| Course Description |

Introduction to using software to create 3D models and computer animations. Students will be given a comprehensive introduction to the various components including modeling, animating, rendering and lighting.

| Course Meetings |

Mon/Wed 9:05AM - 11:35AM @ Recitation Hall Room 203, Mac LAB

9/4, 9 and 11 (to be confirmed), we will have our classes @ Recitation Hall Room 009 instead.

| Course Philosophy and Objectives |

Living in a digital/information age, it is relatively naïve to ignore the existence of virtual space, especially at this particular moment that the virtual and reality seem to be inevitably blending/blurring with each other. After the invention of the Internet, human beings have created a world within a boundless virtual space as a parallel universe(s) breaking the regulation of the time zone and shorten the distance of locations. It was also the time while digital visualization was first generated and been applied to make people engage into this Internet world more. No doubt, the making of the 3D objects and environment plays a crucial role in it. It has been a long time to be generally understood that the development of the 3D creations has only focused and benefited in the animation or game industry. In fact, the 3D has gradually played a more and more important role in our lives no matter if it is in virtual or reality world. We tried to break 3D creations down into 3 major parts. One is Reality to virtual (R to V), one is virtual to reality (V to R), one is virtual mixes with reality (V x R).

1. **R to V**

   Based on our **Real/Physical** experience/inspiration, we create **Virtual** environment/objects in Virtual world. It is the fundamental process/skill while you first engage in 3D creations. As a broad definition, this R to V part here also implies (includes) the parts of creating Virtual directly in Virtual environment (V to V), like some monsters invented by the animators. However, these creations are all based on the creators’ physical experience. The technology of “3D-scanning” is another approach to translate physical objects into virtual world. But it seems to be more as a tool, not a creating process. In other words, some interesting creativities have to come after the scanning process to be inclusive in the “R to V”’s definition.

2. **V to R**

   This part mostly takes place in the design industry after the heavy implementation of digital fabrication. With the trainings/practices of “R to V”, most the designers/architect/creators/ begin to utilize the 3D modeling skill as a tool/medium to create and realize their objects/buildings, and furthermore to convince their clients with their fabulous renderings. But after the idea/method of digital fabrication came, it extended the possibility/ability for designers to not only create their design in a virtual environment but also take back the power of making them real as it used to. Laser
cutter, CNC milling machines, and the 3D printer become the new treasure/toys of designers who are willing to collaborate with these new technics. Not as traditional 3D model makers to only create the “appearance” of the object, as a "V to R" designer, you have to consider the production process to create your designs. This is a trend in nowadays industrial and architectural practice.

3. V x R

2016 has been called the year of VR. Numerous VR products have been launched during that year. We have seen massive development afterward. Under this category, VR(Virtual Reality) might seem to be uncertain to be inclusive here since it mostly only creates a non-existing world. However, the impression of the feelings is definitely real within these VR devices. So I rather put them into this part. And the more we understand about VR, we know that it would sense more realistic once it combines with the real/physical object. For example, “The Void” a VR theme park in Utah, has created physical interior space and decorated with its VR to make the audiences’ experiences more immersive. In the summer of 2016, Pokemon Go has released to open up a new genre of gaming, which is an AR(augmented reality) game. It is like the first time that a virtual world has blended with the real world. And with the worldwide contributions, the potential of utilizing this AR technology in the real world might change the way how we live, work, and entertain. We don’t have to only sit and stare at our computer screen to “interact” by using the keyboard and mouse. In other words, the whole space can transform into your interface as a screen of your laptop and you may use your whole body to interact with it. Mixed Reality or Spatial Computing is its new name but the spirits are relatively the same.

Aforementioned, it is the misunderstanding that only the people in the movie, animate and gaming industries have to work on “3D-modeling”. We see highly potentials of this inevitable tendency of mixing the virtual and reality together for artist/creators to deliver contribution, and “3D-modeling” IS the fundamental key to open up this new world. It is also not to claimed that you “HAVE” to only use computational technology to generate your designs in the coming future, but to say that you should have this extremely powerful tool in your toolbox and it can benefit your design/artistic projects. However, it is not only a technical course emphasizing merely on how to operate the 3D-Software. The ultimate goal is to make you inspire through the modeling process and be able to translate/create your design/artistic idea via these digital tools.

