

## Course Information

Course Number: CSCE 441  
Course Title: Computer Graphics  
Section: 500  
Time: MW 4:10 – 5:25  
Location: 101 HALB  
Credit Hours: 3  
Class Website: <http://faculty.cs.tamu.edu/nimak/Courses/CSCE441-CompGraph/Fall2022/>  
Campuswire Link: <https://campuswire.com/p/GF8AAD76> (access code: 7774)

## Instructor Details

Instructor: Nima Kalantari  
Office: 406 Peterson  
Phone: (979) 862-4251  
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Office Hours: 2:00 – 3:00, TR

## TA Details

Name: Pedro Figueiredo  
Location: 402 Peterson  
E-Mail: [pedrofigueiredo@tamu.edu](mailto:pedrofigueiredo@tamu.edu)  
Office Hours: MWF 1:30 – 3:30

## Course Description

This course is an introduction to the foundations of 3-dimensional computer graphics. Topics covered include 2D and 3D transformations, hidden surface removal and rasterization, shading, lighting models, and texture mapping. We also discuss geometric modeling and curves, as well as ray tracing.

## Course Prerequisites

The main prerequisite listed in the course description is CSCE 221. However, the students are expected to be comfortable with C/C++ as there will be significant amount of programming in this class. The students should also be familiar with linear algebra. A prior course in linear algebra (e.g., MATH 304) is more than sufficient.

## Special Course Designation

N/A

## Course Learning Outcomes

Upon finishing this class, students should be able to:

- Describe the process for 2D rasterization and implement basic 2D operations
- Perform calculations to position objects in a virtual 3D world, and determine where they would project in an image produced from that world
- Calculate the colors at points on a surface, given lighting and material properties of objects
- Define key terms related to the 3D rendering process
- Write programs that generate images of 3D scenes, using a modern graphics library

## Textbook and/or Resource Materials

The following books are recommended:

Fundamentals of Computer Graphics, by Steve Marschner, Peter Shirley, 4th Edition

The OpenGL® Programming Guide, by John Kessenich, Graham Sellers, Dave Shreiner, 9th Edition

## Grading Policy

**Programming assignments (70%):** There will be 5 programming assignments with two having 2 parts.

**Midterm (10%):** The midterm will be given on Oct. 31st during the class. You may skip the midterm and make the final be worth 30% of your course grade.

**Final (20%):** The exam will be given during the scheduled final exam time (Dec. 12<sup>th</sup>, 3:30 – 5:30 pm).

**Grading Scale** → A = 90-100, B  $\leq$  90 and  $\geq$  80, C  $\leq$  80 and  $\geq$  70, D  $\leq$  70 and  $\geq$  60, F  $\leq$  60

A final curve may be applied at the instructor's discretion. Additionally, the instructor reserves the right to raise grades near a "borderline" to the next highest letter grade. Factors weighing into this decision will be the individual student's perceived effort and class attendance and participation.

## Late Work Policy

You will lose 20% from each assignment for each day that it is late. However, there will be 5 granted late days for the entire course. You are free to use it for any of the assignments. You will not get any bonuses for any of the unused late days. All the assignments are due at 11:59 pm on Canvas unless otherwise stated. Note that, one minute over and 23 hours over both count as one full day.

## Course Schedule

1	Introduction and Overview	Hw 1 out
2-4	Transformations	Hw 2 out & Hw 1 due
5-6	Rasterization	Hw 3 out & Hw 2 due
7-10	Color, Shading, and Texture Mapping	Hw 4 out & Hw 3 due
11-12	Ray Tracing	Hw 5 out & Hw 4 due
13-15	Geometry and Curves	Hw 5 due

## Optional Course Information Items

N/A

## University Policies

### Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

### Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

### Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" ([Section 20.1.2.3, Student Rule 20](#)).

All the assignments in this class are individual. Therefore, all the codes need to be written by the student. If indicated in the assignment's instruction, the use of external libraries for performing basic operations is allowed. However, using an outside source code is NOT permitted. Moreover, collaborating with other students on assignments beyond general discussions is NOT allowed. In general, looking at other students' code and/or written answers is NOT allowed. If the students have any questions regarding this issue, they should contact the instructor. The students should not post their code online even after the deadline for the assignment has passed.

