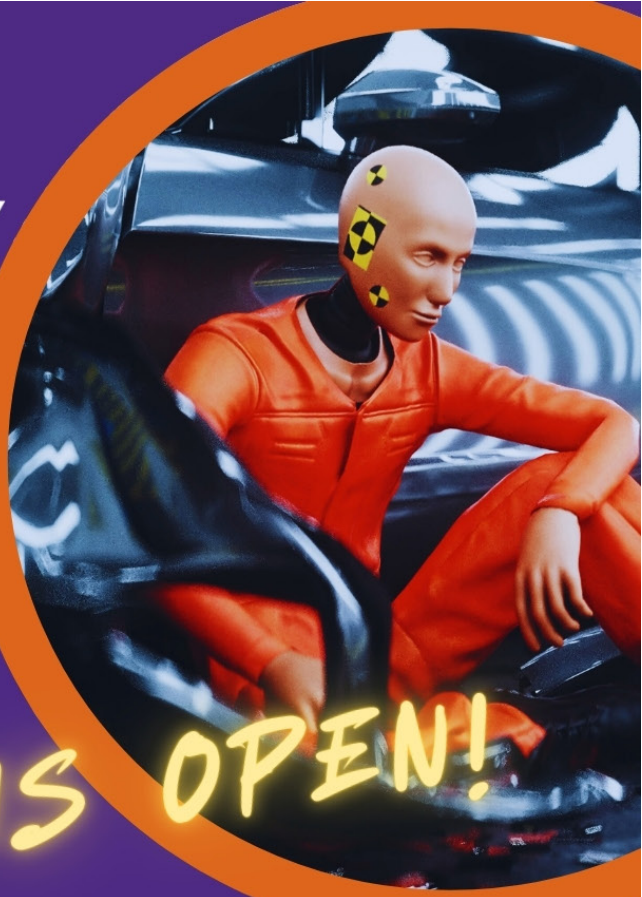
Northwestern

CENTER FOR PUBLIC SAFETY

# 2026 CRASH CATALOG



REGISTRATION IS OPEN!

**REGISTER NOW**

LATRCC
Louisiana Traffic Records Coordinating Committee

HSC
Louisiana Highway Safety Commission

# 2026
# COURSE DATES

## CORE CRASH SERIES

**Jan. 5 - 16** Crash Investigation 1 | page 3
**Mar. 2 - 13** Crash Investigation 2 | page 3
**Apr. 13 - 16** Math & Physics Review for Crash Professionals | page 4
**Apr. 20 - 24** Vehicle Dynamics | page 5
**May 11 - 22** Traffic Crash Reconstruction 1 | page 6
**July 6 - 17** Traffic Crash Reconstruction 2 | page 7

## CRASH INVESTIGATION & RECONSTRUCTION ELECTIVES*

**Feb. 23 - 27** Pedestrian / Bicycle Reconstruction | page 8
**Jun. 8 - 12** Passenger Vehicle Forensic Inspection | page 9
**Jun. 22 - 26** Adv. Crash Reconstruction Utilizing Human Factors Research | page 10
**Sept. 14 - 18** CDR Analysis & Applications | page 11
**Sept. 21 - 25** Supervision of Crash Investigation Units | page 12

## LOCATION

**All courses will be held at**

Louisiana State Police Academy
7901 Independence Blvd.
Baton Rouge, LA 70806

Unless otherwise noted, students are in class 8:00am - 5:00pm, Monday - Friday, for the duration of their course.

**Learn More about the Registration / Selection Process at:**
**http://bit.ly/46ynpB3**

## REGISTRATION WINDOW

**SEPTEMBER 12 – OCTOBER 17**

## IS OPEN NOW!

**Selection Period Only:** Courses will be filled during the Sept. 12 - Oct. 17 timeframe only.
**Act Early:** Seats are limited. Register early to secure your spot.
**Don't Miss Out:** Courses fill quickly and may close before the deadline.

**REGISTER BY QR CODE OR VISIT!**
**Visit surveymonkey.com/r/2026_CrashCourses**

**Or, Use the QR Code**

**DATES: JAN. 5 - 16**

# 1 CRASH INVESTIGATION 1

## At-Scene Investigation

**PREREQUISITES**
None

**CONTENT**
- Comprehensive intro to crash investigation
- Collecting information from drivers & witnesses
- Vehicle inspection protocols and procedures
- Measuring & mapping the crash scene
- Creating sketches and post-crash diagrams
- Intro to Event Data Recorders

The moments immediately following a traffic collision are crucial, and only a well-trained crash investigator knows how to identify and collect the necessary information at the crash scene. That critical training begins with Crash Investigation 1.

Crash 1 is the authoritative NUCPS introductory course that sets students on the path to becoming proficient in the skills required to quickly, successfully, and confidently obtain critical physical evidence and driver and witness information. Our team of expert instructors teach students how to: properly obtain and document at-scene information and evidence; gather information from drivers, passengers, and witnesses; measure and map the crash scene; and, create sketches and after-crash diagrams. Crash 1 also introduces students to EDR technologies and how the data investigators collect are used in crash reconstructions.