The objectives of the course are:
• Understand and gaining basic knowledge relating to 3D modeling.
• Learn how to operate 3D-modeling software from modeling, animating, rendering and lighting
• Understand the tendency of the 3D modeling utilization/implementation in Art/Design industry.
• Understand and have the ability to transform/translate their design/artistic idea via 3D modeling skills.

** Highly encourage students to explore new method and techniques beyond the skills and knowledge taught in class and discover their own thinking outside the box.

|| Course Structure

Following the structure composed of “V to R”, “R to V” and “R x V”, the students will learn certain skills from each category. The course will mostly focus on the practicality of the "V to R" to make the students have the strong foundation to explore the “R to V” and “R x R” later on. The part of “R to V” and “V x R” will be delivered within conceptual and design discussion blending within the assigned art/design project. For the sake of understanding and training, the Course Structure here can also be separated into 3 major parts as a flowing process: Observation, Creation, Imagination.

1. Observation:
   observing existing objects carefully and clearly, do engineering-like drawing, then translate them directly into virtual world.
2. **Creation:**
creating practical design projects purely in virtual world by operating the assigned 3D software to deliver your ideas and final project/product.

3. **Imagination:**
creating imagining character and realize it virtually with the digital tools learned in the format of animation.

The assignments will follow up with the structures to assist the students to gain the required skills.

* 9/2 Labor Day
* 9/18 NYC Field Trip
* 11/25~29 Thanks Giving

|| Project Schedule & Point Value

This is a tentative schedule. Updates and revisions will be posted on Canvas or through emails. Projects will not be accepted after due dates. Failure to turn-in a Project will result in zero points for that Project.

<table>
<thead>
<tr>
<th># Topic</th>
<th>Tentative Due Date</th>
<th>Point Value</th>
<th>Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cube</td>
<td>9/4, 9</td>
<td>50</td>
<td>Physical Modeling</td>
</tr>
<tr>
<td>2 Toothbrush</td>
<td>9/16</td>
<td>50</td>
<td>Orthographic Drawings</td>
</tr>
<tr>
<td>3 Animal</td>
<td>9/25</td>
<td>50</td>
<td>Nurbs Modeling (Creative)</td>
</tr>
<tr>
<td>*4 2Object</td>
<td>10/9</td>
<td>50</td>
<td>Observation/Scale Modeling</td>
</tr>
<tr>
<td>5 Animal House/ MoviePath</td>
<td>10/30</td>
<td>100</td>
<td>Spatial Design (Translation)</td>
</tr>
<tr>
<td>6 Hybrid Animal/ 9spheres</td>
<td>11/6</td>
<td>50</td>
<td>Mesh Modeling (Creative)</td>
</tr>
<tr>
<td>7 Spatial Graffiti</td>
<td>11/13</td>
<td>50</td>
<td>Mesh Modeling (Creative)</td>
</tr>
<tr>
<td>8 Self-portrait (Monster)</td>
<td>12/4</td>
<td>100</td>
<td>Animation (Creative)</td>
</tr>
</tbody>
</table>

***It might have minor changes in the future according to the schedule. And there will be some work-in-class assignment along the practice. Total Points Possible for Projects: 500

|| 3D Modeling Software

**Rhinoceros** and **Cinema4D**. They are both available in Mac LAB.

|| Required Materials

*Materials/Recycle materials for the “Cube” project.

