University of Houston | Gerald D. Hines College of Architecture and Design

ARCH 2331 | ARCH 6397 Digital Vocabularies _ Fall 2020

Instructors: Meg Jackson/Michael Gonzales

Class Meeting_Mondays 6-9pm (Online)
Additional group and individual project meetings will be held during office hours and scheduled in advance during Jury & Finals Week

Fabrication Orientations: TBA

Catalog Description
Prerequisite(s): Major in the College of Architecture and Design, or permission from advisor. Introduction to basic and intermediate concepts of digital drafting and modeling using parametric software, as well as exploring methods of digital fabrication and production.

Course Description
This seminar will be a basic to intermediate lecture/lab introduction to the concepts of digital design. We will use Rhinoceros and introduce Grasshopper as well as explore methods of digital fabrication and production. The course is open to any students who want to explore, experiment and research with Rhinoceros. The course will be organized thematically (curve, surface, contour, seam, pattern, assembly...) and lectures will give an overview of the software. This course is meant to introduce how digital media, digital craft, and methods of digital assembly are approached by different design disciplines and at different scales. Basic concepts will be outlined and taught in class; however, students will be asked to explore and learn the software in depth on their own. This seminar will be set up as a critical workshop. The students will be asked to realize each theme (or working method) by completing a problem-solving exercise for critique. The goal is to not only immerse the student in the software but also challenge them to provide their own critical analysis of the techniques. The class will include a discussion on research methods within the discipline of digital design and craft. In addition to group and individual problem-solving exercises, theoretical readings and precedent studies will be required. *(Students will be responsible for software purchase for their personal machines.)*

This course meets the requirements for Tech 7 and an Interdisciplinary Elective.

Learning Objectives
- Basic to intermediate understanding of digital drafting, surface and solid modeling and rendering techniques.
- Basic to intermediate understanding of parametric visual coding and parametric workflows.
- Basic to Intermediate application of fabrication tools, techniques, process, assembly, output, and production.
- An introduction to problem solving skills, critical thinking skills and digital computation and logic.
- Critical understanding of digital media and digital craft in relation to the design disciplines.

Course Content
The seminar will be composed of weekly, interrelated assignments resulting in a final cumulative project. A schedule of projects will be presented at the beginning of the semester. Attendance, participation, understanding and documentation will be weighted heavily. The final semester grade will also take in to account the evolution of the student's skills and ability.

The criteria for the grade earned for each of the assigned projects will be as follows: 33.4% will be determined by the quality (technical/conceptual understanding) of the idea, 33.3% will be determined by the development of the idea (skill), and 33.3% will be determined by the presentation (craft) of the idea. The presentation will be evaluated according to two aspects, each weighted equally: the degree to which it is legible (technical quality) and the degree to which it is compelling (conceptual quality).

The semester is weighted as follows:

30% - Weekly Assignments
60% - Cumulative Presentation (Projects 1-3 weighted equally)
10% - Attendance, Understanding, Participation, Documentation

Recommended Reading

Aranda, Benjamin, and Chris Lasch. *Tooling*. New York: Princeton Architectural Press, 2006.
Andersen, Paul. *The Architecture of Patterns,* 2010
McCullough, Malcolm. *Abstracting Craft: The Practiced Digital Hand*. The MIT Press: Cambridge, Massachusetts, 1996.
Menges, Achim. *Computational Design Thinking*. John Wiley & Sons, 2011.
Meredith, Michael, and Mutsuro Sasaki. *From Control to Design: Parametric/Algorithmic Architecture.* Barcelona; New York: Actar, 2008.
Moussavi, Farshid, and Daniel Lopez. *The Function of Form.* Barcelona: Actar, 2009.
Moussavi, Farshid, and Michael Kubo. *The Function of Ornament.* Barcelona: Actar, 2006.
Sakamoto, Tomoko. From Control to Design: Parametric/Algorithmic Architecture, ActarD Inc, 2006
Scott, Lisa Iwamoto. *Digital Fabrications: Architectural and Material Techniques.* Princeton Architectural Press, 2009.
Senske, Nicholas. *Digital Minds, Materials, and Ethics: linking computational thinking and digital craft,* at CAADRIA 2014, Kyoto, Japan, 2014.

