will be demonstrated when all of the specific course objectives are fulfilled with at least 70% accuracy.

The grade of "D" is undesirable, but indicates a minimum passing of the course requirements. All of the course objectives must be fulfilled with at least 60% accuracy.

The grade of "F" will be earned by students who do not demonstrate achievement.

<b>Grade Breakdown</b>	<u>Percent Overall Grade</u>
Class Attendance and Participation	10%
Project 1: Hybrid Toy (Primitives, Booleans and Deformers)	15%
Project 2: Polygonal Modeling	15%
Project 3: Environment (Materials, Lights and Cameras)	15%
Project 4: NURBS Part 1	15%
Project 5: Constructed Reality (NURBS Part 2)	15%
Project 6: Utopian Architecture	15%

**Academic Integrity Statement:**

Students are expected to comply with the college-wide requirements for academic integrity. Mercer County Community College is committed to Academic Integrity -- the honest, fair and continuing pursuit of knowledge, free from fraud or deception. This implies that students are expected to be responsible for their own work. Presenting another individual's work as one's own and receiving excessive help from another individual will qualify as a violation of Academic Integrity. ([http://www.mccc.edu/admissions\\_policies\\_integrity.shtml](http://www.mccc.edu/admissions_policies_integrity.shtml))