

Safety Theory/Discipline	N/A	Describe highway safety as a complex, interdisciplinary, multimodal discipline devoted to the avoidance and/or mitigation of fatalities, injuries, and crashes by using science-based highway safety research to guide safety management decisions for improving highway safety.
Safety Theory/Discipline	Strategic Highway Safety Plan (SHSP)	Explain the “Four E’s” of traffic safety: engineering, education, enforcement, and emergency medical services. Identify goals and strategies to reduce highway deaths and injuries. Understand the SHSP statewide and regional approach in Louisiana and understand the process for establishing EAs, in particular, definitions used for EAs (e.g. impaired driving, etc.)
Safety Theory/Discipline	Role of SHSP Major Partners	Describe the institutional roles and responsibilities within which safety is managed (e.g., local, regional, state, and federal government, transportation modes, and the private sector). Identify opportunities for internal and external coalition-building, multidisciplinary relationships, and strategic communications for highway safety initiatives. SHSP statewide agencies include Louisiana State Police, Louisiana Highway Safety Commission, and LA DOTD.
Safety Theory/Discipline	Highway Safety Improvement Program (HSIP)	Understand the federal requirements associated with HSIP (23 USC 148 and 23 CFR 924). Identify goals and strategies to significantly reduce the occurrence of and potential for fatalities and serious injuries on all public roads. Collect, improve, and analyze safety data. Conduct engineering studies. Establish priorities.
Safety Theory/Discipline	Road Safety Theory	Understand the elements of successful road safety programs. Identify contributing crash factors and how they interact. Understand and apply road safety data collection, analysis, and evaluation.
Safety Theory/Discipline	Local Road Safety Program (LRSP)	Understand the elements of the Local Road Safety Program which utilizes HSIP federal-aid funds for safety improvements on locally owned and maintained roads. Be able to identify opportunities for implementation to specific locations in Louisiana. Be familiar with the application process for the program.
Safety Theory/Discipline	Safe Routes to Public Places (SRTPP)	Understand the elements of Safe Routes to Public Places which uses HSIP federal-aid funds and is focused on improving pedestrian and bicycle facilities to schools, libraries, governmental buildings, hospitals, transit facilities, public parks, and other public places for pedestrians, bicyclists, and transit users of all ages and abilities. Be able to identify opportunities for implementation to specific locations in Louisiana. Be familiar with the application process for the program.
Safety Theory/Discipline	Safety Culture & Policies	Understand the goals of safety-related policy, legislation, and investment decisions. Describe the importance of using crash, injury or fatality data to evaluate the implications of safety management actions, policies, and programs at the state and/or regional level.

Highway Safety Data	N/A	Understand the origins and characteristics of traffic safety data and information systems and utilize the available tools to support decisions using a data-driven approach in managing highway safety.
Highway Safety Data	Safety Data Collection & Sources	Describe state and local information systems and data elements that can be used for safety management (e.g., crash, roadway inventory, driver/vehicle registration, citation, hospital/EMS, surveys, operations data, etc.). Describe the specialized statewide and national databases available for safety management (e.g., FARS, GES, CVISN, and WISQARS). Describe the process by which crash data are collected, including constraints associated with accurate, reliable field data. Describe the classification of highway crash and injury severity factors and their relationship to the crash event (i.e., pre-crash, crash, and post-crash).
Highway Safety Data	Safety Data Usage Application	Describe the demographic trends underlying the need for comprehensive and integrated highway safety management (e.g., social, cultural, age, gender). Access and use traffic safety data systems for identifying and tracking crash trends, targeting high-risk groups, and planning programs at the national, state, and local levels e.g., SHSP dashboards). Identify current and potential highway safety problems.
Highway Safety Data	Interpreting Site Specific Crash Data	Understand standard crash data collection and aggregation processes including roadway condition and collision diagram forms. Understand crash report forms, causes, and how to document findings from crash history.
Highway Safety Data	Legal Provisions	Understand the relevant legal constructs affecting Highway Safety (i.e., 23 USC 409 and LA RS 32:398), MOUs, data use agreements, tracking & monitoring data users.
Highway Safety Data	Crash Data Query Tools	<p>Query crash history of a roadway intersection or segment for system or project level analyses. Ability to use the data capture system to create a snapshot of the historical performance of the site. Utilize data pulled in the safety analysis tool to determine crash patterns and high probability of over-represented areas.</p> <p>Crash 1 – Query for state routes (by route name, control section, radius & lat/long, district, parish, statewide)</p> <p>Crash 2 – Query for a specific Crash report number</p> <p>Crash 3 – Query for local routes (by route name, parish, municipality)</p>

