

Number and title: Arch 207 - DC3

Professors: **Alphonso Peluso, Jenna Staff**

E-Mail: peluso@iit.edu

jstaff@iit.edu

Prerequisite(s): **Arch 108 DC2** 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-207-dc3-fall-2022/>

Course description:

This course will focus on the advancement of digital design as an iterative process. Various modeling types covered are: Explicit Modeling, Nurbs Surface Modeling, Parametric Modeling, Generative Modeling & Responsive Modeling. DC3 begins with a series of Parametric structural design concept case studies. Concepts explored are Folded Plate Tessellations, Shell Structure Tessellations, Grid Shells, and Tall Buildings. For the Midterm students are asked to create Parametric models of a proposed design. Students also made several renderings of their proposed designs. After Midterm students will explore Responsive Components and Generative Components. Lastly, the advanced rendering softwares V-Ray and Enscape are explored and applied to their final design proposals.

Goals:

- Continue to develop an in-depth understanding of NURBS 3D Computer Modeling
- Use architectural and structural texts as a guide/aid for learning complex 3D modeling.
- Create complex parametric models based on text book concepts
- Establish a deeper understanding of computer modeling through the Midterm, Final and weekly assignment process and completion.

Software:

Rhino	http://www.rhino3d.com/
Grasshopper	http://www.grasshopper3d.com/
Weaverbird	http://www.giuliopiacentino.com/weaverbird/
Photoshop	https://www.adobe.com/products/photoshop.html
InDesign	https://www.adobe.com/products/indesign.html
Vray for Rhino	https://www.chaosgroup.com/vray/rhino
Enscape	https://enscape3d.com/

Reading List:

Polyhedra Primer by Peter and Susan Pearce.

The Function of Form by Farshid Moussavi

Tragsysteme = Structure Systems by Heino Engel

Architectural Geometry by Portmann, Asperl, Hofer, Kilian

Parametric Architecture with Grasshopper: Primer by Arturo Tedeschi

AAD: Algorithms Aided Design by Arturo Tedeschi

Grading: Students will submit multiple homework assignments, a Midterm, and a Final

The Final grade is based on the four percentages below:

10% for attendance

(attendance is mandatory, signing in for someone and/or 3 unexcused absences will result in a failing grade)

20% for Homework assignments

30% for Midterm

40% for the Final

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 4 different categories:

Legibility - Make sure that your assignments are clear and easy to read. Use spell check (all software apps have it). Your portal page should be neat and organized with assignment #'s labeled. (see past homework examples on course portal page)

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 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 207_ DC3_ Analysis and Exposure _ Fall 2022 _ Professors: Alphonso Peluso, Jenna Staff

16 Class Schedule ***Please note the following schedule is subject to change, it represents what will be covered for homework by students independently outside of class. In-class instruction may cover topics below in addition to addressing studio design communications requirements.***

Class One: Parametric Folded Plate Tessellation (Grasshopper)
August 23,26 Parametric Case Study 01
Air Force Academy Chapel by Skidmore, Owings, Merrill

Class Two: Parametric Shell Structure Tessellation (Grasshopper)
August 30, Sep02 Parametric Case Study 02
Los Manantiales by Felix Candela

Class Three: Working with Lists (Grasshopper)
September 06,09 Parametric Case Study 03
Palazetto Dello Sport by Pier Luigi Nervi

Class Four: Parametric Tower (Data Trees)
September 13,16 Parametric Case Study 04
Absolute Towers by MAD Architects

Class Five: Shark Gill (Data Trees)
September 20,23 Parametric Case Study 05
10 Hills Place by Amanda Levete Architects

Class Six: Mesh Subdivision and Smoothing
September 27,30 Parametric Case Study 06
Grand Musee de l'Afrique by UN Studio _ (Responsive) (Weaverbird)

Class Seven: **Work in Class preparation for Midterm Presentation**
October 04,07

Class Eight: **Midterm Presentation**
October 11,14

Class Nine: Responsive Components _ (Grasshopper)
October 18,21 Parametric Case Study 07
Arab Institute by Jean Nouvel _ (Responsive) (Remap)

Class Ten: Generative Components _ (Grasshopper)
October 25,28 Parametric Case Study 08
Al Bahar Towers by Aedas (Box Morph)

Class Eleven: Vray for Rhino Basics / Enscape Easy Button
November 01,04 Interface, Sun Settings, Interactive vs. Production, Exposure, Resolution

Class Twelve: Vray for Rhino Lights / Enscape Easy Button
November 08,11 Sun, Sphere, Rectangle, Emmisive Material

Class Thirteen: Vray for Rhino Materials / Enscape Easy Button
November 15,18 Seamless Textures, Texture Map Size, Box Texture Mapping

Class Fourteen: **Work in Class preparation for Final Presentation**
November 22,25

Class Fifteen: **No Class - Studio Finals**
November 29, December 02

Class Sixteen: **Final Presentation**
Finals Week TBD