

## Introduction to User Interface Design

**Instructor:** Dr. Rosa Arriaga E-mail: [arriaga@cc.gatech.edu](mailto:arriaga@cc.gatech.edu) Address: TSRB 236

**Teaching Assistant:** Todd Park ([bpark31@gatech.edu](mailto:bpark31@gatech.edu)) Laurel Warrell ([lwarrell@gatech.edu](mailto:lwarrell@gatech.edu))  
Amit Garg ([agarg@gatech.edu](mailto:agarg@gatech.edu))

**Instructor office hour:** MW 30 minutes before/after class and by appointment

**TA office hour:** by appointment

### Required Texts

- Norman, *The Design of Everyday Things* (Doubleday, 2013 edition)
- Rogers, Sharp, and Preece *Interaction Design: Beyond Human-Computer Interaction (2<sup>nd</sup> Edition; Wiley, 2007)*. This book is an introduction to human factors and user interface design, but most of the book is a methodology handbook for designing and evaluating for usability. It's a very practical and hands-on introduction with thoughtful illustrations. We will cover almost all of the content of this book, but not in chapter order.

### Additional Readings

- Will be posted on t-square

### Course Description

From the course catalog:

Describes the characteristics of interaction between humans and computers and demonstrates techniques for the evaluation of user-centered systems.

Beyond the course catalog:

This course is meant to introduce you to human centered computing. This mode of design puts the user first and "technology-for-its own sake" second. Students will be introduced to HCI concepts, design principles and techniques and will be expected to implement them in a variety of group assignments. In this course we work with a "real world" client and use a corporate approach where you are given a project and a team with whom to develop it.

**Client: Carter Center**

**Project: Forum on Women**

### Class Credo

I am committed to respecting the opinions of others and to creating an environment where everyone can share their thoughts and experiences without fear of being judged in or outside of class. Enrollment in this class is taken as an assurance that students too will adhere to this philosophy.

### Course Expectations

Students are expected to have mastered study and organizational skills and to use these to successfully navigate the numerous course deadlines. Students should come to class prepared to discuss the material assigned daily.

***There is no internet access permitted in class (mobile phones included).***

### Student Outcomes

This class is designed to help students develop and use the critical thinking skills and evaluation prowess that are characteristic of HCI researchers. My goal is to create a dynamic learning environment--one where I will set the stage for learning, and where students will take responsibility for their own learning as well as contribute to the learning of others. I encourage students to go beyond the class material and to seek information that supports this goal.

In completing this course you will...

- Be knowledgeable about human-computer interaction concepts and techniques.
- Demonstrate that design is a systematic and data driven process
- Design system that understand the context of the user so that the systems you design are desirable in that they are a natural next step in accomplishing a task
- Gain experience as a designer of interactive technology by getting your hands dirty prototyping interfaces and functions (but not programming or developing the back-end).
- Practice qualitative and quantitative methods for requirement discovery and usability evaluation
- Design technology that is easy to use and supports users with varying levels of expertise.
- Read primary sources in HCI relevant to content area



This course is part of Georgia Tech's Serve-Learn-Sustain (SLS) initiative, which provides students with opportunities to combine their academic and career interests with their desire to make worthwhile

contributions to the world and build sustainable communities where people and nature thrive, in Georgia, the United States, and around the globe. More information about SLS can be found at [www.serve-learn-sustain.gatech.edu](http://www.serve-learn-sustain.gatech.edu). Visit the website to sign up for the [SLS Email List](#), view the full list of [affiliated courses and projects](#), and find links to Facebook, Instagram and Twitter.

### Outline Schedule

**What is good design? (Weeks 1-3)** Topics: Why are systems so difficult to use? Why do users keep making mistakes when they use our great technology? ;)

Q: Given the nature of these problems, what is the answer?

A: User-centered design.

- Reading: Norman's "Design of Everyday Things"

**User-centered Design in Context (Weeks 4-9)** Topics: Identifying needs and establishing requirements, understanding and conceptualizing interaction, design and prototyping interfaces and interactions, understanding users via data gathering and data analysis. Prototyping and Evaluation framework. Empirical and analytic evaluation.