(Additional Readings and case studies may be given based on course assignments)

List of discussion/lecture topics:
Introduction to Rhino and Grasshopper UIs & Workflows
Parametric Design Strategies | Parametric Patterning
Surface Modeling
Introduction to Laser Cutting
Volumetric/Solid Modeling
Introduction to CNC
Intersections and Booleans
Transformation and Aggregation
Digital Detailing
Preparing for Fabrication & Output
Intro to Rendering and Visualization

Weekly Assignments:
To be assigned in class.
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General Rules
Attendance at all class meetings is required. Attendance for the *entire* class is required. If we have a work period, you are expected to work in the classroom during class hours. In the seminar environment, interaction with your classmates and instructors is essential to learning and a high degree of participation in discussions is required. Any days missed beyond three (3) will require an appraisal of abilities by the faculty to complete the required work successfully. Faculty will have the option to drop a student without notice on the fourth absence or any absence after.

• Meetings with faculty may occur during office hours or may be arranged with advance notification.
• Projects will not be accepted after their due date. It is the student's responsibility to ensure that the project is complete on the due date. All projects shall be completed by the beginning of the class.
• A complete digital project portfolio will be required to complete this course.
• Semester grades will not be changed because of additional student work submitted after the due date.
• Plagiarism and/or the submission of work performed by others are grounds for failing course and/or expulsion.

Performance, Evaluation and Grading
In the seminar environment, students are asked to participate in discussions and in individual research. Willingness to explore and experiment in class, in groups and individually both in and out of class is important to the evolution of the knowledge learned. Evaluation will be based on the student's work – quality of the idea and presentation and communication of the idea, his or her evolution during the course of the semester, and participation and understanding. Design exercises will be graded on the due date. No late work will be accepted. Archiving will be required from each student at the end of the semester. No final grade will be given until the documentation has been submitted.

Grading Criteria:

Instructor grading will be based on the following grade assumptions:

A   The student has performed exceptionally in all aspects of the work. He or she has gone well beyond the course requirements to achieve an outstanding result.

B   The student has performed very well in most aspects of the work. He or she has achieved an above-average result that distinguishes the work from the average.

C   The student has performed satisfactorily in most aspects of the work. Though the student may have tried hard and met the requirements, this alone is not a guarantee of success.

D   The student's performance was inadequate, based on the requirements of the class.

F   The student failed to meet one or all of the requirements of the class.

Letter grade assignments are based on the following scoring:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
4.00	3.67	3.33	3.00	2.67	2.33	2.00	1.67	1.33	1.00	0.67	0.00

Academic Honesty
It is expected and understood that students will complete research, identify precedents and discuss their projects with classmates and others. It is understood that students will treat their classmates with respect. Individual or group projects turned in for grading shall reflect the sole effort of that individual or group in its understanding, concept, development, and presentation. See below for University of Houston Academic Honesty policy.

General Classroom Conduct
- Students must conduct themselves in a manner conducive to academic endeavors both during class and after hours.
- When using laptops in class, screens should reflect the work being discussed in the seminar. Failure to adhere to this rule during class will result in dismissal from the class and an absence.
- Materials, equipment and supplies should be brought to class as needed.
- All work submitted during studios becomes the property of the College of Architecture and Design and may be retained permanently. Students are encouraged to photograph work before submitting it.

Physical and Digital File Collection:
At the end of the semester, work will be collected for archiving by the faculty. In addition, in order to receive a grade for the semester, students must submit files of their work digitally. Students are encouraged to photograph work before submitting it.

GENERAL INFORMATION AND POLICIES

CLASS RULES:

A. No cell phones or texting during class

B. Completing the requirements allows the instructor to grade your work. It does not guarantee a certain grade.

C. Attendance at all class meetings is required. Students are expected to work in class/studio during the entire scheduled class time.

D. Students who do not show up on time the first day of classes may lose their spot in this class.

E. [Three] absences from class / studio may result in failure of this course without the requirement of any warning.

F. Students who do not pin-up / have the assignment ready on time before a jury starts will not have their projects reviewed.

G. All students are required to complete their assignments and projects before the final jury.

H. [A complete digital project portfolio due on the last day of classes will be required to complete this course.]

I. Semester grades will not be changed because of additional student work submitted after the due date.

J. Plagiarism and/or the submission of work performed by others are grounds for failing course and/or expulsion.

K. All students should become familiar with the rules and proceedings contained in the Graduate / Undergraduate Catalogue and Handbook.

