

IST 402D: Design Patterns for Simulations and HCI, Fall 2023

435-550 pm Tu/Th 201 East West Gate (Zoom: <https://psu.zoom.us/joining/99357375232>)

Instructors

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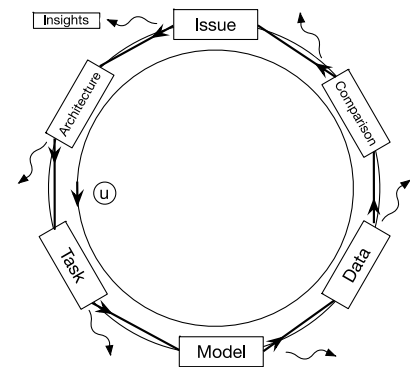
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364 East IST

20 aug 2023

There are methods of developing, testing, and presenting models and simulations. When these methods are performed often enough or clearly enough, they can be seen as design patterns for how to create aspects of this process. These simulations are used directly in science as theories of cognition, implicitly in design of interfaces, and in a variety of areas of AI. Having to start from scratch has impeded the use of simulations and models. This can be contrasted with the relatively fixed formula for running and presenting psychology experiments, which greatly helps with work in psychology. These patterns are also very related to work in human-computer interaction (HCI) because such work is created implicitly or explicitly with a model in mind including models of users. They use the results to improve the model of the user and to improve the design of systems, which is another goal of many simulation projects.



This course, based on a forthcoming book (available as handouts), will examine the simulation and modeling process, and then cover each of the stages: (a) choosing an architecture, (b) choosing a task to illustrate the issue, (c) getting data to build, refine, and later test the simulation, (c) building the simulation, (d) describing the simulation, and (e) evaluating the simulation. It will also cover example simulations, advanced issues, and how to publish the pieces and the whole projects. Grading will be based on discussion, comments on readings, and small projects.

This course uses the grading rubric and regulations from IST 331 (<http://acs.ist.psu.edu/ist331>) and related Penn State regulations. The 331 site has the IRB and plagiarism info, grading scheme, etc.

Course Objectives

At the conclusion of this course, students will be able to:

- Understand more about simulations and modeling.
- Describe a range of modeling approaches and use one or more of them to make theoretical statements.
- Analyze an issue and note a task that will illustrate behavior in that area.
- Create a model in an architecture.
- Gather data to test a model.
- Evaluate a model using several approaches
- Write a report describing these steps including why the model is (or is not) worth taking seriously.

Grade based on:

- (a) Midterms in class (40%: 15 +15 +10) [THERE IS NO FINAL]
- (b) Class participation (10%: 12+24)
 - Attendance (from 12 points, you can miss 3/30 classes w/o excuse)
 - Reading notes (from at least 10 readings, choose 10, for 24 points)
 - Notes from attending extra credit talks (+1%)
- (c) Labs (40%): 9 labs @ 5%, drop 2 worst
 - IRB (+1%)
 - Plagiarism (+1%)
 - Team contract (+0.5%)
- (d) Final report (10%): Summary of modeling project

Canvas has trouble with these formulas, so the Canvas grade is only approximate.

Many days have a “short notes” due at the beginning of class on a standard PDF, Canvas upload, or anything that Click & Clack accept (delivered to class). Keep a copy open for the discussion. Notes indicate: (a) What is it, (b) who wrote it, (c) what does it say, (d) do we believe it, (e) what does it imply, (f) questions for class or instructor. A quiz may be made available instead. If a reading is misassigned by me, it counts double if you turn it in correctly. Readings are indicated with “*”.

Currently, the tenth reading is to find a reading that the book should cite but does not, and read and write it up.

Labs due dates will vary and are noted in them and in the class, typically, in one week. Labs and readings are expected to take 6 to 9 hours/week outside of class.

Grading Policy

Grades are not rounded up. [indicates from there and above, and) indicates there to that number short of the next integer. E.g., 89.985 is a B+.

Letter Grade	Percentage
A	[93 and above
A-	[90-92)
B+	[87-89)
B	[84-86)
B-	[80-83)
C+	[77-79)
C	[70-76)
D	[60-69)
F	[0-59)

Readings

Readings are taken from a few sources. All references are to the book, *Design patterns for modeling and HCI*. There is a form for each reading that will be turned in via Canvas.