**Toothbrush x 1, 24” x 18” (or A1) Vellum Paper x 2[https://www.staples.com/Staedtler-Vellum-Paper-White-10-Sheet-Pad-9471824T/product_484935](https://www.staples.com/Staedtler-Vellum-Paper-White-10-Sheet-Pad-9471824T/product_484935), pencil x 3(at least H, HB & 2B) & eraser, ruler(longer one), masking tape, set square, pencil compass, form curve ruler/French Curve[https://www.amazon.com/dp/B079L1XGKH/ref=ssp_a_dk_detail_5?psc=1&pd_rd_i=B079L1XGKH&pf_rd_m=ATVPDKIKX0DER&pf_rd_p=a544f13f-b8ba-4ce7-b28d-d77f99a90c6f&pf_rd_r=R73NB632ZVXXW9MGX2ZS&pf_rd_w=V4xK&pf_rd_r=s-desktop-dp-sims&pf_rd_r=40701&pf_rd_w=DBboT&pf_rd_r=desktop-dp-sims&pf_rd_r=0078bc66-a635-11e8-9a57-1d7ca1325d6](https://www.amazon.com/dp/B079L1XGKH/ref=ssp_a_dk_detail_5?psc=1&pd_rd_i=B079L1XGKH&pf_rd_m=ATVPDKIKX0DER&pf_rd_p=a544f13f-b8ba-4ce7-b28d-d77f99a90c6f&pf_rd_r=R73NB632ZVXXW9MGX2ZS&pf_rd_w=V4xK&pf_rd_r=s-desktop-dp-sims&pf_rd_r=40701&pf_rd_w=DBboT&pf_rd_r=desktop-dp-sims&pf_rd_r=0078bc66-a635-11e8-9a57-1d7ca1325d6)**
…etc., basic drawing tools for the “Toothbrush” project.

|| Readings

This class will consist of lecture, discussion, and physical capture, modeling and outputting. And a certain amount of related reading materials will be hand out for study. I expect you to give the same energy to reading and discussion that you give to your digital work.

|| Attendance

Do not miss class and do not be late to class. If you do, you are responsible for asking your fellow classmates about what you missed. You are not allowed to have any unexcused absences, and please provide your notes as proofs for the excused absences. Unexcused absences will automatically reduce your final grade one full letter. Each additional absence drops the final grade another letter.

|| Contact

E-mail is the best way to get in touch with me, and it is how I will contact you. You are required to check your email a minimum of 12 hours prior to the next class period.

|| Classroom

Class sessions will be held in the Recitation Hall Macintosh Site (Room 203).

|| Course Format

You are required to be self-motivated and actively participate in the course either on or off class. If there is anything that is interfering with your ability to perform what is required in this class, it is your responsibility to speak with me so that accommodations can be discussed.

In-Class Work Periods (designated on the Course Schedule) are mandatory. Be Prepared! Projects: Work to be completed as stated in the assignment, and delivered according to the Course Schedule.

|| Course Website

www.udel.edu/canvas: This will be the “course website” for this course. It will be used for distribution of Assignments, course schedule, posting announcements, web links and grades. Bookmark this website and check it often. Meanwhile, I might also send you information via emails, so please pay attention to receiving the announcement/documents/assignments through your Udel emails.
Maintaining your digital files & Backing up your work

You are required to keep your files for this course on an external hard drive and regularly backup this drive to prevent loss of data if your drive malfunctions. Files left on any computer in the Macintosh Site may be deleted at any time, for any reason.

Participation

You are required to actively participate in every class period. Your level of participation in every class meeting will be evaluated. Total Points Possible for Participation: 100.

In-class Presentation

If the presentation is requested due to the requirements of the assignment, the performance of the presentation will reflect on the assignment’s grades.

Documenting/Delivering Your Work

You must turn in digital documentation, on disc, for all Assignments at the end of the semester. This includes all work made for this course, (Rhino, Cinema4D files, and Jpeg, mp4, mov format depending on the assignments, etc.). More information regarding content, format and deliver process will be provided toward the end of the semester.

All digital files must be in the following formats collected as a package:

Hand drawing: scanned as high-quality pdf/jpeg file.
Rhino/Cinema4D/: Put entire folder structure (root folder) on disc
Video
Illustrator: Save as a pdf, all fonts embedded, "high-quality print"
Photoshop: Save as a .tiff file
iMovie, After Effects, Final Cut Pro: Export as a Quicktime Movie, H264 compression, full-size, high quality.

Please hand in the whole digital file before 12/5 (To Be Confirmed).

Total Points Possible for Documentation: 50

Assignment Evaluation

The evaluation of your assignments’ scores will be considered if your projects are submitted on-time, the percentage of the skills you applied, the creativity, your oral presentations (including Q&A), and the aesthetics of presentation slides.

If it is on a 50-points scale, the rubric would be:
45-50
- submitted on time.
- executed excellent and freely apply 90% the skills I taught in class.
- great oral and visual presentation.

