Computer Graphics & Multimedia
Credit: 3
Lecture: TR 3:30PM-4:45PM
Room: J-158
Web: http://ksuweb.kennesaw.edu/~cmei/cs4722/

Instructor

Chao Mei
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Web: http://www.chao-mei.com/
Phone: 470-578-5571
Office: J-367
Office hours: Tue 12:30 PM - 3:30 PM, Thur 2:00 PM - 3:30 PM 5:00 PM -6:30 PM, via email, by appointment, and open-door.

Course Description

A study of the hardware and software of computer graphics and multimedia systems from the programmer's perspective. Includes a survey of display and other media technologies, algorithms and data structures for manipulation of graphical and other media objects, and consideration of user interface design. Major project included.

Course Prerequisites

Prerequisites for 4722: CS 3304 (Data Structures)

Course Learning Outcomes

Students will be able to:

1. Demonstrate an understanding of how graphical information is represented to a graphics system and encoded by the system to create images

2. Organize graphical information in a program in order to create images with a graphics API

3. Use events in a graphics system to create interactive graphics displays

4. Use a modern graphics API (such as OpenGL or DirectX) to create effective images.

5. Construct programs and demonstrate proficiency using shaders written in languages such as HLSL, Cg, or GLSL.
Required Textbook

Publisher: Addison-Wesley (2011)
ISBN-10: 0132545233

About the Course

This course focuses on programming interactive computer graphics using OpenGL 3.x in the language(s) of C/C++. Unlike previous semesters, this course will be using the core profile of OpenGL - which moves away from the fixed function pipeline and into shader-based programs. The course begins with an introduction/review of relevant mathematical concepts that will most definitely be used throughout the semester (e.g. dot/cross products of vectors, matrices, etc.. and don't worry, I'll explain these to you if you haven't taken Linear Algebra) as well as common terminology (e.g. lighting, backface culling, rasterization, projections, etc..) By the end of the course, students will be expected to generate simple, yet extremely awesome, interactive 3D environments. The class promises to be a fun one!

Assessment

Grading Scale

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>[90, 100+]</td>
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<tr>
<td>B</td>
<td>[80, 90)</td>
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<tr>
<td>C</td>
<td>[70, 80)</td>
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<tr>
<td>D</td>
<td>[60, 70)</td>
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<tr>
<td>F+</td>
<td>[0, 60)</td>
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Assignments

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Projects (3)</td>
<td>45%</td>
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<tr>
<td>- Project 1 - 15%</td>
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<td>- Project 2 - 15%</td>
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<td>- Project 3 - 15%</td>
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<tr>
<td>Labs</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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Course Policies

"Labs"

They aren't really "labs" in the traditional sense, but more of a guided lecture. You’ll see when we get into it.

Academic Misconduct

To be explicit: You cannot submit code that you have not personally written. You cannot submit your friend/partner’s code. You cannot “borrow” code from the Web – even if you site it. You cannot submit my code either. Why? Because you need to be able to crank this code out! That’s why employers will want to hire you! **ALL CODE MUST BE YOUR OWN, UNLESS OTHERWISE STATED.**

Course Policies Academic Misconduct

Every KSU student is responsible for upholding all provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. The Code of Conduct includes the following:

*Section II of the Student Code of Conduct addresses the University’s policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes either an “informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct’s minimum one semester suspension requirement.*

*Students involved in off-campuss activities shall not act in a disorderly or disruptive fashion, nor shall they conduct any dangerous activity.*

*Students involved in off-campus activities shall not take, damage or destroy or attempt to take, damage or destroy property of another.*


Disability Statement

*Important notice: Any student who, because of a disabbling condition, may require some special arrangements in order to meet the course requirements should contact the instructor as soon as possible to arrange the necessary accommodations. Students should present appropriate verification from KSU Student Disability Services. No requirements exist that accommodations be made prior to completion of this approved University process.*
Any student with a documented disability needing academic adjustments is requested to notify the instructor as early in the semester as possible. Verification from KSU Student Disability Services is required. All discussions will remain confidential.

If you have a hidden or visible disability which may require classroom or test accommodations, please see me as soon as possible during scheduled office hours. If you have not already done so, please register with KSU Student Disability Services, the office responsible for coordinating accommodations and services for students with disabilities.

Please contact the instructor immediately if you have or think you may have a disability or medical condition which may affect your performance, attendance, or grades in this class and for which you wish to discuss accommodations of class-related activities or schedules. Accommodations are arranged on an individualized, as-needed basis after the needs and circumstances have been evaluated.

If you have a specific physical, psychiatric, or learning disability and require accommodations, please let me know early in the semester so that your learning needs may be appropriately met. You will need to provide documentation of your disability to the Student Disability Services office, located in the Student Center room 267, and obtain a list of approved accommodations.

If you believe you qualify for course adaptations or special accommodations under the Americans with Disabilities Act, it is your responsibility to contact the Student Disability Services office in the Student Development Center and provide the appropriate documentation. If you have already documented a disability or other condition that would qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can reach me by phone at 678-915-5558, or you can schedule an appointment to meet me in J-379 at a determined time. If this location is not convenient for you, we will schedule an alternative place for the meeting. If you use an alternative medium for communicating, let me know well in advance of the meeting (at least one week) so that appropriate accommodations can be arranged.

