

## Course Descriptions and Outlines

### Department of Architectural Technology

#### **ARCH 1110-D512 ARCHITECTURAL DESIGN I: FOUNDATIONS**

6 lab/studio hours, 3 credits

**Course Description:** Architectural Design I: Foundations is the first course in the one-year foundation sequence which increases the student's ability to perceive visual cues, create visual design, formulate concepts, and render ideas in two or three dimensions. Students will use a combination of hand and digital skills to aid in the creation and interpretation of three dimensional objects and space, and the delineation of the same using standard projection systems.

**Course context:** This course is a required first step in the Design Studio sequence.

**Prerequisites:** None

**Co-requisites:** ARCH 1191 Visual Studies I (MUST BE LINKED TO SECTION D550)

#### **Required Text:**

In the form of a reader:

1. Hannah, Gail Greet. Elements of Design: Rowena Reed Kostellow and the Structure of Visual Relationships, pp.44-57.
2. Elam, Kimberly. Geometry of Design. Pages 44-75.
3. Durer, Albrecht. Of the Just Shaping of Letters.  
Web URL, PDF: <<http://sean.gleeson.us/2006/03/08/durers-crazy-idea>>
4. Benedict, William. ARCH 121 SYLLABUS. Pages 29-40.

#### **Recommended texts:**

- Benedict, William. Base, 121, 122, 123 Syllabi, Drawing Form, Creating Relationships. San Luis Obispo, CA: El Corral Publications, 2007. PDF. <[www.williambenedict.com](http://www.williambenedict.com)>
- Ching, Francis D.K. Architecture: Form, Space, and Order (latest edition). New York, NY: John Wiley & Sons, Inc., 1996 (or most recent). Print.
- Elam, Kimberly. Geometry of Design: Studies in Proportion and Composition. New York, NY: Princeton Architectural Press, 2001. Print.
- Hannah, Gail Greet. Elements of Design: Rowena Reed Kostellow and the Structures of Visual Relationships. New York, NY: Princeton Architectural Press, 2002. Print.

#### **Required Tools:**

- |   |                               |                               |
|---|-------------------------------|-------------------------------|
| 1. Lead Holder  | 13. 12" Alvin Rolling Ruler   | 21. Drawing Transport Tube    |
| 2. Lead Holder Sharpener  | 14. Alvin Adjustable Compas   | 22. Art Bin/Tackle box        |
| 3. Leads: 2H, HB, H, 2B<br><b>OR Graphite Pencil Set</b>              | 15. Olfa Knife OR             | 23. 12" White Tracing Paper   |
| 4. 12" and 3" 30°/60° Triangle  | 16. #11 X-Acto Knife & Blades | 24. 11"x17" Vellum Pad        |
| 5. 12" and 3" 45° Triangle<br><b>OR Adjustable Triangle</b>           | 17. 18" Metal Ruler w/ Cork   | 25. 11"x17" Mylar Sheets      |
| 6. White Eraser   | 18. Super Glue                | 26. 5 ½"x8" (min) Sketch Book |
| 7. Erasing Shield   | 19. White Glue                | 27. 8 ½"x11" Black Paper (5)  |
| 8. 12" Architect's Scale  | 20. French Curves             | 28. 8 ½"x11" Sheet Protectors |
| 9. Prismacolor Color Pencils: <b>Black, 20%, 50%, 70% Gray, White</b> |                               |                               |
| 10. Micron Permanent Black Ink Pens: 005, 01, 03 Weights              |                               |                               |
| 11. Faber-Castell Permanent Black Ink Pens: <b>S, F, M Weights</b>    |                               |                               |
| 12. 9"x12" Self-Healing Cutting Mat                                   |                               |                               |

**Attendance Policy:** No more than 10% absences are permitted during the semester. For the purposes of record, two lateness are considered as one absence. Exceeding this limit will expose the student to failing at the discretion of the instructor.

**Course Structure:** This course is the first design studio which will include lectures, student presentations, guest critics, in-class workshops, and charrettes. The students will be given problems in a week to week sequence. Each problem will involve a cyclical iteration of the design process in which new skills in a variety of media will be acquired. Students will give verbal and graphic presentations of their designs which will demonstrate agility with vocabulary, concepts, and result in a critical class discussion to assess quality of the work. Work will be completed both in and outside of class. Written evaluation for each week will be provided by the professor and fellow classmates. Students should keep record of their own progress in a spreadsheet.