40-44
- submitted on time.
- executed well and Freely apply 80% the skills I taught in class.
- good oral and visual presentation.

30-39
- submitted on time.
- executed fine and Freely apply 60% the skills I taught in class.
- fine oral and visual presentation.

***There can be minor difference/adjustment according to each individual's performance.

|| Grade Evaluation

Each Assignment includes a rubric on how it will be graded. Because this class is a technological art class, there is a premium on having working projects. However, a secondary premium to having projects that work in the sense of aesthetics, creativity, and innovation will be considered.

Rubric

A
- completion of all assignments
- evidence of care and creative solutions in the finished work
- assignments are executed well and applied 80% - 90% of the skills taught in class.
- attentiveness during class and openness to criticism

B
- completion of all assignments
- evidence of effort given to finished work
- assignments are applied 60% of the skills taught in class.
- attentiveness during class

C
- missing completion of one assignment
- absence of more than three classes
- evidence of effort given to finished work
- assignments are applied less than 60% of the skills taught in class.
- leaves class early on a regular basis

D
- missing more than one assignment
- absent more than four classes
- lack of effort given to finished work
- comes late and/or leaves class early on a regular basis

Final letter grades will be determined according to the University of Delaware’s Official Grade Scale.

|| Letter Grade Descriptions
The following Letter Grade Descriptions detail the criteria for earning grades. Plus and minus grades fall between the straight letter grades in achievement. To receive a grade of C or better on any assignment, it must be turned in on time unless a PRIOR arrangement has been made or there is an emergency situation.

A: Outstanding work relative to the level necessary to meet course requirements. This work goes FAR beyond completing the requirements of the assignment and shows unusual mastery of the skills and innovative and creative thinking.

B: Significantly above the level necessary to meet course requirements. A "B" is a very good grade, but not outstanding.

C: Average achievement that meets the course requirements in every respect, but does not go beyond. A "C" is an average grade, meaning you did not succeed beyond the average effort of your classmates.

D: Worthy of some credit even though it fails to fully meet the course requirements. Basically, it means that you squeaked by... "D" is for "dangerously close to failing."

F: Represents failure and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an “I”. Keep in mind that a student can turn in work, attend class and still fail the course if the work is not worthy of credit according to the clearly stated criteria for passing work. An “F” carries zero grade-points and the credits for the course do not count toward any academic degree program.

A letter grade of an "I" stands for an Incomplete Grade and is assigned at the discretion of the instructor when, due to extraordinary circumstances, e.g., hospitalization, the student was prevented from completing the work of the course on time. Student must have been passing the course before the emergency incident. Requires a written agreement between the instructor and student specifying the time and manner in which the student will complete the course requirements. In no event may any such written agreement allow a period of longer than 6 months to complete the course requirements.

The requirements and objectives for this course are clearly stated in this syllabus. This is the criteria you will be graded on. If you are not clear about the criteria or what you will be graded on, please ask. I encourage you to discuss your grades with me at any time. Federal law prohibits me from discussing your academic standing (including grades) with anyone except you. I am also prohibited from sending email with personal information such as grades.

|| Academic Honesty

All students must be honest and forthright in their academic studies. To falsify the results of one’s research, to steal the words or ideas of another, to cheat on an assignment, or to allow or assist another to commit these acts corrupts the educational process. Students are expected to do their own work and neither give nor receive unauthorized
assistance.
“Any violation of this standard must be reported to the Office of Student Conduct. The faculty member, in consultation with a representative from the Office of Student Conduct, will decide under which option the incident is best filed and what specific academic penalty should be applied.” http://www1.udel.edu/stuguide/17-18/code.html#honesty

|| Inclusion of Diverse Learning Needs

Any student who thinks they may need an accommodation based on a disability should contact the Office of Disability Support Services (DSS) office as soon as possible. The DSS office is located at 240 Academy Street, Alison Hall Suite 130, Phone: 302-831-4643, fax: 302-831-3261, DSS Website (http://www.udel.edu/DSS/). You may contact DSS at dssoffice@udel.edu