Unknown typos in the books are worth 0.1 points of extra credit on the final grade, up to 1.0 total.
(<http://frankritter.com/fducs/fducs-errata.txt>)

Syllabus for IST 402D, Fall 2023

Detailed Reading list

		Tu	Th	Reading/Lab due BoC
1	22-Aug-23	Syllabus, intros		
2	24-Aug-23		How a book is prepared	Preface*
3	29-Aug-23			Ch1 Intro*
4	31-Aug-23		Lab 1: E3.2 Reading	
5	05-Sep-23			Ch2 Framework
6	07-Sep-23		Lab2: E1.1,2,3 Call your shot	L1
7	12-Sep-23			Ch3 Task*
8	14-Sep-23		Lab3: E3.1 Task criteria	L2
9	19-Sep-23			Ch4 Data*, FDUCS14*
10	21-Sep-23		Lab4: E4.1 Survey	L3
11	26-Sep-23	Review		
12	28-Sep-23		Exam (15)	L4
13	03-Oct-23			Ch5 Build
14	05-Oct-23		Lab5: RUI	RUI*
15	10-Oct-23			Ch6 Describe
16	12-Oct-23		Lab6: E4.2 VPA	L5
17	17-Oct-23			Ch7 Eval*
18	19-Oct-23		Tools for building models	L6
19	24-Oct-23			Ch8 Write*
20	26-Oct-23		Lab7: Build a model	
21	31-Oct-23		Snow day	
22	02-Nov-23		Work in class	
23	07-Nov-23	Review		
24	09-Nov-23		Exam (15)	L7
25	14-Nov-23			Ch9 Topics
26	16-Nov-23		Lab8: E7.6, .3, .2, .5, or .7 Eval	
	21-Nov-23		Thanksgiving	
	23-Nov-23		Thanksgiving	
27	28-Nov-23			Ch10 Summary
28	30-Nov-23	Review	Lab9: 8.1/8.5/8.3	L8
29	05-Dec-23		Exam (10)	
30	07-Dec-23	Reports	Lab10: Summary of project	L9
	12-Dec-23			L10

Possible lab/project topics

The emphasis is on learning new methods related to modeling and HCI. You may do a project, that is, each lab cumulates, or you may do labs on separate topics. Groups can be 2, or if one is a graduate student, 3 students. You need to be in a group.

Labs due before 1 week after they are introduced at 23:59 EST that day, or as announced.

Possible topics include:

1. Simulations of interface use
2. Extensions to Bobby or related website testers
3. Simulations of professor time and advancement, or other professions
4. Interactions with SIMBA or LionPath, PSU's not so new and not shiny systems
5. Neural net models
6. Simulations of infectious disease or other public health topics
7. Anything you are working on or want to work on, subject to instructor approval

Teamwork and Collaborative Learning

Some assignments and activities in this course are collaborative. Each student will be a member of a group, and will participate in collaborative learning through the group. In collaborative activities, different people in the group will necessarily contribute differently to the group's overall effort. However, throughout the semester I expect that group members will contribute roughly equally to the total effort made by the group. In other words, it should not be the case that some group members carry disproportionately more of the responsibilities, and others disproportionately less. It is also an Academic Integrity violation to put author's names on a paper who did not contribute.

As part of each report, students will be asked to assess the contributions of themselves and other group members to their group's overall efforts. The outcome of these ratings will impact each students' grade for that report. The main objective in asking you to do this is to help you regulate your collaborative efforts so that contributions are indeed roughly equal. And in this case, all group members will share credit equally. But this self-assessment of individual contributions to teamwork is also a mechanism to correct for possible unequal participation: If members carry disproportionately more of the responsibilities, or disproportionately less, they will receive more or less credit in course grading.

If you are unfamiliar with the notion of assessing contribution to teams, please refer to https://www.catme.org/login/survey_instructions.

Attendance

Attendance is an important component of this course—especially for group-based activities that rely on each member consistently being present and engaged and for the discussions of the readings. Each student is allowed to miss up to 3 classes without a grade deduction. In addition to the points penalty, beyond three missed classes, a half letter grade can be deducted for every 2 classes missed (e.g. 4-5 missed classes will turn an A into an A-, and 6-7 missed classes will turn an A into a B, etc.). Note that missing a sufficient number of classes will turn an A into an F in this course, even if readings are turned in.

Being a good student in this class goes beyond showing up! The Teaching and Technical Assistant(s) (if assigned) and I will do everything in our power to provide an engaging and productive learning environment during every single class. In return, we expect you to:

- Come ready to engage in a variety of learning activities
- Be respectful to your classmates and instructors.
- Avoid distractions like mobile device usage or social media in class.

