**Course Number:** ID 6106

**Course Title:** 3D Design Methods

**Credit Value:** 2 credit hours

**Course Times:**

**Instructor:**

**Email/Office Hours:**

***\*Graduate level requirements added***

*This course was developed from ID2102. Assignments have been added and modified.*

**General Information**

**Course Description:**

This course introduces CAD tools in the product design environment. Students learn how to model a product, use scanned data, create animations and 3D print.

## Pre-Requisites

ID6104

**Course Goals and Learning Outcomes:**

Upon completion of the course students demonstrate knowledge, skill and abilities in the following areas:

* Design and model a product using solid and sculpt modeling techniques that incorporate 3D scanned data
* Learn how to create renderings and a product animation to communicate product form, function and use
* Produce physical outputs from 3D solid and sculpt models as well as 3D scanned data

**Weekly Learning Activities:**

* Lecture (2 hours)

**Course Requirements and Grading**

**Required Texts**

*Books:*

* No textbook is required for this course.

*Other Resources:*

* Lynda Tutorials - http://www.lynda.gatech.edu/
* This course will use Fusion 360 CAD software (https://www.autodesk.com/products/fusion-360/students-teachers-educators). Online training material will be used. A schedule will be provided that details training modules that should be completed prior to specific classes. This will help students learn the material effectively and allow for class sessions to cover advance material.

## Course Website and Other Classroom Management Tools

Canvas (<http://canvas.gatech.edu/>) will be the main portal for dissemination of course information.

Students are expected to check in on a daily basis

**Grading**

|  |  |  |
| --- | --- | --- |
| Assignment | Date | Weight (Percentage, points, etc) |
| Assignment 1- Solid Modeling | Weeks 1 - 4 | 15% |
| Assignment 2 - Rendering | Weeks 5 - 6 | 15% |
| Assignment 3 - Working with Scan Data | Weeks 7 - 8 | 15% |
| Assignment 4 - Sculpt Modeling | Weeks 9 - 12 | 25% |
| Assignment 5 - Animation | Weeks 13 - 14 | 15% |
| Assignment 6 - Studio Project | Weeks 15 - 16 | 15% |

**Grading Scale**

Your final grade will be assigned as a letter grade according to the following scale:

A 90-100% (Guide: Independent work style and exceeding expectations)

B 80-89% (Guide: Meet expectations)

C 70-79% (Guide: Meets the majority of expectations)

D 60-69% (Guide: Fails to meet some expectations

F 0-59% (Guide: Fails to meet most expectations)

**Course Schedule**

|  |  |
| --- | --- |
| **Week** | **Topic** |
| 1 | Class Introduction |
| Solid Modeling Introduction/Primitives |
| 2 | 2D Sketching/Canvas |
| Solid Modeling from a Sketch |
| 3 | Modifying Solids |
| Editing Solids |
| 4 | 3D Output |
| **Assignment 1 - Solid Modeling** |
| 5 | Rendering Overview |
| Material and Textures |
| 6 | Lighting and Environments |
| **Assignment 2 - Rendering** |
| 7 | Scan Data Overview |
| Working with Scan Data |
| 8 | Scan Data Output |
| **Assignment 3 - Working with Scan Data** |
| 9 | Sculpt Modeling Overview (t-splines) |
| Sculpt Modeling Primitives |
| 10 | Sculpt Modeling from a Sketch |
| Modifying a t-spline |
| 11 | More on Modifying a t-spline |
| Converting a t-spline to a Solid |
| 12 | Patch Modeling (Surface) |
| Sculpt Modeling & Scan Data |
| **Assignment 4 - Sculpt Modeling** |
| 13 | Animation Overview |
| Animation Timelines |
| Animation Cameras |
| 14 | Compositing/Output |
| **Assignment 5 - Animation** |
| 15 | Assignment Work |
| Assignment Work |
| 16 | **Assignment 6 - Studio Project** |
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**Course Expectations, Guidelines and Policies**

## Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or <http://www.catalog.gatech.edu/rules/18/>.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

## Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

## Attendance and/or Participation

## Attendance will not be taken. To make the most out of the learning experience, please be in class on time, logged in and have started the software.

## Collaboration and Group work

All work is to be student's own work. No collaboration or group work is allowed. In addition, students are to create their own content for assignments unless otherwise noted. Students are not allowed to use content from in-class demo files unless specific permission is given.

## Extensions, Late Assignments, & Re-Scheduled/Missed Exams

Assignments are due by the end of the day on the date indicated in Canvas except as noted below. Electronic submissions must be uploaded in Canvas by midnight to not be counted “late”. One assignment can be used as a late or re-grade assignment. You have until the end of the semester to submit a late or re-grade assignment.

## Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek.

## Student Use of Mobile Devices in the Classroom

Please turn off or silence all cell phones while in class.

## Additional Course Policies

* All work must be original
* No internet images or stock photography allowed.
* Social Media boundaries. LinkedIn – Yes Facebook – No
* Work is done in the studio. Keep email communications brief and to the point.
* No pets in studio
* No texting or phone calls during studio. If you have urgent phone call please step outside classroom.
* No eating in class. Coffee and water encouraged and please clean up

**Campus Resources for Students**

We encourage making use of the range of laboratories, workshops and makers spaces around campus. In the School of ID we house the ID Shop (basement), Body Scan Lab, IPDL Lab and Driving Lab. Please contact workshop and lab staff to arrange working space and access to facilities. The Digital Fabrication Lab is a few minutes away.

**Student Academic Bill of Rights**

* The right to attend classes at regularly scheduled times without deviation from such time and without penalty if the student cannot attend instructional, lab, or examination hours not institutionally scheduled.
* The right to consult with an assigned and qualified advisor for a reasonable amount of time each term.
* The right to consult with faculty outside usual classroom time such as regularly scheduled office hours by appointment.
* The right to have reasonable access to campus facilities of which use is required to complete course assignments and/or objectives.
* The right to receive a syllabus for each course at the first class meeting. The syllabus should include an outline of the course objectives, criteria used in determining the course grade, and any other requirements. Students should be informed of any changes made to the syllabus with reasonable time to adjust to these changes.
* The right to have reasonable time to learn course material prior to the administration of an examination.
* The right of each student to receive access to any of his/her records kept by the institution.
* The right to have reasonable access to grading instruments and/or evaluation criteria and to have graded material returned in a timely fashion.
* The right to be informed of the grade appeals process.
* The right to have reasonable facilities in which to receive instruction and examinations.
* The right to be informed in each course of the definition of academic misconduct.

Last update 01/08/2019