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Highway Safety Data	Quantitative Safety Analysis Using the Highway Safety Manual (HSM)	Understand the Highway Safety Manual (HSM) structure, concepts and principles. Recognize the benefits of using a quantitative safety analysis in various stages of the transportation project development process by using HSM principles (e.g., rural and urban intersection crash prediction models). Describe and apply the three primary types of safety analysis found in the HSM: Site, Systemic, and Section-wide. Leverage HSM to conduct network screening, systemic studies, project safety analysis, and project evaluations (pre & post) for the HSIP. Be able to appropriately apply quantitative safety analysis in the LA DOTD project development process. This includes applying Crash Modification Factors (CMFs) for planning projects and estimating predictive crash performance for intersections and segments using HSM spreadsheets.
Highway Safety Data	Software: IHSDM/ISATe	Understand software commands needed to estimate predictive crash performance for a specific project using geometric features developed during the design phase.
Highway Safety Data	NHTSA Fatality Analysis Reporting System (FARS)	Understand input needed for national NHTSA crash database, FARS. This should include the basic reports and understanding of the data as it relates to manipulating reference files. Leverage the FARS data to inform data quality initiatives including training for law enforcement agencies to improve front end data collection.
Highway Safety Data	Crash Analysis Tool	Understand how to utilize the Crash Analysis Tool. This should include the basic commands and understanding of the program abilities. Leverage the Crash Analysis Tool to analyze the data to pinpoint safety concerns for various types of transportation projects programmed at DOTD, MPOs, and with local entities.
Highway Safety Data	Microsoft Excel	Understand software basic commands and program abilities. Leverage Excel to use plugins, macros, Cure plots, pivot tables, and query tools to perform network screening, systemic analysis, and safety analysis. This may include using samples of roadway and crash data to develop safety performance functions.
Highway Safety Data	Microsoft Access	Understand software basic commands and program abilities. Leverage Access to query databases to perform network screening, systemic analysis, and safety analysis.
Highway Safety Data	General Statistics Analysis (Theories)	Understand how to collect, organize, and interpret data. Utilize software (e.g., Excel, Access, SAS, SPSS) to uncover patterns and trends (e.g. cure plots, regression) used to help make informed decisions. Understand theories around statistical analysis (e.g., descriptive, predictive, and prescriptive).

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Highway Safety Data	Data Integrations with GIS	Understand how to accurately combine data from different sources into GIS. Identify strategies to consolidate disparate sources of data into one definitive source.
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<p>Safety Interventions</p>	<p>N/A</p>	<p>Demonstrate the knowledge and skills to assess factors contributing to highway crashes, injuries, and fatalities, identify potential countermeasures linked to the contributing factors, apply countermeasures to user groups or sites with promise of crash and injury reduction, and implement and evaluate the effectiveness of the countermeasures.</p>
<p>Safety Interventions</p>	<p>Designing Safe Systems: Infrastructure and Operations Countermeasures</p>	<p>Understand the Louisiana’s Destination Zero Deaths goal of reducing traffic-related deaths and serious injuries through a multidisciplinary, data-driven, and constantly evolving plan in line with FHWA’s Zero Deaths Vision and the Strategic Highway Safety Plan (SHSP). Understand the nature of humans is to make mistakes, which means infrastructure must be designed to mitigate driver error to the greatest extent possible using the safe systems approach. Demonstrate the importance of computing the expected safety and cost benefit associated with implementing a FHWA and/or DOTD highway safety countermeasure, as the difference between the crashes, fatalities, and injuries likely to occur with the countermeasure in place and the number of crashes, fatalities, and injuries expected to occur if the countermeasure were not implemented. Examples include intersection design, roadway departure, signalization, and signage.</p>
<p>Safety Interventions</p>	<p>Designing Safe Systems: Behavioral Countermeasures</p>	<p>Understand the Louisiana’s Destination Zero Deaths goal of traffic-related deaths and serious injuries through a multidisciplinary, data-driven, and constantly evolving plan in line with NHTSA’s Road to Zero and the Louisiana Highway Safety Commission (LHSC). Identify the linkages among human factors and behavior, vehicle design, roadway design, and the environment and their interactions with respect to identified crash problems. Included focus areas: impaired driving, occupant protection, young drivers, and distracted driving. Have a basic understanding of the behavioral program (e.g. 402 program, HSP, types, and projects, etc.)</p>
<p>Safety Interventions</p>	<p>Planning Level Cost Estimating</p>	<p>Understand how to develop high level cost estimates for safety improvements using DOTD weighted bid tabs and prior safety projects with similar pay items. Demonstrate knowledge of general costs associated with other miscellaneous items associated with project implementation costs, such as: survey, engineering design, temporary traffic control, utility relocation, drainage elements, ROW acquisition, construction engineering and inspection, traffic studies, etc.</p>
<p>Safety Interventions</p>	<p>Benefit Cost Analysis</p>	<p>Understand Highway Safety Manual (HSM) methodologies for developing safety benefit cost ratio. Use data available (e.g., historical crash data, predicted crashes, etc.) to compare alternatives based on benefit cost ratio.</p>
<p>Safety Interventions</p>	<p>Principles of Intersection Design</p>	<p>Understand the key components of proper intersection design including intersection sight distance, management of multi-modal forms of transportation that are context sensitive, intersection functional area of the intersection, appropriate and driveway access, selection of the appropriate</p>

