FORT HAYS STATE UNIVERSITY
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(CSCI 431) Computer Graphics (Spring 2020)

Fort Hays State University
College of Science, Technology and Mathematics
Department of Computer Science
Professor Dr. Hong Biao Zeng

1. COURSE INFORMATION

- Course Credit Hours: Three credit hours
- Course Prerequisites: CSCI 251
- Meeting of Class: On Campus: TT: 10:30 a.m. – 11:45 a.m. RH 206.
  OnLine: MTWT: 8:00 p.m. – 9:00 p.m. by appointment

2. INSTRUCTOR INFORMATION

- Instructor: Dr. Hong Biao Zeng, Professor
- Office Location: HH 257
- Office Hours: MTWTF: 9:30 a.m. – 11:20 a.m. Walk-in or Call in
  MTWT: 8:00 p.m. – 9:00 p.m. by appointment requested one day ahead.
- Email Address: hzeng@fhsu.edu
- Phone Number: 785-628-5811
- Fax Number: 785-628-5816

3. TEXTBOOK AND COURSE MATERIALS

- Required Textbook
  Title: Interactive Computer Graphics – A top down approach with WebGL, 7th edition
  Author: Edward Angle, Dave Shreiner
  Publisher: Pearson
  ISBN 10: 0-13-357484-9
  ISBN 13: 978-0-13-357484-5

4. COURSE DESCRIPTION

Raster graphics algorithms, transformations, orthographic & perspective projection, hidden surface elimination, surface shading, the graphics pipeline, and color models. Application development utilizing a graphics API. Prerequisite(s): CSCI 251.

5. COURSE OUTCOMES

Upon a successful completion of this course, the students will be able to

- utilizes graphics algorithms to perform transformations and create projections.
- employs techniques to remove hidden surfaces and shade visible surfaces.
- demonstrates knowledge of the terminology and concepts of a graphics pipeline and color models.
- develops graphics applications utilizing a graphics API (Application Programmer's Interface).

6. TEACHING, LEARNING METHODS, & COURSE STRUCTURE

- Delivery Method
  - Read textbook
  - Watch the video notes from the instructor.
  - Participate the class
  - Do Review on blackboard
  - Do Programming Project
  - Participate discussion on Piazza.

- Instructional Approach
  All materials will be divided into Three Units. Each Unit will cover three modules. One exam will be given at the end of each Unit. Students should study the materials of each module in following steps
  - Read the Project instruction for the module and get general ideas about the concepts that are covered in the module
  - Read the module chapter of the textbook before come to class
  - Watch video notes to help understanding
  - Begin to do the project/reviews after finish half of the module text.
  - Finish and turn in the project.
  - After finish all modules in a unit, finish and turn in the Review. Note: the students shall start to do Review at beginning of the Unit. Do NOT wait to last minutes to do it since there will be NO time.

- Course Structure
  The course is structured into nine Modules total three Units. It is student's responsibility to finish each module within its timeline. The detailed structure and timeline is listed in Course Schedule section below.

7. COURSE SCHEDULE

This schedule is tentative and might change during the semester depending on how the course evolves. Students will be notified of the changes through announcements at the Blackboard

course site. If time is mentioned in the course, it refers to the Central Time Zone. All project/Concept Quiz/Exams are due on indicated date by **11:59 p.m**. Final Exam is due on Friday of final week by 11:59 p.m.

Modules/Exams	Topics	Reading/Explore	Assignment
Module 1 Week 1 – 2 (Wed)	Graphics Systems and Models	Chapter 1 Start Review 1	Project 1, homework 1 Due on Week 2 Wed
Module 2 Week 2 - 3	Graphics Programming	Chapter 2 Continue Review 1	Project 2, Homework 2 Due on Week 3 Fri
Module 3 Week 4 – 5 (Wed)	Interaction and Animation	Chapter 3 Continue Review 1	Project 3, homework 3 Due on Week 5 Wed
Exam One Week 5	Cover Module 1-3 Review Guide	Finish Review 1. Due Week 5 Fri.	Exam One Due Week 6 Mon
Module 4 Week 6 – 7 (Wed)	Geometric Objects and Transformation	Chapter 4 Start Review 2	Project 4, homework 4 Due on Week 7 Wed
Module 5 Week 7 -- 8	Viewing	Chapter 5 Continue Review 2	Project 5, homework 5 Due on Week 8 Fri
Module 6 Week 9 – 10 (Wed)	Lighting and Shading	Chapter 6 Continue Review 2	Project 6, homework 6 Due on Week 10 Wed
Exam Two Week 10	Cover Module 4-6 Review Guide	Finish Review 2 Due Week 10 Fri	Exam Two Due Week 11 Mon
Module 7 Week 11 – 12(Wed)	Discrete Techniques	Chapter 7 Start Review 3	Project 7, homework 7 Due on Week 12 Wed
Module 8 Week 12 - 13	Modeling and Hierarchy	Chapter 9 Continue Review 3	Project 8, homework 8 Due on Week 13 Fri
Module 9 Week 14 – 15(Mon)	From Geometry to Pixels	Chapter 8 Continue Review 3	Project 9, homework 9 Due on Week 15 Tue
Exam Three Week 15	Cover Module 7 – 9 Review Guide	Finish Review 3 Due on Week 15 Wed	Exam Three Due Week 15 Fri
Final Exam	Final Exam is due on Friday of Week 16 by 11:59 p.m.		

