

Syllabus
SAAST Computer Graphics
University of Pennsylvania
2013

Professor: Mark C. van Langeveld
TA: Rebecca Williams
RTAs: Brian McNeely, Jun Xia, Paul Wang

Class Dates: July 8th to July 26th
Class Time: 9AM to 12Noon and 1PM to 5PM M-F
Lab Time: 7 to 10PM M-F and 24/7 Weekends

Welcome to SAAST – Computer Graphics.

This course introduces students to asset design and production pipeline for 3D characters for machinima, games and animation with a focus on base modeling. This course is interdisciplinary including academics from engineering, design, communications, and art. The application is focused on digital character production.

Students will utilize advance graphics software packages that are prominent in the video game industry such as AutoDesk's MAYA, Pixologic's zBrush, and Adobe's PhotoShop. These software packages will be demonstrated from a users perspective and explained from the software engineer's point-of-view specifically for 3D character production. The students will learn the how to use the tools from multiple perspectives allowing them to think through problems that occur in the art asset pipeline. The course is focused on the application of modeling base characters with a survey of the art asset pipeline. This is a project-based class that includes a teaching strategy of short lectures, project demonstrations and one-on-one training in the lab.

The main project is broken into many stages with the goal of creating a custom character. This includes designing and modeling a base character. They will also learn to adapt given models.

The projects can start with drawings, clay models and verbal representations of the character design, and then the students will be taught to apply professional practices to digitally sculpt their base characters in MAYA 3D.

The modeling strategy and philosophy taught combines low, medium, and high resolution models in one middle resolution model that can be adapted for use in games, machinama, animations and movies. The techniques are specific and are taught from the starting with the assumption of no prior knowledge of the specific techniques. Each student's project will advance through the production pipeline at different rates, depending on the background of student and the complexity of

character chosen; although, all students will be taught the entire process with the focus on base character modeling.

There will be Three Fieldtrips to Ewing Cole, Blue Sky, and Curious Pictures.

COURSE OBJECTIVES AND LEARNING OUTCOMES

- To teach the production pipeline application for CG character development for games, machinima, animation, and research based on techniques that teach the foundations of CG character development focusing on base modeling.
- To teach students basic computer graphic principles and concepts by project application, including introduction of basic algorithms and data structures used in modeling and digital sculpture software.
- Students will learn the ability to create a high quality CG base character that can be used for customizing games, machinima, animations, portfolios, and programming based computer science graphics course consistent with industry standards and strategies.
- Students will complete a base character model using form and contour design that will work through the entire character pipeline.
- Student will improve understanding of translating design concepts between non-digital representations (drawings, sculptures, photos, and words) to digital 3D representations in both directions (3D printing).
- Students will learn the ability to distinguish and demonstrate critical elements of digital character modeling that distinguish levels of quality and refinement in CG character models.
- Students will learn the ability to apply complex software packages used in industry for base modeling and initial sculpting details including writing simple scripts to assist processes.
- Students will learn to improve there drawing, sculpting, critiquing, and presenting skills. They will use references to help in the production.
- Students will practice approaches and exercises for developing interesting CG characters that will communicate well.

LAB STRUCTURE

Regular lab/class hours are mandatory (during regularly assign class times); whereas, optional lab times (after hours) will be setup for working on projects with one-on-one time with TAs and/or instructor. The lab will have many open hours for students to work independently on their projects.

ASSIGNMENTS

Each student will be required to design and develop a base CG character Based off a random selection of characteristics. The level of development required of each student will differ depending on the complexity of the character and experience of the student as decided by the instructor. The projects will be broken down into milestones for grading purposes.

Characters choices can range from realistic to fantasy, from human to alien, or cartoon to surreal based on criterion. The instructional examples will typically demonstrate modeling humanoid characters, but the techniques and practices will apply to all types of characters. I want you to have passion for the character that you design, because you'll be spending an entire course working on it.

GRADES

Students will be graded 80% on their MAYA base character project, 10% on quizzes/assignments/extras, and 10% on their class/lab participation.

FINAL

The final presentation of projects on the last day of class and you will be required to turn in a DVD of everything stage of work and all references.

MATERIALS PROVIDED

- Tracing Paper, pencil, and eraser.

SOFTWARE (PROVIDED IN LABS and Free Downloads from AutoDesk)

- AutoDesk MAYA, AutoDesk MudBox
- AdobePhotoshop, and zBrush (not so free)

A FEW READINGS, TUTORIALS AND REFERENCES FOR STARTING OFF (NO TEXT BOOKS TO PURCHASE)

- www.cgtalk.com

- www.highend3d.com • www.pixologic.com • www.deviantart.com • www.daz3d.com

- www.pixar.com • www.ilm.com

Appeals Procedures, Withdrawal Procedures, Repeating Courses, Adding Courses, and Americans with Disabilities Act

- The information on these topics is college wide and provided here.
Student Code

Make sure that you follow the University guidelines for individual work when appropriate.