

Title: Building computer-based supports for student learning through inquiry

Short: Building Tech for Learning

Credit hours: 4

Pre-requisites: Senior standing

Faculty: Mark Guzdia, Elliot Soloway

Room: EECS 3433

Time: Monday/Wednesday 12-1:30

**Description:**

In this 498, the goal will be to build software to support educational activities in K-12 and in higher education. Faculty in K-12 have suggested the need for specific pieces of software. For example, a 3<sup>rd</sup> grade teacher has been pleading for a T-Chart app – one that is collaborified, i.e., it supports synchronous collaboration. In higher ed, in materials courses, there is a need for a VR app to help students visualize the atomic structure of the materials. In high school, there is a need for a tool to support historical inquiry. In past iterations of this project, students have built software that is actually used in schools, nationwide. Teams will be formed; they will use the agile software development methodology: cycles of design, build, user test. Be prepared to visit classrooms and hear first-hand what users think of your software!

**Tentative List of Projects:**

- VR project for College of Engineering
- AR project on shadows and/or phases of the moon (maybe use new Mozilla Mixed Reality framework? <https://mixedreality.mozilla.org/>)
- Collaborative pro/con (“T-Chart”) for elementary school students
- Two projects on supporting History inquiry
- Learning matrices and wave functions in Precalculus
- Machine learning to support eye cancer research

Grading: Each of the first 5 “check-ins” are worth 15% of your grade (all members of the team get the same grade). The last check-in is worth 25% of your grade.

## Schedule:

On reading days, be prepared to come in with your most interesting quotes on the reading.

On “Teams meet” days, you are *expected* to meet with your team. You all have the time blocked, and working with your team is required for both project success and individual student learning.

On days in bold, your team is presenting.

<b>Mondays</b>	<b>Wednesdays</b>
	9/4: Introduction to class and projects
9/9: More on projects. Read Agile papers.	9/11: <b><i>Student teams commit to projects and to presenting a tool for Agile (e.g., Trello, Asana, Basecamp)</i></b>
9/16: Teams meet (no formal class)	<b>9/18: Teams present top-level designs (Check-in #1)</b>
<b>9/23: Teams present tools</b>	9/25: How to build a user interface: Users
9/30: Teams meet	10/2: How to build a user interface: Storyboards
<b>10/7: Teams present MVP in Gallery Walk (#2)</b>	10/9: Teams meet
10/14: <i>Fall Break</i>	10/16: Teams meet
10/21: Learner-Centered Design: <a href="#">Paper 1</a> and <a href="#">Paper 2</a>	10/23: Teams meet
10/28: Teams meet	<b>10/30: Demo of MVP (#3)</b>
11/4: Teams meet	<b>11/6: Teams report on MVP Testing</b>
11/11: Teams meet	11/13: Teams meet
11/18: Read <a href="#">Chapter 1 of “How People Learn”</a>	<b>11/20: Teams present MVP 2 in Gallery Walk (#4)</b>
11/25: Read <a href="#">Chapters 1 and 2 of “Learner Centered Design of Computing Education”</a>	11/26: <i>No Class</i>
<b>12/2: Present Results of MVP 2 Test (#5)</b>	<b>12/4: Each team presents 3 Lessons Learned from this experience (#6)</b>
12/9: <i>No Class</i>	