University of Virginia, School of Architecture
Design Thinking

ARCH 3070 - Foundations in Design Thinking

spring 2018

12.30 – 1.45, Tuesday and Thursday, Campbell Hall 153, and studio spaces
Credits: 4

Office Hours – Thursdays – 3 to 5, Campbell 317, with prepared student agenda.

Course Professor
Elgin Cleckley, Assoc. AIA, NOMA
Assistant Professor of Architecture and Design Thinking

with an appointment in the Curry School of Education and the School of Nursing
Campbell Hall, 317, Office Hours By Appointment, Thursdays 2-4, elc2n@virginia.edu

Teaching Assistants

Lead TA:
Yunni Dan       yd3sw@virginia.edu

Graduate TA’s:
Fang Nan        fn7uu@virginia.edu
Mark Meiklejohn mlm5ce@virginia.edu
Siddarth Velamakanni ssv4yt@virginia.edu
Hutch Landfair  htl9ub@virginia.edu
Christian Storch crs9sf@virginia.edu

Perimeter Institute, Power of Ideas Traveling Exhibition
Elgin Cleckley, 3D Designer, Ontario Science Centre
Course Description

This course will examine the fundamentals of Design Thinking, implemented through a series of dynamic real-world projects, lectures, mini – charrettes, and readings. You will develop strategies and tactics in the exciting environment of the School of Architecture, utilizing its mindset and spaces to design and make. As the course is open to students from across the University, you will obtain new interdisciplinary relationships in the robust collaborative nature of the course. In the words of Nigel Cross, “your mind will be stretched.”

Why Design Thinking?

Today’s issues require new ways of thinking when looking for responses and solutions. At the core is design, the underlying matrix of our human condition. Design Thinking, as defined in this course, is the path to creation consisting of systematic, rigorous methodologies and modes of inquiry used by designers. This course will deeply explore the designer’s mindset, proving universal value of the skills needed to develop new ideas and to address the wicked problems of our time.

*A wicked problem is a social or cultural problem that is difficult or impossible to solve for as many as four reasons: incomplete or contradictory knowledge, the number of people and opinions involved, the large economic burden, and the interconnected nature of these problems with other problems.*

_Wicked Problems: Problems Worth Solving - Jon Kolko_  

This course will provide answers to the following questions:

- How do Designers think? How do they make, think, and collaborate?
- What is Design and Design Thinking? What is the process of Design? How do ideas take form?
- How do I create a compelling presentation that conveys an idea?
- How can Design make a difference? Locally, globally, and in my life?
In this course, you will learn and work in an interdisciplinary Design Strategy Team.

The course immediately begins with all students assigned to collaborative Design Strategy Teams in an empathic collective exercise.

1.0 Course Components

1.1 Course Diagram
This diagram outlines how the semester, please note that items may shift, especially for the real-world projects, as needed.
1.2 Real-World Projects

You will work in your assigned “Design Strategy Teams (DST)” on larger projects throughout the semester. Projects will co-occur, similar to what happens in professional design firms. The simultaneous nature of the course will require rigorous project management in your DST, which means that assigning roles, and establishing a collaborative culture is essential. Updates will occur through Collab of upcoming developments, as timing in real-world projects can shift.

Projects will require professional interaction with the community, other schools at the University, and professional collaborators. Each project will end with a design brief explaining your strategies and tactics created by your DST – content, concept, and overall design.

Proposed Projects for spring 2018:

New Vinegar Hill – African American Redevelopment in Charlottesville
Alderman Library Renewal Project
YEDEA Service Learning Project 2017 -2018, Koforidua, Ghana
Baker-Butler Elementary School – continuation of Design Thinking Education Project

These projects are a framework in which you will need to find and frame the question(s). It is not purely about designing a solution; you will engage in deep thinking about the innovations you determine. Your design thinking could look like this:

What could be done better? Are the right questions being asked? Are there other design interventions that are more feasible? Is there another approach? What can we change? Do we need to make specific stories visible? Is something missing?

We will collaborate with experts at the University and in the field on these projects, with feedback loops in class. Professional behavior is expected and required.

Costs: expect to spend 50 to 100 dollars for the course in your DST, if you choose to construct prototypes. With this in mind, all readings are PDF’s.

1.3 Design Thinking Methodologies

You will analyze, examine, learn, and implement Design Thinking methodologies, used in all elements of the course. You will be required to indicate the steps, processes, and modes in your work – and be prepared to assess outcomes.
1.4 Influence Documents (Readings)

The readings will open you to perspectives on Design Thinking, allowing you to develop your design voice. Reading assignments are integrated at specific points to introduce concepts and broaden understanding of Design Thinking, directing and enhance the real-world projects. Readings are discussed within the course in innovative ways, requiring advanced comprehension and presentation skills. Let the Influence Documents act as a basis for understanding the importance of research to develop your design language and point of view.

