Course Title: Topics in Engineering Psychology: Advanced Human Factors/Ergonomics—Human Performance Modeling (0514.788.01)

Meeting Times: Wednesdays 6:00—9:50 pm, at 06-A220.

Instructor: Esa M. Rantanen, Ph.D. <esa.rantanen@rit.edu>

Office: 01-3140 Eastman Bldg.; Tel. (585) 475-4412

Office Hours: Wednesdays, 10:00 a.m.—12:00 noon or by appointment


Other Readings: See course schedule.

Course Description: This course will cover several fundamental models of human information processing in the context of human-system interactions. The models include the Signal Detection Theory, Information Theory, theories of attention, both normative and naturalistic decision-making models, Control Theory, and the Lens Model of Brunswick, as well as models of the human as a physical engine, that is, anthropometry, biomechanics, and work physiology. Most topics include readings in addition to the course text as well as a lab exercise with a detailed lab report.

Prerequisites: N/A.

Expectations: Class participation. Active class participation is expected. Much of the material will be presented only in lectures and discussions and will not be available in textbooks or other readings. You are also expected to make presentations on the assigned materials and share your questions, comments, ideas, and critique with the class at all times.

Laboratory: There will be 3 lab exercises with detailed written lab reports to be submitted afterwards. Exact instructions and due dates for each assignment will be provided. No late lab reports will be accepted.

Presentations: Short presentations may be assigned to each student, including a written outline. The presentations will be graded on their accuracy and information content and the student’s level of preparedness.

Exams: There will be an in-class, closed-book and -notes comprehensive final exam on May [CONFIRM DATE]. Expect about 8 questions on the most fundamental concepts covered during the quarter, requiring short answers

Term paper: A term paper is the main deliverable for this course; you should choose a phenomenon or a problem of interest to you and show how you would apply some model we have discussed in the class to it. Note that this is strictly a ‘paper & pencil’ exercise, and you only need to detail your plan (i.e., how would you collect relevant data and how you would go about modeling the data). Please see me for help in formulating your approach and identifying references and other materials.

Grading:

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<tr>
<td>Class participation</td>
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<td>A: ≥ 90%</td>
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<td>Homework</td>
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<td>Presentations</td>
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<td>Final Exam</td>
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<td>Term Paper</td>
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**Class Policies:** Documented medical, bereavement, or religious reasons are valid excuses for absence. Any other absences must be approved and arrangements for make-up assignments made prior to the class in question.

**Cheating:** This includes plagiarism; the Institute and College of Liberal Arts policies on cheating will be followed and most severe sanctions permitted advocated.

**Course Website:** https://mycourses.rit.edu

**Course Schedule: Topics and Readings:**

Note that the course schedule below is only tentative. All references to chapters and pages are to the course text (Wickens & Hollands, 2000)

1. Wed., Mar. 11: Introductions, course organization; syllabus. The Signal Detection Theory (SDT), ROC curves, and fuzzy SDT.  

*Readings:* Wickens & Hollands ch. 2, 9.


5. Wed., Apr. 8: Manual control; discrete control and Fitts’ law, continuous control and pursuit and compensatory tracking.  
*Readings:* (a) Wickens & Hollands ch. 10. (b) Handout: Lab 2 instructions and assignment


   *Readings*: Wickens & Hollands ch. 11.


    *Readings*: Wickens & Hollands ch. 13.