

Human Factors in On-Line Information Systems

Computer Science 6606 (CRN 24627)*

Winter 2011–2012

Meeting Time: Tuesdays and Thursdays 5:35 – 6:55 p.m.
Meeting Room: Room 2116, McCain Arts & Social Sciences Building
Professor: James Blustein
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(class only) To Be Announced

The schedule and procedures in this syllabus are subject to change in the event of extenuating circumstances.

1 Course Content and Goals

The purposes of this course are to give students a working background in Human Factors (HF) and human-computer interaction (HCI) and to sharpen their thinking, reading, writing, and presentation skills. This course will introduce issues related to behavioural/human aspects of on-line information systems (especially hypertext), provide students with some (reading) knowledge of behavioural research methodology, and demonstrate its relevance to on-line information systems and computing endeavours in general.

1.1 Topics

Topics will include methodology and theoretical background; user interface design topics, such as I/O devices, types and applications of hypertext, usability and evaluation of user interfaces, documentation and designing for diverse users; other areas, such as psychology of computer use, programming, design and specification, computer training, etc.

The specific **topics for this semester** will be decided in consultation with the students. However, we will begin with background reviews of

1. theories of reading comprehension, especially as applied to scholarly writing;
2. information foraging;
3. annotation and interactive writing/reading.

A list of proposed readings is attached.

Student suggestions for topics and individual readings are encouraged.

*3 credit hours, graduate course, syllabus Version: 02 January 2012 (1a).

1.2 Expectations

Graduate work is generally harder than undergraduate courses but it is also more rewarding. I expect that, although you may find parts of this course difficult, you will find it fulfilling. If you know what you want for your thesis, then this is a chance to get background, and prepare or draft of part of thesis. If you have not yet decided on a topic or area, then active participation in this course can be a great way to explore your options and opportunities. I expect all students to participate meaningfully in the class and to listen to each other, and the professor, with respect.

1.3 On-Line Resources

Students will collaborate with each other and, to a lesser degree, the professor to create and maintain a knowledge repository in a wiki. Every student will also have a blog of their own. All of these resources will be provided by the Faculty of Computer Science.

1.3.1 E-mail Contact

If you submit **assignments** to me by e-mail, please use the address <prof6606@cs.dal.ca>. You may send all **other course-related e-mail** messages to <jamie@cs.dal.ca>, but please prefix the 'Subject' header of those messages with [CS6606] to help me identify them.

1.3.2 Bibliographic Tools for Scholars

There is much software to help you keep track of texts you read and ideas you have about those texts. Five that are most interesting for this class are (in alphabetic order):

1. Bibsonomy ([URL:http://www.bibsonomy.org/](http://www.bibsonomy.org/)),
2. CiteULike ([URL:http://www.citeulike.org/](http://www.citeulike.org/)),
3. Connotea ([URL:http://www.connotea.org/](http://www.connotea.org/)),
4. RefWorks ([URL:http://libraries.dal.ca/research/refworks.html](http://libraries.dal.ca/research/refworks.html)), and
5. Zotero ([URL:http://www.zotero.org/](http://www.zotero.org/)).

I encourage you all to use at least one of them.

2 Assessment

Students' final grades will be computed from the following mandatory components:

- Term paper
- At least one presentation to the class
- Critical summaries of readings
- A midterm report *or* group project
- Contribution to learning environment
- Participation during in-class workshop
- Bona fide attempts at assignments

2.1 Summary of Evaluation

Contribution to learning environment	10%	
Seminar Presentation(s)	15%	See attached grading scheme for presentation
Critical summaries	15%	
Midterm report <i>or</i> * } Group project }	20%	See attached grading scheme for midterm essay
Term paper	40%	See attached grading scheme for term paper
Total	<u>100%</u>	

2.2 Grading Scale

Students will earn a grade of B^+ for work which demonstrates evidence of original thinking, knowledge of the underlying facts, analysis and synthesis of the subject matter. I expect all students in a graduate level class to produce work of at least this quality.

The grades of A^- to A^+ are achieved by work which exceeds the expectations of the B^+ in the same categories. To earn an A^- , a student's work must exceed expectations in at least one category. To earn an A , a student's work must exceed expectations in more than one category or substantially exceed expectations in one category. To earn an A^+ , a student's work must substantially exceed expectations in at least two categories.

