

MIE1414 Human Factors in Transportation

Instructor

Maurice Masliah

Course Time & Location

Tuesdays, 6-9pm

SS 1072

Email

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Office Location

MC317

Office Hours

By Appointment Only

5-6 PM Tuesdays

Course Overview

The course will cover a wide range of human factors topics related to transportation, in particular motor vehicle transportation. The students will gain an understanding of road user characteristics and limitations and how these affect design of traffic control devices and the roadway. The course topics include: history and scope of human factors in transportation; vision and information processing in the context of driving; driver adaptation; driver education, driver licensing and regulation; traffic control devices; crash types, causes, and countermeasures; alcohol, drug, and fatigue effects; forensic human factors.

The course will be taught in the form of lectures followed by relevant case studies involving practical application of knowledge gained. Case studies, and related assigned readings, will involve human factors in relation to crash pattern analysis and countermeasure selection, highway and traffic control design issues, driver regulation policy issues, and forensic investigation. The students will work on two projects, one in each half of the term, on topics of their choice. They will be asked to make presentations on these projects.

Optional Text – Not Required

Much of the course is based upon the following text: Human Factors in Traffic Safety, Third Edition, Edited by Alison Smiley, Lawyers & Judges Publishing Company, Inc. 2016.

Course Schedule – *Subject to Change*

Week	Title	Content
Week 1 – Jan 2, 2018	Introduction	History and scope of human factors in transportation, application to traffic safety
Week 2 – Jan 9, 2018	Vision	Within the context of driving: function of the eye, visual acuity, contrast sensitivity, colour vision, adaptation, perception of closing velocity
Week 3 – Jan 16, 2018	Information Processing	Within the context of driving: attention, information processing capacity, expectancy, mental workload, driver visual search, information processing exercises

Week	Title	Content
Week 4 – Jan 23, 2018	Driver Adaptation	Perceptual cues for speed, adaptation of speed, visual search, attention, adaptation to road safety interventions. Task Analysis Due (30%)
Week 5 – Jan 30, 2018	Road Departure Collisions	Driver behavior in curves, inattention and fatigue, expectancy, overtaking issues, countermeasures: curve design shoulders and clear zone, rumble strips, collision pattern exercise
Week 6 – Feb 6, 2018	Intersection Collisions	Driver tasks in intersections, countermeasures to improve detection, visual search, dilemma zone decisions, countermeasures to improve detection
Week 7 – Feb 13, 2018	Forensic Human Factors	Human factors cases involving visibility, perception of closing speed, driver expectancy, perception-reaction time
Week 8 – Feb 20, 2018	Winter Reading Week - no classes	
Week 9 – Feb 27, 2018	Mock Trial Forensics Human Factors	Expert Report Due (30%)
Week 10 – Mar 6, 2018	Bicycle Collisions	Tom Smahel – Guest Lecturer
Week 11 – Mar 13, 2018	Distraction, Impaired Driving	Sources of distraction, effects on performance, collision rate, impact of alcohol on perception and driving performance
Week 12 – Mar 20, 2018	Young & Old Drivers	Collision rates, graduated licensing, cognitive functions and aging, older driver adaptation, senior driver assessments
Week 13 – Mar 27, 2018	Fatigue	Long hours, time of day, short sleep, fatigue management programs
Week 14 – Apr 3, 2018	Driverless Vehicles	Human factors challenges
Week 15 – Apr 10, 2018	Exam (40%)	

Assignments/Exam Schedule

Week	Subject
Week 4 – Jan 23, 2018	Assignment 1 Task Analysis Due (30%)
Week 9 – Feb 27, 2018	Assignment 2 Expert Report Due (30%)
Week 15 – Apr 10, 2018	Exam (40%)