### Learning Objectives

Upon successful completion of this course, the student will:

1. **Implement** an iterative design process from problem identification, information gathering, solution generation and evaluation, implementation, presentation, and overall project evaluation. (Knowledge)
2. **Incorporate** design concepts and vocabulary into design process and presentations. (Knowledge)
3. **Distinguish** between media and **determine** the appropriate method and media required to complete a drawing or model. (Gen Ed)
4. **Communicate** ideas and information both verbally and through writing. (Gen Ed)
5. **Develop** and **apply** professional vocabulary. (Gen Ed)
6. **Produce** orthographic, axonometric, perspective, and architectural vignette drawings. (Skill)
7. **Utilize** analogue and digital media to create drawings and models. (Skill)
8. **INTEGRATE** the skills, media, and thinking processes between 1110 Foundations and 1191 Visual Studies.

### Assessment

To evaluate the students' achievement of the learning objectives, the professor will do the following:

1. **Review** students' creative process (initial sketches through to the final project) by means of frequent pin-ups. (LOs: 1,2, 3, 6, 7)
2. **Assess** the students' use of professional vocabulary during oral presentations. (LOs: 2, 4, 5)
3. **Review** students' written descriptions of design work and feedback. (LOs: 4, 5)

### Grading:

Class Participation	10%
Weekly Sketches	10%
Projects	75%
Course Portfolio	5%

**Academic Integrity:** Students and all others who work with information, ideas, texts, images, music, inventions and other intellectual property owe their audience and sources accuracy and honesty in using, crediting and citation of sources. As a community of intellectual and professional workers, the college recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension and expulsion.

**Course Outline:** At the beginning of each semester, students should prepare a spreadsheet with each exercise and their relative grade weights. Each exercise will have a Craft grade and a Design grade. Students should keep track of their own progress in this way.

## **WEEKLY SKETCHES**

A total of 10 weekly sketches will be completed per semester as homework. Each sketch has a clearly defined focus and method such as blind contour form study, positive and negative space, shade and shadow, texture, light, depth, perspective, and scale. Sketches will explore a variety of paper and drawing media. Thumbnail study sketches should be completed in a sketchbook prior to preparing the final sketch on 8 ½"x11" paper. Hand letter on the back of each sketch the intention, time it took to complete, and the location.

### **WEEK 1:**

#### **Wednesday**

*Lecture:* **RECTILINEAR FORM:** Identify axis in rectilinear forms and recognize hierarchy and dominance of volumes based on proportion. Group forms to create a visually pleasing unified object.

#### *Lab & Homework:* **EXERCISE 1a**

1. Construct six (6) rectangular volumes of white clay of varying sizes, but all smaller than 4" in the greatest dimension.
2. Identify dominant forms, subdominant forms, and subordinate forms. Identify the dominant axis of each volume.
3. Assemble groupings of 3 rectangular volumes (a total of 3 groupings) and secure to a ½" thick foamcore base.

*Reading:* Hannah, Gail Greet. Elements of Design: Rowena Reed Kostellow and the Structure of Visual Relationships, pp.44-57.

### **WEEK 2:**

#### **Monday** (ARCH1191-class 1)

*Sketching:* **Drawing what you see**

*Lecture:* **DELINEATING RECTILINEAR FORM: Projective Drawing.** Represent 3-D form in 2-D drawings which communicate relationships between parts in plan and elevation.

*Lab:* Projective drawing layout and drafting.

#### *Homework:* **EXERCISE 1b**

1. Work with one of the models from the previous exercise. Construct multi-view drawings using the projective method reviewed in class drafted construction lines.
2. Indicate the dominant, subdominant, and subordinate forms graphically. Label and dimension the axis of each volume. Indicate the ratio of length to width.

#### **Wednesday**

*Present and review:* Exercise 1.

*Lecture:* Model Photography: Select your three best models and photograph them from elevation, oblique, and close-up. Learn to use the photo booth to control lighting and backdrop.

*Lab:* Model Photography and projective drawing.

**WEEK 3:**

**Monday** (ARCH1191-class 2)

*Sketching:* shade and shadow.

*Lecture:* **AXONOMETRIC/ISOMETRIC:** Learn how to construct an axonometric and isometric from a plan and elevation. What is the difference between an axonometric and an isometric? Why are these drawings helpful in representing architectural ideas?