8. ASSESSMENT METHODS AND GRADING SCALE

- Exam Review (6%)
  There are three Unit Exam Reviews on blackboard. The students do the Reviews on Blackboard. The students can save the work and return to continue as long as the students submit the Review before the deadline. Once the deadline passes, the Review link will be closed. Therefore, no late Review is acceptable.

- EXAMS (30%)

  There will three unit exams. Each exam covers three modules. All exams are on Blackboard and must be taken using Respondus Lockdown Browser in class.

  All exams are located in Exam folder on Blackboard. Once the exam starts, the student need to finish the exam in 90 minutes. After 90 minutes, the exam will be automatically submitted.

  The students need to take and submit the exam before deadline. Once the deadline passes, the exam link will be closed. Therefore, no late exam is acceptable.

  The exam questions will cover the same concepts that are demonstrated in Exam Review, homework, and projects.

- HOMEWORK (18%)
  There are nine homework. Each homework has different number of questions. Students need to turn in their homework on time via link on blackboard. NO late homework is acceptable.

- PROJECTS (30%)
  There are nine projects. Students need to turn in their projects on time via Blackboard. NO late projects are acceptable.

- FINAL (16%)
  There will be a comprehensive final exam given at the last week of the semester. Final exam is **mandatory**. Whoever misses the final will automatically fail the course. The final exam follows the same procedures as unit exams.

- Grade Cut:
  90% or above: A; 80% to 89%: B; 70% to 79%: C; 60% to 69%: D; 59% or below: U
  All grade cut are sharp. There will be NO curve for any individual.

Please notice that the **weighted average** will be used for course assessment. Your course percentage will be calculated using the following formula:

$$Course\ Grade = \frac{YRT}{90} \times 6\% + \frac{YET}{300} \times 30\% + \frac{YHT}{900} \times 18\% + \frac{YPT}{900} \times 30\% + \frac{YF}{100} \times 16\%$$

Where YRT for Your Reviews Total Points; YET for Your Exams Total Points; YHT for Your Homework Total Points; YPT stands for Your Project Total Points; and YF for Your Final Exam Points

Please **DO NOT** simply using your course total points to divide by 2000 to get your course percentage since the points on different categories are weighted differently. Please refer the following table for unit points, total unit points, and weight for each assessment category.

Assessment Categories	Unit Points	Total Category Points	Weight
3 Exam Reviews	30	30 × 3 = 90	6%
9 Homework	Vary	610	18%
9 Projects	100	100 × 9 = 900	30%
Three Exams	100	100 × 3 = 300	30%
1 Final Exam	100	100 × 1 =100	16%
Total Points		2000	100%

9. STUDENT HELP RESOURCES

Students have access to academic services, technical support and student services at Fort Hays State University. You can find the resources on Blackboard under Helpful Resources folder

10. COURSE POLICIES

- Class Attendance
  Students need do Reviews, Projects, and Exams on time. Anyone who misses one review, or one project, or one exam will be reported to TigerIQ, , which is the FHSU student retention system.

- Assignment Due Date
  There no late Review, Project, or Exam is acceptable except with permission from instructor due to the emergency. In case there is an emergency which needs to be accommodated, the student must first send the instructor an e-mail notification before the due date, then submit the evidence within two days.

- Procedures for all Assignment Submission
  - The online Review is finished and submitted on Blackboard. The Review link will be closed once the due date passes. Late Review assignments are not acceptable.
  - The projects need to be finished using required programming language. The students need to turn in project file by uploading it to Blackboard via project assignment link. The project file must be well documented. The author's name must be included. The project link will be closed once the due date passes. Late projects are not acceptable.
  - Three Exams and Final Exam are finished and submitted on Blackboard.

- Exam Make-ups
  Exam make-ups are possible if the student provides appropriate information for being unable to take the Exam on time. The instructor reserves the right to ask for the evidence and documentation.

- Review/Project Due Dates
  All the due dates are posted in course calendar. The instructor may (may not) announces it in class to remind the students about the due date. However, it is the students' full responsibility to ensure that all required materials are turned in on time.

11. UNIVERSITY POLICIES

All university policies can be found on Blackboard under University Policies folder.