Arch 108 _ DC2_ Systems and Assemblances _ Spring 2023

Number and title: Arch 108 - DC2

Instructors info: Allaa Abdelsaid   Diana Gros   Piyush Khairnar   Alphonso Peluso Mina Rezaeian

E-Mail: aabdelsaid@iit.edu dgros@iit.edu pkhairn1@iit.edu   peluso@iit.edu   mrezaeia@iit.edu

Class meeting days, time and place: Tuesday: 8:35-11:15am CR 001 Diana Gros
Tuesday: 1:50- 4:30pm CR 001 Mina Rezaeian
Tuesday: 5:00-7:40pm TN110 Piyush Khairnar
Thursday: 1:50-4:30pm CR001 Allaa Abdelsaid
Thursday: 1:50-4:30pm TN110 Alphonso Peluso

Prerequisite(s):   **Arch 107** DC1 or permission to take the course
Text and Materials: All course resources will be provided
                               on the portal link below:
Tutorials Location: **http://www.digiitalarchfab.com/arch-108-dc2-spring-2023/**

Course description:
This course will focus on 3D modeling of geometric components in Architecture and design. Computer 3D Modeling types covered are: Explicit Modeling, Nurbs Surface Modeling and Basic Computer Rendering

Goals: •Develop an in-depth understanding of NURBS 3D Computer Modeling
                  •Learn the basic Rhino rendering techniques
                  •Understand the basics of Parametric Design and create parametric 3D models
                  •Establish a deeper understanding of computer modeling through the (2) major pin up presentations and
                   the weekly assignment process and completion.
                  •Reinforce concepts from DC1 and establish productive and effective work flows.

Software: Rhino   http://www.rhino3d.com/
                  InDesign and Photoshop, will be used tangentially. Grasshopper will be introduced classes 11-14

Reading List:

Polyhedra Primer by Peter and Susan Pearce.

The Function of Form by Farshid Moussavi

Architectural Geometry by Portmann, Asperl, Hofer, Kilian

Grading: Students will submit 11 Homework assignments, and participate in (2) major pin ups (*subject to change)

The Final grade is based on the four percentages below:

10% for attendance
Attendance is mandatory. Any planned absences must be discussed with and approved by the professor in advance. Unforeseen absences due to a medical emergency should be communicated to the instructor as soon as possible via email and followed up with a note from your physician. Lateness or other incomplete attendance will be counted as an absence at the discretion of the instructor. Two unexcused absences will result in an automatic reduction of your final grade by one letter grade. Further letter grade deductions will be made for each unexcused absence thereafter.

30% for Homework assignments

60% for pinups (30% for each major pinup presentation)
Please note: attendance**,** completion and submission of all course work on time is the minimum requirement and does not mean that you will receive an A grade. All grades are subject to the grade judging criteria below.

Grades are determined by judging 3 different categories:

Legibility - Make sure that your assignments are clear and easy to read. Use spell check (all software apps have it). Your shared folder should be neat and organized with assignment #'s labeled **Firstname_Lastname_A0#**.

Composition - In addition to being legible you should apply all the concepts of composition that you have previously learned. Some suggestions including but not limited to are: all line drawings must demonstrate good line weights, assignments, when required, should include title and drawing names, all text should be placed with good layout & scale.

Innovation - Expand upon the skill sets taught in the course and apply them to the assignments. Research additional learning resources found on the Internet and in Libraries. Create your own way to apply the software tools and concepts discussed in the course.