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		<p>traffic control device, and the addition and proper geometry of right and left turn lanes, as well as determining when channelization is appropriate. Proper selection of the appropriate intersection type. Familiarity with the basic design concepts for roundabouts, e.g. CFI's, R-cuts, jug handles, Michigan u-turn, etc., and/or when the appropriate intersection may require a full grade separation. In the selection of the appropriate intersection type, understand basic traffic engineering concepts related to operation and safety such as delay, crash data, predicted safety performance, and conflict points. Understand the impacts to right-of-way and utilities associated with each intersection type in order to determine the best design for the specific traffic condition.</p>
Safety Interventions	Work Zones	<p>Demonstrate knowledge of Work Zone Safety elements. Be familiar with guidance and policy regarding work zones, e.g. MUTCD and DOTD TTC standard plans and specs. Understand importance of planning, coordinating, and implementing an annual Work Zone Safety outreach campaign to support the state and national efforts.</p>
Safety Interventions	Road Safety Assessment/Audit	<p>Understand the FHWA guidance on conducting a Road Safety Assessment/Audit (RSA), which is a formal safety performance examination of an existing or future road or intersection. Demonstrate expertise with summarizing historical crash data for discussion at the RSA and assist with documenting short and long-term safety improvements through an RSA report. Ability to provide support and guidance on conducting an RSA to districts and local entities.</p>
Safety Interventions	Principles of Roadway Departure	<p>Define roadway departure and the need to reduce the likelihood of road departures; diagnose crash factors and select safety countermeasures. Understand applications of clear zone concepts to all types of roadways in conjunction with appropriate transportation elements such as slopes, striping, barriers, and other roadside hardware.</p>
Safety Interventions	Non-motorized Road Users Safety	<p>Define non-motorized road users and their needs for safe accessible transportation; diagnose crash causes and select safety countermeasures. Identify safety-related geometric design elements. Understand road safety issues and how to address them. Understand public right-of-way accessibility guidelines.</p>

Transportation Elements	N/A	Recognize how highway safety is influenced by highway design, transportation planning, traffic operations, and vehicle design.
Transportation Elements	Introduction to Traffic Engineering	Explain and provide examples of the importance of highway safety relative to other transportation priorities (e.g., congestion mitigation, environmental protection, air quality, economic prosperity).
Transportation Elements	Project Delivery Process	Identify strategies to integrate and amplify safety in project delivery processes. This includes the importance of MPO TAC committees, TIPs, STIP, and Stage 0 review opportunities to maximize highway safety management. Understand importance of project purpose and need.
Transportation Elements	Highway Plans	Ability to read, interpret, and understand highway plans and identify opportunities for highway safety management integration.
Transportation Elements	Complete Streets	Demonstrate knowledge of the Complete Streets policy which encompasses many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient. Users include people of all ages and abilities, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public transportation riders. Resources examples include LA DOTD Bicycle Planning Tool and Bicycle Suitability map; Complete Streets Minimum Design Guidelines, CS EDSM.
Transportation Elements	Right-of-Way	Understand right-of-way guidelines including utilities, permits, and acquisitions.
Transportation Elements	Roadside Design Elements	Understanding and application of Roadside Design Guide and national testing standards (i.e., Manual for Assessing Safety Hardware). This includes current information and operating practices related to roadside safety, testing and evaluation of roadside safety features, and safety treatments to reduce road user serious injuries.
Transportation Elements	Railroad	Understand the railroad design techniques and principles, the concept of preemption and active/passive devices at at-grade crossings. Identify opportunities to integrate highway safety management elements as appropriate.
Transportation Elements	Signal Fundamentals and Design	Understanding of signal equipment, construction plans, inspection, and safety applications. The steps required to plan, design, and implement a signalized intersection. How to devise an appropriate data collection plan for planning, designing, and operating a signalized intersection, PHB, RRFB, pedestrian crossing, flashing signs (including following DOTD guidance and permitting

