

# HABIB UNIVERSITY

Uncovering Designed Ecologies: Thinking in Systems

*"There is no whole system without an interconnection of its parts and there is no whole system without an environment." - Francisco Varela*

[Summer 2018]

[TBD]

[TBD]

Instructor: Ahmed Ansari  
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Timings & Venue: 9am-12pm, Tuesdays & Thursdays, Playground  
Office Hours & Venue: Wednesdays, 12pm-3pm, E- 114 in D block or playground  
Course LMS URL: --  
Course Prerequisites: None  
Content Area: Systems Theory, Complexity Theory, Futures & Forecasting

## **I. Rationale:**

Unlike simple problems, like figuring out how to debug and optimize a piece of code or designing an aesthetically pleasing, useful and usable product, *wicked* problems, like rising inner city crime, rural to urban flight, or falling standards in lower education, require developing a different kind of mindset and expertise that can deal with the scale, intricacy, and interconnectedness of these problems. As the distinctions between the natural world, built environment, and culture and society become increasingly blurry, and as the role of designers expands from dealing with straightforward, simple problems to tackling larger systemic issues, we can no longer talk about design outside of its role in determining the shape and form of these systems, models of aspects of the world that can articulate and guide intentional, planned change.

This course intends to introduce participants to concepts, approaches and methods in applied systems and complexity theory. We will explore different ways of observing, analyzing, and describing socio-technical systems, with a view to then being able to determine where best to intervene in them, and determine what the nature of those interventions, whether they are artifacts, services, experiences, environments or platforms, should be. This course will be divided into two components for every session: a lecture on key concepts and subsequent discussion, followed by hands on exercises where participants will put their newly acquired knowledge to work. By the end of this course, participants should have developed an appreciation for the value of systems thinking, a better sense of how to create rich and useful visualizations and models of systemic phenomenon, where and how to design interventions to tackle wicked problems, and be in a better position to gauge the efficacy of, and take responsibility for, the consequences of their designed actions.

## **II. Course Aims and Outcomes:**

*Aims*

This course intends to give students a new perspective on the world. From seeing phenomenon of the everyday as independent entities, we hope that students will be sensitized to seeing the world as complex, interconnected, and many-layered, and learn to appreciate the value of observing and thinking holistically, see themselves as conscious actors that affect the world around them and the systems they are in, and see themselves as possessing the agency to consciously and carefully shape change.

***Specific Learning Outcomes:***

By the end of this course, students will:

1. Have an understanding of the value of “thinking in systems” and an experience of the power of good models;
2. Be able to apply the core concepts and models of designerly systems thinking to their own practice, for the benefit of their understanding, build confidence, and to build rigor into their work;
3. Become proficient in the tasks of representing the relations between various actors, their agency and impact, and modeling system components and interactions in a cohesive, holistic manner;
4. Have a good grasp of a variety of approaches in systems and complexity theory, with a sense of the history, epistemological questions, relevance to studying specific types of phenomenon, principles, and methods of each;
5. Become familiar with modelling local systems (financial, political, social, ecological etc.), and being able to articulate the nature of problems they find in Pakistan;
6. At the end of the day, improve the way they design their interventions into local systems.

**III. Format and Procedures:**

This class shall be conducted over five weeks, for three hours twice a week. Each session will consist of an hour and half of lecture and discussion, and an hour and half of short exercises meant to familiarize students with applying the key concepts discussed in the lecture. Students will be assigned to groups to work collectively on class exercises, and so collaboration and active participation is required.

Full attendance is vital to this course. Students are expected to arrive at least 5-10 minutes before class, since we start on the clock. Anyone who arrives later than 5 minutes into class will be penalized – three lates equal the fall of a full letter grade for the course. In the case that a student might be absent from a session, they must inform the instructor or the program coordinator at least a day before. Any uninformed absences will result in the loss of a full letter grade. This policy complements Habib’s policy of 85% or 75% attendance.

Students are expected to show respect for their colleagues – any explicit instances of rudeness, harassment, intolerance or any other form of improper behavior will result in the student being dismissed from class.

**IV. Course Requirements:**

**1. Class participation policy:**

While there is no grade for class participation, I encourage participation and discussion in class, and if students have any comments, observations or questions, they should raise their hands and voice them. I keep office hours on Wednesdays, from 12pm to 3pm.

## 2. Course readings:

There are no required texts for this course. Supplementary reading material will be provided after sessions on the course website and students are highly encouraged to read it, but it is not mandatory.

## V. Grading Procedures: Grades will be based on:

**(a) Class attendance:** as mentioned above, attendance is vital for the course and tied to grades – lates and absences will result in being downgraded. **If you are a scholarship candidate then missing a session would result in termination of the scholarship contract.**

**(b) Weekly Reflections:** students will be asked to write two to three pages of weekly reflections on the material we cover in class. In these reflections, you will develop your own questions, observations and points of discussion based on your experiences with exercises, lectures and readings. These will offer you a chance to document your own thinking and demonstrate to us that you have been engaging with the material taught in the previous week. You will write these reflections on your own over the weekend and upload them on Sunday (before midnight) in the folder assigned to you in the class Drive folder.

We do not expect straight descriptions of what was done in class—the idea is for you to give us your own thoughts, observations and reflections on content as it relates to what we did that week, how it relates to specific issues of your choice, and how you feel you might use it in your practice, rather than reiterating what the instructor taught.

By the end of the course, students should have a total of 10 uploaded posts in their Drive folder, one for each week. Each post is worth a straight 10% of your overall grade, for a total of 100% of the total grade.

