Human Factors Engineering ENTC 3350
Department of Mechanical Engineering
Fall 2019

A. COURSE INFORMATION

Course number/section: ENTC 3350.001
Class meeting time: Lecture: MWF 9:00-9:50 pm
Class location: CS 101
Course Website: Blackboard

B. INSTRUCTOR INFORMATION

Instructor: Byung Cheol (Bruce) Lee Ph.D.
Office location: EN 315
Office hours: MWTh 3:00-5:00 pm and by appointment
Telephone: 361-825-4134
E-mail: bruce.lee@tamucc.edu or in Blackboard email (will reply within 48 hours, but not on weekends)
Appointments: Corresponde using ISLANDER email

C. COURSE DESCRIPTION

Catalog Course Description
Introduction to the basic concepts and principles of human factors to demonstrate and apply a broad knowledge of various modern industrial engineering methods and tools associated with designing systems in manufacturing and other related fields. Apply engineering design methods to represent, integrate and solve problems, including the ability to recognize problem context and integrate knowledge and skills appropriate sources.

D. PREREQUISITES AND COREQUISITES

Prerequisites
None
Corequisites
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)

Optional Textbook(s) or Other References

1
None

**Supplies**
None

F. **STUDENT LEARNING OUTCOMES AND ASSESSMENT**

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, you should be able to:

1. Define the concepts of historical and modern human factors and human-system interaction associated with designing systems in manufacturing and other related fields.
2. Solve human factors problems by applying engineering design methods, human factors research methods, design and evaluation knowledge and skills, and engineering representation.
3. Analyze functionality and human considerations of machines to design user-friendly machine control interfaces.
4. Identify and analyze features of human and organizational error and specify designs that avoid occupation related injuries. Perform basic analysis to identify, evaluate, and control risk factors that contribute to work-related injuries.
5. Define and apply appropriate training and the principles of work environmental design for operators of systems. Evaluate the impact of workplace design and environment on productivity.

G. **INSTRUCTIONAL METHODS AND ACTIVITIES**

Methods and activities for instruction include the following: lectures, meetings, invited speakers, group discussions, webinars, team assignments, homework assignments, quizzes, reports, oral presentation, and a technical notebook.

H. **MAJOR COURSE REQUIREMENTS AND GRADING**

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<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Assignment</td>
<td>20</td>
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<tr>
<td>Course project report &amp; presentation</td>
<td>20</td>
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<tr>
<td>Midterm exam</td>
<td>25</td>
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I. COURSE CONTENT/SCHEDULE

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<tr>
<th>WK</th>
<th>Date</th>
<th>Lecture Topics</th>
<th>Assignments</th>
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| 1  | 08/26-08/30| Review of syllabus; Lecture - Introduction to Human Factors and Historical Foundation | • Project introduction  
                            |                                       | • IRB protocol                      |
| 2  | 09/02-09/06| Lecture - Human-Computer Interaction  
                            | Lecture - Research Methods 1: Scientific methods | • Assignment 1                       |
| 3  | 09/09-09/13| Lecture - Research Method 2: Research Design  
                            | Lecture - Research Method 3: Statistics | • Project idea (Introduction)        |
| 4  | 09/16-09/20| Lecture - Signal Detection Theory  
                            | Lecture - Human information processing and Psychophysical methods | • Assignment 2                       |
| 5  | 09/23-09/27| Lecture – Attention  
                            | Lecture - Memory stores and working memory | • Project plan (Background)          |
| 6  | 09/30-10/04| Lecture - Long-term memory and comprehension  
                            | Lecture - Problem solving and reasoning | • Assignment 3                       |
| 7  | 10/07-10/11| Midterm Exam  
                            | Lecture - Decision making and decision aids | • Project design (Experiment design)  |
| 8  | 10/14-10/18| Lecture – Vision  
                            | Lecture - Visual perception | • Assignment 4                       |
| 9  | 10/21-10/25| Lecture - Depth Perception  
                            | Lecture - Audition and touch | • Project progress report 1          |
| 10 | 10/28-11/01| Lecture - Auditory and tactual displays  
                            | Lecture - Warning lights and dynamic visual displays | • Assignment 5                       |
| 11 | 11/03-11/08| Lecture - Response selection and principles of compatibility  
                            | Lecture - Population stereotypes and dual task performance | • Project progress report 2          |
| 12 | 11/11-11/15| Lecture - Control of movement_pt1  
                            | Lecture - Control of movement_pt2 | • Assignment 6                       |
| 13 | 11/18-11/22| Thanksgiving week                                                              |                                      |
| 14 | 11/25-11/29| Lecture - Attention and mental workload  
                            | Lecture - System concept and Human Error | • Project report (final)             |
| 15 | 12/02-12/04| Lecture - The practice of human factors                                         | • Project presentation               |
| TBA|            | Final Exam                                                                     |                                      |

*Target dates may be adjusted depending on material covered.*
Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Attendance/Tardiness
You are advised to attend all lectures and laboratories. If you miss a class period, you are responsible for whatever is covered or announced during your absence. There will be no make-ups for oral presentations or quizzes. The students are expected to display responsible conduct in the classroom and laboratory, including but not limited to adhering to the rules and regulations, and respecting the instructor and fellow classmates.

Extra Credit
Extra credit may be assigned at the discretion of the instructor.

Food in Class
Eating or drinking is strictly prohibited in the labs, and not permitted in the lecture rooms. Students with food or drink in visible sight will be asked to discard them, or leave the room. All signage regarding health and safety must be followed in the lecture rooms and laboratories.

Use of Electronic Devices
The use of cell phones, electronic devices, or computers for purposes other than those of the course objectives of the day is not permitted. Restricted activities include but are not limited to text messaging, twittering, talking on the phone, instagramming, browsing on the internet, and disrupting the classroom activities. Anyone displaying unsuitable classroom behavior will be asked to leave the classroom or the laboratory. Recording of part or all of the lecture or lab instruction and materials requires approval of the course instructor.

Safety
The safety of students, faculty, staff and visitors to the engineering laboratories is of paramount importance to the Mechanical Engineering and Engineering Technology programs. You must follow all safety procedures and use personal protective equipment as required in each laboratory and workshop. Any student who attempts to use equipment without authorization or violates any safety policy or regulation will be immediately removed from the laboratory.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test
will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science
and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.