

If Texas Tech University campus operations are required to change because of health concerns related to the COVID-19 pandemic, it is possible that this course will move to a fully online delivery format. Should that be necessary, students will need to have access to a webcam and microphone for remote delivery of the class. Additionally, students will need to have access to Blackboard, Zoom, & Raider Email. Note: This course is entirely taught online.

ARCH 4341 MEDIA ELECTIVE

COLLEGE OF ARCHITECTURE, TEXAS TECH UNIVERSITY

FALL 2020

INSTRUCTORS

Catherine Söderberg Esper, Coordinator, Visiting Assistant Professor, catherine.soderberg@ttu.edu
Raquel Bitar, Instructor, rbitar17@gmail.com



Miguel Fisac's Component Drawing and Prototype; Miguel Fisac's Hotel Tres Islas Facade

COURSE TITLE

Tectonic Translations: Drawing and Building Performative Facades for a New Climate Age

CATALOG DESCRIPTION

Analog or digital media options chosen from approved list. May be repeated for credit.

COURSE DESCRIPTION

When, during the Renaissance, the architect's role was separated from that of the builders' guilds, there developed the relative autonomy of two disciplines in architecture: drawing and building. From the modern period to the contemporary scene, this takes on a new institutional guise in the way law defines the division of labor between architect and builder.¹

-Nader Tehrani

In this course, students will draw and build performative facade components for the built environment of Downtown El Paso using both digital and analog tools.

Today, the architect is charged with the design and the builder is responsible for the means and methods of construction. This significantly disempowers the architect and problematizes the relationship between design intent and material construction.¹ It's important for architects to be authors of not only

¹ "tehrani_a murder in the court - WordPress.com." https://610f13.files.wordpress.com/2013/10/tehrani_a-murder-in-the-court.pdf. Accessed 23 Aug. 2020.

the 2D image, but the 3D constructive logic. This course will encourage students to innovate and design a series of novel tectonic building materials while promoting environmental stewardship and addressing critical climate issues of the region.

This course will include lectures that present a historical overview of the Facade as an element of architecture. Novel tectonic building materials will be introduced, such as, biomaterials, recycled and performative materials. Students will also be introduced to material fabrication processes such as robotic assembling, casting, cnc milling and 3D printing. This course will also include lectures that highlight climate issues of the border region such as air pollution, and extreme heat. Other lectures will explore the spatial and performative formal structures of bricks, blocks, panels and other facade components used to naturally cool the built environment.

Students will follow a workflow that consists of digitally scanning existing facades supplemented with analog field measuring methods. Students will then import the point data into 3D software and computationally perform translation and transformational processes catalogued within a compositional drawing. Environmental issues will be researched and students will analyze the projected critical effects on the region in order to design newly optimized and performative facade units. Finally, students will fabricate their facade components using 3D printing technology.

1. Digitally scan a facade detail of 1' x 1' dimensions within the existing urban context of Downtown El Paso. Supplement the digital scan with analog measurements.
2. Computationally generate 10 transformations and translations of the facade detail using plan and section cuts.
3. Perform climatology research.
4. Design a new, optimized facade unit.
5. Render the new facade.
6. Generate a performance analysis on the new facade unit.
7. 3D print/ cast the new unit with wall framing details at 8"x8"x3" dimensions.
8. Represent steps 1-6 on 1/3 of a 36"x36" artboard.

Repeat steps 1-8 two more times.

STUDENT LEARNING OBJECTIVES

1. To develop an ability to use digital scanning technology to generate spatial point data.
2. To develop an ability to generate transformations and translations on digital forms using computational tools.
3. To develop the ability to research and respond to regional environmental issues for an integrated architectural solution.
4. To develop the ability to research fabrication methods used to innovate with materials.
5. To develop an ability to use representational drawings to describe the constructive logic of tectonic envelopes.

STUDENT PERFORMANCE OBJECTIVES

1. To develop an understanding of material fabrication techniques.
2. To develop the ability to digitally represent and model complex spatial forms.
3. To develop the ability to translate conceptual 2D iterations into a 3D tectonic identity with detailing.

4. To develop the ability to consider climatic issues when designing facades and building envelopes.

MEANS OF EVALUATION

1. Deliverables

Weeks 1,2+3	Scanning Assignment
Week 4	Facade 1- Steps 1+2
Week 5	Facade 1- Steps 3+4
Week 6	Facade 1- Steps 5+6
Week 7	Facade 1- Steps 7+8
Week 8	Facade 2- Steps 1+2
Week 9	Facade 2- Steps 3+4
Week 10	Facade 2- Steps 5+6
Week 11	Facade 2- Steps 7+8
Week 12	Facade 3- Steps 1+2
Week 13	Facade 3- Steps 3+4
Week 14	Facade 3- Steps 5+6, No Classes
Week 15	Facade 3- Steps 7+8, No Classes
Week 16	Final Review, Final Deliverables include:

1 36" x 36" drawing

3 3D printed or casted facade units

2. Methods of Assessment

- a. Completion of deliverables in a timely manner
- b. Thoughtful engagement with critical questions regarding context

TEACHING METHODS

The course will teach students how to represent constructive logics through drawings and how to fabricate tectonic components using 3D printing technology through the attendance of lectures and response to assignments.

