EXPANDED COURSE DESCRIPTION
DIGITAL MEDIA PROGRAM
School of the Arts, Media, Performance and Design
Computational Arts
FA / DATT 2500 3.0 SECTION A
INTRODUCTION TO 3D MODELLING
FALL 2017 / WINTER 2018

COURSE CALENDAR DESCRIPTION

This course provides a foundation in 3D modelling using state of the art render time 3D modelling software such as Maya, Blender, and 3DS Max. The course will provide a survey of various modelling techniques and approaches with an emphasis on modelling used in 3D art, 3D animation and games. Topics include photorealistic rendering, scene building, character modelling, and the use of 3D graphics in simulation and visualization. Prerequisite: none

INSTRUCTOR(S)

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<tr>
<th>Name</th>
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<tr>
<td>Shaik, Yifat</td>
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SPECIAL FEATURES

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. 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 and is the preferred 3D program in the industry.

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.

LIST OF LEARNING OUTCOMES AND EXAMPLES OF

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.
Course Text / Readings
Readings are not mandatory, but it is recommended you take a look at the following texts:
a) Maya Help File (in Maya, F1 key)
c) Introducing Autodesk Maya 2015 by Dariush Derakhshani, Publisher: Sybex, Pub. Date: 2014
d) Mastering Autodesk Maya 2015 by Todd Palamar, Publisher: Sybex, Pub. Date: 2014
f) Maya® 2008 Character Modeling and Animation: Principles and Practices by Tereza Flaxman, Publisher: Course Technology PTR, Pub. Date: January 01, 2008
g) Advanced Maya® Texturing and Lighting, Second Edition by Lee Lanier, Publisher: Sybex, Pub. Date: August 11, 2008
h) Professional MEL Solutions for Production by Kevin Mannens; Ed Caspersen, Publisher: Jones & Bartlett Learning, Pub. Date: June 23, 2009
i) 3D Technology in Fine Art and Craft by Bridgette Mongeon, Focal Press, 2015
j) Maya® Studio Projects: Game Environments and Props, by Michael McKinley and Juan Pablo Stegmann, Sybex, 2010
k) Creating Visual Effects in Maya by Lee Lanier, Focal Press, 2014
l) 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/sculptris/
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 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

GRADED ASSESSMENT

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 still life image (painting or 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- Organic modeling: Based on a chosen reference of an organic object (animal/character) 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. (35%)
• Project 3- Shading & rendering: Using your 1st and 2nd project, create a textured final render of your projects. The projects must be UV mapped, textured and rendered using Arnold renderer. Submit a best-quality rendered image along with the reference image you have chosen, and a brief explanation of both, to Moodle. (25%)

• 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%)

Evaluation *

The final grade for the course will be based on the following items weighted as indicated:

Project #1 – Still Life Modelling: 20%
Project #1 – Organic Modelling: 35%
Project #1 – Shading & Rendering: 25%
Lab Assignments: 20%

Overall: 100%

Specific project rubric will be published with the details of each project, but overall what this is what we expect from the students:

• 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 in 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)

• Projects are organized and keep naming conventions

Grading, Assignment Submission, Lateness Penalties and Missed Tests

Grading: The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York (e.g., A+ = 9, A = 8, B+ = 7, C+ = 5, etc.). Assignments and tests* will bear either a letter grade designation or a corresponding number grade (e.g. A+ = 90 to 100, A = 80 to 90, B+ = 75 to 79, etc.)

Grade Point Percent Range Description

Grade

Grade Point

Percent 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)

Assignment Submission: Proper academic performance depends on students doing their work not only well, but on time. Accordingly, assignments for this course must be received on the due date specified for the assignment. Assignments are to be handed in Moodle and will be labelled last name_first name_date_assignment

Lateness Penalty: Assignments received later than the due date will be penalized (State penalty: e.g., one-half letter grade (1 grade point) per day that assignment is late). Exceptions to the lateness penalty for valid reasons such as illness, compassionate grounds, etc., may be entertained by the Course Instructor but will require supporting documentation (e.g., a doctor’s letter).

Course Schedule:
Week 1: Introduction to 3D Modeling
Lecture - introduction to 3D modeling
Lab - introduction Maya 3D (menu, navigation and basic modeling)

Week 2: Overview of 3D modeling
Lecture – NURBS, Polygon, and Subdivision modeling, fundamental components, and different modeling method
Lab – Introduction to NURBS modeling + Intro to Project I

Week 3: Introduction to hard surface polygon modeling
Lecture – Polygonal modeling
Lab – Introduction to hard surface modeling, working on project I
Week 4: Modeling techniques
Lecture – Modeling techniques
Lab – Practice polygonal modeling, working on project I.
Week 5: Organic Modeling I
Lecture – Introduction to organic modeling
Lab – Organic modeling I + Introduction to project II
Project I is due in the beginning of class
Week 6: Organic modeling II
Lecture – Modeling process
Lab – Organic modeling II, working on project II
Week 7: Organic modeling III
Lecture: Character modeling
Lab – Organic modeling III, working on project II
Week 8: Shading
Lecture – Applying materials (shaders) & textures.
Lab - Practice shading
Week 9: Texturing I
Lecture – Texturing
Lab – UV Mapping + Introduction to Project III
Week 10: Texturing II
Lecture – Shading and Texturing (or how to make your scene look amazing)
Lab – Designing with Aesthetics
Project II is due at the beginning of the class
Week 11: Rendering I
Lecture – Introduction to rendering and rendering engines
Lab – rendering using Arnold, working on project III
Week 12: Rendering II
Lecture – Introduction to lighting and cameras
Lab – lighting and cameras in Maya, working on project III
Project III is due a week after class ends
Note: Schedule might change at the professor's discretion

ADDITIONAL INFORMATION

This class is highly practice based. One-third of the class will be lecture-based, showing theory and practice using presentation media and demonstration (33%). The other two-thirds will be supervised students’ hands-on practice (66%).
• 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 complexities can easily overwhelm. If you have any question or difficulty in following, don’t hesitate to ask the instructor.
• Develop your unique preference as a maker/producer among a variety of 3D modeling techniques.
• If you have high fluency using 3D software, then investigate near future trends.
• When you research examples of 3D artworks, try to avoid popular mass productions such as Pixar’s or DreamWorks’; 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, manufacture, and so on.

• Sharing information is recommended to accelerate the speed of progress, unless it interrupts other students’ concentration. Questions and discussions are encouraged during class time.

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)

• 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

Many courses utilize Moodle, York University’s course website system. If your course is using Moodle, click here to access it.

Moodle @ York University