# Welcome to ESAP Computer Graphics--2015

Introduces students to asset design and production pipelines used to create 3D characters that are used in machinima, games and animation, with the focus on base modeling. The course is focused on the application of modeling base characters with a survey of the art asset pipeline. The course is interdisciplinary and crosses several disciplines including character design and development tied to story, technical art, anatomy, contours, forms, animation applications, and computer graphics. Students will utilize advance graphics software packages that are prominent in the video game industry such as Autodesk's MAYA. These software packages will be demonstrated from a user's perspective and explained from the software engineer's point-of-view specifically for 3D character production.

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 students will learn how to use the tools from multiple perspectives allowing them to think through problems that occur in the art asset pipeline for developing characters. The final project is broken into many stages with the goal of creating a base mesh for a complex character. This project will be worked on each day during class— with the goal to teach students design, visual art principles, tools and extension through the pipeline.

The students will be organized into groups of 3 to 5 peers. Each group will work on their individual final project characters as a part of the group. All of the students in the group will work together to make each of their individual characters as a part of a story. Together each member will design and create a character that fits one unified art direction as agreed on by its members (the group). They can choose a protagonist, antagonist, villain, side-kick, or minor-character to design, develop and model within a story that fits the chosen theme, genre, culture, and setting.

The character design starts with verbal representations by completing Ernest Adams' characterization profile followed by 2D drawings of the character design, and actual sculpting in plastilina. Students will apply the professional practices taught in class to digitally sculpt their own characters in 3D using MAYA. The four processes are iterative, overlap in timing, and should effect eachother.

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 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.

## Course Syllabus

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 design and 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 one complex base character models.

- 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 their drawing, sculpting, critiquing, and presenting skills.

- Students will practice approaches and exercises for developing interesting CG characters.

## 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. The lab will have many open hours for students to work independently and together on their projects.

## ASSIGMENTS

Each student will be required to design and develop a base CG character of her or his choice. 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. The instructional examples will typically demonstrate modeling humanoid characters, but the techniques and practices will apply to all types of characters. I want the students to have passion for the character that they choose, because they'll be spending an entire semester working on it. Student's projects in the past included: elves, werewolves, humans with fish faces, Ninja, bathing suit models, Roman and Polish warriors, mannequins, aliens and fairies. The only limit is their imagination and coordination with the groups vision.

## GRADES

Personal Character with Team: 60%
Character profiles/ drawings /extras: 20%
Class/ lab participation (weekly evals): 20%

## FINAL

The final presentation of projects will be during the Finals Week (TBA). You can invite your family and friends. All work will be turned in on a digitally to the TAs with every save, version, and all other related images The night before the final day.

## MATERIALS PROVIDED

- Tracing Paper, pencil, sharpener, eraser and plastilina.

SOFTWARE (PROVIDED IN LABS and Free Downloads from AutoDesk student center)

- AutoDesk MAYA

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

- ☐ www.cgtalk.com
- ☐ www.highend3d.com (Links to an external site.)
- ☐ www.pixologic.com (Links to an external site.)
- ☐ www.deviantart.com (Links to an external site.)
- ☐ www.daz3d.com
- ☐ www.pixar.com (Links to an external site.)
- ☐ Polycount.com
- ☐ www.ilm.com