*Lab:* axonometric drawing

*Homework:* **EXERCISE 1c**

1. Working with Project 1b, construct a minimum of three axonometric drawings of your clay model that describes its form from different angles.
2. Develop axonometric drawings with shade and shadow.

**Wednesday**

*Lecture:* **PERSPECTIVE:** Learn how to construct a perspective from a plan and elevation. What is entourage?

*Lab:* axonometric and perspective drawing.

*Homework* **EVERYBODY:**

1. Complete all assignments 1a, 1b, 1c, and 1d (extra credit – see below).
2. Scan all assignments and present according to the requirements of your portfolio book. Coordinate with Professor Alfonso.

*Homework* **EXTRA CREDIT: EXERCISE 1d**

3. Working with Project 1a,b,c, construct a minimum of three perspectives that described the experience of moving around your model.
4. Present perspectives with construction lines.
5. Work on adding entourage.
6. Develop perspectives with shade and shadow, entourage, etc. as far as possible.

*Reading:* Yee, Rendow. Architectural Drawing: A Visual Compendium of Types and Methods. Selected pages between: 181-303 and 367-425.

**WEEK 4:**

**Monday**

*PRESENTATION:* Assignment 1a,1b,1c,& (1d).

**Wednesday**

*TO FOLLOW*

*Lecture:* **BASIC PATTERN AND GEOMETRY RECOGNITION:** Identify attributes of an illustration and record their properties and affect. Identify underlying geometries and proportions of an illustration. Present and review Exercise 2.

*Lab & Homework:* **EXERCISE 4**

1. Identify the basic pattern areas in an illustration (magazine or architectural lecture series poster) by outlining their contours on tracing paper.
2. Describe the attributes: number, position, size, shape, direction, texture, surface quality, and color. Explain why these attributes enhance or support the intent of the illustration.
3. Create four 11"x17" presentation boards with the original clipping, the basic pattern area identification overlay, and inventory of attributes in either horizontal or vertical format. Label all parts of the presentation with lettering.
4. Using the same illustration, identify the overall organizing geometries of the page and its' objects by hardline drafting over them on tracing paper.
5. Label dimensions, radii, angles, and identify the center of the page. Describe the geometric layout in sentence format.
6. Scan the illustration and overlay. Create four 11"x17" presentation board with the clipping, overlay, and description.

*Reading:* Theil, Philip. Visual Awareness and Design. pp. 68-81.

*Reading:* Elam, Kimberly. Geometry of Design. Pages 44-75

**WEEK 5:**

*Lecture:* **GEOMETRIC HIERARCHY:** The designs created in the Shape Generation project, Exercise 9, visually establish a flat two-dimensional world. The challenge of the Hierarchy project is to see new possibilities in these familiar designs. The goal of this project is develop a visual hierarchy of lines, balance weight and motion and implied shapes and patterns. The project will continue to investigate ideas related to generating designs within a set of constraints, generating alternatives, concepts of symmetry and asymmetry and the skills and techniques associated with traditional and digital drafting. **Present and review Exercise 4.**

*Lab & Homework:* **EXERCISE 5**

1. Take the geometry analysis from exercise 4.
2. Double the size of the square to 6"x6".
3. Using line weight, create a sense of hierarchy between the forms.
4. Redraw your drawings with pen on vellum.
5. Scan your drawings. Add a title and print on 11"x17" paper.

*Reading:* Benedict, William. ARCH 121 SYLLABUS. Pages 37-42.

**WEEK 6:**

*Lecture:* **PAPER LANDSCAPES:** Transforming two dimensional composition into three dimensional compositions. Consider scale, proportion, hierarchy, circulation and space . **Present and review Exercise 5.**

*Lab & Homework:* **EXERCISE 5**

1. Take the geometry analysis from exercise 5 and the patten generated in exercise 4.
2. Scale both patterns to fit in a 6"x6" square.
3. Generate a set of rules using based on the line types used in the composition to create a tree dimensional exploration. i.e: thin line = fold; medium line = cut; thick line = extrusion.
4. Insert human scale into the exploration and generate a series of iterations exploring how human scale relates to the different spaces.

**WEEK 7 & 8:**

*Lecture:* **DURER'S ALPHABET:** Understand geometric proportions described in written form to draft an accurate representation through multi-view orthographic and paraline drawings. Present and review Exercise 4.

