IXDSN-210

Systems Syllabus

* Instructor: **Tim Sheiner**
* Contact: **tsheiner@cca.com**
* Class meeting times: **7:15 to 10:15pm MW**
* Meeting Location: **CCA SF/West 1**
* **Office hours by appointment**

# Course Overview

In a world where data resides in the cloud and access is achieved with various devices used in different contexts, designing in terms of systems is a crucial part of delivering useful and compelling user experiences. However, the value of a systems approach to interaction design problems goes much deeper than the current networked world in which we live and gets at the essential nature of interactivity, communication and information itself. This course will introduce you to classical system theory, explore its application to user experience design and the world of wicked problems, and provide you with practice with tools for prototyping and sharing your ideas.

# Learning Objectives

1. Gain an understanding of the basic concepts and vocabulary of classical system theory, as expressed in the work of Shannon, Weiner, Ashby, Forrester, Meadows, Senge
2. Develop a framework for, and practice with, applying systems theory to the design of software experiences for contexts ranging from the simple to the complex and wicked
3. Build confidence in expressing system design concepts through diagrams, wireframes and software prototypes

# Grading Policy

Your final course grade will be based on the scores you receive for the course submissions, averaged and weighted per the following breakdown.

## Lessons - 30%

Lessons are standalone deliverables due weekly intended to teach you a particular aspect of system design.

## Applications - 50%

Applications are multi-week challenges that require you to synthesize a variety of system design skills and concepts. The first application will be done individually and the second will be done in a team. For the team project, all team members will receive the same grade.

## Participation - 20%

While this is a studio class, there will be treatment of theory, communicated through readings, videos, lectures and in-class discussion. Readings and videos must be completed **before** the class in which they will be discussed. Your participation in these activities, even though they do not directly result in a tangible submission, will be a significant part of your final grade.

Participation will be scored according to the following rubric:

| **Quality** | **Poor (1)** | **Good (2 - 3)** | **Excellent (4)** | **Weight (%)** |
| --- | --- | --- | --- | --- |
| Preparation | Student has not prepared the material or prepared to the most cursory degree | Student has reviewed the assigned material and made a reasonable effort to synthesize it | Student demonstrates a mastery of the assigned material, even linking it to other related work from previous experience | 40% |
| Attitude | Student does not engage the discussion or contribute in any meaningful way, is sullen, sarcastic or otherwise negative towards the activity | Student follows the discussion, reacts to the contributions of others and offers, at times, his or her point of view, is open and positive towards the activity, and engages even out his or her natural comfort zone | Student is enthusiastic, fully engaged and supportive to the discussion at all times, and works to maintain a high level energy in the activity and bring those less outgoing into the discussion | 60% |

While all grading necessarily contains some degree of subjectivity, it is my intention is to make the process as transparent as possible. I will, therefore, include a detailed evaluation rubric, as above, with all assignments and project briefs.

All lessons, applications and participation activities will be given numeric scores. These scores that will be summed and averaged according to the weightings given above to determine your final class grade as follows.:

**4.0 = A = 100%**

3.7 = A- = 92%

3.3 = B+ = 83%

**3.0 = B = 75%**

2.7 = B- = 67%

2.3 = C+ = 58%

**2.0 = C = 50%**

1.7 = C- = 42%

1.3 = D+ = 33%

**1.0 = D = 25%**

0.7 = D- = 17%

0.3 = F+ = 8%

**0.0 = F = 0%**

# Required Course Materials

* Tom Stoppard, Arcadia
* Donella Meadows, Thinking in Systems
* Dan Brown, Communicating Design
* Panic, Coda
* Apple, Keynote

# Attendance Policy

Students must be present in the classroom for the entire class period for each scheduled meeting of the semester in order to meet the class learning objectives. Class will include discussions, critiques, lectures, and other learning activities. Students are expected to arrive on-time and remain present for the entire period scheduled.

The responsibility for any work missed due to any type of absence rests with the student. Records of attendance and tardiness will be kept for each class. Three unexcused absences will result in a failing grade for the class. Being late three time (more than 10 minutes) will be treated as equivalent to one unexcused absence.

You are expected to inform your instructor of any absence before the start of the class you will miss.

