

School of the Arts, Media, Performance and Design
Computational Arts
FA/DATT 2500 3.0 Fall Term 2016

Course director: Haru (Hyunkyung) Ji	Email: haruoneday@gmail.com		
Course website: http://jiharu.github.io/datt2500/	Course portfolio: (Lab 01) http://2016datt2500.tumblr.com/		
Office: 229 Goldfarb Centre for Fine Arts	(Lab 02) http://2016datt2500lab2.tumblr.com/		
Office hours: Wed / Thur by appointment	(Lab 03) http://2016datt2500lab3.tumblr.com/		
Lecture hours: Tuesday 9:30 to 10:20	(Lab 04) http://2016datt2500lab4.tumblr.com/		
Lecture location: ACW 004			
Lab location: ACW 102 - Art and Technology Learning Laboratory			
Lab 01	Tuesday 10:30-12:20	Haru (Hyunkyung) Ji	haruoneday@gmail.com
Lab 02	Tuesday 12:30-2:20	Yifat Shaik	yifatshaik@gmail.com
Lab 03	Tuesday 2:30-4:20	Yifat Shaik	
Lab 04	Tuesday 4:30-6:20	Yifat Shaik	
	Digital Media Technician	Frank Tsonis	tsonfr@yorku.ca

Introduction to 3D Modeling

Expanded Course Description:

The 3D modeling class is designed for students to learn both practical and theoretical knowledge in constructing and managing 3-dimensional modeling and texturing data. It is a highly interdisciplinary and complex subject of artistic expression and technological understanding, therefore needing a creative open mindset from students. Throughout the class, there will be three projects to help students build problem-solving abilities toward the subject in an incremental way.

Each class consists of one hour of lecture and two hours of lab practice to accomplish theoretical and practical approaches. The main software used in the class is Autodesk Maya, which has very strong support for modeling as well as other related stages of the production pipeline.

The level of the course covers beginner to intermediate modeling and shading. Evaluation will be mainly via three projects and minor assignments taking a creative approach to expressive 3D modeling and texturing. Students will learn: understanding 3D computer graphics / various kinds of digital modeling methods / Maya interface and structure / Maya NURBs, polygon, subdivision modeling / shading including texturing / UV (texture mapping) / deformers & shape blending / digital cinematography / lighting & rendering / global illumination / ambient occlusion shading & depth of field.

Course Objectives:

- To build a framework of skills and vocabulary to create and modify 3D modeling data.
- To understand the fundamental components and their position in the production pipeline of 3D modeling artworks.
- To appreciate the interdisciplinary research attitudes of art and technology (computer graphics).
- To invest independent and artistic expression along with problem solving processes during construction.
- To develop awareness of current 3D modeling practices through diverse examples of animation, films, video games, virtual worlds, 3D printing, and so on.

Project Description:

More details regarding projects and assignments will be announced in class.

Project 1- Still life modeling: Based on a chosen reference of a masterwork of still life (painting or a photograph), reconstruct via 3D modeling with proper lighting and shadows. Submit a best-quality rendered image along with the reference image you have chosen, and a brief explanation of both, to Moodle. (20%)

Project 2- Still life shading & rendering: Continuation and completion of project 1 applying proper shaders with textures and cinematographic set-up including camera, lights, and shadows. Details will be announced in class. (20%)

Project 3- Free theme scene modeling & rendering: Details will be announced in class. (40%)

Assignments: simple hands-on practices designed to help students' progress following each 3D modeling subtopic. Completion in time and proper targeting to the subject are the two evaluation criteria. (20%)

Issues to consider:

- Please be patient to repeat practice exercises until you feel familiar with the logic & structure of the 3D software interface, pipeline, processes, and vocabularies since the complexities can easily overwhelm. If you have any question or difficulty following, don't hesitate to ask the instructors.
- Develop your unique preference as a maker/producer among a variety of 3D modeling methods.
- If you have high fluency using 3D software, then investigate near future trends.
- When you research examples of 3D artwork, try to avoid popular mass productions such as Pixar's or Dreamwork's; instead find a specific modeler and investigate his/her portfolio as an independent artist.
- Explore many usages of 3D modeling in different areas such as entertainment, education, medical, manufactural, and so on.