*Lab & Homework:* **EXERCISE 7**

1. Based on Albrecht Durer's written description, choose a letter of the alphabet and construct a precise and perfectly proportioned drawing. Preserve your construction lines.

2. Imagine the letter was extruded to fit a 4" cube then draw all 6 sides of the object. Draw a plan oblique view and a set of multi-view drawings (including sections) of the letter and add shading.
3. Reconstruct your 6 orthographic drawings in vector graphics software (Adobe Illustrator), and add line weights for construction lines and final lines. Students may scan hand drawings and scale appropriately in software.

*Reading:* Durer, Albrecht. *Of the Just Shaping of Letters.*

Web URL, PDF: <<http://sean.gleeson.us/2006/03/08/durers-crazy-idea>>

## **WEEK 9 & 10:**

*Lecture:* **GRIDS/CUBE PART 1:** Use geometric proportions to derive a 6-sided form which addresses a

given use. Present and review Exercise 5.

*Lab & Homework:* **EXERCISE 8**

1 Set up 6 - 4"x4" boxes on a sheet of vellum. In each box you will develop a different grid system based

on rhythm and proportion as discussed in class. Tools : Autocad & Illustrator. Label proportions and repetitions. Use layers in Adobe Illustrator to create transparencies and levels in the grid.

2 Apply each of the "rendered" 4"x4" grids to a 4" foam cube. Carefully consider how the lines wrap around the volume. Consider what happens to spaces in between the grid lines, at the edges and at areas with varies level indicated by the transparent or gradient fills.

3 Cut into the foam cube based on the lines of your grid. Use appropriate tools to get precise and detailed cuts per your 4"x4" grid drawing.

4 Take 3 high quality photos of each foam model. Pay close attention to light, shadow to highlight your forms. Each photo must fill an 11x17 page.

5 Create a 2D hand drafted multi-view drawing of your cube with shading to indicate depth on vellum.

## **WEEK 11:**

*Lecture:* **CUBE PART 2:** The exploded sectional isometric

*Lab & Homework:* **EXERCISE 9**

1 Create an exploded isometric sectional drawing of your cube.

2 First draw an isometric of your foam cube.

3 Select sectional cuts approximately 1/2" from the surface of each face.

4 Use lineweights, hatching and colored lead to identify the cross sectional areas.

5 Use construction lines and heavy dashed lines to extend (explode) the section cuts away from the cube to illustrate the section clearly.

6 Final drawings should be on vellum paper sized to show all six sectional cuts clearly and with no overlaps on the original cube at the center of the drawing.

*Reading:* Benedict, William. *ARCH 121 SYLLABUS.* Pages 29-36.

## **WEEK 12:**

*Lecture:* **CUBE PART 3:** Workshops\_Cube Free planes and Folded Planes. Explore composition making through the use of rules and a modular system. Investigate solutions through iterative testing of assemblies to explore spatial hierarchy and transitions.

*Lab & Homework:* **EXERCISE 11: Free Planes**

**Step 1:** Carefully draw a 1/2" X 1/2" double-line grid (two parallel lines offset by 1/64") on both sides of 3 9" X 9" sheets of 4-ply Bristol Board. Make sure that all of the grid lines "register" or match both sides of the sheet. If they don't, discard the plane and START OVER!

**Step 2:** Cut each sheet into 7 segments along the grid lines ONLY with no segment measuring less than 2" in any direction. Explore a variety of geometric shapes (Ls, Ts, Squares, Bars).

**Step 3:** Assemble and compose each set of segments by slotting and tabbing them to each other.

Develop at least one horizontal and one vertical model as you explore a variety of compositional possibilities. Rules:

- No plane measures less than 2" in any direction.
- Planes may not be joined at the edges.

- Only 90 degree connections
- Minimum 1" overlap on all tabbed connections
- For each connection, you MUST cut a 1/2" slot on both segments.
- The composition must be stable and stand on its own
- No GLUE or TAPE
- You must use all 7 segments for each model

**Step 4:**

- Place at each model your silhouette in three positions (standing, stretching, kneeling) at the same scale.

*Lab & Homework:* **EXERCISE 12: Folded Planes**

**Step 1:** Carefully draw a 1/2" X 1/2" grid on both sides of an 11" x 17" sheet of **4-ply (1/16" thickness)** Bristol Board or any other material with the same thickness.

