
Department of Information Systems
University of Maryland, Baltimore County (UMBC)
Baltimore, Maryland 21250
Departmental Office: ITE 404
Departmental Office Phone: 410-455-3206

IS 303 0301
Human Factors in Computer Systems Design
Spring 2009

Professor: Dr. Ravi Kuber
Office: ITE, Room 435
Telephone: 410-455-3268
Email: rkuber@umbc.edu
Office hours: One hour after class and by appointment
Lectures: ITE 458 Mondays and Wednesdays 13:00 – 14:15

Description: The term ‘human factors’ relates to both how people interact with technology, and the ways in which technology can affect people’s performance. This course provides an introduction to human factors related to the design of information systems. The emphasis is on the human component of human-computer interaction (HCI), and the process of user-centered design and evaluation. In general, lectures will be interactive, combining in-class discussions with small group problem-solving exercises. These will lead to the development of skills which can be used in both work and research environments.

Prerequisites and Course Placement: Before attempting this course, students should have completed IS 202 or IS 300 with grades of “C” or better. IS 303 is a requirement for both the Business Technology Administration Bachelor of Arts degree and the Web Development Certificate (WEBC). The course is additionally recommended for the Information Systems Bachelor of Science degree. IS303 is the prerequisite for IS 403.

Objectives:

- Appreciate the role of human factors in the design of information systems.
- Develop an understanding of basic human factors concepts such as affordances, mental models, mappings, feedback and visibility.
- Be able to apply those basic concepts to the design of physical objects and computer systems.
- Be familiar with the constraints on perception, attention and memory that are critical to a usable design.
- Know how to evaluate a device or system using a usability engineering approach.
- Appreciate the human factors involved in current HCI areas including computer-supported collaborative work (CSCW), alternate input/output techniques, information visualization, virtual reality and universal usability.

Online Resources: A site relating to the course will be maintained on Blackboard. It can be accessed through myUMBC or at <http://blackboard.umbc.edu>. The site contains lecture slides, details of assignments, and announcements pertinent to the course. It will be updated throughout the semester. **Each student is responsible for checking the web page regularly, and for being aware of any information posted there.**

Recommended Textbook: Shneiderman, B. and Plaisant, C. (2004) Designing the user interface: Strategies for effective Human-Computer Interaction (4th Edition). ISBN: 0321197860.

Other Useful Material:

- Dix, A., Finlay, J., Abowd, G.A. and Beale, R. (2004) Human-Computer Interaction (3rd Edition). ISBN: 0130461091.
- Norman, D.A. (1998) Design of Everyday Things. ISBN: 0385267746.
- Preece, J., Rodgers, H. and Sharp, Y. (2007) Interaction design: Beyond human-computer interaction (2nd Edition). ISBN: 0470018666.
- Other information will be supplied in class, and posted on Blackboard.

All these books are available on reserve in the UMBC library.

Grading: The final grade will reflect the student’s achievement of the learning objectives. This will be measured through three assignments (individual and group-based), two exams and class participation. The distribution of percentages among these components is given below:

Assignment 1 (Individual)	12.5%
Assignment 2 (Group)	25%
Assignment 3 (Individual)	12.5%
Mid-term Exam	20%
Final Exam	20%
Attendance and participation	10%

For the group assignment, note that part of the grade will be influenced by peer evaluations.

Grading Standards: IS instructors are expected to have exams and evaluations which result in a reasonable distribution of grades. With respect to the final letter grades, the University’s Undergraduate Catalogue states that, “A indicates superior achievement; B, good performance; C, adequate performance; D, minimal performance; F, failure”. There is specifically no mention of any numerical scores associated with these letter grades. Final letter grades in this course conform to the University’s officially published definitions of the respective letter grades. In accordance with the published University grading policy, it is important to understand that final letter grades reflect academic achievement and not effort. While mistakes in the arithmetic computation of grades and grade recording errors will always be corrected, it is important to understand that in all other situations final letter grades are not negotiable and challenges to final letter grades are not entertained. Historical data suggests an “A” may be in the 91-100 range, a “B” may be from 81-89 and “C” grades range from 70-80.