Any exceptions are up to the discretion of the instructor. Be in close communication with your instructor and problems can be avoided.

Missing class does NOT excuse you from completing any of the assignments due for that class.

# Studio Etiquette

CCA classrooms, shops, and other facilities exist to create an efficient learning environment. Many people will share the same space as your class. It is imperative to leave your spaces orderly and clean. This means removing your personal and course-related items from the space and leaving a clean work area. There is no storage for your belongings.

Instructors will note when use of laptops is allowed in class. However, the use of laptops does not mean that you can use social networking sites, email, and so forth. (See below.)

The use of an iPod, iPhone, or similar music device during class requires instructor approval. Most of the time in your class is about building a collaborative, supportive environment for work, and "plugging in" will obstruct your ability to be present and contribute in class.

You may not use your cell phone, mobile device, or iPad while in class. The use of phones and tablets is prohibited unless you have made special arrangements with your teacher due to extenuating, emergency circumstances. This includes checking for and/or sending text messages, checking social networks, etc.

No talking on cell phones in the studio, even when classes are not in session. Those who share the studios with you do not want to be disturbed. Please go outside, unless there is a safety issue that needs to be addressed.

About social networking and email during class: While we will address social, digital tools through this class, it is not acceptable during studio work times, design activities, or lectures by the teacher or visiting teachers. In-class usage outside the context of the course will not be tolerated and it will impact your class participation grade.

# Academic Integrity Code

CCA students are expected to maintain standards of academic integrity. The college defines four types of academic dishonesty:

1. **Cheating**, or the intentional use or attempted use of unauthorized materials, information, or study aids in any academic or studio exercise.
2. **Fabrication**, or the intentional and unauthorized fabrication or invention of any information or citation in any academic or studio exercise.
3. **Plagiarism**, or the intentional or knowing representation of words, images, concepts, or ideas of another as one's own in any academic or studio exercise.
4. **Facilitating academic dishonesty**, or intentionally or knowingly helping or attempting to help another to violate any provision of this code.

The Academic Integrity Code is to be upheld and enforced by all CCA students and faculty members. Depending on the nature or severity of the incident, violations of this code may result in academic and/or disciplinary sanctions up to including the failure of the course and dismissal from the college.

# Creative Rights and Responsibilities

## The Academic Environment:

CCA strives to provide an academic environment that supports and challenges our students to grow, learn, and create. While classrooms, studio spaces and teaching styles may vary, all of these environments must be safe places where every student has the ability to strive and succeed. These are collaborative settings where the needs of the individual student must be balanced with the overall needs of the group. Students, staff and faculty share a responsibility for creating and maintaining such an environment. Behavior that is disruptive to the learning process of others will be addressed.

## Responsible Expression:

The college encourages frank discussion and honest expression in the studio and classroom. Art and learning require the open exchange of different ideas and perspectives. All students at CCA should feel free to take reasoned exception to the data or views offered in their course of study and to create art that expresses their ideas with boldness and conviction.

However, each individual's freedom of expression must also be weighed with our shared goal of creating a vibrant and inclusive artistic community. For this reason, CCA does not condone expression that singles out specific people or groups for gratuitous insult or that interferes with the learning experience of other members of the college community. Repeated abusive or disruptive expression or expression in a manner that violates the college's policies against unlawful discrimination and harassment may lead to disciplinary action.

Students have the right to receive candid feedback on their work that is presented in a thoughtful, respectful and constructive manner. Every student has the responsibility to accept feedback with an open mind and respond to it in a respectful and mature manner. Creative work should not pose a threat to others, the community, or the creator in any fashion. Any work that is submitted for review that violates or depicts violations of college policy or local, state or federal law may be subject to disciplinary action.