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		requirements). How signal timing at the design stage affects the actuated and coordinated operational strategies, including pedestrian clearance levels. Basic phasing of an intersection including a two-way stop control, all-way stop control, roundabout, and signalized and unsignalized intersections. General understanding of HCM (Highway Capacity Manual) and MUTCD (Manual for Uniform Traffic Control Devices) and how it applies to intersection and mid-block design for all road users.
Transportation Elements	Sign Fundamentals	Understand the five principles of signing, (readability and retroreflectivity, sign type and designation, sign priority/primacy, and meeting road user needs). Be able to apply the MUTCD and LA DOTD's specifications. Understand signing material, construction plans, inspection, and maintenance.
Transportation Elements	Intro to NEPA	Understand the NEPA analysis and roles and responsibilities of participants in the NEPA process. Application of NEPA analysis with the DOTD Stage 1 project review to improve opportunities for highway safety management inclusion.
Transportation Elements	ADA Compliance	Demonstrate knowledge of Title II of the Americans with Disabilities Act (Title II ADA), Section 504 of the Rehabilitation Act of 1973 (Section 504), and Louisiana ADA Transition Plan to provide safe and efficient transportation facilities. Ability to identify ADA compliance priorities in Louisiana. Implement ADA appropriate elements into road design for safety and compliance.

Internal Processes	N/A	Internal DOTD processes related to Highway Safety.
Internal Processes	Overview of DOTD Structure	Understand how the sections interface/interact (Engineering Directives and Standards Manual [EDSM] and other policies).
Internal Processes	Project Management	Understand DOTD project management and delivery process, including projects performed by consultants. Be able to operate as a Task Manager or Project Manager, using the Project Manager Manual and Consulting Contract Services Manual as guiding documents. Ability to utilize technology based solutions for project management (i.e., Microsoft Excel or Project, Primavera) for tracking and monitoring project delivery. This may include using graphs, tables, and charts to communicate status of projects and program to safety partners.
Internal Processes	Planning & Traffic Policy	Understand how to conduct LA DOTD planning process, traffic studies, Stage 0s, and associated reporting.
Internal Processes	Traffic Studies	Understand and apply LA DOTD traffic engineering policies.
Internal Processes	Funding Streams & Contracts	Knowledge of state procurement guidelines and DOTD contract formats, standards, and budget partitions. Understand processes for DOTD CCS advertisements, negotiations, contracts, and invoicing. Understanding of safety funding streams (federal, state, and local) and required documentation and reporting. This includes the importance of Stage 2 review opportunities to maximize highway safety management.
Internal Processes	Technical Grant Writing	Understanding of technical grant writing concepts and standards for creating competitive bid guidance and for drafting complete and successful responses.
Internal Processes	Resources and Partners	Identify opportunities for internal and external coalition-building and strategic communications for highway safety initiatives. Recognize the barriers that hinder collaboration across and within institutions. Assess and promote effective outreach/public involvement program development and implementation. Resource/Partner examples include: Every Day Counts (EDC), Focused Approach to Safety, and Proven Safety Countermeasures.
Internal Processes	Meeting Facilitation	Knowledge and ability to facilitate a group of professionals, understanding group dynamics, addressing personal agendas in a non-threatening manner, and being flexible in activities to reach outcomes.

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Internal Processes	Verbal Communications	Understand the importance of public speaking to and tailoring a presentation to your audience. This includes preparing and delivering visual aids along with presentation notes to assist in delivering a specific message.
Internal Processes	Setting SMART goals	Utilize strategies in SMART goal setting to establish measurable action items in SHSP action plans. Be able to track and monitor action items.