Students can earn the grades of B to B^- for work which is below the level expected for students in this course but which demonstrates some grasp of the subject matter, familiarity with the underlying facts, some evidence of critical and analytic abilities, and reasonable understanding of relevant issues. Work that does not deserve a grade of at least B^- is not acceptable.

For purposes of computation, all essays and projects will be assigned the arithmetic mean of the scale proscribed by the Faculty of Graduate studies as recorded in [§6.6.2 of Dalhousie's graduate calendar](#)[†].

► Grading schemes for presentations, midterm reports, and term papers are attached to this document and form part of the syllabus.

2.3 Late Policy

Assignments, essays, project reports, etc. are due at the very start of class on days when we meet, and at noon on other days. Hardcopies of assignments submitted on other days may be placed under my office door or placed in my Faculty mailbox by the Faculty's receptionist.

Assignments will be accepted up to 24 hours after they are due but no later. Assignments that are submitted directly to the professor (*not* under his office door or in his mailbox) on the same calendar day as they are due will be penalised 3%. Assignments that are submitted on the day after the class will be penalised 10%. Assignments that are submitted later than the day after the class will be assigned a grade of zero (F).

3 Background Readings

We will be reading selected parts of textbooks and several research articles.

The initial list of articles from which I plan to draw our term's readings is attached to this syllabus. Many, but not all of, the papers we will read will be drawn from that list.

Copies that are not on reserve in the Killam library will be available either on the World Wide Web or from the hanger on the outside of my office.

*You may not submit both a group report and individual essay.

[†]<http://dalgrad.dal.ca/regulations/vi/#6.6.2> retrieved 11 December 2011.

4 Tentative Outline

Exact dates for presentations and other assignments will be announced later. You should check the website regularly for updates to the course schedule.

4.1 Some Due Dates

10 Jan (Tue)	Annotation exercise #1 assigned	16 Feb (Thu)	} Discussion of exercise #2 and } Last of completed summaries due
12 Jan (Thu)	Discussion of exercise #1	20–24 Feb	
17 Jan (Tue)	First draft summaries due	29 Feb (Wed)	} Midterm report due and } Term paper proposal due
19 Jan (Tue)	First comments on summaries due	1 Mar (Thu)	
24 Jan (Thu)	First of completed summaries due	15 Mar (Tue)	(optional) Term paper draft
26 Jan (Thu)	Resources for Research workshop	29 Mar (Thu)	Presentations end
31 Jan (Tue)	Midterm report topic due	10 Apr (Tue)	Term paper due at noon
7 Feb (Tue)	Term paper area or topic due		
14 Feb (Tue)	Annotation exercise #2 assigned		

January

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				5		
		10		12		
		17		19		
		24		26		
		31				

February

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				2		
		7		9		
		14		16		
		21		23		
		28	29			

March

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1		
		6		8		
		13		15		
		20		22		
		27		29		

April

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		3		5		
		10				

4.2 Lectures

The course will begin with lecture material and readings about the basics of human-computer interaction (HCI) also known as Human Factors (HF) but will quickly move to a symposium format focusing on assigned readings. Readings from various articles and chapters will be assigned and you will be expected to contribute to discussion.

Topics will include methodology and theoretical background; usability and evaluation of user interfaces; and may include other areas such as psychology of programming, design and specification, computer training, etc.

4.3 Seminar Discussion and Summaries (15%)

We will read articles and chapters about topics in HF and user-centred design. We will discuss the articles together in class. Each of you will read the assigned articles before the class and prepare notes to refer to during the discussion.

As a researcher you will routinely send written articles and comments to journals and conferences. You must be able to (a) summarise claims and arguments, (b) critique them as a reviewer, (c) respond to them to improve your work as a researcher and author, (d) anticipate critiques and questions other researchers will have about your work. You particularly should expect to provide a rationale for your research direction.

These exercises are meant to simulate professional interchange. You will be expected to (a) demonstrate critical thinking by summarising the important and salient points of assigned readings, (b) provide critical commentary in the context of other research studies, including evaluating the credibility of claims of fact, and (c) improve your writing and hone your analysis through iteration.

