

School of Kinesiology
Faculty of Health Sciences
Western University

**KIN 3457A – Cognitive Ergonomics
Fall 2017**

Instructor:	Alan Salmoni	Office:	TH 3159b
Location:	Tu 8:30AM – 9:30 AM Th 8:30AM-10:30AM	Office Hours:	upon demand
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TAs:	TBD	Email:	asalmoni@uwo.ca

NOTE: All course information including assignment outlines, deadlines, etc. will be available via OWL. Also note the class has 4 hours of class time. **Students are expected to attend all 4 hours each week and to let the professor know when attendance is not possible.**

Calendar Course Description:

Cognitive ergonomics is concerned with mental processes, such as perception, decision making, memory, reasoning, and response execution, as they affect interactions among humans and other elements of a work system. Relevant topics include skilled performance, attention, distraction, human error, work stress, risk perception, and Kansei engineering as these may relate to human-system design, safety and productivity. Assessment methodologies include hierarchical task analysis, cognitive task analysis, mental workload, human error identification/accident investigation, and situation awareness assessment.

My Course Description: Cognitive ergonomics is concerned with how mental processes affect interactions among humans and other elements of the system to affect safety and productivity. Relevant topics include safety culture/climate, risk perception, accident analysis, attention and distraction, product design, injury prevention, and productivity. Ergonomic tools include: behavioral observation, hierarchical task analysis, usability analysis, safety culture assessment, safety audit. ***It is very important to note that while the description above is focused on content topics, the course is predominantly aimed at acquainting students with how cognitive ergonomists think. In this light, class/assignment process is much more important than topical content.***

Course/Class Format:

Lectures, presentations, and discussions: prior to the beginning of each new topic, students are expected to search for information related to the topic to be covered and come to class prepared to talk about what they have learned.

I will spend the first 15 minutes of each class answering questions and discussing assignments and the following rules hold:

- I do not want to answer assignment-based questions by email, particularly if the question was dealt with in class (I will simply tell you to consult a friend)
- If you come to class late, I expect you to do so unobtrusively

I expect all cell phones to be turned off and out of sight during lectures. If your computer is on I assume you are not sending emails or playing a game.

Course Objectives:

As the course professor, I care more about students learning to think than learning about content. I challenge each student to listen to class discussions carefully (not distracted by cell phones etc.), think critically about what people say, and to add their own critical and creative thoughts into the discussion.

During classes students will:

1. Listen carefully
2. Think about what the professor and students say
3. Raise your hand to speak.

At the end of class students will:

4. appreciate issues germane to both ergonomic research and consulting. The learning culture for this class is to treat students as ergonomic consultants and to expect their behavior to mimic that of a professional in the field.
5. Understand and be able to think with example concepts/topics in cognitive ergonomics.
6. have practical experience using some of the knowledge and methodologies employed in the field to understand safety promotion/injury prevention, work design, and work/job assessment.

Other objectives:

7. Students will:
 - practice being a professional (having pride in your work) with minimal direction,
 - complete application-based assignments,
 - practice being a self-directed and self-reflective learner (i.e., student to be a co-learner and co-leader in the course)
 - develop their listening skills,
 - practice reading & thinking critically and creatively,
 - practice effective (literature) search skills,
 - improve their communication skills.

Required Course Material:

Students are expected to read extensively, particularly material related to assignments (electronically available textbooks below are excellent resources for many topics). **Lecture material will provide (ONLY) a foundation or “jumping off point” for assignments with students needing to read on their own to fill gaps in their understanding.** Professor Salmoni is always available to discuss questions arising. **E1-Compendex is an excellent database to search for safety topics.**

Texts from which some topics/materials for the course have been gleaned:

- N. Stanton, A. Hedge, K. Brookhuis, E. Salas, & H. Hendrick (2005). Handbook of Human Factors and Ergonomics Methods. NY: CRC Press. [available on line from Library]
- N.A. Stanton, P.M. Salmon, G.H. Walker, C. Baber, & D.P. Jenkins (2005). Human factors methods: A practical guide for engineering and design. Burlington, VT: Ashgate Publishing Ltd.(available on line from Library)