COURSE SCHEDULE

	S	M	T	W	R	F	S
1	23	Aug 24	25	26 First Day of Class Intro to Recap Zoom Session 8:30-11:30	27	28	29
2	30	31	Sept 1	2 Lecture 'Facade + Materials' Review Scans Zoom Session 8:30-11:30	3	4	5
3	6	7 No Classes	8	9 Lecture 'Form + Climate' Review Scans Zoom Session 8:30-11:30	10	11	12

4	13	14	15	16 Review Facade 1 Steps 1+2 Zoom Session 8:30-11:30	17	18	19
5	20	21	22	23 Review Facade 1 Steps 3+4 Zoom Session 8:30-11:30	24	25	26
6	27	28	29	30 Review Facade 1 Steps 5+6 Zoom Session 8:30-11:30	Oct 1	2	3
7	4	5	6	7 Review Facade 1 Steps 7+8 Zoom Session 8:30-11:30	8	9	10
8	11	12	13	14 Review Facade 2 Steps 1+2 Zoom Session 8:30-11:30	15	16	17
9	18	19	20	21 Review Facade 2 Steps 3+4 Zoom Session 8:30-11:30	22	23	24
10	25	26	27	28 Review Facade 2 Steps 5+6 Zoom Session 8:30-11:30	29	30	31
11	Nov 1	2	3	4 Review Facade 2 Steps 7+8 Zoom Session 8:30-11:30	5	6	7
12	8	9	10	11 Review Facade 3 Steps 1+2 Zoom Session 8:30-11:30	12	13	14
13	15	16	17	18 Review Facade 3 Steps 3+4 Zoom Session 8:30-11:30	19	20	21
14	22	23	24	25 No Classes	26 No Classes	27 No Classes	28
15	29	30	Dec 1	2 No Classes	3	4	5
16	6	7	8	9 Final Review Zoom Session 8:30-11:30	10	11	12

REQUIRED TEXTS

Robin Evans, "Translations from Drawing to Building."

[Kate Franklin, *Radical Matter: Rethinking Materials for a Sustainable Future*](#)

[Seetal Solanki, *Why Materials Matter: Responsible Design for a Better World*](#)

Branko Kolarevic, *Manufacturing Material Effects: Rethinking Design and Making in Architecture*

Farshid Moussavi, *The Function of Ornament*

[Michael Cadwell, *Strange Details*](#)

Rem Koolhaas, *Elements of Architecture*

COURSE REQUIREMENTS

Students are required to have a personal computer which meets the school's minimum requirements. Technical difficulties, viruses, crashes, server and print bureau problems, or corrupted files will not be accepted as legitimate excuses. ALL WORK SHOULD BE CONTINUOUSLY SAVED AND REGULARLY BACKED UP.

GRADING

Grades will be calculated as follows:

Model 1 + Final Drawing 1	30%
Model 2 + Final Drawing 2	30%
Model 3 + Final Drawing 3	30%
Final Presentation	10%

NAAB CRITERIA

A.1 Professional Communication Skills (Ability)

ATTENDANCE POLICY

Students are responsible for attending all scheduled class meetings for the full class period. Class meetings include all course meeting times, reviews, and online sessions. A total of three absences is considered excessive, requiring the student to drop the class or receive a grade of "F" in compliance with the drop deadlines. All absences are considered unexcused except for absences due to religious observance or officially approved trips.

II. COVID-19 INFORMATION

FACE COVERINGS ARE REQUIRED

Texas Tech University requires that students wear face coverings while in classes, while otherwise in campus buildings, and when social distancing cannot be maintained outdoors on campus.

SIGNAGE

Be attentive to signage posted at external and some classroom doorways that indicates entry and exit ways, gathering and queuing spaces, and availability of masks and hand sanitizer.

SEATING ASSIGNMENTS

The purpose of assigned seating is to assist in contact tracing, if necessary, and to augment social distancing. Students are expected to sit at a minimum of six feet apart. There will also be an orderly procedure, designed to ensure social distancing, for exiting the classroom.

ILLNESS-BASED ABSENCE POLICY

If at any time during this semester you feel ill, in the interest of your own health and safety as well as the health and safety of your instructors and classmates, you are encouraged not to attend face-to-face class meetings or events. Please review the steps outlined below that you should follow to ensure your absence for illness will be excused. These steps also apply to not participating in synchronous online class meetings if you feel too ill to do so and missing specified assignment due dates in asynchronous online classes because of illness.