There is one book to purchase – a sketchbook. Details on expectations will be outlined in class.

1.5 Lectures

We will have guest lectures from active creatives throughout the semester. Expect the talks to be dynamic, exciting, and integral for your honing your design thinking voice. Be prepared to ask questions, participate, and interact in new ways to inspire your creativity.

Last semester featured locally and globally known social impact designers, design thinkers, and local artists.

1.6 Mini – Charrettes (MC)

A period of intense work, with a deadline. (See Ecole des Beaux-Arts)

(These will occur throughout the semester, with announcement in class, integrated into the Midterm and Final Showcase Design Brief reports).

Origin

_Late Middle English (denoting a cart or wagon): from French charrette, literally ‘cart’; current sense dates from the mid 20th century, possibly concerning the use of a cart in 19th-century Paris to collect architecture students’ work on the day of an exhibition._

– Oxford Living Dictionary

1.7 Final Showcase

The end of the semester features a comprehensive exposition of your “firm’s” work in the Hot Desks at the School of Architecture, in which your firm will create an extensive website featuring the work of the semester. Guests will be invited to evaluate your work.
1.8 Course Outcomes

Making a flexible framework
Combining critical thinking and visualization to describe an idea
Identifying design principles, analyze, and adjust for your work
Learning how to question your process
Gaining skills in analytical reasoning in teams to stakeholders
Understanding how to storybook your ideas, and demonstrate in visual format
Discovering how to incorporate changes to your design ideas as you work
Developing the power of detail in project development
Learning how to receive feedback, and how to respond respectively
Developing an understanding of the steps in the Design Thinking process, and when to amplify, adjust, or reassess

Work will occur in your DST, yet you will be assessed individually. Exemplary teams are expected to demonstrate their work to the entire group for full class comprehension. Interactions with external and internal collaborators and contributors will be noted and included in group evaluations.

Design Thinking requires a positive, optimistic environment in which ideas are respected, heard, and appreciated. Expect enriched discussions for your toolkit. Working in smaller groups, or in the class as a whole, this behavior will enhance the necessary tools needed for Design Thinking by relating to individuals or organizations.

This course is a space of active learning, with openness to change as required.
### 1.8 Typical Rubric for Real-World Projects

Courtesy of Mark Yu and Nancy Hopkins at the Curry School of Education, with facilitation by Elgin Cleckley, fall 2017 Global Leadership Forum - featuring 27 participants from 27 countries.

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>Situates plan within a real-world issue; situates the innovation to address the issue within the relevant empirical evidence, literature, theory etc.; thoroughly reviews the pertinent evidence related to the issue and mechanisms underlying the proposed innovation; thoroughly describes the stakeholders to be served; describes all parts of the plan clearly enough that they can be implemented by others; possible constraints are discussed and effectively addressed; presents a logical progression and general cohesion of ideas throughout the presentation of the innovation; answers audience questions clearly and effectively.</td>
<td>___/10</td>
</tr>
<tr>
<td>Design/Solution</td>
<td>Proposed plan is defined, compelling and responsive to archetypal stakeholder’s defined need; solution is fundamentally distinctive from existing approaches and demonstrates potential to impact the issue in a new way; the potential for the innovation project/plan to generate enthusiasm from potential clients, investors, and other stakeholders.</td>
<td>___/10</td>
</tr>
<tr>
<td>Thesis/Problem Statement</td>
<td>Provides a clear statement of issue to be addressed; frames the issue with a strong and clear rationale. Exhibits a deep and broad understanding of multiple dimensions of a problem that needs to be solved (including social, behavioral, economic, environmental factors); potential solution is deeply connected and responsive to multiple dimensions of the identified need.</td>
<td>___/10</td>
</tr>
<tr>
<td>Feasibility/Sustainability</td>
<td>The plan is feasible (i.e., can be viably implemented); consideration is given to all needed resources (time, money, materials, etc.) and sources for those resources are identified; consideration is given to the feasibility from multiple perspectives (i.e., community partners, students, families, etc.); consideration of and plan for sustainability is discussed; and the innovation project/plan is sustainable in the real world.</td>
<td>___/10</td>
</tr>
</tbody>
</table>
2.0 Course Guidelines

2.1 Attendance

Working attendance is compulsory during lecture and studio time. The course meets on Tuesdays and Thursdays from 12.30 to 1.45pm. Except for other scheduled events such as lectures, orientations, workshops, and reviews, you are expected to be in the designated lecture hall or working at your desk in the studio during these times. These intervals of time are an invaluable resource principally because they occur in shared learning environments – you stand to benefit significantly from the presence of instructors and colleagues also intensely involved in problem-solving during this time. Establish and maintain a rigorous work ethic throughout the term in service of developing your ideas.