From 17 January until 16 February, you will take turns writing summaries of articles we discuss in seminar, and critiquing summaries of those articles. At the end of each seminar, you will all submit to me a written summary of the articles we have discussed. Some students ('the writers') will also share their summaries with some other students ('the reviewers') to get recommendations for improvement*. By the start of the next seminar, the reviewers will share written comments on the content and presentation of the summaries with the corresponding writer. Each writer will submit a revised summary to share with all students in the class one week after the article was originally discussed in class. The process is summarised in the following table.

<i>Class #</i>	<i>Activities</i>	<i>Submission</i>
n	all: prepare summary and discuss article	all: submit summary to me writers: also share summary with a reviewer
\vdots	reviewers: prepare written comments	
$n + 1$		reviewers: share written comments with writer
\vdots	writers: revise summary	
$n + 2$		writers: submit revised summary and copies of all comments to me

Publication Revised summaries will be posted in the class website for all the students to read. The summaries will note the writer and reviewer(s).

Grading The summaries will be worth 20% of each writer's final grade. The grade you receive on your summaries will reflect your demonstrated understanding of the article and its implications.

*I strongly recommend that you exchange e-mail addresses with each other to keep the sharing simple. I will assign you to rôles (writer or reviewer) after the first week of class.

4.4 Seminar Presentation(s) (15%)

During the early part of March, you will take turns presenting articles to the other students.

Mandatory To pass the course, each student must make at least one presentation.

Grading Your presentations will be worth 15% of your final grade. Presentations will be judged on your ability to share your understanding of the ideas raised by the article, and their implications, with the class. The grading scheme for presentations is attached to this document and forms part of the syllabus.

Other Students If it is not your turn to present the article, then you will instead read the article carefully and prepare questions about it. How you interact with the presenters and other students will be assessed as part of your participation grade. The questions you ask will form a substantial part of that assessment.

4.5 Essays

You will also write two essays: a midterm report and a term paper. You may choose to submit a rough draft (or outline) of your term paper to be graded for 5% of your grade (see the 'Rough Draft' section, below for more details).

4.5.1 General Format and Quality

Your midterm report should be in the form of a wiki or wikipage, but may be on paper instead. I recommend that your 'term paper' be on paper but you are free to discuss other options with me.

I expect proper structure, grammar, and spelling (English or American). For all works submitted on paper you must submit both a hardcopy and a softcopy of your essay. I prefer to receive the softcopy on a CD-ROM or by e-mail. Softcopies should be either plain text or PDF files; I do not accept Microsoft Word files.

Essays will be graded for breadth and depth of understanding, originality of synthesis, quality of research, and clarity of expression (which includes grammar and spelling).

► Grading schemes for midterm reports and term papers are attached to this document and form part of the syllabus.

4.5.2 Midterm* (20%)

Format The midterm report should be a briefing for the class, in the style of an encyclopaedia article. I recommend (but do not require) the following parts and order:

- | | |
|---|--|
| 1. One or two sentence introduction/overview | 5. Examples of Application, Use, or Results |
| 2. Motivation | 6. Concluding Summary (stressing practical applications) |
| 3. Background | 7. References for further investigation |
| 4. Detailed Method
How you gathered material to write about
<i>or</i>
How the theory, principle, etc. you report on is justified | 8. References to sources cited in the body of the essay |

*You must submit either an individual midterm essay or be part of a group that submits a midterm project.

Your report should be equivalent in length to 4 – 7 pages and cite at least 5 references.

Topic Your midterm report should be about a basic topic in human factors. I will need to know by 31 January the title of your midterm report. Some sample topics are:

- Definitions of Usability
- Interaction Styles
- Activity Theory
- Prototyping Methods
- Heuristic Evaluation
- Problems with Metaphors
- Usability Testing
- Fitts' Law
- Mental & Conceptual Models
- User-Centred Design Processes
- Rôle and defining characteristics of Expertise

but you are free to choose another topic in consultation with me.

4.5.3 Term Paper (40%)

Format Your term paper should have a title page (with your name, the due date, the course name, etc.) and be double-spaced with 1 inch margins, a 11-point font, numbered pages. Labeled sections and a table of contents are recommended, but not required. A [L^AT_EX template](#) is available for the intrepid.