Course Withdrawal

Please refer to the KSU Undergraduate Catalog at http://catalog.kennesaw.edu/content.php?catoid=24&navoid=2171&hl=Withdrawal&returnto=search#withdrawalfromclasses

Communication

The University provides all KSU students with an “official” email account with the address “students.kennesaw.edu.” As a result of federal laws protecting educational information and other data, this is the sole email account you should use to communicate with your instructor or other University officials.

Professional communication is important in presenting yourself. You must use proper spelling, punctuation, grammar, etc. when communicating in your submissions and via email to me. Do
not use leet or texting shorthand when emailing me, or I will not respond to your email or I will take off a significant portion of your grade. I don't do this to be mean; rather, I want to encourage your professional development, and I also don't have time to decipher cryptic emails that are not clearly written.

**Make-up Policy**

No late work is accepted. Plan ahead and coordinate with me proactively and head of time if a deadline cannot be met. If you have a problem that arises during the course of the semester, please contact me as soon as possible. I'm happy to work with you under legitimate circumstances (life has potholes), but I can't work with you to help you succeed if you don't let me know of a problem.

If a student must miss a test or final exam due to a documented, legitimate reason (illness with documentation, family death, etc.), then a make-up test/exam will be administered. To coordinate this, contact the instructor as soon as possible. It is the responsibility of the student to coordinate this in a timely manner.

**Attendance**

It is expected that you attend class. However, (other than the first week and exams) class attendance is not required and does not affect your overall grade. It is suggested that if (for whatever reason) you miss class, you coordinate with other students about the lecture.

**Feedback in a timely manner**

You will receive a response from me typically within 24 hours of sending an email.

**Academic Integrity**

Every KSU student is responsible for upholding all provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. The Code of Conduct includes the following:

- Section II of the Student Code of Conduct addresses the University’s policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes either an “informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct’s minimum one semester suspension requirement.
• Students involved in off-campus activities shall not act in a disorderly or disruptive fashion, nor shall they conduct any dangerous activity.

• Students involved in off-campus activities shall not take, damage or destroy or attempt to take, damage or destroy property of another.

**Reasonable Accommodations**

Students with qualifying disabilities under the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act who require “reasonable accommodation(s)” to complete the course may request those from Office of Student Disability Services. Students requiring such accommodations are required to work with the University's Office of Student Disability Services rather than engaging in this discussion with individual faculty members or academic departments. If, after reviewing the course syllabus, a student anticipates or should have anticipated a need for accommodation, he or she must submit documentation requesting an accommodation and permitting time for a determination prior to submitting assignments or taking course quizzes or exams. Students may not request retroactive accommodation for needs that were or should have been foreseeable. Students should contact the office as soon as possible in the term for which they are seeking accommodations. Student Disability Services is located in the Carmichael Student Center in Suite 267. Please visit the Student Disabilities Services website at www.kennesaw.edu/stu_dev/sds for more information, or call the office at 470-578-2666.

**Religious Observance**

I encourage students in promoting their spiritual health. Religiously-observant students wishing to be absent on holidays that require missing class and/or exam should notify the instructor at least two weeks in advance and discuss acceptable ways of making up any work missed because of the absence. It is up to the student to be proactive and handle this early in the semester.

**Academic honesty**

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**Academic Resources**

Academic Tutoring Services - [http://www.kennesaw.edu/stu_dev/alp/academic.shtml](http://www.kennesaw.edu/stu_dev/alp/academic.shtml)

Disability Resources - [http://www.kennesaw.edu/stu_dev/dsss/dsss.html](http://www.kennesaw.edu/stu_dev/dsss/dsss.html)

ESL Study and Tutorial Center - [http://www.kennesaw.edu/uc/esl/](http://www.kennesaw.edu/uc/esl/)

Library - [http://www.kennesaw.edu/library](http://www.kennesaw.edu/library)

Supplemental Instruction - [http://www.kennesaw.edu/us/si_leaders/](http://www.kennesaw.edu/us/si_leaders/)


The KSU Writing Center helps students in all majors improve their writing. Experienced, friendly writing assistants help with topic development, revision, research, documentation, grammar, and more. For more information or to make an appointment, visit writingcenter.kennesaw.edu or stop by English Building, Room 242 (Kennesaw campus) or Building A, Room 184 (Marietta campus).

Math Lab - [http://mathlab.kennesaw.edu/Home.html](http://mathlab.kennesaw.edu/Home.html)

**Student Support and Wellness Resources**

Career Services Center - [https://careerctr.kennesaw.edu/](https://careerctr.kennesaw.edu/)

Counseling and Psychological Services - [http://sss.kennesaw.edu/cps/](http://sss.kennesaw.edu/cps/)

KSU offers counseling services on-campus that are available to you at no cost. All counseling services provided are confidential and in no way connected to your academic record.

Center for Health, Promotion and Wellness - [http://www.kennesaw.edu/col_hhs/wellness/](http://www.kennesaw.edu/col_hhs/wellness/)

Student Health Clinic - [http://www.kennesaw.edu/col_hhs/hc/](http://www.kennesaw.edu/col_hhs/hc/)

**Course Schedule**

I have made every effort to plan the course out well with reasonable pacing, but it may be that we're moving too fast/slow and the schedule may change. Please view the published schedule to plan your semester but realize that it might change. Assignment deadlines may change as well. I will announce in class and email if such changes occur.