Assignments: The assignments will result in a total of 50% of your semester grade. A maximum of 12.5 points can be awarded for Assignments 1 and 3. For Assignment 2, a maximum of 25 points can be awarded. When submitting an assignment, be aware that numerous delays can occur. For example, computer failures, system performance issues, printing problems and other commitments. It is essential that students are able to organise their time effectively, to ensure that deliverables are handed-in on time. If an assignment is not in on time, it may possibly be accepted following the due date with an accompanying reduction of the 50% of the earned grade. If you do not hand-in an assignment, you will receive a zero grade.

Writing Reports and Deliverables

- Page limits have been suggested for each assignment (excluding cover page, table of contents and references). These should be adhered to.
- Staple the report together, rather than using a folder.
- On a cover page, clearly present your name or names of those in the group, email address and title of the assignment.
- Use appropriate formatting (text size 10-12 point), single, 1.5 or double-spaced text, and always number pages.
- Ensure that work is proof-read.
- When citing or quoting existing work, always include appropriate references.

Exams: There will be a mid-term exam and a final exam. The exams will result in a total of 40% of your semester grade. Each exam is 20 points. You may not use calculators or computers for exams. You must bring picture ID. The exams will cover material from the lectures, readings and assignments. If you miss an exam, you will receive a zero grade.

Class Format, Attendance and Participation: For most classes, class participation is listed as a factor that contributes to a students' overall grade for a class. Attending class, participating in classroom discussions and activities are considered normal and expected contributions to the class. In addition, participation in laboratory activities is considered essential. To receive an above average grade a student must participate beyond this norm in a noteworthy way. This participation may occur in the classroom or outside of class. Failure to contribute sufficiently in or outside class will result in a lower than average grade. Lateness to class may affect this grade. If you miss a class, you are responsible for getting the relevant notes and hand outs to help you prepare for the exams.

Course Policies:

- **Assignments:** Submissions are due in class on the specified dates.
- **Communication:** Feel free to contact me by coming to my office (either during my office hours, or by making an appointment). You are also encouraged to send me email (rkuber@umbc.edu). Make sure you add "303" in the subject of the email and you use your UMBC email account. Emails sent to me from non-UMBC providers (e.g. verizon.net, gmail.com, comcast.net, etc.) may be filtered out and never arrive in my mailbox.
- **Make-up Exams:** There will be NO make-up exams unless an emergency occurs and an official document is submitted, verified, and pre-approved by the instructor. Notify the instructor immediately and before the class exam takes place. Important Note: Having multiple exams in the same day does not constitute a valid reason for a make-up exam.
- **Re-grading:** I will review any graded exam or assignment if you believe the grade you received was not appropriate. You have one week after the graded assignment is delivered to the class, to return it to me with a written statement discussing why you believe the item in question deserved a different grade. Please note that the entire assignment will be reviewed and your final assignment grade may be raised or lowered as a result of the review.
- **Extra Credit:** Simply stated, it does not exist, especially on an individual basis.
- **Absence:** In the case of absence due to emergency (e.g. illness), religious holiday, or participation in an official UMBC function, it is the student's responsibility to confer with the instructor regarding the absence and missed work.
- **Readings:** Some sections in the textbook will be assigned as reading materials. Students are expected to read the materials that will be discussed in the class before the class meeting.
- **Cell phones and beepers:** All cell phones and beepers must either be turned off or set to a silent method of operation (e.g., vibrating rather than beeping). If you must answer a call, please leave the classroom. As with arriving late, if you disrupt the class you will be asked to leave the

classroom.

Academic integrity: By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory. Acts of Academic Misconduct are defined as the following:

- **Cheating:** Knowingly using or attempting to use unauthorized material, information, or study aids in any academic exercise.
- **Fabrication:** Intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
- **Facilitating Academic Dishonesty:** Intentionally or knowingly helping or attempting to help another commit an act of academic dishonesty.
- **Plagiarism:** Knowingly representing the words or ideas of another as one's own in any academic exercise, including works of art and computer-generated information/images.