**Step 2:** Score, fold, and tab each sheet into a 3-dimensional composition. Note that scoring the backside of the plane prior to folding creates neat edges. Rules:

- Only 90 degree connections
- No coplanar, edge connected to edge or overlap, conditions
- Minimum 1" overlap on all tabbed connections.
- No piece may measure less than 1" in any direction
- You may not detach and discard any of the original planes
- The composition must be stable and stand on its own
- You may not use glue.

**Step 3:**

- Place at your folded model your silhouette in three positions (standing, stretching, kneeling) at the same scale.

**PART B**

Using the same folding technique translate the solids of your foam cube to folded planes. Steps:

- Analyse your foam cube into structural elements or partitions versus solids.
- Organise in bigger groups the **solids** of your cube composition.
- Recreate the resulted bigger shapes using the folded plane technique. You should draw a 1/2" X 1/2" grid on them on both sides.
- Tape them in such a way that the overall result recreates the foam cube composition, this time though, using folded planes.

**WEEK 13:**

**Lecture: CUBE PART 4: Free Plane and fold Composite:** From this point our goal is to combine folded geometries with free planes to produce inhabitable space; to explore the synthesis of both fabrication techniques into a composite plane/fold model.

01. Create a composition with two distinct covered (interior) spaces that connect with each other through one or more paths either horizontally, vertically or both ways. Part of the process is to rearrange the new folded pieces of your cube composition in such a way that they interact with free horizontal and vertical planes to form an architectural space.

Characteristics (minimum) of the developed spaces are as follows:

- One horizontal surface is present that might be considered the "floor"
- There are at least two vertical planes that enclose and define the edges of the space.
- No surface defining the space may measure less than 1 in any direction.

02. Use 1/8" bristol board, cart board, or basswood for partitions, slabs and structural elements. In other words, differentiate the material of the free planes (1/16") from the folded geometries (1/8").

Apart from different thicknesses you may use different material or color.

Rules for the inserting the free planes:

- Only orthogonal 90 degree connections permitted.
- Added planes may intersect the fold planes at grid lines only.

- No coplanar conditions
- No edge to edge attachments
- Minimum 1" overlap on all tabbed connections
- No piece may measure less than 1"
- The composition must be stable and stand on its own

03. The overall composition cannot be bigger than a 9" cube and smaller than 6" cube. **The overall composition does not have to be cubic.** It can be bigger in the horizontal axis or the vertical axis according to your argument.

04. Choose a scale that fits best your composition and position silhouette in different postures inhabiting the produced space.

05. Create a label with your name and a title for your composition (same as you did for 3/4 pin up)

06. Take 17 photos of your free plane and fold composite model against white or black background. Use the Lab spotlight to make clear shadows. Take 4 photos at bird's eye view, 4 photos at eye level, 5 photos as top, front, back, left and right orthographic views and 4 close-up photos.

#### **WEEK 14:**

*Lecture:* **CUBE PART 5: Sections.** How to construct an architectural section.

#### **Process**

- Draw a thick horizontal line as your ground.
- Measure volumes and transfer to your mylar sheet.
- Highlight as dark outline filled with black ink all your cut areas.
- Shade accordingly projected areas. In other words shade accordingly areas that you do not cut but still see them as elevations. Areas closer to your sectional plane are brighter and those that are further away are darker.
- Use coherent techniques for all your shadings.
- Add silhouettes in scale to your sectional drawings interacting with the space.

#### **WEEK 15:**

*Lecture:* **FINAL PRESENTATION:** Final pin-up and presentation of all cube exercise. Verbal presentations by students with a review jury of at least one outside critic. Written feedback on student performance completed and distributed.

#### **Bibliography:**

Hannah, Gail Greet. *Elements of Design: Rowena Reed Kostellow and the Structure of Visual Relationships.* New York: Princeton Architectural Press, 2002. Print.

Lupton, Ellen and Jennifer Cole Phillips. *Graphic Design: The New Basics.* New York, NY: Princeton

Architectural Press, 2008. Print.

Theil, Philip. *Visual Awareness and Design: An Introductory Program in Conceptual Awareness, Perceptual Sensitivity, and Basic Design Skills.* Seattle: University of Washington Press, 1983. Print

Zell, Mo. *Architectural Drawing Course: Tools and Techniques for 2D and 3D Representation.* Hauppauge, NY: Barron's Educational Series, Inc., 2008. Print.

I have read and acknowledge the above written syllabus for Arch 1110: (Your Full Name)

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