1. If you are ill and think the symptoms might be COVID-19-related:
 - a. Call Student Health Services at 806.743.2848 or your healthcare provider. After hours and on weekends contact TTU COVID-19 Helpline at 806.743.2911.
 - b. Self-report as soon as possible using the Dean of Students COVID-19 webpage. This website has specific directions about how to upload documentation from a medical provider and what will happen if your illness renders you unable to participate in classes for more than one week.
 - c. If your illness is determined to be COVID-19-related, all remaining documentation and communication will be handled through the Office of the Dean of Students, including notification of your instructors of the period of time you may be absent from and may return to classes.
 - d. If your illness is determined not to be COVID-19-related, please follow steps 2.a-d below.
2. If you are ill and can attribute your symptoms to something other than COVID-19:
 - a. If your illness renders you unable to attend face-to-face classes, participate in synchronous online classes, or miss specified assignment due dates in asynchronous online classes, you are encouraged to visit with either Student Health Services at 806.743.2848 or your healthcare provider. Note that Student Health Services and your own and other health care providers may arrange virtual visits.
 - b. During the health provider visit, request a “return to school” note;
 - c. E-mail the instructor a picture of that note;
 - d. Return to class by the next class period after the date indicated on your note.

Following the steps outlined above helps to keep your instructors informed about your absences and ensures your absence or missing an assignment due date because of illness will be marked excused. You will still be responsible to complete within a week of returning to class any assignments, quizzes, or exams you miss because of illness.

3. If you have interacted with individual(s) who have tested positive for COVID-19: Maintain a list of those persons and consult Student Health Services at 806-743-2911 or your primary care provider on next steps.

Do not return to class until you are medically cleared by your Healthcare Provider.

III. UNIVERSITY REQUIRED STATEMENTS

ADA STATEMENT

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's

office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

ACADEMIC INTEGRITY STATEMENT

Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. [Texas Tech University ("University") Quality Enhancement Plan, Academic Integrity Task Force, 2010]

RELIGIOUS HOLY DAY STATEMENT

"Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

DISCRIMINATION, HARASSMENT, AND SEXUAL VIOLENCE STATEMENT

Texas Tech University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from gender and/or sex discrimination of any kind. Sexual assault, discrimination, harassment, and other Title IX violations are not tolerated by the University. Report any incidents to the Office for Student Rights & Resolution, (806)-742-SAFE (7233) or file a report online at titleix.ttu.edu/students. Faculty and staff members at TTU are committed to connecting you to resources on campus. Some of these available resources are: TTU Student Counseling Center, 806- 742-3674, <https://www.depts.ttu.edu/scc/>(Provides confidential support on campus.) TTU 24-hour Crisis Helpline, 806-742-5555, (Assists students who are experiencing a mental health or interpersonal violence crisis. If you call the helpline, you will speak with a mental health counselor.) Voice of Hope Lubbock Rape Crisis Center, 806-763-7273, voiceofhopelubbock.org (24-hour hotline that provides support for survivors of sexual violence.) The Risk, Intervention, Safety and Education (RISE) Office, 806-742-2110, <https://www.depts.ttu.edu/rise/> (Provides a range of resources and support options focused on prevention education and student wellness.) Texas Tech Police Department, 806-742- 3931,<http://www.depts.ttu.edu/tttd/> (To report criminal activity that occurs on or near Texas Tech campus.)

CIVILITY IN THE CLASSROOM STATEMENT

Texas Tech University is a community of faculty, students, and staff that enjoys an expectation of cooperation, professionalism, and civility during the conduct of all forms of university business, including the conduct of student–student and student–faculty interactions in and out of the classroom. Further, the classroom is a setting in which an exchange of ideas and creative thinking should be encouraged and

where intellectual growth and development are fostered. Students who disrupt this classroom mission by rude, sarcastic, threatening, abusive or obscene language and/or behavior will be subject to appropriate sanctions according to university policy. Likewise, faculty members are expected to maintain the highest standards of professionalism in all interactions with all constituents of the university (www.depts.ttu.edu/ethics/matadorchallenge/ethicalprinciples.php).

LGBTQIA SUPPORT STATEMENT

I identify as an ally to the lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA) community, and I am available to listen and support you in an affirming manner. I can assist in connecting you with resources on campus to address problems you may face pertaining to sexual orientation and/or gender identity that could interfere with your success at Texas Tech. Please note that additional resources are available through the Office of LGBTQIA within the Center for Campus Life, Student Union Building Room 201, www.lgbtqia.ttu.edu, 806.742.5433.”