- Reading: Sharp et al "Interaction Design"

### Evaluation Components

#### **Norman Certification: QUIZZES**

Our text *The design of everyday things* plays a central part in the class discussion and will serve as the basis for the quizzes in the first month of courses.

• **On QUIZ DAYS:**

Bring (1) **a folder** with your name and \*course number (not GT id) on it

(2) Your signed outline (more about this later but for now):

**If you bring printed outlines you will NOT be able to use them**

**If your outlines are not authenticated properly (signed and Xed out) you will NOT be able to use them)**

### **EXAMS**

The exams are cumulative and made up of multiple choice and short answer questions.

### **Class Attendance**

Learning in this course requires that students attend class regularly, **arrive on time**, and contribute to class activities. \*Each student will be assigned a number. It is each student's responsibility to sign in for each class. (For more details see Appendix). Note that it is imperative that you arrive on time. Four late arrivals will count as one absence.

Attendance, promptness and preparedness are worth 10% of the course grade as follows:

Absences	Points Earned
0-2	10 /10 points**
3	9/10
4-	8/10 (drop one point per absence)

### **Homework**

The goal of homework is to get you to think about the reading material as it applies to your theme/project. Many of the homework items require that you apply what you learned from the reading to your client's current website or media. You may also visit other websites or media outlets that have the same "goal" as your client's and investigate what they do correctly or where they fall short. The goal is for you to apply what you learn and to think about your client/project. These exercises are meant to be brief—no more than 10 minutes.

Note: if you fail to include these (along with other class assignments, both considered dlogs) in your report binder you will lose points.

### **Grades**

- Team grade (50%) ASSIGNMENTS
  - Part 0: Project idea and overview (Participation Grade)
  - Part 1: Project requirements 10%
  - Part 2: Design alternatives (includes Poster Session) 10%
  - Part 3: Prototyping and Evaluation plan 10%
  - Part 4: Final Report, Final project deliverable and presentation 20%

Homework must be turned in by each individual team member. This will also be put in the report binder. It is the responsibility for each member to do so. If they do not include it they will lose points (the team will not be penalized). Lost points due to missing homework or class assignments can NOT be made up.

Note that teams are able to request feedback from the Prof and TA. Material for feedback must be submitted by the Friday before reports are due (by 11:59pm). Teams will receive feedback by the Saturday before reports are due (by 11:59pm).

- Individual grade (50%):
  - Class participation
    - Attendance (in class assignments, poster critique, etc)10%

NOTE: if you are voted off your group you automatically get 0% for participation

- Quizzes = 20% (your total/total points possible)
- Exams = 20% (your total/total points possible)

### **Policy on Regrades (See Appendix for details)**

Quizzes: All regrade requests must be turned in on the class day following the day it was returned.

Reports: Teams are allowed to resubmit 1 report for points that will lead to an improvement in 1 letter grade. There is a 1 week deadline for resubmissions.

### **Extra Credit Policy**

You are allowed to bolster your final grade by 2 percentage points (earn 80% instead of 78%) by participating in studies with the Psychology Department (Sona Experiment Management System) or HCI (in CS). Three hours of experiments are equal to 1 grade point toward your final grade.

Note: Grade points only come in whole integers. If you participate in 2.999 hours of experiments, you earn 0 grade points. (Since I do not “round up,” plan accordingly).

### **Communication with Professor and TA**

It is each student’s responsibility to document all meaningful communication with the professor and TA by sending an e-mail of the details to the person in question. (Do not purge meaningful “sent mail.”)

When corresponding with the professor and TA, please use professional email etiquette.

It is also each student’s responsibility to keep track of all digital copies of your assignments. If material is misplaced during the semester, it is the student’s responsibility to replace it upon request. To ensure that your e-mail does not get misfiled, always start your subject line with the prefix **3750**:

To comply with Federal privacy laws (FERPA), it is GA Tech policy only to recognize email to or from a valid GA Tech email address for course communications. Do not use gmail, yahoo or other external email accounts for any academic communications or expect replies to them.