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Systems Schedule

Weeks 1-4:

### Classical System Theory

#### Week 1: Introduction

* Mon - 1/21
  + No Class
* Wed - 1/23
  + Why Systems?
  + Instructor Background
  + Class Mechanics
  + Activity: Introduce Lesson 1: Terminology

#### Week 2: The Emotional Context

* Mon - 1/28
  + Lesson 1 due
  + Reading of Arcadia
* Wed - 1/30
  + Discussion
    - Arcadia
    - Is Arcadia Greatest Play of Our Age?
  + Introduce Lesson 2: Character Map
  + Keynote for Designers & Diagramming Basics

#### Week 3: Classical Systems

* Mon - 2/4
  + Lesson 2 due
  + Critique of Lesson 2
  + Discussion: Meadows, Intro, Ch. 1-2
  + Introduce Lesson 3: System Archetypes
* Wed - 2/6
  + System Tools
    - Behavior vs Time Graphs
    - Function Graphs
    - Loop Diagrams
  + Studio

#### Week 4: Feedback

* Mon - 2/11
  + Lesson 3 due
  + Critique of Lesson 3
  + Discussion: Meadows, Ch. 3-5
  + Introduce Lesson 4: Commercial Process
* Wed - 2/13
  + Beer Game
  + Discussion
    - Beer Debrief
    - Wired, Harnessing the Power of Feedback Loops
  + Studio

Weeks 5-9:

### Systems and Software Design: Conceptual, Object, Data & Error Models

#### Week 5: Conceptual Model

* Mon - 2/18
  + Lesson 4 due
  + Presentation & Critique: Lesson 4
* Wed - 2/20
  + Visitor: Hugh Dubberly
  + Discussion
    - Dubberly, Model of Models
    - Dubberly, What is Interaction?
  + Conceptual Model Workshop
  + Introduce Lesson 5,6

#### Week 6: Object & Data Model

* Mon - 2/25
  + Lesson 5 due
  + From Information Architecture to Data Models
  + Discussion: Ashby: 1; 2/1-4,17; 3/1-6,11
  + Introduce Application One
* Wed - 2/27
  + Lesson 6 due
  + Discussion: Ashby: 4/1-4,6-11; 6/1-8
  + Conceptual Models & Black Boxes
  + Studio

#### Week 7: Error Model

* Mon - 3/4
  + Presentations & Critique: Application One/Phase I: Conceptual, Object & Data Models
  + Studio
* Wed - 3/6
  + Wireframing I: Static
  + Studio

#### Week 8: Interaction Model: La Enchilada Completa

* Mon - 3/11
  + Presentations & Critique: Application One/Phase II: Static Wireframes
  + Studio
* Wed - 3/13
  + Wireframing II: Animated
  + Studio

#### Week 9: Application One Final

* Mon - 3/18
  + Studio
* Wed - 3/20
  + Public Presentations & Critique: Application One

#### ~ Spring Break - No Class ~

Weeks 10-15:

### Wicked Problems & The Opportunities for Software Mitigations

#### Week 10: The Web Interface Context

* Mon - 4/1
  + How the Internet Works
  + Website Basics
  + Introduce Lesson 7: Basic Website
  + Studio
* Wed - 4/3
  + Lesson 7 due
  + Markup/CSS
  + Introduce Lesson 8: Markup/CSS
  + Studio

#### Week 11: Wicked Problems

* Mon - 4/8
  + Lesson 8 Due
  + Visitor: TBD
  + Introduce Application Two
  + Wicked Problems
  + Discussion
    - Rittel, Dilemmas in Planning
    - Dubberly, Why Rittel Matters
* Wed - 4/10
  + Discussion: Meadows, Ch. 6
  + UI Framework - Twitter Bootstrap
  + Studio

#### Week 12: The Organization as Context

* Mon - 4/15
  + Other Interfaces:UI & API
  + Discussion:
    - Forrester, Designing the Future
    - Senge, The Fifth Discipline, pp 3-12; 57-67
* Wed - 4/17
  + Javascript & Bootstrap
  + Presentation & Critique: Application Two/Phase I: Personas & Needs
  + Studio

#### Week 13: Software Mitigations

* Mon - 4/22
  + Presentation & Critique: Application Two/Phase II: The System & Points of Leverage
  + Studio
* Wed - 4/24
  + Javascript: Custom Behaviors
  + Studio

#### Week 14: The Application as Narrative

* Mon - 4/29
  + Presentation & Critique: Application Two/Phase III: Scenarios & Wireframes
  + Studio
* Wed - 5/1
  + Studio

#### Week 15: Application Two Final

* Mon - 5/6
  + Public Presentation & Critique: Application Two
* Wed - 5/8
  + Discussion: Meadows, Ch. 7
  + Wrap Up/Recap
  + Party