RESEARCH METHODS IN HUMAN FACTORS
TASK ANALYSIS AND COGNITIVE TASK ANALYSIS
PSYCHOLOGY 645 – SPRING 2009

Instructor:	Chris Monk	**Office Hrs:**	Monday 3:15-4:15pm; by appointment
Phone:	(703) 993-3408	**Class Time:**	Monday 4:30-7:10pm
Email:	cmonk@gmu.edu	**Location:**	David King 2073 (Arch Lab Conf. Room)
Office:	2059 David King	**Website:**	http://archlab.gmu.edu/people/cmonk/645S09.html

Course Objectives

This seminar will be a project-based, hands-on approach to a range of task analysis methods, including information gathering, various analytical techniques, and assessment methods. Emphasis will be on hierarchical task analysis, cognitive task analysis, the GOMS family of cognitive models, and verbal protocol analysis. Task analysis techniques allow analysts to describe the activities (both physical and cognitive) required in the execution of a task. The seminar will maintain a dual emphasis on task analysis techniques for both the usability lab and advanced cognitive research. Task analyses will be conducted of routine tasks performed with a variety of devices, software, and products.

This course will use a combination of lectures, discussion, in-class exercises, and individual projects to convey the material to be learned. The detailed schedule of topics and weekly assignments lists the specific approach used for each class meeting.

Texts & Readings

Kirwan, B. & Ainsworth, L.K. (Eds.) (1992). *A Guide to Task Analysis*. London: Taylor & Francis. [Required]

Crandall, B., Klein, G., & Hoffman, R. (2006). *Working Minds: A Practitioner's Guide to Cognitive Task Analysis*. Cambridge, MA: MIT Press. [Required]

Additional articles will be assigned on a weekly basis.

Course Requirements and Grading

There will be no exams in this seminar. Grades will be based on weekly assignments, class participation, a method presentation, and an individual project.

Weekly Assignments

30% of the grade will be based upon hands-on projects and class discussions of projects assigned to all students. The goal of these projects is to demonstrate mastery of the various task analysis techniques.

Late assignments

All assignments are due on the date announced in class by the instructor. As many of the projects will be discussed in class the day they are due or shortly thereafter, no projects will be accepted late. Students desiring an exception to this policy must contact the instructor BEFORE the project is due. Exceptions may be granted on a case-by-case basis.

Class Participation

25% of the grade will be based upon in-class participation of the readings, assignments, and presentations, as well as posting comments on the class blog site by 5pm Sunday afternoon prior to class on Mondays. This is a project-oriented course and substantial in-class time will be devoted to discussions

of the current project. Lectures will introduce the various techniques, their strengths and weaknesses, and theoretical foundations. All students are expected to have read all of the week's assigned readings before coming to class as evidenced by posting questions on the class blog and responding to other student questions.

Method Presentation

15% of the grade will be based on the method presentation. Each student will make a 15-minute presentation on a method or technique for task analysis. The specific topics and schedule will be announced in class. The goal of this presentation is to increase the breadth of task analysis techniques learned in the class. For the selected technique, students must do the following:

1. Find source materials describing the technique (aside from K&A).
2. Apply the analysis technique to a data set (to be discussed with, and approved by, the instructor)
3. Give a classroom presentation describing the technique and illustrating your presentation with your data set. The description of the technique should include a description of the steps necessary to perform the technique, in what circumstances this technique would be appropriately used, and a discussion of the advantages and disadvantages of using the technique.
4. Submit (a) an electronic copy of your class presentation slides and (b) a short written report in APA format (5-6 pages of text with 1-2 pages of figures or tables as appropriate), and (c) an ANNOTATED bibliography of the sources used in completing the project. NOTE: An annotated bibliography means that in addition to listing the cited sources, a 1-3 sentence summary of what is contained in each reference should be included so that other students can know what can be found in that document.

Individual Project

30% of the grade will be based on an individual project completed by each student. The project will encompass all phases of the task analysis process (info gathering, analysis, interpretation, and recommendations) on a task/systems/project of the students choosing. Students will be required to give brief presentations on the progress of their projects throughout the semester, and will ultimately deliver a 15- to 20-page paper along with a final presentation to the class. Details for the project will be announced in class.

Attendance

This seminar will be discussion-based; therefore attendance is essential. Lack of attendance will affect a student's Class Participation grade. Please notify the instructor in advance class will be missed, excluding emergencies or unforeseen circumstances.

The final exam for this class is scheduled for May 11. Although there is no final exam in the class, this date may be used as a class period (particularly if we have any snow days during the semester). An announcement regarding whether or not the final exam period will be used for class will be made no later than 3 weeks prior to the end of the class.

Electronic Distribution of Course Information and Materials

On-line materials for this class can be accessed through my website:

http://archlab.gmu.edu/people/cmonk/645S09.html

Such materials include, but are not limited to, the syllabus, copies of the PowerPoint slides used in class, additional class readings, guidelines/instructions for assignments, and posting location for assignments and class discussions. Students will post comments on weekly readings on a designated blog site.

Honor Code

George Mason University has an Honor Code that each student accepts as a condition of enrollment. This code is consistent with APA's ethical principles for working professionals, and it is important that each student adhere to the Honor Code. For this course, each student will produce his or her own assignments. If you have any questions about what is permitted and what is not, please as me.

Outside sources (e.g., journals, books) will be required to complete some course assignments. Plagiarism is defined as in the APA's "Ethical Principles of Psychologists and Code of Conduct" and in the Publication Manual of the American Psychological Association (see pages 292 – 298 of the Fourth Edition).

Special Accommodations

If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 703-993-2474. All academic accommodations must be arranged through that office.

Course Outline

The course outline is listed on the following pages, including a reading list. Please note that the schedule is subject to change based on the progress of the class on each week's assignments, and per the instructor's desire.

Important Dates

Martin Luther King Holiday	Jan. 19 (NO CLASS)
First Day of Class	Jan. 26
Last Day to Add	Feb. 3
Last Day to Drop	Feb. 20
Spring Break	Mar. 9 – 15
Last class	May 4
Final Period*	May 11 – 4:30 – 7:15pm

* Last class if needed.

Schedule of Lectures for PSYC 645

Date	Class	Topic
26-Jan	1	Introduction to task analysis & course
2-Feb	2	Information Gathering: Observation, Interviews, Questionnaires, and Participation
9-Feb	3	Information Gathering: Verbal protocol analysis/Think-Aloud Problem Solving
16-Feb	4	Information Gathering: Concept Maps and Knowledge Elicitation, *Activity Sampling*
23-Feb	5	Information Gathering: Critical Decision Method, *Critical Incident Technique*
2-Mar	6	Description: Hierarchical Task Analysis
9-Mar		**SPRING BREAK**
16-Mar	7	Description: Decision-Action Diagrams, *Link Analysis, Timeline Analysis, TAFEI*
23-Mar	8	Description: Operational Sequence Diagrams, Project Briefings
30-Mar	9	Description: *HAZOP, MORT, Event Trees, Barrier Analysis*
6-Apr	10	Description: KLM and GOMS overview
13-Apr	11	Description: GOMSL Part 1
20-Apr	12	Description: GOMSL Part 2 and CPM-GOMS
27-Apr	13	Student Project Presentations
4-May	14	Student Project Presentations/Wrap-up
11-May*	15	Make-Up Date/ Presentations

* Last class if needed.