### **Students with Disabilities**

Students must provide the instructor with an accommodation letter from the Georgia Tech ADAPTS office (404-894-2564) within the first two weeks of class to have accommodations made.

### **Student Code of Conduct: Academic Honesty**

Georgia Tech requires students to adhere to high standards of integrity in their academic work. **ALL BREACHES OF ACADEMIC INTEGRITY WILL BE REPORTED TO THE DEAN OF STUDENTS AND WILL RESULT IN AN “F” IN THIS CLASS.**

**SEE APPENDIX FOR OTHER RELEVANT DETAILS**

### **Tentative Course Schedule may change after Part1\***

WK	Dates	Topics	Chapters*	Assignments In Class or otherwise
	8/23	Syllabus Review		Pre-test Group Activity CITI certification Info and Outline Info Can you find other sites or apps that do what our client wants to do?
	8/25	Norman (N)	preface N1	<b>Norman Certification (Quiz 1)</b> <b>Hand written Outlines</b> N vi-xviii, Ch 1 Bring book along so that you can follow lecture notes <b>Homework 1:</b> Design exercise-Go through current/other Website/app and consider how to implement 1 concept from Ch 1
<b>2</b>	8/30	Norman	N2-3	<b>Norman Certification (Quiz 2)</b> <b>Hand written Outlines</b> Ch 2-3 Norman in action  <b>Homework 2:</b> Design exercise-Go through current/other Website/app and consider how to implement 1 concept from each of the 3 chapters
	9/1	Norman	N4	<b>Norman Certification (Quiz 3)</b> <b>Hand written Outlines</b> Norman in action <b>Homework 3:</b> Design exercise-Go through another Website/app that does the same thing as our current client and consider how to implement 1 concept from each of the 4 chapters

3	9/6	Discussion—what we know about Norman’s brand of design	N5-6	<b>Norman Certification (Quiz 4)</b> <b>Hand written Outlines</b> Norman in action
	9/8	Beyond Norman, Design as scholarship Toward Conceptualizing your World View Literature Review Research Design (RD) in HCI	RD1	<b>Quiz 5</b> <b>Hand written Outlines</b> In Class: Debrief and consider user tasks/interfaces  Random assignment to teams  <b>Homework 4:</b> Read “Creswell Research Design” RD Ch1, 1)find one article that relates to your “world view position” AND the problem space 2) Write 1 paragraph summary and list 10 project ideas (brain storm, quick exercise)
4	9/13	Review of Reports and Syllabus  <i>Interfaces and Interactions</i>	S6 & 7	<b>Part 0 explanation</b> <b>Homework 5 Assigned:</b> As a TEAM draft a 1 paragraph summary and come up with 5 ideas for Part 0 (can be derivatives of HW4) <b>Norman Remediation Posted</b>
	9/15	Contextualizing our design and world view		<b>1. GUEST SPEAKER</b> <b>2. Group team activity – Ten minute break for teams to think about presentation and how it relates to HW5</b> <b>a. discuss HW5 Use this to drive your objective for Part 0</b>  <b>3. Teams can ask Guest Speaker questions regarding the client’s goals</b>  <b>Part 0 due 9/19 by 11:59pm (material must be uploaded to team wiki page)</b>
5	9/20	Develop Interview Exercise Data gathering and analysis;  Work on interview questions- each member comes up with 5  User Requirements: The process of interaction design	S9	<b>Part 0 Presentation (Physical copy in Binder)</b> <b>CITI certification Due</b>  Present Part 1 <b>Homework 6 Assigned: Interview 2 people</b>  Team activity: Discuss <b>HW5</b> and develop TEAM’s 10 item survey questionnaire for data collection – Due Friday @ NOON
	9/22	Ch10 Notes provide excellent view of what the objective is for Report 1  - Usability objectives - User and environment properties - Personas	S10	Exercises: Essential Use cases, scenarios - Hierarchical task analysis-Personas  <b>Team Activity- Discuss H6, consider what 10 questions to ask people for Part 1</b>

