

**University of Arkansas – Fort Smith  
5210 Grand Avenue  
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Fort Smith, AR 2913  
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**General Syllabus**

**CSCE 33203 Computer Graphics**

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: CSCE 20003 Data Structures

Effective Catalog: 2018- 2019

**I. Course Information**

**A. Catalog Description**

Examines the generation and manipulation of computer images and digital media. Topics include basic theories and concepts around computer graphics, hardware, geometric modeling, and display algorithms and data structures.

**B. Additional Course Information**

This course is used to satisfy the requirements for the Data Analytics Concentration in the Information Technology degree. It may also be used as an upper level elective in all other concentrations of the IT degree.

**II. Student Learning Outcomes**

**A. Subject Matter**

Upon successful completion of this course, the student will be able to:

1. Analyze the common uses of digital media and graphics.
2. Explain, design and utilize the basic concepts of computer graphics.
3. Assess how the limits of human perception affect choices about the digital representation of analog signals.
4. Evaluate the differences between lossy and lossless image compression techniques.
5. Create and implement various graphics transformations and filters.
6. Analyze and explain the concept and applications of texture mapping, sampling and anti-aliasing.
7. Create programs that use various modeling approaches with respect to space and time complexity and quality of image.

## **B. University Learning Outcomes**

This course enhances student abilities in the following areas:

### **Communication Skills (written and oral)**

Students will apply programming documentation, demonstrations and technical explanations to concepts and code execution.

### **Analytical Skills**

**Critical Thinking Skills:** Students will design algorithm requirements and properties to implement the appropriate programming code solution or application implementation to solve the given problem.

## **III. Major Course Topics**

- A. Fundamentals of Computer Graphics
- B. Mathematics for Computer Graphics
- C. Digital Media
- D. Lossy and Lossless Compression Algorithms
- E. Basic Rendering and Techniques
- F. Geometric Modeling
- G. Animation
- H. Composition
- I. OpenGL