**Designing an Experiment**

The general guidelines to prepare for a usability test for instruction manuals and rules are as follows:

- Understand the users’ needs
- Determine the purpose of the test
- Staff the test team
- Set up the test environment
- Develop a test plan
- Select participants
- Prepare the test materials
- Conduct a pilot test

The general guidelines to conduct a usability test for instruction manuals and rules are as follows:

- Stay organized (make a checklist and develop a schedule / agenda)
- Interact with participants (record their complaints, avoid leading questions, etc.)

There are many ways to set-up and conduct an experiment. One such way is to the seven step approach:

1. Select relevant variables for testing.
2. Specify the levels of treatment.
3. Control the environmental and extraneous factor.
4. Choose an experimental design suited to the hypothesis.
5. Select and assign subjects to groups.
6. Pilot-test, revise, and conduct the final test.
7. Analyze the data.

For this class, the focus will be on two types of measurement instruments: the survey and the case study.

The following should be considered when preparing a survey:

- Demographics
- Wording of questions
- Using the Likert Scale
- Statistical analysis
- Set criteria before testing
- Error analysis

In establishing the sampling population (demographics), things to consider which may influence the results of the survey are age, gender, education, economic status, etc. In order to find the best wording for a question on a questionnaire, it is important to consider several issues: shared vocabulary, vocabulary with a single meaning, misleading or erroneous assumptions, biased wording, correctly personalized, and enough alternatives. This is a case where pretesting would significantly help to check these questions. It is also a good idea to create open ended questions and leave room for comments. The Likert scale is assigning numerical value to phrases. For example, strongly agree may have a five associated with it; whereas, strongly disagree is equal to
one. Using the Likert scale allows for statistical analysis. A statistical analysis should at the very least include the average and standard deviation of the data. Before conducting the survey, it is necessary to set the criteria of what will be considered successful. Finally, an error analysis should be presented. The weakness of a survey is that it “leads” the participant and will not likely reveal unforeseen factors or provoke alternative answers.

Case studies are a single sampling method where a specific example is examined in full detail. Case studies help to reveal unforeseen factors that are not found with a survey. The weakness of a case study is that it is not necessarily representative of the population.