As this is a cumulative learning environment attendance in all classes is mandatory. Failure to attend class and arrive to class on time will result in academic penalty on your final grade, and/or a request for withdrawal from the course. Exceptions to the lateness penalty for valid reasons such as illness, compassionate grounds, etc., will be considered by the Course Instructor but will require supporting documentation (e.g., a doctor's letter).

Projects and assignments to be marked for course credit will be submitted through Moodle on the scheduled date. There will be no extensions except for verified reasons. All work submitted for evaluation will be original work created in full by the student. York students are required to maintain high standards of academic integrity and are subject to the Senate Policy on Academic Honesty (<http://www.yorku.ca/secretariat/legislation/senate/acadhone.htm>). It is highly recommended that all students complete the Academic Integrity Tutorial (http://www.yorku.ca/tutorial/academic_integrity/).

Sharing information is recommended to accelerate the speed of progress, unless it interrupts other students' concentration. Students will share their assignments through the Tumblr website (<http://2016datt2500.tumblr.com/>). Questions and discussions are encouraged during class time.

Grade Breakdown:

Project 1- Still life modeling	20%
Project 2- Still life shading & rendering	20%
Project 3- Free theme scene modeling & rendering	40%
Assignments	20%

Failure to complete any project, assignment or to participate in lectures and lab practice will result in failure of the class. It is mandatory for all students to adhere to the course schedule.

The evaluation will be based on cumulative achievement, regular attendance and the student's participation in research, making, and creative expression. It is expected that students will show a commitment to completing all projects and assignments with creative & aesthetic solutions based consistent work habits both in class time and outside of class time.

*** Please Note: The last day to drop this course without receiving a grade is the last day of classes.**

Evaluation/Grading Criteria:

- Quality of the work produced; with the balance of the student's artistic expression & sensitivity as well as technical understanding, with integration of techniques and subject.
- Ability to use 3D modeling techniques and to solve problems into the process of making.
- The progress and engagement of the student in their research studies, as well as their curiosity and motivation to learn and achieve.
- The degree and details to which students can set challenges for her or himself.
- Commitment (includes attendance, participation, completing work on time, ambition of project)

When you submit your work, please name your assignment as the following format: last name_first name_date_assignment number.extension

Grade	Grade Point	Per-Cent Range	Description
A+	9	90-100	Exceptional
A	8	80-89	Excellent
B+	7	75-79	Very Good
B	6	70-74	Good
C+	5	65-69	Competent
C	4	60-64	Fairly Competent
D+	3	55-59	Passing
D	2	50-54	Marginally Passing
E	1	Marginally below 50	Marginally Failing
F	0	Below 50	Failing

(For a full description of York grading system see the York University Undergraduate Calendar - http://calendars.registrar.yorku.ca/pdfs/ug2004cal/calug04_5_acadinfo.pdf)

Computer Lab:

There will be general introduction from the lab technician in the first class. Please clean your seat and log out before you leave for a next lab session. If you have a question about using lab, address it to the lab technician or instructor.

Please turn your cell phones off before entering class and/or the computer lab.

It is expected that the majority of the assignments will be completed outside of class time. **If you plan to use the lab outside of your class time, you must purchase a Digital Media Lab Card.** Lab Cards are \$30 for the year, or \$20 for one term. The Digital Media Lab Card can be purchased in the Digital Media office, located in Rm. 232, Goldfarb Centre for Fine Arts. The office is open Monday to Friday, 8:30am-4:30pm.

Supplies:

Students will be required to supply headphones in the lab to follow web tutorials.

