

Subject: [Ie545-001-f18] Welcome to IE 545

From: Ken Funk <funkk@engr.orst.edu>

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To: ie545-001-f18@engr.orst.edu

If you are new to the University, welcome to Corvallis and OSU! If you are a returning student, welcome back!

The first IE 545 class meeting will be tomorrow (Friday) morning at 0800 in ROG 332. The course syllabus is at <http://classes.engr.oregonstate.edu/mime/fall2018/ie545-001/>, which you may read before class if you like, but we will bring hard copies and we will go over it in detail with you.

You will work with a team we assign to complete a term project. Several ideas for projects are briefly described below, but to draw on your creativity and to provide more options from which to choose, please bring an idea of your own to class tomorrow: the user interface of some device or system that you are familiar with and which you think could be improved, or a job performance aid that could help someone perform their technical tasks more accurately and efficiently, or even a complete but simple device that must not only be functionally effective, but also easy, efficient, and safe to use.

International students, please note: By the very nature of human factors engineering, IE 545 involves a significant amount of reading, qualitative reasoning, memorization of terminology and principles, writing, and oral presentation. If this is only your first or second term at a US college or university and your first language is not English, perhaps you should not take IE 545 this term unless you are

1. fluent in spoken and written English,
2. willing and able to read and think about as much as 35 pages of English language technical material in preparation for a class meeting,
3. able to work well in a small team using English for spoken and written communication, and
4. able to write technical memos and reports in grammatically correct English.

We do not wish to discourage international students from taking IE 545, and we do not expect any student's English skills to be perfect, but we also do not want anyone to struggle and fail simply because of language problems. If your English language skills are not ready for this course now, please consider taking it next fall when you have more experience with English.

If you have any concerns or questions, please come to class, see how it goes, and if they remain, talk to us. We look forward to seeing you tomorrow.

Kenneth Funk and Xinhui Zhu

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IE 545 Instructors

Some Ideas For IE 545 Human Factors Engineering Projects

West African Infectious Disease Diagnosis Aid (WAIDDA)

Sierra Leone is a tropical West African country of over six million people where infectious diseases, including cholera, dengue fever, ebola, lassa fever, malaria, typhoid fever, and yellow fever, are endemic. But following 20 years of civil war, Sierra Leone's healthcare infrastructure is decimated, with fewer than 200 physicians to serve the whole nation. To address this deficit, Willamette International (WI) a Christian humanitarian organization based in Albany, Oregon is attempting to create a network of minimally trained, native clinicians who, augmented with tools derived from western medicine, can better serve the Sierra Leonian people.

Oregon State University has teamed with WI and infectious diseases specialists from Samaritan Health Services to develop a software application to facilitate the diagnosis of the diseases mentioned above, based on the signs and symptoms they produce in patients, for use in areas with no access to medical laboratories that could provide definitive diagnoses. The team has developed a knowledge base of these diseases and is working on an algorithm that accepts a set of signs and symptoms exhibited by the patient and generates a differential diagnosis: the relative likelihood of each disease based on the input. The design for the user interface is yet to be determined, but it should guide the clinician intelligently through the diagnosis process to efficiently obtain the input needed for the algorithm to generate the differential diagnosis.

Operating Room Distractions and Interruptions Data Collection Tool User Interface

The hospital operating room (OR) is a busy place, with frequent distractions and interruptions that can interfere with safe completion of the surgery. Researchers with OSU School of Mechanical, Industrial, and Manufacturing Engineering have teamed with the General Surgery department of Oregon Health and Sciences University (OHSU) to investigate the nature and significance of distractions and interruptions in the OR. OSU investigators will observe surgeries in OHSU's ORs to record the types, severities, durations, and effects of distractions and interruptions. To do this, they will need a tablet-computer-based data collection tool that keeps track of time, provides means for the observer to quickly enter distraction and interruption information, and record that data for later analysis. The purpose of this project is to design just the user interface for the tool – not the completely functional tool.

Capstone 2018 Aircraft Instrument Panel

In fall 2017 through winter 2018, a team of OSU mechanical engineering students completed the high-level design of a light utility aircraft for their senior Capstone Design project. The aircraft has a single, normally aspirated engine, with high wings and fixed, tricycle landing gear, similar to a Cessna 152. It is capable of carrying a pilot, a single passenger, and a small amount of cargo.

This project would entail designing the displays for this aircraft, including primary flight displays and displays for secondary systems (engine, fuel, electrical, etc.), plus the controls to interact with the displays and manage the secondary systems. The seating and primary flight controls were designed by a second Capstone team, but the IE 545 team is free to revise those designs as it sees fit.

Chemical Plant Storage and Delivery Subsystem Operator Interface

The subsystem consists of a large tank that receives liquid product from one of several upstream processes and stores it for later delivery to one of several outputs: a railroad tank car, a tank truck, a pipeline, secondary storage tanks, etc. The operator interface must be designed to help the operator configure the system for proper routing, control and monitor flow into and out of the tank, monitor levels, temperatures, pressures, flow rates, and other parameters, and respond quickly and appropriately to non-normal events.

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