All missed classes require a note to the instructor. There will be no cell phone use (unless it is a medical emergency) and no use of laptops, audio headphones, and phones, during any portion of class time. The use of laptop computers is only allowed during group work, with approval from the instructor. If you need to leave the lecture hall, please notify a TA. Coming and going from the lecture hall and studio spaces will not be permitted, and if this consistently occurs, will be reflected in your Code of Conduct grade.

2.2 Evaluation & Grading Policies

Design Thinking Projects – (Presentation (Verbal), Digital, Design Briefs) - 60%

Design Thinking Mini – Charrettes – (Quick Exercises, Readings, and Sketchbook) - 20%

Code of Conduct – Collaboration, Correspondence, Behavior (in class, and in the field) - 10%

Attendance – (3 absences without approved notes automatically equals one lower grade) 10%

‘A’ Excellent work: Work reflects outstanding achievement in both content and execution. Work must far surpass the given requirements.

‘B’ Good work: Work reflects high achievement in both content and execution and must excel beyond the given requirements.

‘C’ Adequate work: Work fulfills the given requirements.

‘D’ Poor work: Work is less than satisfactory and does not fulfill requirements.

‘E’ Inadequate work: Work fulfills few – if any – of the requirements.

‘I’ Incomplete work: Grade is only available due to health reasons or other emergency situations. (See University Standards for time limit and coordinate with course and studio instructors)
3.0 Studio Policy

We will often use the Studio space on the 3rd floor of the School of Architecture. Please note the following guidelines for the area.

3.1 Culture

The studio space acts as a central setting for your design education. It’s where you convene with instructors and colleagues to discuss and question design in a thoughtful and serious manner. Please be considerate of all others who share the studio space with you. Be mindful of your surroundings and the impact your footprint has on the work of your classmates.

3.2 Safety

The University of Virginia is dedicated to providing a safe and equitable learning environment for all students. To that end, it is vital that you know two values that, the ARCH 3070 -001 faculty, teaching assistants, and the University hold as critically important:

1. Power-based personal violence will not be tolerated.
2. Everyone has a responsibility to do their part to maintain a safe community on Grounds.

If you or someone you know has been affected by power-based personal violence, more information can be found on the UVA Sexual Violence website that describes reporting options and resources available - www.virginia.edu/sexualviolence. As your professors and as persons, know that we care about you and your well-being and stand ready to provide support and resources as we can. As faculty members, we are responsible employees, which means that we are required by University policy and federal law to report what you tell us to the University's Title IX Coordinator. The Title IX, Coordinator's job, is to ensure that the reporting student receives the resources and support that they need, while also reviewing the information presented to determine whether further action is necessary to ensure survivor safety and the safety of the University community. If you would rather keep this information confidential, there are Confidential Employees you can talk to on Grounds. (http://www.virginia.edu/justreportit/confidential_resources.pdf).

The worst possible situation would be for you or your friend to remain silent when there are so many here willing and able to help.

3.3 Safety in Studio

Your safety and the safety of others is the primary concern. When using tools and materials in the studio, be considerate of how this act of production affects the safety and comfort of your neighbors. Secondly, prevent clutter; do not let materials accumulate in the isles and under desks – this poses a serious fire hazard. Organize your materials carefully so that you can access them throughout the term – storage boxes and containers are an effective and inexpensive way of keeping tools and materials in order and
from being damaged. No longer needed materials should be recycled and/or disposed of responsibly and in a reasonable amount of time after the completion of a task, an exercise, and a project.

3.4 Community

Campbell Hall offers a variety of facilities, which act as “auxiliary laboratories.” The woodshop, digital fabrication lab, computer labs, scanning, printing, and plotting stations are only a few components of the infrastructural system supporting the design work we conduct on a day-to-day basis. It is necessary that you act in a responsible and considerate manner while sharing this equipment with everyone in Campbell Hall.

3.5 Deadlines

All project deadlines are final and will be delivered in class and on Collab.

3.6 Extensions

Individual requests due to medical emergencies or family circumstances are to be discussed with Professor Cleckley. The utmost discretion protecting your privacy will be assured. The final decision for any extension request and post review schedule to complete work for grading purposes will be made by Professor Cleckley.