Course Texts and References:

- Class website: <http://jiharu.github.io/2016datt2500/>
- Homework portfolio website: <http://2016datt2500.tumblr.com/>
(not mandatory to purchase)
- Maya Help File (in Maya menu, F1 key)
- The Art of Maya: An Introduction to 3D Computer Graphics by Autodesk Maya Press, Pub. Date: 2003/2005/2007 edition.
- Introducing Autodesk Maya 2015 by Dariush Derakhshani, Publisher: Sybex, Pub. Date: 2014
- Mastering Autodesk Maya 2015 by Todd Palamar, Publisher: Sybex, Pub. Date: 2014
- Autodesk Maya 2014 Essentials by Paul Naas, Publisher: Sybex, Pub. Date: 2013
- [digital] Modeling by William Vaughan, Publisher: New Riders, Pub. Date: December 23, 2011
- Maya® 2008 Character Modeling and Animation: Principles and Practices by Tereza Flaxman, Publisher: Course Technology PTR, Pub. Date: January 01, 2008
- Advanced Maya® Texturing and Lighting, Second Edition by Lee Lanier, Publisher: Sybex, Pub. Date: August 11, 2008
- Professional MEL Solutions for Production by Kevin Mannens; Ed Caspersen, Publisher: Jones & Bartlett Learning, Pub. Date: June 23, 2009
- 3D Technology in Fine Art and Craft by Bridgette Mongeon, Focal Press, 2015
- Maya® Studio Projects: Game Environments and Props, by Michael McKinley and Juan Pablo Stegmann, Sybex, 2010
- Creating Visual Effects in Maya by Lee Lanier, Focal Press, 2014
- Digital Art Masters series by 3DTotal publishing

Useful Links:

http://knowledge.autodesk.com/support/maya#?p=MAYAUL&p_disp=Maya&sort=score

<http://forums.cgsociety.org/>

<http://www.melscripting.com/>

<http://www.creativecrash.com/maya/>

Digital sculpting: <http://pixologic.com/sculpttris/>

Tutorial from Yifat: <https://tplinnovator.wordpress.com/>

And more online tutorials.

Important Course Information For Students:

All students are expected to familiarize themselves with the following information, available on the Senate Committee on Academic Standards, Curriculum & Pedagogy webpage (see Reports, Initiatives, Documents)

- <http://www.yorku.ca/secretariat/senate/committees/ascp/documents/CourseInformationForStudentsAugust2012.pdf>
- Senate Policy on Academic Honesty and the Academic Integrity Website
- Ethics Review Process for research involving human participants
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation

Course Schedule:

Week 1: Lecture: Introduction to class & projects, overview of 3D modeling & the Maya interface. Lab: Set-up account for the class portfolio website, working on using the Maya interface (using Help links); Maya/Help/1-Minute Startup Movies & Maya/Help/Tutorials/Maya Tutorials. Assignment 1(a01).

Week 2: Lecture: Overview of 3D modeling: NURBS, Polygon, and Subdivision modeling, fundamental components, and different modeling methods. Lab: Practice basic NURBS, Polygon, and Subdivision modeling. Assignment 2 (a02).

Week 3: Lecture: NURBS modeling. Lab: Practice NURBS modeling. Assignment 3 (a03).

Week 4: Lecture: Polygonal modeling. Lab: Practice polygonal modeling, **working on project 1: still life modeling.**

Week 5: Lecture: Modeling techniques. Lab: Practice smoothing & sub divisional modeling, Assignment 4 (a04).

Week 6: Lecture: Applying materials (shaders) & textures. Lab: Practice shading. Assignment 5 (a05).

Week 7: Lecture: Texturing. Lab: Practice UV texturing. Assignment 6 (a06).

Week 8: Lecture: Cinematography; 1-, 2-, and 3-point lighting & soft shadow plus camera set-up. Lab: Practice cinematography; lighting, camera, and Maya rendering. **working on project 2: still life completion.**

Week 9: Lecture: More on NURBS & Polygon modeling. Lab: Practice based on the class material. Assignment 7 (a07).

Week 10: Lecture: Character modeling & Low-polygon modeling. Lab: Practice based on the class material. Assignment 8 (a08).

Week 11: Lecture: Global Illumination & Mental Ray. Lab:(Using Cornell Box) practice Global Illumination, Final Gather & your final project. Assignment 9 (a09).

Week 12: Lecture: Ambient occlusion, DoF, Dynamics; soft body & Bifröst. Lab: Feedback & practice. **working on project 3: free theme modeling & rendering.**