		Essential Use cases and scenarios - Hierarchical task analysis - Other representational techniques briefly		
6	T 9/27	Data Gathering and Analyses	S9	<b>NORMAN Remediation due beginning of class</b>
	TH 9/29	Studio- help available in class		<b>NO lecture but TAs and Prof available PART 1 due Monday 10/3 by 11:59pm This includes 1)update Part 0 2)Part</b>
7	T 10/4			<b>Part 1 Presentations</b> Physical Copy of PART 0 (original and updated) and 1 is due Peer Evaluations due* as needed <i>Remediation details provided</i>
	10/6	Lecture: Design Criteria and Alternatives		Review Report 2 Working with Requirements Exercise
8	<b>10/11</b>	<b>Recess- NO CLASS</b>		
	Th 10/13	<b>PROTOTYPING</b> - Low and high fidelity prototyping - Conceptual design Preparation: Chapter 11.1-11.3 - Concrete and scenario-based design Preparation: Read Chapter 11.4-11.7	S11	Working with Requirements Exercise Story Board and Sketching Exercise <i>Remediation due in class</i>
9	T 10/18	- Introduction to HCI styles - Command interfaces Preparation: Read pp. 216-224		Card Based Prototypes Evaluation
	TH 10/20			Part 2 draft due 10/22 at 6pm Part 2 feedback by 10/23 at 6pm Part 2 due 10/24 11:59pm
10	T 10/25	<b>EVALUATION</b> - Usability testing - Field studies Preparation: Read Chapter 14.1-14.3  Various exercises to determine bench mark tasks Lecture, Studio session, Test and Evaluation Plan	S 14 S12	<b>Physical Copy of PART 2 is due</b> Review PART3
	TH 10/27			<b>Exam 1 (Sharp 6, 7,9,10,11)</b>
11	11/1	<b>Carter Center</b>		<b>Part 2. Design Alternatives (Poster Presentation)</b>
	11/3	Decide an Evaluation Framework	S13	Implementing material from R12/13 Verify appt for Pilot/Demo Testing

		<i>Employing Norman Principles?</i>		
12	<i>T</i> 11/8;	<i>Pilot/Demo Testing</i>		
	<i>TH</i> 11/10	<i>Testing in class</i>		<b>PART 3 due 11/14 by 11:59pm</b>
13	11/15	<i>Experimental Design Heuristic Evaluation</i>	S4 S5	<b>Physical Copy of PART 3 is due</b>
	11/17	<i>Cognitive Walk through Human Capabilities I &amp; 2</i>		
14	<i>M</i> 11/22	<i>Studio-Testing</i>		
	<b>11/24</b>	<b>Holiday</b>		
15	11/29	<i>Studio- Data Analyses</i>		<b>PART 4 due 11/30 by 11:55pm Digital copy of presentation and R4</b>
	12/1	<b>Group presentations randomly assigned</b>		<b>Monday: Physical Copy of R4 is due Project Presentations All participant data is due</b>
16	12/6	<b>Group presentations randomly assigned</b>		<b>Monday: Physical Copy of R4 is due Project Presentations All participant data is due</b>
<b>17</b>	<b>12/8</b>	<b>FINAL Quiz 2:50-5:40pm</b>		<b>Exam 2 (S4-5; 12-14)</b>

\*N= Norman ; S= Sharp et al

## APPENDIX: RELEVANT DETAILS

### Grades.

The grade assignments will be as follow:

- 90% or > earns an A;
- 80%-89.999% earns a B;
- 70%-79.999% earns a C;
- 60%-69.999% earns a D;
- 59.999 and < earns an F

Note: Because I give students the opportunity to earn extra credit, I don't "curve" grades and I don't "round up." When in doubt, do extra credit.

### Attendance.

**Excusable absences are limited to medical treatment and death in the family.** There is a buffer (2 free absences) included in the absence policy for all the other reasons why students don't come to class (not feeling well, interviews, etc). Manufacturing a false excuse is a violation of the Honor Code. All excused absences must be cleared through the Office of the Dean of Students. Students are responsible for getting lecture notes from a classmate. Each student is responsible for signing the attendance sheet; no individual can sign in for another student. If someone is caught signing in for someone else, both students will receive an absent mark.