L. **The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990**, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students with a disability. In accordance with Section 504 and ADA guidelines, each University within the System strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact your University's student disability services center.

Student Disability Accommodations and Services
Every department within the University of Houston strives to ensure that ALL students succeed. If you feel you may have an impairment affecting your coursework, please contact the Center for Students with DisABILITIES (http://www.uh.edu/csd/) to explore what options are available to you. If you are aware of any disability prior to enrolling in classes, you should inform the Center for Students with DisABILITIES as soon as possible to request accommodations as necessary.

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students who have a disability. In accordance with Section 504 and ADA guidelines, University of Houston strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please visit The Center for Students with DisABILITIES (CSD) website at http://www.uh.edu/csd/ for more information.

If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share with the instructor, or if you need special arrangements in the event that the building must be evacuated, please notify the course instructor as soon as possible.

Title IX Statement
In accordance with the UHS Sexual Misconduct Policy, your instructor is a "responsible employee" for reporting

purposes under Title IX regulations and must report incidents of sexual misconduct (sexual harassment, non-consensual sexual contact, sexual assault, sexual exploitation, sexual intimidation, intimate partner violence, or stalking) about which they become aware to the Title IX office. Please know there are places on campus where you can make a report in confidence. More information can be found on the UHS sexual misconduct prevention and awareness website, Salutations, at http://uhsystem.edu/salutations/title-ix- contacts/.

Preferred Name/Gender Pronouns
This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is on the class roster, please let the instructor(s) know in person or by email. Please also correct the instructor(s) on your preferred gender pronouns if necessary. All communication with instructor(s) will remain confidential.

Religious Observances
Should the schedule for this course conflict with your mandated religious observance, please contact the instructor at the beginning of the semester. Students will not be penalized for absence from regularly scheduled class activities which conflict with mandated religious observances. Students are responsible for initiating discussion with the instructor to reach a mutually acceptable solution.

UH CAPS Statement

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by c
alling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus.
http://www.uh.edu/caps/outreach/lets_talk.html

Graduate/Professional Colleges:

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to the demands of a professional program, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus. http://www.uh.edu/caps/outreach/lets_talk.html

UH Academic Honesty Policy
High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of conferred degrees in the community. All UH students, regardless of their chosen discipline, are expected to contribute to an atmosphere of the highest possible ethical standards. Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The UH Academic Honesty Policy is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself. All students and faculty of the University of Houston are responsible for being familiar with this policy.

The official University of Houston Academic Honesty Policy appears in the Undergraduate Catalog, and at http://www.uh.edu/provost/policies/honesty/

In particular, plagiarism of any sort is considered a form of academic dishonesty. Any evidence of plagiarism on any assignment will be considered grounds for failing the course.

Section 3.02 of Academic Honesty Policy on plagiarism:
Academic Dishonesty Prohibited. "Academic dishonesty" means employing a method or technique or engaging in conduct in an academic endeavor that contravenes the standards of ethical integrity expected at the University of Houston or by a course instructor to fulfill any and all academic requirements. Academic dishonesty includes, but is

not limited to, the following:

Plagiarism. Representing as one's own work the work of another without acknowledging the source (plagiarism). This would include submitting substantially identical writing assignments or

other materials in fulfillment of an assignment by two or more individuals, whether or not these used common data or other information, unless this has been specifically permitted by the instructor. Plagiarism includes copying verbatim text from the literature, whether printed or electronic, in written assignments, candidacy exams, and theses/dissertations.

The University of Houston Libraries website offers additional guidance on definitions and conventions of plagiarism: http://guides.lib.uh.edu/plagiarism

Fall 2020 Syllabus Information
Face Covering Update
Until further notice, the University of Houston requires face coverings for all students and employees while on-campus. Visit the face covering policy webpage. Update: A mask with a valve is not considered an adequate face covering and should not be used, as it can expel exhaled air, increasing the risk to others. More information available on Face Covering FAQ.