|| Harassment and Discrimination

The University of Delaware works to promote an academic and work environment that is free from all forms of discrimination, including harassment. As a member of the community, your rights, resource and responsibilities are reflected in the non-discrimination and sexual misconduct policies. Please familiarize yourself with these policies at http://www.udel.edu/oei. You can report any concerns to the University’s Office of Equity & Inclusion, at 305 Hullihen Hall, (302) 831-8063 or you can report anonymously through UD Police (302) 831-2222 or the EthicsPoint Compliance Hotline at http://www1.udel.edu/compliance. You can also report any violation of UD policy on harassment, discrimination, or abuse of any person at this site: http://sites.udel.edu/sexualmisconduct/how-to-report/

|| Title IX Statement

The University of Delaware does not discriminate on the basis of race, color, national origin, sex, disability, religion, age, veteran status, gender identity or expression, or sexual orientation, or any other characteristic protected by applicable law in its employment, educational programs and activities, admissions policies, and scholarship and loan programs as required by Title IX of the Educational Amendments of 1972, the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964, and other applicable statutes and University policies. The University of Delaware also prohibits unlawful harassment including sexual harassment and sexual violence. For inquiries or complaints related to Title IX, Section 504 of the Rehabilitation Act of 1973 and/or the Americans with Disabilities Act, and Title VII and age discrimination please contact:

Susan L. Groff, Ed. D.
Director, Institutional Equity & Title IX Coordinator
305 Hullihen Hall
Newark, DE 19716
(302) 831-8063
titleixcoordinator@udel.edu
At the end of each term, grades are reported to students electronically. Reports of grades are available through UDSIS Personal Access website. The University uses a system of letter grades with plus and minus designators.

“NOTE: In courses requiring a minimum letter grade (for example, a C or better), the minus grade (for example, C-) fulfills the requirement, unless 2.0 minimum is specified. Similarly, when a B or better is required, a B-fulfills the requirement. However, the quality points per credit for a C-are fewer than for a C (see chart below). Undergraduate students must achieve an overall cumulative grade point index of at least 2.0 for graduation.

http://catalog.udel.edu/content.php?catoid=11&navoid=400

“The following final grades are used:
• A Excellent 4.000 quality points per credit
• A- 3.667 quality points per credit
• B+ 3.333 quality points per credit
• B Good 3.000 quality points per credit
• B- 2.667 quality points per credit
• C+ 2.333 quality points per credit
• C Fair 2.000 quality points per credit
• C- 1.667 quality points per credit
• D+ 1.333 quality points per credit
• D Poor 1.000 quality points per credit
• D- 0.667 quality points per credit
• F Failure 0.00 quality points per credit
• X-Failure, 0.00 quality points per credit (Academic Dishonesty)
• Z-Failure, 0.00 quality points per credit (Unofficial Withdrawal)
• LW Listener (Audit) -Registration without credit or grade. Class attendance is required, but class participation is not.
• LW Listener Withdrawn -A listener who does not attend sufficient class meetings to be eligible, in the judgment of the instructor, for the grade of LW.
• NR No grade required.
• P Passing -For specifically authorized courses. P grades are not calculated in indexes. (For further explanation, see Pass/Fail grade option section.)
• W Official Withdrawal -Passing at time of withdrawal.

“The following temporary grades are used:
• I Incomplete -In the event that a student fails to complete a course due to illness or other reason deemed adequate by the instructor.
• S Satisfactory progress -For thesis, research, dissertation, independent study, special problems, distance learning and other courses which span two semesters or in which assignments extend beyond the grading deadline in a given semester.
• U Unsatisfactory progress -For thesis, research, dissertation, independent study, special problems, distance learning and other courses which span two semesters or in which assignments extend beyond the grading deadline in a given semester.
• Temporary grades of S and U are recorded for work in progress pending completion of the project(s). Final grades are reported only at the end of the semester in which the work was completed.
• No grade reported by instructor.”

|| Statement on Attending Visiting Artists, Designers, Critics, and Curators Lectures and Gallery Exhibits:

Art Majors are expected to attend all Visiting Artist Lectures in the Department of Art & Design during the semester. In addition, students are expected to see all the art exhibitions in the department’s galleries. As a part of this course, you are asked to bring a sketchbook and take notes. Engaging in dialogue with our guests by asking questions is highly recommended.