Computer Science EN.601.457
Computer Graphics
Fall, 2021 (3 credits, EQ)

Instructor
Professor Misha Kazhdan, misha@cs.jhu.edu, https://www.cs.jhu.edu/~misha
Office hours: Thursdays 12-1pm
Office hours Zoom link: https://wse.zoom.us/j/96631624458

Teaching Assistant
Tommy Mitchel, tmitchel@jhu.edu
Office hours: Mondays 12-1pm
Office hours Zoom link: https://JHUBlueJays.zoom.us/j/95451630432

Course Assistant
Aaron Rhee, arhee5@jhu.edu
Office hours: Tuesdays 8-9pm
Office hours Zoom link: https://JHUBlueJays.zoom.us/j/93621919044

Jingguo Liang jliang35@jhu.edu
Office hours: Fridays 4-5pm
Office hours Zoom link: https://JHUBlueJays.zoom.us/j/3431712501

Meeting
- 601.457
  Monday, Wednesday, Friday, 11:00–11:50 am
  Class Zoom link: https://wse.zoom.us/j/92866400288
- 601.657 Monday, Wednesday, Friday, 1:30–2:20 am
  Class Zoom link: https://wse.zoom.us/j/94533266701

Textbook
Recommended:
Online Resources
Course notes and videos will be available at http://www.cs.jhu.edu/~misha/Fall21/.
Assignments will be posted on Blackboard, https://blackboard.jhu.edu/.
Discussions will be facilitated via Piazza http://piazza.com/jhu/fall2021/600457657.

Course Information
- This course introduces computer graphics techniques and applications, including image processing, rendering, modeling and animation.
- **Prerequisites**
  Intermediate Programming (EN.601.220 or the equivalent)
  Data Structures (EN.601.226 or the equivalent)
  Linear Algebra (AS.110.201 or the equivalent)

Course Goals
Specific Outcomes for this course are that
- Students will become familiar with the basics of computer graphics.

This course will address the following Criterion 3 Student Outcomes

Graduates of the program will have an ability to:

(1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
(2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
(3) Apply computer science theory and software development fundamentals to produce computing-based solutions.

Course Topics
- Image processing
- Ray tracing
- Real time rendering
- Animation

Course Expectations & Grading
Students will be grades based on four homework assignments and two exams. Each of the homework assignments and exams will comprise 15 percent of the final grade. In addition, for students who participate, opportunity to further boost the final grade, up to 10 percent of the final grade. (For students who choose not to participate, the final grade will be determined by homework assignments and exams and will be normalize, so that students will not be penalized for lack of participation.)

Key Dates
See course webpage at http://www.cs.jhu.edu/~misha/Fall21.
Assignments & Readings
Assignments will be posted on Blackboard.

Ethics
The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful, abiding by the Computer Science Academic Integrity Policy:

Cheating is wrong. Cheating hurts our community by undermining academic integrity, creating mistrust, and fostering unfair competition. The university will punish cheaters with failure on an assignment, failure in a course, permanent transcript notation, suspension, and/or expulsion. Offenses may be reported to medical, law or other professional or graduate schools when a cheater applies.

Violations can include cheating on exams, plagiarism, reuse of assignments without permission, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. Ignorance of these rules is not an excuse.

Academic honesty is required in all work you submit to be graded. Except where the instructor specifies group work, you must solve all homework and programming assignments without the help of others. For example, you must not look at anyone else’s solutions (including program code) to your homework problems. However, you may discuss assignment specifications (not solutions) with others to be sure you understand what is required by the assignment.

If your instructor permits using fragments of source code from outside sources, such as your textbook or on-line resources, you must properly cite the source. Not citing it constitutes plagiarism. Similarly, your group projects must list everyone who participated.

Falsifying program output or results is prohibited.

Your instructor is free to override parts of this policy for particular assignments. To protect yourself: (1) Ask the instructor if you are not sure what is permissible. (2) Seek help from the instructor, TA or CAs, as you are always encouraged to do, rather than from other students. (3) Cite any questionable sources of help you may have received.

On every exam, you will sign the following pledge: "I agree to complete this exam without unauthorized assistance from any person, materials or device. [Signed and dated]". Your course instructors will let you know where to find copies of old exams, if they are available.

Report any violations you witness to the instructor.

You can find more information about university misconduct policies on the web at these sites:

- For undergraduates: http://e-catalog.jhu.edu/undergrad-students/student-life-policies/
- For graduate students: http://e-catalog.jhu.edu/grad-students/graduate-specific-policies/

Personal Wellbeing

- If you are sick, in particular with an illness that may be contagious, notify me by email but do not come to class. Rather, visit the Health and Wellness: 1 East 31 Street, 410-516-8270. See also http://studentaffairs.jhu.edu/student-life/support-and-assistance/absences-from-class/illness-note-policy/
• All students with disabilities who require accommodations for this course should contact me at their earliest convenience to discuss their specific needs. If you have a documented disability, you must be registered with the JHU Office for Student Disability Services (Shaffer 101; 410-516-4720; http://web.jhu.edu/disabilities/) to receive accommodations.