Excused Absence Policy
Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy and Graduate Excused Absence Policy for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

Interim Undergraduate Grading Policy
Due to the unique and unprecedented challenges associated with the COVID-19 pandemic, the University of Houston has implemented an Interim Undergraduate Grade Policy for undergraduate grades which applies to all undergraduate students in courses offered in all sessions during fall 2020. Under this policy, students have the option of converting final assigned letter grades to S (Satisfactory, applicable to any letter grade from A to D-) or NCR (No Credit Reported COVID-19, applicable to grades of F) on their transcripts. Please visit FAQs for additional information.

Recording of Class
Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the Center for Students with DisABILITIES. If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with *anyone* without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Copyright
The University of Houston Libraries offer many resources regarding Copyright Law and Fair Use. Please visit their site for more information. Below are a few helpful notes regarding Copyright, Fair Use, and Creative Commons (CC) licenses.

- All Content including online content is protected by Copyright law, so permission is required from the creator for use.
- Your work or content is automatically protected by Copyright laws once it is permanently recorded.

- - Protected for 70 years after the death of the owner, then after that time it is in public domain.
    - Content in public domain are free to use and do not require permission for use or copy.
  - Fair use allows the public to reproduce portions of a copyrighted work without permission for purposes such as scholarly criticism, comment, teaching, scholarship, and research.
    - No set limit to a number of words or percentage of work used to qualify for fair use, but four factors are considered: purpose of use, nature of use, amount of work used, and effect of use.
  - Creative Commons (CC) licenses help creators of content retain copyright while allowing others to copy, distribute, and make some uses of their work with an attribute the original creator of a work

Quick Links to Resources

Copyright Crash Course: A crash course in Copyright available online under a Creative Commons license.

Interactive Copyright Guide: An interactive guide that allows you to select the date of first publication and type of author to determine if a work is protected by Copyright.

Blackboard Help on US Copyright Law: A page where Blackboard highlights frequently asked questions regarding Copyright Law.

The TEACH Act Guide: A brief guide regarding the TEACH Act.

Resources for Online Learning
The University of Houston is committed to student success, and provides information to optimize the online learning experience through our Power-On website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access to the internet, AccessUH, and Blackboard; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

UH Email
Email communications related to this course will be sent to your Exchange email account which each University of Houston student receives. The Exchange mail server can be accessed via Outlook, which provides a single location for organizing and managing day-to-day information, from email and calendars to contacts and task lists. Exchange email accounts can be accessed by logging into Office 365 with your Cougarnet credentials or through Acccess UH. They can also be configured on IOS and Android mobile devices. Additional assistance can be found at the Get Help page.

Webcams
Access to a webcam is required for students participating remotely in this course. Webcams must be turned on (*state when webcams are required to be on and the academic basis for requiring them to be on*). (*Example: Webcams must be turned on during exams to ensure the academic integrity of exam administration*.)

Honor Code Statement
Students may be asked to sign an honor code statement as part of their submission of any graded work including but not limited to projects, quizzes, and exams: "*I understand and agree to abide by the provisions in the (select: University of Houston Undergraduate Academic Honesty Policy, University of Houston Graduate Academic Honesty Policy). I understand that academic honesty is taken very seriously and, in the cases of violations, penalties may include suspension or expulsion from the University of Houston.*"

Syllabus Changes
Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through TEAMS.

Course Delivery Formats and Final Exams
Synchronous Online Courses: This course is being offered in the Synchronous Online format. Synchronous online class meetings will take place according to the class schedule. There is no face-to-face component to this course. In between

synchronous class meetings, there may also be asynchronous activities to complete (e.g., discussion forums and assignments).

Alternative Assessment in Any Course Format: An alternative assessment will be used in the place of the traditional final exam at the course conclusion. Instructions will be provided, including the date and time that the assessment materials will be released to the class and will be due, resources and collaborations that are allowed and disallowed in the process of completing the assessment, procedures to follow if connectivity or other resource obstacles are encountered during the assessment period, acceptable submission formats, and submission location.

Helpful Information

COVID-19 Updates: https://uh.edu/covid-19/

Coogs Care: https://www.uh.edu/dsaes/coogscare/

Laptop Checkout Requests: https://www.uh.edu/infotech/about/planning/off-campus/index.php#do-you-need-a-laptop

Health FAQs: https://uh.edu/covid-19/faq/health-wellness-prevention-faqs/

Student Health Center: https://uh.edu/class/english/lcc/current-students/student-health-center/index.php

The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.