Potential Lecture Topics (topics may change or the ones below may not be covered depending on direction of major assignment)

As one might imagine, cognitive ergonomics is a vast field that covers a multitude of topics. My intent for the lectures is to provide a few topical examples. Most importantly, my goal in the class is to get you to think as an ergonomist. For example, many students in past classes said the course changed how they see the world. They see safety issues that before the class would have gone unnoticed.

Major and minor assignment discussion (1st 15 minutes of each class)

Introduction: What is Cognitive Ergonomics – information processing, micro and macro ergonomics, a systems approach

Hierarchical task analysis (HTA)

Organization and safety culture

Risk perception & risk homeostasis

Mental Workload assessment

Attention, distractions, cell phone use & driving safety

Safety of playground equipment & children's risk taking

Product design & usability

****Note that there are FOUR hours of class time per week. Some portion of the extra time will be allotted to group work sessions for assignments.**

Course Evaluation

1. 5 quizzes on assigned reading (20%)
2. Assignments* (70%)
 - Major assignment (40%)
 - Written report (30%)
 - Presentation (10%)
 - Hierarchical task analysis (15%)
 - Mental workload (15%)
3. Self reflection (10%) – you as a learner in the course (handed in on the last day of class – 1-2 page assessment of your performance) – 5% a self grade and 5% the professor's assessment of the quality/depth of self-reflection

Assignments

There will be 2 minor and 1 major assignment during the course. *It is important for the student to recognize that the amount of work they put into an assignment may not be proportionate to the value given to the assignment or the mark you get.*

In concert with my learning objectives for you, I will expect much of the work you do on assignments to be self-directed. I will provide little in the way of rubrics and explicit direction for the assignments. However, I expect teams to come to class ready to discuss issues they are having in completing the assignments (***I expect teams to do work first, including lots of reading, before asking questions***). The lectures I give will focus on providing students with mental models to help direct their thinking during assignments.

Late submissions: Assignments will lose 33% per day late (first late day begins at 4:01 pm of the assignment due date), unless permission to hand the assignment in at an alternate time/date is granted prior to the assignment due date. Submission dates are discussed and agreed upon when assignments are given to students.

Minor Assignments

Assignments will be spelled out in class:

- HTA assessment
- Mental workload assessment

Major Assignment Topics (to be assigned after consultation with class)

Ergonomists are often hired to solve problems that revolve around safety issues, although their scope of work can often go well beyond safety. This is particularly true because safety is always embedded in a larger picture and organizational structure. For example, safety culture is always embedded in a larger organizational culture which involves all other aspects of an organization including making money and providing services. This means that people's actions around safety are always part of a much bigger picture since many factors can affect safety and safety practice/injury prevention (e.g., working efficiently, making money, having fun).

Example topic – Pedestrian Safety at Western

Example topic – Distracted driving on and off campus

Example topic – Bicycle helmet use

Course/University Policies

1. **Lateness/Absences:** Assignments are due at the beginning of class on the assigned due date and will not be accepted late, except under medical or other compassionate circumstances. Electronic submission of assignments will not be accepted (unless otherwise specified) under any circumstances. Submitting a late assignment without appropriate documentation will result in a zero (0) grade. Appropriate documentation for assignments worth less than 10% should be submitted to the instructor. A missed mid-term examination without appropriate documentation will result in a zero (0) grade. The course policy is not to allow make-ups for scheduled midterms, presentations or final exams, nor to assign a grade of Incomplete without acceptable and verifiable medical (or equivalent compassionate) reasons. Acceptable reasons might include hospital stays, serious illness, family emergencies (like serious accidents or illness, death) or similar circumstances.