3.7 Extensions for Medical Reasons

Regarding medical circumstances/emergencies, safely attending to the medical circumstance/emergency is the first and foremost priority. A request for a deadline extension due to a medical emergency should be submitted only after the emergency has been safely and properly addressed. A request for a deadline extension due to a medical reason should be submitted in writing to Professor Cleckley. The deadline extension request must include an official note from a physician and a schedule specifying the completion date of the project after the time of the review.

3.8 Extensions for Family Circumstances

A request for a deadline extension due to a family circumstance should be submitted in writing to Professor Cleckley. The deadline extension request must include a note signed by you explaining the reason for the extension request and a schedule specifying the completion date of the project after the time of the review.
3.9 Teaching Assistants

The teaching assistants for Architecture 3070-001 are dedicated and talented students of the School of Architecture and provide an invaluable service toward your design education. They will be available in your studio at clearly scheduled times and weekdays throughout the term to assist you in a number of ways. As a very useful resource of knowledge, skill sets, and know-how, the teaching assistants will help you with the development of your design thinking and work. Since they come to this teaching assignment with considerable experience, they will also offer very helpful insight into design education, studio culture, and workflows. Unless other arrangements have been coordinated, please respect the studio meeting time set by the teaching assistant. Utilize this additional “studio time” to ask questions and advance your work. Used effectively, this time will greatly contribute to the development of your design work.

3.10 Honor Code

The School of Architecture relies upon and cherishes its community of trust. We firmly endorse, uphold, and embrace the University’s Honor principle that students will not lie, cheat, or steal, nor shall they tolerate those who do. We recognize that even one honor infraction can destroy an exemplary reputation that has taken years to build. Acting in a manner consistent with the principles of honor will benefit every member of our community. It is assumed that students work together in a spirit of collaborative learning in a design studio. You are encouraged to ask for advice from your classmates and other students, and offer the same for them. When referencing ideas and principles gleaned from exemplary designs of the past and present, mention them in desk critiques and reviews – this is an important part of your creative process. From the instructors’ perspective, there is a key implication of the Honor System for Architecture 3070-001 and other design courses. Regularly, you will be asked to complete your studio work in advance of studio reviews, so that you are rested and lucid during discussion of your studio’s work. You are on your honor to stop at the deadline designated on the project statements, regardless of whether or not the instructor or teaching assistants are in the studio or review space. Failure to do so will be considered an Honor violation. All project deadlines are set – an individual student may request an exception due to unforeseen medical or family emergencies or circumstances. A request for an extension to continue to work after a deadline is to be made to the course instructor. If you have questions about the University of Virginia Honor Code please contact the School's representatives or call the Honor offices at 434.924.7602. In addition, you may find more information at http://www.virginia.edu/honor/. If you have questions about special cases in the context of the School of Architecture’s curriculum, contact your academic advisor.
4.0 Design Brief – Examples
(Spring 2017 – University Health System, School of Medicine (Trowbridge, Chen, Hewlett)
THE POWER OF IDEAS

“The big lesson in physics over the last century is how much is hidden from our view.”

— Lisa Randall

EXHIBITION GOALS

The overarching theme of this exhibition is the Process of Science. This process includes exploring, testing, debating, reflecting, asking questions, developing models, testing those models, and working together, exchanging ideas. Exhibits are designed to encourage and enable the types of behaviors that mimic the work of scientists at the Perimeter Institute and that emulate the curiosity about the nature of the Universe. Illustrating the process of science through engaging exhibitions, visitors exploring concepts will also present STEM (Science, Technology, Engineering, Math) and improve brain development and problem-solving skills discussions of science around the dinner table.

TARGET AUDIENCES

The travelling exhibition will be accessible on some level to everyone, offering points of entry points for youths and their families. But the subject matter and brainteaser are geared toward grades 6 to 12, with a focus on middle school.

EXHIBITION VOICE

Keeping in mind its target audience, the voice of this exhibition — a combination of vivid experiences, story, graphics, and ambience — is simple, accessible, inclusive, and relevant. But the voice will also be thought-provoking, inventive, and engaging, keeping with the awe-inspiring personal stories and rich narrative content. Through this exhibition, the process of science — curiosity, creativity, critical thinking, and collaboration — will be an integral part of every experience. Overall, the exhibition will create an environment that encourages participation and display, curiosity and questions, and willingness to explore and experiment, and the shaping of visitors’ own questions, ideas and theories, the ultimate goal is to stimulate the process of idea and move minds to the infinity possibilities in shaping our future.

Architecture 3070-001 – Foundations in Design Thinking | spring 2018 | Course Syllabus
The People

People connect with people. They are interested in their stories, ideas, and what motivates them to explore the big questions. This thematic area showcases inspirational stories of brilliant physicists and helps visitors connect the human side to the physics and the technology. The voice of young students is integral to the experience because it signals that their ideas and questions matter.