**Texas A&M at College Station**

*You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).*

**Texas A&M at Galveston**

*You can learn more about the Honor Council Rules and Procedures as well as your rights and responsibilities at [tamuq.edu/HonorSystem](http://tamuq.edu/HonorSystem).*

**Texas A&M at Qatar**

*You can learn more about academic integrity and your rights and responsibilities at Texas A&M University at Qatar by visiting the [Aggie Honor System](http://aggiehonor.tamu.edu) website.*

## Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below). Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

**Texas A&M at College Station**

*Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](http://disability.tamu.edu).*

**Texas A&M at Galveston**

*Disability Resources is located in the Student Services Building or at (409) 740-4587 or visit [tamuq.edu/counsel/Disabilities](http://tamuq.edu/counsel/Disabilities).*

**Texas A&M at Qatar**

*Disability Services is located in the Engineering Building, room 318C or at +974.4423.0316 or visit <http://www.qatar.tamu.edu/students/student-affairs/disability-services>.*

## Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

### **Texas A&M at College Station**

*Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services](#) (CAPS).*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).*

### **Texas A&M at Galveston**

*Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with the Counseling Office in the Seibel Student Center, or call (409)740-4587. For additional information, visit [tamug.edu/counsel](http://tamug.edu/counsel).*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the Galveston Campus' [Title IX webpage](#).*

### **Texas A&M at Qatar**

*Texas A&M University at Qatar students wishing to discuss concerns in a confidential setting are encouraged to visit the [Health and Wellness](#) website for more information.*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).*

## Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care by utilizing available resources and services on your campus

### **Texas A&M College Station**

*Students who need someone to talk to can contact Counseling & Psychological Services (CAPS) or call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org](https://suicidepreventionlifeline.org).*

### **Texas A&M at Galveston**

*Students who need someone to talk to can call (409) 740-4736 from 8:00 a.m. to 5:00 p.m. weekdays or visit [tamug.edu/counsel](https://tamug.edu/counsel) for more information. For 24-hour emergency assistance during nights and weekends, contact the TAMUG Police Dept at (409) 740-4545. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org](https://suicidepreventionlifeline.org).*

### **Texas A&M at Qatar**

*Texas A&M University at Qatar students wishing to discuss concerns in a confidential setting are encouraged to visit the [Health and Wellness](#) website for more information.*

## Campus-Specific Policies

### **Texas A&M at Galveston**

#### Classroom Access and Inclusion Statement

Texas A&M University is committed to engaged student participation in all of its programs and courses and provides an accessible academic environment for all students. This means that our classrooms, our virtual spaces, our practices and our interactions are as inclusive as possible and we work to provide a welcoming instructional climate and equal learning opportunities for everyone. If you have an instructional need, please notify me as soon as possible.

The Aggie Core values of respect, excellence, leadership, loyalty, integrity and selfless service in addition to civility, and the ability to listen and to observe others are the foundation of a welcoming instructional climate. Active, thoughtful and respectful participation in all aspects of the course supports a more inclusive classroom environment as well as [our mutual](#) responsibilities to the campus community.

*The following statements below are optional. Leave as is to include, or delete if preferred. Either way, delete this note.*

#### Statement on the Family Educational Rights and Privacy Act (FERPA)

FERPA is a federal law designed to protect the privacy of educational records by limiting access to these records, to establish the right of students to inspect and review their educational records and to provide guidelines for the correction of inaccurate and misleading data through informal and formal

hearings. Currently enrolled students wishing to withhold any or all directory information items may do so by going to [howdy.tamu.edu](http://howdy.tamu.edu) and clicking on the "Directory Hold Information" link in the Student Records channel on the MyRecord tab. The complete [FERPA Notice to Students](#) and the student records policy is available on the Office of the Registrar webpage.

Items that can never be identified as public information are a student's social security number, citizenship, gender, grades, GPR or class schedule. All efforts will be made in this class to protect your privacy and to ensure confidential treatment of information associated with or generated by your participation in the class.

Directory items include name, UIN, local address, permanent address, email address, local telephone number, permanent telephone number, dates of attendance, program of study (college, major, campus), classification, previous institutions attended, degrees honors and awards received, participation in officially recognized activities and sports, medical residence location and medical residence specialization.

### College and Department Policies

College and departmental units may establish their own policies and minimum syllabus requirements. As long as these policies and requirements do not contradict the university level requirements, colleges and departments can add them in this section. Please remove this section if not needed.