***Arch 490 - 01_ Intro to Parametric Modeling*** _ Summer 2024 _ Professor: Alphonso Peluso

**Number and title:** Arch 490 - 01 - Intro to Parametric Modeling

**Professor:** **Alphonso Peluso**

**E-Mail:** peluso@iit.edu

**Prerequisite(s):** **Arch 108 / 507** 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-490-intro-to-parametric-modeling-fall-2023/**

## Course description:

This course will serve as an Introduction to Parametric Modeling. The course will use architectural and structural texts as a guide/aid for learning complex Parametric Modeling. It will explore a series of Parametric structural design case studies. Case studies explored are Folded Plate Tessellations, Shell Structure Tessellations, Grid Shells, Tall Buildings, Responsive Components, and Generative Components. Students will propose and create their own Parametric designs.

**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/ |
| Lunchbox | http://www.food4rhino.com/project/lunchbox |

## Reading List:

**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: Algorithims 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 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 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.

**Originality** - Midterm and Final grades will weigh heavily on *Originality*. Strive to satisfy the requirements of the midterm and final assignments with creative and original solutions

## 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.

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***12 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 differ from what is listed below****

***Class One:*** Parametric Folded Plate Tessellation ( Grasshopper )
May 13 Parametric Case Study 01
Air Force Academy Chapel by Skidmore, Owings, Merrill

***Class Two:*** Parametric Shell Structure Tessellation ( Grasshopper )
May 15 Parametric Case Study 02
Los Manantiales by Felix Candela

***Class Three:*** Working with Lists ( Grasshopper )
May 20 Parametric Case Study 03
Palazetto Dello Sport by Pier Luigi Nervi

***Class Four:*** Parametric Tower ( Data Trees )
May 22 Parametric Case Study 04
Absolute Towers by MAD Architects

***Class Five:*** ***No Class - Memorial Day***
May 27

***Class Six:*** Shark Gill ( Data Trees )
May 29 Parametric Case Study 05
10 Hills Place by Amanda Levete Architects

***Class Seven:*** Mesh Subdivision and Smoothing
June 03 Parametric Case Study 06
Grand Musee de l'Afrique by UN Studio _ ( Responsive ) ( Weaverbird )

***Class Eight:*** **Midterm Presentation**
June 05

***Class Nine:*** Responsive Components _ ( Grasshopper
)June 10 Parametric Case Study 07
Arab Institute by Jean Nouvel _ ( Responsive ) ( Remap )

***Class Ten:*** Generative Components _ ( Grasshopper )
June 12 Attractors _ ( Grasshopper )
Parametric Case Study 08
Al Bahar Towers by Aedas ( Box Morph )

***Class Eleven:*** **Final Presentation**
June 17

***Class Twelve:*** ***No Class - Juneteenth***
June 19