*Arch 108 _ DC2_* Systems and Assemblances _ Spring 2023
16 Class Schedule

Class One: **2D Polygons _ 2D Tessellations _ CAD WYSIWYG** (what you see is what you get)
Drawing Types: Hand, CAD, Photoshop, Hybrid Hand & Digital

Class Two: ***3D* Polyhedra _ 3D Tessellations**
Polyhedra: Platonic solids, Dihedral angle, Rotate 3D

Class Three: **Rhino Cutting Techniques**
Cutting Techniques: Boolean, Contour, Wirecut, SolidPtOn, Shell

3D Printing Basics
3D Printing: Cura Slicing Software _ Model Material _ Support Material _ Infill

Class Four: **Studio Precedent Model**
2D Drawing Basics: Line, Polyline, Curve, Offset, Trim,
Move, Copy, Array, Rotate, Scale, Mirror,
Trim, Fillet, Line weights, Walls, Doors, Windows, Hatching, Scale Factors

Class Five: **Studio Precedent Model**
3D Modeling Techniques: Extrude, Loft, Sweep1, Sweep 2
Cameras, Solid Point On
Boolean Operations: Union, Intersection, Difference, Split

Class Six: **Rhino Rendering Basics / Rhino Materials**
Rendering: Background Color, Ambient Light, Sun, Shadows, Ground Plane
Cameras: F6 (show camera), Camera, Target, Lens Length, **Projection:** Perspective, Parallel, 2 Point

Class Seven: **Rhino Materials / Rhino Lighting**
Rhino Material Basics: Square, Seamless, Low Res, Wood Floor, Mapping Widget, Marble, Brick,
Glass, ***Bonus 3D Warehouse***

Rhino Lighting
Rhino Lighting Basics: Sun, Sphere Light (Point), Rectangle Light, Emissive Material
Bonus: RenderInWindow, Fillet Edge, OpenLastRendering

Class Eight: **Work in Class on Midterm Assignment**

Class Nine: **Midterm Presentation**

SPRING BREAK - March 13-18

Class Ten: **Diagramming in Rhino**
3D Diagrams: Massing, Program

Class Eleven: **Renderings of Community Space Project**
Renderings: Highly Detailed Models of Studio Project, Context Buildings, Materials, Lighting,
People, and Trees

Class Twelve: **Parametric Modeling 01 - What is Grasshopper - Site Analysis**
Transformations: Move, Copy, Rotate, Scale, Array, Extrude, Cap Holes

Parametric Modeling 02 - What is Grasshopper good for?
Multiple Values, Domain, Range, Series, Random, Iterations

Class Thirteen: **Parametric Modeling 03 - Surface Patterns**
IsoTrim, Divide Domain2, Bounding Box, Srf Box, Morph Box

Class Fourteen: **Work in Class preparation for Final Presentation**

Class Fifteen: **Work in Class preparation for Final Presentation**

Class Sixteen: **Final Presentation**

Please note the schedule is subject to change, Some topics will be covered in class and some topics will be for homework covered by students independently outside of class. In-class will also adapt to address design studio integration as well as design communications requirements.*

Students with Disabilities Statement:
Americans with Disabilities Act (ADA) Policy Statement
Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must go through the Center for Disability Resources office. The Center for Disability Resources (CDR) is located at 3424 S. State Street, Suite 1C3-2, Chicago, IL 60616 telephone 312 567.5744 or disabilities@iit.edu.

Illinois Tech's Sexual Harassment and Discrimination Information:

Illinois Tech prohibits all sexual harassment, sexual misconduct, and gender discrimination by any member of our community. This includes harassment among students, staff, or faculty. Sexual harassment of a student by a faculty member or sexual harassment of an employee by a supervisor is particularly serious. Such conduct may easily create an intimidating, hostile, or offensive environment.
Illinois Tech encourages anyone experiencing sexual harassment or sexual misconduct to speak with the Office of Title IX Compliance for information on support options and the resolution process.
You can report sexual harassment electronically at iit.edu/incidentreport, which may be completed anonymously. You may additionally report by contacting the Title IX Coordinator, Virginia Foster at foster@iit.edu or the Deputy Title IX Coordinator at eespeland@iit.edu.
For confidential support, you may reach Illinois Tech's Confidential Advisor at (773) 907-1062. You can also contact a licensed practitioner in Illinois Tech's Student Health and Wellness Center at student.health@iit.edu or (312)567-7550
For a comprehensive list of resources regarding counseling services, medical assistance, legal assistance and visa and immigration services, you can visit the Office of Title IX Compliance website at https://www.iit.edu/title-ix/resources.