Attendance and In-class Assignments

In class assignments are exactly that, in-class. I design these activities such that the educational value is in interacting with your group and the instruction team. It isn't just about completing the work and it isn't just checking a box. These assignments can span one or two days, and the policies in these different cases are: (a) if the assignment is for one day and you miss that day, then you get a 0 for that assignment; (b) if the assignment is for two days and you miss both days you get a 0 for that assignment; (c) if the assignment is for two days and you miss one day then you get a 50 for that assignment.

This means, that if you miss class and you message me later claiming that you did the work and were not in class, then it doesn't matter. Being in the classroom is a major component of the work and discussion.

Assignments and Deadlines

All assignments due before the start of class as noted in Canvas as noted there (typically 30 min. prior). Late homework assignments receive a grade of zero, but will get feedback.

Questions about grading

All questions regarding grading must be resolved within *one week* of assignment of grade.

E-mail and phone interactions

I will make every effort to respond to you quickly as possible. However, please do not expect to get a reply in less than 24 hours. I have shared my office phone number; it does not receive text messages. Text messages will be deleted. If you send an email regarding this class, you must *put "IST413"* in the subject line of your email.

Academic Integrity (AI)

I feel strongly about academic integrity. I think that one of the things you deserve to see and learn at Penn State is how to be a scholar and a professional, and how to act with academic/professional integrity. I will try to model that in my class, and I urge you to reflect on the class from the standpoint of integrity. I have tried to design class activities that are creative, and therefore difficult to plagiarize, but also, hopefully, more engaging for you, so that you would not want to plagiarize them. Using Course Hero or Chegg or posting any information to these types of sites is an AI violation; I do not give my consent to post my material to these websites and consider that both an AI and copyright violation.

According to the Penn State Principles and University Code of Conduct:

"Academic integrity is a basic guiding principle for all academic activity at Penn State University, allowing the pursuit of scholarly activity in an open, honest, and responsible manner. In accordance with the University's Code of Conduct, you must not engage in or tolerate academic dishonesty. This includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used without informing the instructor, or tampering with the academic work of other students."

Any violation of academic integrity will be investigated, and where warranted, punitive action will be taken. For every incident when a penalty of any kind is assessed I must (and do and have) file(d) a report.

Plagiarism (cheating)

Plagiarism is stealing because it does not provide attribution of work. It fundamentally undermines the university as a community of scholars. Talking over your ideas and getting comments on your writing from friends are NOT examples of plagiarism. Presenting someone else's words (published or not) and calling them your own is plagiarism. Building upon someone else's (attributed) work is what we should all do. In most cases, citations will protect you. Plagiarism has dire consequences, including failing the paper in question, failing the course, and university disciplinary action, depending on the circumstances of the offense.

The simplest way to avoid plagiarism is to document the sources of your information carefully. If you have any doubts about what plagiarism is, please clear them up and ask. There are many resources at Penn State and on

the Internet for this (e.g., <https://plagiarism.iu.edu/>), including the TA and instructor. If you have doubts about your own submissions, consider checking them with Turnitin or other plagiarism detection services (<http://tlt.its.psu.edu/turnitin/>). There is zero tolerance for plagiarism in this class; we will follow the standard Penn State protocol for dealing with suspected plagiarism (<http://www.psu.edu/dept/oue/aappm/G-9.html>).

COVID-19 and related diseases

The CDC and PSU apply public health measures. Individual health measures may be more conservative.

As we start this semester, masking is not needed, but extra ventilation will be used. If you are sick, I will ask you to leave. I will have a Zoom room available in case that is necessary (we used this occasionally in Spring 2023 for ill students). If you would like to Zoom because you are sick, email by noon of the class, or call by 2 pm. We will if necessary, meet outside and Zoom liberally.

Americans with Disabilities Act [see PSU GURU for details]

Students with Disabilities

[See PSU GURU for details and <https://senate.psu.edu/faculty/syllabus-statement-examples/#disability>]

Information on available Counseling & Psychological Services

See: <https://senate.psu.edu/faculty/syllabus-statement-examples/#caps>

Reporting Educational Equity Concerns through the Report Bias site

<https://senate.psu.edu/faculty/syllabus-statement-examples/#reportbias>

Statement on Nondiscrimination and Harassment

[see: Policy AD42: Statement on Nondiscrimination and Harassment): <http://guru.psu.edu/policies/AD42.html>]

This syllabus is only for use within the requirements of AD G-10: GRADE MEDIATION AND ADJUDICATION, read this policy before contacting me if you are not a student in the class.