• If you are struggling with anxiety, stress, depression or other mental health related concerns, please consider visiting the JHU Counseling Center. If you are concerned about a friend, please encourage that person to seek out our services. The Counseling Center is located at 3003 North Charles Street in Suite S-200 and can be reached at 410-516-8278 and online at http://studentaffairs.jhu.edu/counselingcenter/

Classroom Climate
I am committed to creating a classroom environment that values the diversity of experiences and perspectives that all students bring. Everyone here has the right to be treated with dignity and respect. I believe fostering an inclusive climate is important because research and my experience show that students who interact with peers who are different from themselves learn new things and experience tangible educational outcomes. Please join me in creating a welcoming and vibrant classroom climate. Note that you should expect to be challenged intellectually by me, the TAs, and your peers, and at times this may feel uncomfortable. Indeed, it can be helpful to be pushed sometimes in order to learn and grow. But at no time in this learning process should someone be singled out or treated unequally on the basis of any seen or unseen part of their identity.

If you ever have concerns in this course about harassment, discrimination, or any unequal treatment, or if you seek accommodations or resources, I invite you to share directly with me or the TAs. I promise that we will take your communication seriously and to seek mutually acceptable resolutions and accommodations. Reporting will never impact your course grade. You may also share concerns with the Department Head (Randal Burns, randal@cs.jhu.edu), the Director of Undergraduate Studies (Joanne Selinski, joanne@cs.jhu.edu), the Assistant Dean for Diversity and Inclusion (Darlene Saporu, dsaporu@jhu.edu), or the Office of Institutional Equity (oie@jhu.edu). In handling reports, people will protect your privacy as much as possible, but faculty and staff are required to officially report information for some cases (e.g. sexual harassment).

Family Accommodations Policy
You are welcome to bring a family member to class on occasional days when your responsibilities require it (for example, if emergency childcare is unavailable, or for health needs of a relative). In fact, you may see my children in class on days when their school is closed. Please be sensitive to the classroom environment, and if your family member becomes uncomfortably disruptive, you may leave the classroom and return as needed.

University Policy on Incompletes
The university recognizes that the Fall 2020 semester is surrounded with uncertainty and many students may find themselves in unexpected situations where study is difficult if not impossible. Students who are confronted with extraordinary circumstances that interfere with their ability perform their academic work may request an incomplete grade from the instructor. While approval of such a request is not automatic, it is expected that faculty will make every effort to accommodate students dealing with illness in the family and other pandemic-related hardships. The instructor and student must establish a timetable for submitting the unfinished work with a final deadline no later than the end of the third week of the Spring 2021 semester (February 12, 2021). Exceptions to this deadline require a petition from the instructor to the student’s academic advising office by February 12, 2021. When entering an Incomplete grade in SIS, faculty must include a reversion grade which represents the grade the student will receive if s/he does not complete the missing work by the agreed-upon deadline.
Deadlines for Adding, Dropping and Withdrawing from Courses

Students may add a course up to September 11, 2020. They may drop courses up to October 12, 2020 provided they remain registered for a minimum of 12 credits. Between October 12 and November 13, 2020, a student may withdraw from a course with a W on their academic record. A record of the course will remain on the academic record with a W appearing in the grade column to indicate that the student registered and then withdrew from the course. For more information on these and other academic policies, see https://e-catalogue.jhu.edu/engineering/full-time-residential-programs/undergraduate-policies/academic-policies/grading-policies/

The Office of Academic Support at JHU

All programs are free to students, please see below for specifics:

- **PILOT Learning** – Peer-Led Team Learning
  - Students are organized into small study teams who meet weekly to collaborate on faculty-developed problems-sets. Students work together as a team to solve problems.
  - A trained student leader acts as captain and facilitates the weekly meetings using various strategies to foster a collaborative learning environment.
  - Registration opens on August 31st at 9pm EST; registration will remain open throughout the semester if space allows.
  - Contact: Ariane Kelly - ariane.kelly@jhu.edu
  - Instagram: @jhupilot

- **Learning Den Tutoring Program** - Small Group Tutoring
  - Small group, tailored tutoring of 4 students or less which is headed by one tutor. Visit the website (above) to access zoom links for drop-in sessions
  - Tutors can assist with but are not limited to:
    * Review and strengthening of subject-specific material knowledge
    * Assist with homework-like problems
    * Course-specific study skills and exam preparation
    * Contact: Kaitlin Quigley – quigley@jhu.edu
    * Instagram: @jhulearningden

- **The Study Consulting Program**
  - Students work one-on-one with a study consultant to set academic goals and develop customized strategies for success. Areas addressed include but are not limited to:
    * Time management
    * Note taking and test preparation
    * Mastering large amounts of information
  - Contact: Dr. Sharleen Argamaso – sharleen.argamaso@jhu.edu
  - Instagram: @jhustudyconsulting

- **The Writing Center**
  - Undergraduate and graduate students in KSAS/Whiting School of Engineering can schedule 50-min sessions with a Writing Center tutor to look over a draft of written work (up to 10 pages) or a personal statement for graduate study
  - Contact: Robert Tinkle – rtinkle1@jhu.edu
  - Web Address: https://krieger.jhu.edu/writingcenter/