Your term paper should be between 15 and 25 pages long and include at least twelve references to cited research articles or books. You *must* provide two possible publication venues with your completed article (there are details below). See also the section about the plagiarism policy below.

I expect the best term papers to be good enough to be published in a scholarly journal. All of the term papers should be good enough to appear in the ACM Student Magazine [XRDS: Crossroads](#).

Topic and Proposal For your term paper, any topic in HCI will be acceptable but you must choose it in consultation with the professor. Your term paper should describe issues about an aspect of HCI and either propose solutions or survey solutions by others. The essay can be a great opportunity for you to explore a thesis topic or do a partial draft of part of your thesis document. However, your essay should be self-contained, i.e. with no references to chapters that are not included in the document or using technical terms that are assumed to have been defined in an earlier chapter.

You must tell me the area you are interested in (or the specific topic) by week 5. You can change this topic later but it will help you to focus if you can identify an area by week 4, and it can help me to make sure that no students are working on the same topic. Your proposal should be about one paragraph long. To show that you have begun researching your topic, your proposal must include three references that you think will be useful for your essay. In it you should tell me what topic you want to write your essay about and what you know about that topic. It will be best if you tell me what you want to write about the topic (especially if you have a tentative conclusion in mind). However, it will be acceptable for you to describe the topic and its relation to the topics of this course.

week #	begins
4	31 Jan
5	07 Feb
7	21 Feb
9	06 Mar
11	20 Mar

Rough Draft I will be glad to comment on drafts after the Study Break. Outlines and rough drafts submitted to me for comments before week 9 will be eligible for 5% of your grade, otherwise all 40% of your grade will depend on your final draft. Between then and week 11, I will be glad to provide comments on any stage of your essay, but only drafts submitted before week 9 will be eligible for grades. I cannot promise to comment on drafts submitted after week 11. You can get additional help with writing skills from Dalhousie's Writing Centre in the Killam building's Learning Commons.

Publication Venue You must provide evidence that there are at least two possible places for you to publish your (revised) term paper after the class ends. You must be prepared to publish in *refereed* venues (conferences or journals). For upcoming conferences you must provide a copy of the call for participation that shows that the topic will be welcome and that the submission deadline is between six weeks and six months from the due date of the term paper. For a journal you must either provide a call for participation for a special issue (as with the conference above) or an e-mail from the editor saying that something on your topic would be welcome.

4.6 Group Project* (20%)

For the project, a group of students will perform heuristic evaluations of the usability of two or more of the bibliographic management tools listed in §1.3.2 (on p. 2).

4.6.1 Work in Groups

The project may only be performed by groups of between three and five students. If you choose to submit a project report instead of your midterm essay, then *all* group members *must* inform me by 31 January of their decision. That decision can be revoked *only if* all group members agree.

The students will submit a *joint* project report. All of the students will be identified on the title page by name and ID number. Each student must also *individually* submit their own description of the contribution of all of team members, and a ranking of contribution with no ties. The individual reports are due 24 hours after the joint report. You will not pass the midterm if I do not receive a proper individual report from you.

4.6.2 Project Details

To conduct a meaningful heuristic evaluation you must first define and operationalise ‘usability’ in the appropriate context; Therefore you must identify characteristics of the user population and develop an (informal) task analysis. You will find the following references a good place to start learning about heuristic evaluation, but you and your group will need to conduct research on your own to teach yourselves enough to perform a sufficient evaluation and prepare a report.

- [1] Bevan, N., Barnum, C., Cockton, G., Nielsen, J., Spool, J., and Wixon, D. (2003). The "magic number 5": Is it enough for Web testing? In *CHI '03 extended abstracts on Human factors in computing systems*, CHI EA '03, pages 698–699, New York, NY, USA. ACM. [URL:http://doi.acm.org/10.1145/765891.765936](http://doi.acm.org/10.1145/765891.765936).
- [2] Molich, R. and Nielsen, J. (1990). Improving a human-computer dialogue. *Communications of the ACM*, 33:338–348. [URL:http://doi.acm.org/10.1145/77481.77486](http://doi.acm.org/10.1145/77481.77486).
- [3] Nielsen, J. (1992). Finding usability problems through heuristic evaluation. In *Proceedings of the SIGCHI conference on Human factors in computing systems*, CHI '92, pages 373–380, New York, NY, USA. ACM. [URL:http://doi.acm.org/10.1145/142750.142834](http://doi.acm.org/10.1145/142750.142834).
- [4] Nielsen, J. (1994). Heuristic evaluation. In *Usability inspection methods*, chapter 2, pages 25–62. John Wiley & Sons, Inc., New York, NY, USA.
- [5] Nielsen, J. (2005). Heuristic evaluation. [URL:http://www.useit.com/papers/heuristic/](http://www.useit.com/papers/heuristic/). Downloaded 2012-11-16.