Available Support Services: Utilize the resources that are provided to you by the University. Besides, you pay for them through your tuition, so why not to use them?

- The UMBC Writing Center is a resource I highly recommend to all students who need some help in writing.
- Blackboard. Various types of information will be posted on blackboard, ranging from external links to a specific article relevant to the course, to internships available for IS students. Check the "Information" area in the course Blackboard site.

Inclement Weather

In case of inclement weather, check the main UMBC Webpage (<http://www.umbc.edu>) to see whether UMBC is closed and classes are cancelled. Any work due on a class date that has been cancelled due to inclement weather will be due the next class meeting.

Using Lab Computers

During lab times, it is essential that computers are used for activities relating to class activities, and not for personal or entertainment purposes. This includes using the computer for email, instant messaging, chatting, surfing the Web, and other activities which are not relevant during the class. Students who indulge in any of the above will be asked to leave the classroom for the remainder of the session and a record will be made of the incident.

Class Evaluations

Information Systems Department Class evaluations will be filled out online. You are strongly encouraged to fill out the evaluations online at the end of the semester and will be notified accordingly.

Tentative Schedule: Below is a tentative schedule of lecture topics and exams. I reserve the right to adjust this schedule for any reason, but I will make every effort to advise you of any changes well in advance.

Date	Lecture Topics	Reading	Work Due
26 Jan	Introduction to HCI and Syllabus		
28 Jan	Why Good Design Matters Overview of Systems Design	S&P 1.1-1.4 PR&S Chapters 1 & 9	
2 Feb	The Design of Everyday Things & Mental Models	Affordances and Design synopsis PR&S 1.6.3	
4 Feb	The Design of Everyday Things & Mental Models Assignment 1 description given	See readings above	
9 Feb	Understanding the Needs of Users	S&P 1.5.2 PR&S 3.1–3.2	
11 Feb	Establishing Requirements through Data Gathering	S&P Chapter 3 PR&S Chapter 10	
16 Feb	Establishing Requirements through Data Gathering Design Methodologies & Design Principles	See readings above S&P 2.1–2.4	
18 Feb	Design Methodologies & Design Principles		Assignment 1 due
23 Feb	Prototyping and Construction Assignment 2 description given out	S&P 5.3-5.4 PR&S Chapter 11	
25 Feb	Prototyping and Construction	See readings above	
2 Mar	Introduction to VB.Net		
4 Mar	VB.Net and supervised time for Assignment 2		
9 Mar	Evaluation Techniques	S&P Chapter 4 PR&S Chapter 12 & 15	
11 Mar	Evaluation Techniques		
16 Mar	Spring Break – No Class	See readings above	
18 Mar	Spring Break – No Class	See readings above	
23 Mar	Evaluation Techniques		Assignment 2 due
25 Mar	Review Class		

Date	Lecture Topics	Reading	Work Due
30 Mar	Mid-term exam – Bring ID		
1 Apr	Universal Usability	S&P 1.5 PR&S 10.3 (p482)	
6 Apr	Universal Usability	See readings above	
8 Apr	Internationalisation of Interfaces Assignment 3 given out	S&P 1.6 PR&S 10.3 (p481)	
13 Apr	Emotional Design	Emotion and Design: Attractive Things Work Better PR&S Chapter 5	
15 Apr	Direct Manipulation & Virtual Environments	S&P Chapter 6 PR&S 2.3 and 6.3 (p244-249)	
20 Apr	Menus and Form Filling	S&P Chapter 7 PR&S 6.3 (p227-234)	
22 Apr	Interaction Devices	S&P Chapter 9	
27 Apr	Communication and Collaboration	S&P Chapter 10 PR&S Chapter 4	Assignment 3 due
29 Apr	Quality of Service and User Frustration User Support and Help	S&P Chapters 11, 13 & 14 PR&S 5.4 & 6.3 (p249-256)	
4 May	Information Search and Visualization	See readings above	
6 May	Review Lecture		
11 May	Final Exam – Bring ID		
13 May	Study Day – No Class		
14 – 20 May	Finals Week		