Course Title: Topics in Engineering Psychology: Human Error and Reliability (0514.788.01)

Meeting Times: Tuesdays 6:00—9:50 pm, at 06-3159.

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

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


Course Description: This course will cover both the theoretical underpinnings of human error as well as methods for analysis, modeling, and prediction of human error and reliability in applied settings. Towards this end, the course will consist of two distinct parts: The first will concentrate on theories of human error and the Generic Error Modeling System of James Reason. The second part of the course will delve into the issues of human reliability and the analysis and prediction of human error in systems. We will review several Human Reliability Analysis (HRA) methods and their applications in human-machine systems, and with a specific focus on the ‘second generation’ HRA method, Cognitive Reliability and Error Analysis Method CREAM. We will evaluate the CREAM technique through several case studies, available from the National Transportation Safety Board (NTSB) accident investigation reports and other sources. The course format will be a mix of lectures, discussions, and student presentations. Student evaluations will be based on their contributions to the class discussions and written assignments throughout the quarter.

Prerequisites: N/A.

Expectations: As this is a very small class this quarter, the expectations for each participant (including the instructor!) are raised. You are therefore expected to come to each class session fully prepared and ready to make significant contribution to the discussion and the class project(s). Outside the class times, you are expected to participate in continuing discussion on the myCourses website and work both individually and together with your classmates on the projects and assignments.

Class Policies: Because of the small number of students enrolled in the class, regular participation in all class activities by everyone is paramount to the success of this class. Documented medical, bereavement, or religious reasons are valid excuses for absence. Any other absences must be approved by the instructor and arrangements for make-up assignments made prior to the class in question.

Course Website: https://mycourses.rit.edu
Course Schedule: Topics and Readings:

Note that the course schedule below is only tentative; current handouts, readings, and assignments will be posted on the myCourses course website.

1. Sep. 2: Introductions, syllabus. What is ‘Human Error’
4. Sep. 25: TBA
5. Sep. 30: Reason (1990), ch. 4
6. Oct. 7: Reason (1990), ch. 5–6
7. Oct. 14: Reason (1990), ch. 7; the systems concept (handout)
8. Oct. 21: Intro to HRA (handout)
9. Oct. 28: HRA techniques (Kirwan 1998a, b)
10. Nov. 4: CREAM (Hollnagel, 1998)
11. Nov. 6: CREAM (Hollnagel, 1998)