

CE 539 Traffic Safety Analysis

Credit and Contact hours	3 / 3 (Lectures), 0 (Tutorials), 0 (Laboratory)												
Required, or Elective	Elective												
Course Description	This course presents topics related to transportation safety analysis. That is to master the road crash research concepts, and identification of the contributing factors to the crash occurrence.												
Prerequisites or Co-requisites	None												
Course Learning Outcomes	<p>Students completing this course successfully will be able to:</p> <table> <thead> <tr> <th>Course Learning Outcomes (CLOs)</th><th>Related Student Outcomes (SO)</th></tr> </thead> <tbody> <tr> <td>CLO1. Understand the road safety management process using different approaches. K1</td><td>SO1</td></tr> <tr> <td>CLO2. Understand the various methods used to analyze safety data. K1</td><td>SO1</td></tr> <tr> <td>CLO3. Carry out hotspot analysis and statistical before-and-after studies to identify the effect of certain countermeasures. S1</td><td>SO2</td></tr> <tr> <td>CLO4. Develop statistical models to identify the contributing factors to crash occurrence. S1</td><td>SO2</td></tr> <tr> <td>CLO5. Select and apply appropriate methods and techniques for analyzing and solving traffic safety related problems. V2</td><td>SO7</td></tr> </tbody> </table>	Course Learning Outcomes (CLOs)	Related Student Outcomes (SO)	CLO1. Understand the road safety management process using different approaches. K1	SO1	CLO2. Understand the various methods used to analyze safety data. K1	SO1	CLO3. Carry out hotspot analysis and statistical before-and-after studies to identify the effect of certain countermeasures. S1	SO2	CLO4. Develop statistical models to identify the contributing factors to crash occurrence. S1	SO2	CLO5. Select and apply appropriate methods and techniques for analyzing and solving traffic safety related problems. V2	SO7
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Student Outcomes related to this Course	<p>SO 1 Recognize advanced engineering knowledge, concepts, and techniques to identify, interpret, and analyze complex and real-life engineering problems.</p> <p>SO 2 Provide solutions for complex and real-life engineering problems through critical thinking and the use of modern engineering tools, and identify their impact on social, global, cultural, environmental, safety, and economic factors.</p> <p>SO 7 Effectively manage, individually or in groups, specialized tasks and activities in coursework, projects, assignments, and research work with a high level of autonomy and responsibility.</p>												

Topics Covered	List of Topics	Related CLOs
	1. Course introduction, project assignment	CLO 1
	2. Safety statistics and trends	CLO 2,7
	3. Risk, Exposure & Safety	CLO 2
	4. Highway Safety Manual	CLO 1,2,5
	5. Driver Factors	CLO 2,3
	6. Roadway and Vehicle Factors	CLO 2,3
	7. Road Safety Management Approaches	CLO 3,4
	8. Modeling Crash Occurrence	CLO 1,4
	9. State-of-the-art traffic safety research	CLO 4,5
	10. Revision/Project Presentations	CLO 1-5
Textbook(s) and Other Required Material	<ul style="list-style-type: none"> Highway safety analytics and modeling, by Lord, D., Qin, X., & Geedipally, S, Elsevier, 2021. ISBN: 9780128168189 	
Grading System	Project progress report -Part one	2.5%
	Project progress report -Part Two	2.5%
	Assignments	15%
	Term paper	20%
	Project – Final report and oral presentation	20%
	Final Exam	40%
Instructors	Dr. Saif Abdulaziz S Alarifi	
Date of Review	November, 2024	