*You must submit either an individual midterm essay or be part of a group that submits a midterm project.

4.7 Contribution to Learning Environment (10%)

Part of our grade will reflect how well you participate in class. The highest grade will be available only to those students who frequently have relevant and insightful comments that help the class as a whole to greater understanding. I am more interested in the quality of your participation than the sheer number of comments you make. Your participation is particularly important during presentations by other students.

- You may earn up to half of your participation grade from contributions you make to the class wiki.

- Part of your grade will be for making a genuine effort to complete exercises and assignments.

Your in-class participation will be assessed based on* your contribution to class discussions, i.e., your readiness and eagerness to engage actively in discussion, your display of familiarity with the readings, your preparedness for discussion and also your willingness to ask questions. Please be aware of the following scale:

<i>Performance</i>	<i>Grade Range</i>
Student always has something interesting to say or work through with the help of the class.	→ $\mathcal{A}^+/\mathcal{A}^{\text{h}}$
Student more often than not participates in discussion generated by others.	→ $\mathcal{A}^-/\mathcal{B}^+$
Student occasionally participates in discussion; does not always demonstrate a grounding in the material, i.e., perhaps has not read all of the assigned material.	→ $\mathcal{B}^{\text{h}}/\mathcal{B}^-$
Student does not participate in class discussion, for whatever reason.	→ \mathcal{F}

5 Policies and Rules

Students are subject to all applicable University and Faculty policies. By your enrolment in this course beyond the first day you are deemed to be fully aware of all such obligations and responsibilities so most of them will not be repeated here. I do want to draw your particular attention to some of them however.

5.1 Accommodation on the Basis of Disability

Any student wishing to discuss an accommodation on the basis of permanent or temporary disability is asked to register with the [The Office of Student Accessibility & Accommodation](#) in their Centre off the patio in front of the Killam library, by telephone at 494-2836, by e-mail at access@dal.ca, or by fax at 494-2042. That Service asked me to pass on their encouragement to students with disabilities ‘to register as quickly as possible at the Student Accessibility Services if they want to receive academic accommodations.’

Your grade should reflect how much you can demonstrate you know and can apply about the topics of this class. If you have registered with that Office then I will be guided by their advice in deciding how you are asked to demonstrate that knowledge.

5.2 Undergraduate Students

It is a policy of the Faculty of Computer Science that undergraduate students may enrol in graduate level courses (such as this one) *only if* the student is in their fourth year and has at least a \mathcal{B} average. If you are an undergraduate student who does not meet those requirements then you must drop this course.

*The method of in-class participation is adapted from that used — and published — by Dr. Ann-Barbara Graff at Nipissing University. Dr. Graff graciously granted permission for me to use here. The wording is largely Dr. Graff’s.

5.3 Plagiarism

Plagiarism will not be tolerated. You must do your own work and provide proper credit when quoting or paraphrasing the work of others.

This policy applies equally to text, images, program code, and algorithms. This policy applies to everything that you present or submit (in class, in assignments, etc.) as part of this class. This policy applies to the whole of everything that you present or submit and every part of everything that you present or submit.

You may use any standard style guide you wish so long as you use it consistently. The reference desk at the Killam library or your professor can offer suggestions for style guides.

Further details are in the Academic Integrity section on this syllabus.

5.4 Academic Integrity*

At Dalhousie University, we respect the values of academic integrity: honesty, trust, fairness, responsibility and respect. As a Dalhousie student and a member of the academic community, you are expected to abide by these values and the policies which enforce them. What is academic integrity?