2. **Written documentation:** Students who require academic accommodation should provide notification and documentation in advance of due dates, examinations, etc. stating specific reasons and dates. Students must follow up with their professors and their Academic Counselling office in a timely manner. Documentation for any request for accommodation shall be submitted directly, as soon as possible, to the appropriate Academic Counselling office of the student's Faculty/School of registration (ex. KIN students ~ KIN Undergraduate Office), **not** to the instructor, with a request for relief specifying the nature of the accommodation being requested. In the event of a medical request, the documentation should be obtained at the time of the initial consultation with the physician or walk-in clinic. An "Accommodation Consideration Request Form" found online or in the Kinesiology Undergraduate Office" for **ALL** such accommodation requests must be submitted into the appropriate Academic Counselling office of the student's Faculty/School of registration. These documents will be retained in the student's file, and will be held in confidence.

See <https://studentservices.uwo.ca/secure/index.cfm> for specific policy and forms relating to accommodation.

3. **Grades:** Where possible assignment objectives and rubrics will be posted on OWL. Should you have a concern regarding the grade you received for an assignment or feel that it is unfair in any way, you must wait 24 hours from the receipt of the assignment to approach the instructor or TA. In doing so, please make an appointment and prepare in writing, with evidence, why you feel your grade is inappropriate. Please be aware that in requesting a grade reassessment, your grade could go up/down/or stay the same. Note that calculations errors (which do occur!) should be brought to my attention immediately.

15% of course grades will be posted by the last day to drop a course.

4. **Scholastic offences:** They are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf.

A) Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar). All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and Turnitin.com (<http://www.turnitin.com>)

B) Computer marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

5. **Formatting** (*as recommended by the course instructor*): example- APA style is the approved style of writing for all assignments produced for this course. Please refer to Western University Library webpage for information on citation style and format or consult the APA publication manual: Publication manual of the American Psychological Association (6th ed.). (2009). Washington, DC: American Psychological Association.

6. According to the **Examination Conflict policy**, "A student who is scheduled to write more than two examinations in any 24-hour period may request alternative arrangements through the office of their Academic Counsellor." **This policy does NOT apply to mid-term examinations.* There will be no make-up for the mid-term exam. Students who miss this exam with a valid reason will have the final re-weighted accordingly.

7. **Classroom Behaviour:** Class will begin promptly at the time specified at the top of page one of this syllabus. In the event that you must arrive late, please enter the classroom with a minimal disturbance to the class. I reserve the right to lock the classroom door and deny entrance if lateness becomes a common occurrence. Excessive talking during class time is disruptive, disrespectful, and will not be tolerated. Students engaging in such behaviour may be asked to leave the room. Cellular phones, pagers, and text-messaging devices are disruptive when they ring in class. If you must bring these with you, please place them on silent mode or turn them off during class. Failure to do so may result in your being asked to leave.

8. Laptops for the **purpose of typing lecture notes** are permitted in class, but please be respectful to your fellow students and turn the sound off. If I receive complaints from other students regarding noise or other disruptive behaviour (e.g., watching videos on YouTube.com, updating your Facebook status, playing Solitaire), your classroom laptop privileges will be revoked.

9. Audio and/or videotaping of lectures is not permitted unless approval has been sought from the instructor in advance.

STUDENT CODE OF CONDUCT

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed, and set out the disciplinary procedures that the University will follow. For more information, visit

<http://www.uwo.ca/univsec/board/code.pdf>

ENGLISH PROFICIENCY FOR THE ASSIGNMENT OF GRADES

Visit the website <http://www.uwo.ca/univsec/handbook/exam/english.pdf>

SUPPORT SERVICES

There are various support services around campus and these include, but are not limited to:

1. Student Development Centre -- <http://www.sdc.uwo.ca/ssd/>
2. Student Health -- <http://www.shs.uwo.ca/student/studenthealthservices.html>
3. Registrar's Office -- <http://www.registrar.uwo.ca/>
4. Ombuds Office -- <http://www.uwo.ca/ombuds/>

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.