### Assignment Policies

**Late projects** are heavily penalized: -10 points on the first day, additional -10 points on the second day. A zero will be entered for work that is 3 days late..

A "day" refers to day of the week, NOT class day; every day counts (even weekends).

It is each student's responsibility to check the course website and the e-mail address you have provided the school system on a regular basis. If you know you have sports team or other obligations, please plan ahead accordingly.

If you find yourself falling behind because of personal, psychological or any other reasons please come by and speak to me so that we can figure out a way to help you.

### **Regrades/ Remediation**

**Quiz: All regrade requests must be turned in on the class day following the day it was handed back. NO EXCEPTIONS.**

#### **DETAILS:**

#### **Regrade**

- a. reread the section in the book related to the material in question
- b. summarize what the book says about said topic (reference the page number)
- c. and then state how what you wrote in the quiz is worthy of a point.
- d. you must send me a digital copy and provide a printed copy at the beginning of class.

#### **Remediation**

**On occasion you will have the opportunity to improve your grade via a resubmission of "mastered material."**

**However you must also include**

- a) your current total points/possible points
- b) average
- c) how many points you hope to earn toward the maximum allotted.

#### **Remediation Details**

- a. reread the section in the book related to the material in question
- b. summarize what the book says about said topic (reference the page number)
- c. and then **INCLUDE THE CORRECT ANSWER TO THE QUESTION**
- d. you must send me a digital copy and provide a printed copy at the beginning of class.



Reports: Only ONE report may be resubmitted and only Reports 1-3 are eligible for resubmission. They must be turned in a week before the following report is due. The resubmission must include a "cover letter" that indicates what was addressed in the improved report and how many points are being attempted. The new material must be highlighted so that it is easy to see the changes in the new report. **Points lost for failure to turn in class assignments and HOMEWORK (dlogs) cannot be reclaimed.**

### **CITI DETAILS**

- CITI Certification
  - Go to  
[http://researchintegrity.gatech.edu/forms/IRB/CITI\\_GT\\_instructions.pdf](http://researchintegrity.gatech.edu/forms/IRB/CITI_GT_instructions.pdf)
  - 
  - Follow directions
  - Group 2: Social/Behavioral Module
  - Can be added to your CV (3 year certification)
- More Details
  - <http://www.compliance.gatech.edu/citi-training-information/>

### **Communication with Professor and TA**

It is each student's responsibility to document all meaningful communication with the professor and TA by sending an e-mail of the details to the person in question. (Do not purge meaningful "sent mail.") Always assume that the teacher or TA will NOT remember what you talked about before class, after class or in the corridors.

When corresponding with the professor and TA, please use professional email etiquette.

It is also each student's responsibility to keep track of all digital copies of your assignments. If material is misplaced during the semester, it is the student's responsibility to replace it upon request. (In such cases, students will not receive "late" penalties.) To ensure that your e-mail does not get mis-filed, always start your subject line with the prefix **3750**:

### **Pedagogical Approach**

Why do we have to take quizzes?

Teaching the *Testing Effect*

Why do we have to do all of these class exercises, why don't you just tell us what you want us to learn? Knowledge in our minds is different from knowledge in the world and exercises get team members to articulate what they are thinking

### **Student Code of Conduct: Academic Honesty**

Georgia Tech requires students to adhere to high standards of integrity in their academic work. Plagiarism and cheating will not be tolerated. All breaches of academic integrity are taken seriously. ALL assignments, quizzes and exams are assumed to be your INDIVIDUAL effort. All papers/material submitted to this class must be original to **THIS** class, not something submitted to another class and reformatted to meet this course's requirements. Reformatting a previous/concurrent paper to fit the current specifications is academic dishonesty and as such a violation of the honor code.

IGNORANCE IS NOT AN EXCUSE. WHEN IN "DOUBT"---DON'T.

**ALL BREACHES OF ACADEMIC INTEGRITY ARE REPORTED TO THE DEAN OF STUDENTS.**

As an example of identifying source materials, this syllabus and this course are heavily influenced by the material prepared by **Colin Potts, Gillian Hayes.**