GRADING SCALE		
LETTER GRADE	GPA POINTS	PERCENTAGE
A+	4.00	97 – 100
A	4.00	93 – 96
A-	3.67	90 – 92
B+	3.33	80 – 89
B	3.00	75 – 79
B-	2.67	70 – 74
C+	2.33	67 – 69
C	2.00	63 – 66
C-	1.67	60 – 62
F	0.00	0 – 59

**The grade for this course will not affect your CGPA. Based on your performance in this course, your transcripts will show either Pass/Fail.**

## **VI. Attendance Policy:**

Habib University requires that all freshmen and sophomores must maintain at least 85% attendance and all juniors and seniors must maintain at least 75% attendance for each class in which they are registered. Non-compliance with minimum attendance requirements will result in automatic failure of the course and may require the student to repeat the course when next offered. This policy is at a minimum. Departments, schools, and individual faculty members may alter this policy to include stronger attendance requirements and/or implement them for all levels of students. It is the responsibility of the student to keep track of their own attendance and speak with their faculty member or the Office of the Registrar for any clarification.

**If you are a scholarship candidate then missing a session would result in termination of the scholarship contract.**

## **VII. Accommodations for students with disabilities**

In compliance with the Habib University policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first two weeks of the semester, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with the Office of Academic Performance to verify their eligibility for appropriate accommodations.

## **VIII. Inclusivity Statement**

We understand that our members represent a rich variety of backgrounds and perspectives. Habib University is committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value each other's opinions and communicate in a respectful manner
- keep confidential discussions that the community has of a personal (or professional) nature
- use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the Habib community

## **IX. Office hours:**

Office hours have been scheduled, circulated, and posted. During these hours the course instructor will be available to answer questions or provide additional help. Every student enrolled in this course must meet individually with the course instructor during course office hours at least once during the semester. The first meeting should happen within the first five weeks of the semester but must occur before midterms. Any student who does not meet with the instructor may face a grade reduction or other penalties at the discretion of the instructor and will have an academic hold placed by the Registrar's Office.

## **X. Academic Integrity**

Each student in this course is expected to abide by the Habib University Student Honor Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work.

Scholastic dishonesty shall be considered a serious violation of these rules and regulations and is subject to strict disciplinary action as prescribed by Habib University regulations and policies. Scholastic dishonesty includes, but is not limited to, cheating on exams, plagiarism on assignments, and collusion.

**PLAGIARISM:** Plagiarism is the act of taking the work created by another person or entity and presenting it as one's own for the purpose of personal gain or of obtaining academic credit. As per University policy, plagiarism includes the submission of or incorporation of the work of others without acknowledging its provenance or giving due credit according to established academic practices. This includes the submission of material that has been appropriated, bought, received as a gift, downloaded, or obtained by any other means. Students must not, unless they have been granted permission from all faculty members concerned, submit the same assignment or project for academic credit for different courses.

**CHEATING:** The term cheating shall refer to the use of or obtaining of unauthorized information in order to obtain personal benefit or academic credit.

**COLLUSION:** Collusion is the act of providing unauthorized assistance to one or more person or of not taking the appropriate precautions against doing so. All violations of academic integrity will also be immediately reported to the Student Conduct Office.

You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e-mail, an e-mail attachment file, a diskette, or a hard copy.

Should copying occur, the student who copied work from another student and the student who gave material to be copied will both be in violation of the Student Code of Conduct.

During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

Penalty for violation of this Code can also be extended to include failure of the course and University disciplinary action.

## XII. Tentative Course Schedule

Week	Topic	Assignment
<p><b>Session I</b> June 19</p>	<p><b>What is a system? Why study systems?</b> <i>An introduction and short history of thinking about systems and complexity</i></p>	<p>Making Models</p>
<p><b>Session II</b> June 21</p>	<p><b>First Order Cybernetics</b> <i>First order cybernetic systems and associated terminologies like goals, feedback, actuation, regulation etc.</i></p>	<p>Modelling a Basic Technical System</p>
<p><b>Session III</b> June 26</p>	<p><b>Second Order Cybernetics</b> <i>Second order cybernetic systems and associated terminologies like requisite variety, communication, reflexivity, conversation, etc.</i></p>	<p>Designing for Conversation</p>
<p><b>Session IV</b> June 28</p>	<p><b>Mental Models, Metaphors &amp; Frames</b> <i>Talking about mental models, George Lakoff's concepts of metaphors and frames</i></p>	<p>Creative Metaphors</p>
<p><b>Session V</b> July 3</p>	<p><b>Wicked Problems</b> <i>Horst Rittel's conception of Wicked Problems &amp; Richard Buchanan's translation of them into design</i></p>	<p>Mess Maps</p>
<p><b>Session VI</b> July 5</p>	<p><b>Living Systems</b> <i>Concepts of living systems theory from the work of Maturana and Varela: boundaries and dynamics, autopoiesis etc.</i></p>	<p>Bio-Cost Assessment</p>
<p><b>Session VII</b> July 10</p>	<p><b>Leverage Points &amp; Cynefin</b> <i>Donella Meadows twelve leverage points, stocks and flows, buffers etc., Dave Snowden's Cynefin framework</i></p>	<p>Identifying Leverage Points</p>
<p><b>Session VIII</b> July 12</p>	<p><b>Multi-Level Perspective</b> <i>Understanding sociotechnical transitions, micro, meso, and macro level shifts over varying timescales</i></p>	<p>Multi-Level Perspective Mapping</p>

<p><b>Session IX</b> <b>July 17</b></p>	<p><b>Futuring &amp; Forecasting</b> <i>An introduction to futuring, anticipatory thinking, integral theory, causal layered analysis</i></p>	<p>Causal Layered Analysis</p>
<p><b>Session X</b> <b>July 19</b></p>	<p><b>Building Future Narratives</b> <i>The futures of everyday things, the cone of the future, visioning, scenario-building</i></p>	<p>The Thing From the Future</p>