Academic integrity is ensuring that any work you submit is your own and that you have given appropriate acknowledgment to any sources that you consulted. 'Dalhousie University defines plagiarism as the submission or presentation of the work of another as if it were one's own. Plagiarism is considered a serious academic offence which may lead to the assignment of a failing grade, suspension or expulsion from the University.' (from Undergraduate Calendar (2008/2009) section on Intellectual Honesty, p. 23).

Some examples of plagiarism are:

- failure to attribute authorship when using a broad spectrum of sources such as written or oral work, computer codes/programs, artistic or architectural works, scientific projects, performances, web page designs, graphical representations, diagrams, videos, and images;
- downloading all or part of the work of another from the Internet and submitting as one's own
- the submission of an assignment or other work prepared by any person other than the individual claiming to be the author
- submitting work that has been completed through collaboration or previously submitted for another assignment without permission from your instructor

5.4.1 How is Plagiarism Detected?

Professors and TAs are highly skilled at recognising discrepancies between writing styles, inappropriate citations, and obvious word-for-word copying. In addition, the Senate has affirmed the right of any instructor to require that student papers be submitted in both written and digital format, and to submit any paper to an originality check such as that performed by MOSS for software code.

5.4.2 What Happens If I Am Accused of Plagiarism?

Instructors are required to forward any suspected cases of plagiarism to the Academic Integrity Officer (AIO) for the Faculty. You will be informed of the allegation by the AIO and a meeting will be convened. You may contact the Dalhousie Student Advocacy Service who will be able to assist you in preparing a defence. Until the case is resolved, your final grade will be 'PND'. If you are judged

*The section is adapted from the original version which is from the Faculty Resources section of Dalhousie University's Academic Integrity website ([URL:http://academicintegrity.dal.ca/Faculty%20Resources/index.php](http://academicintegrity.dal.ca/Faculty%20Resources/index.php)) entitled *Academic Integrity Statement for Syllabus*. The original is dated 16 July 2008. It was copied on 25 September 2008.

to have committed an offence, penalties may include a loss of credit, ‘F’ in a course, suspension or expulsion from the University, or even the revocation of a degree (for more information see Dalhousie’s Academic Integrity website).

5.4.3 How Can I Avoid Plagiarism?

- Give appropriate credit to the sources used in all of your assignments
 - Use RefWorks to keep track of your research and edit and format bibliographies in the citation style required by the instructor — [URL:http://www.library.dal.ca/How/RefWorks](http://www.library.dal.ca/How/RefWorks)
- If you are unsure about anything, contact your instructor or TA
- Prepare your assignments completely independently
- Make sure you understand Dalhousie’s policies on academic integrity

5.4.4 Specifics for CSCI 6606

You must do your own work and provide proper credit when quoting or paraphrasing the work of others. This policy applies equally to text, images, program code and algorithms. You may use any standard style guide you wish so long as you use it consistently.

Webpages When citing webpages you must include the following details:

1. the address of the webpage,
2. the author of the webpage or a note that it is anonymous,
3. the date that the page was last updated or, if that is not available, the date that you read the page and a note to that effect.

Images and Designs Use of images (e.g. logos and icons) and designs (e.g. webpage layouts) by someone else is essentially the same as quoting text. You must provide full citation information for any image that is not your own, even if the image is ‘royalty free’, you purchased rights to use it, or it includes the trademark symbol ‘™’ or registered trademark symbol ‘®’.

If you alter an image by someone else (for example by cropping or blurring it) or you combine two or more images to make a new image then you must identify the source of the original images (just as though you had used them without alteration) and note that you have modified, combined, or modified and combined the images.

☛ In all circumstances, it is the student’s responsibility to ensure that full credit is given and that it is clear whom is being credited for what.

5.4.5 Where Can I Turn for Help?

Academic Integrity website — [URL:http://academicintegrity.dal.ca](http://academicintegrity.dal.ca)

Links to policies, definitions, online tutorials, tips on citing and paraphrasing

Writing Centre — [URL:http://writingcentre.dal.ca](http://writingcentre.dal.ca)

Proofreading, writing styles, citations

Dalhousie Libraries — [URL:http://www.library.dal.ca/How/Classes](http://www.library.dal.ca/How/Classes)

Workshops, online tutorials, citation guides, Assignment Calculator, RefWorks