Crash Investigation 1 is based on the most recent edition of our seminal text, Traffic Crash Investigation, which is included in the course tuition.

**DATES: MAR. 2 - 13**

# 2 CRASH INVESTIGATION 2

## Technical Investigation

**PREREQUISITES**
Crash Investigation 1

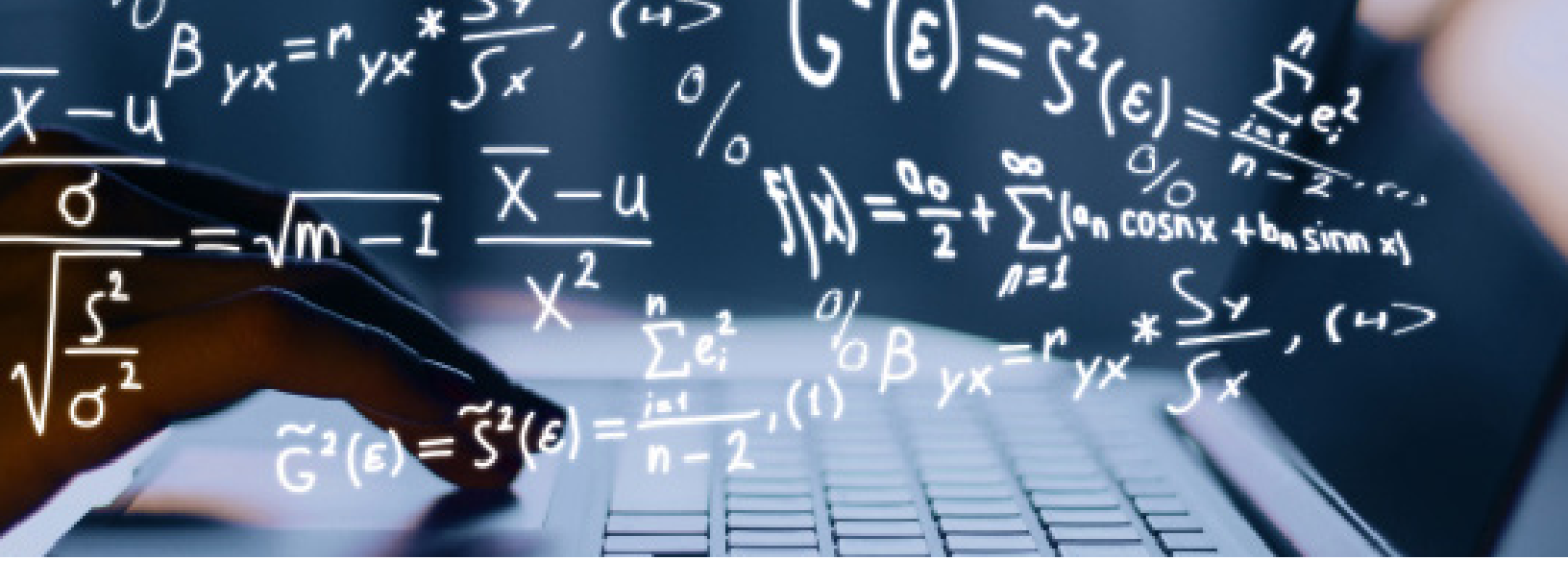
**CONTENT**
- Vehicle damage analysis (describing, reporting & determining direction of forces)
- Vehicle behavior in crashes
- Identifying and interpreting tire marks, road scars & other results of a crash on the road
- CDR Systems Operator courseTechnical report writing
- Lamp filament analysis
- Tire damage analysis & tire failure
- Measurement methods, including perspective grid, photogrammetry, diagram drawing, aerial imagery & application to crash investigation
- Interpretation of data
- Specialized data gathering, measuring devices & other testing

Traffic crash data is useful only if it is properly collected, interpreted, and analyzed. Participation in Crash Investigation 2 increases the at-scene investigator's professional skill set and enhances their credibility.

> Students who successfully complete Crash Investigation 2 develop skills in technically preparing crash investigation data and collecting follow-up data required by reconstructionists, prosecutors, defense attorneys, claims adjusters, fleet supervisors, and highway safety engineers.

Crash Investigation 2 builds upon topics examined in Crash 1 and provides students with greater knowledge of the information available at the crash scene, how to properly collect that data, and how to initiate its interpretation. Like Crash 1, the course is rooted in the latest edition of our authoritative text Traffic Crash Investigation and emphasizes vehicle behavior in crashes, vehicle damage analysis, advanced mapping and evidence location skills, technical report writing, and proper preservation of digital evidence collected from collision investigations.

Instructors demonstrate use of such emerging technologies as mapping scenes and recording videos with drones and/or total stations. Our CDR Systems Operator course is included as a unit within Crash 2, and students who complete Crash 2 are certified to download and preserve data from EDRs.



**DATES: APR. 13 - 16**

# 3 MATH & PHYSICS REVIEW FOR CRASH RECONSTRUCTION

**PREREQUISITES**
Crash Investigation 1 & 2

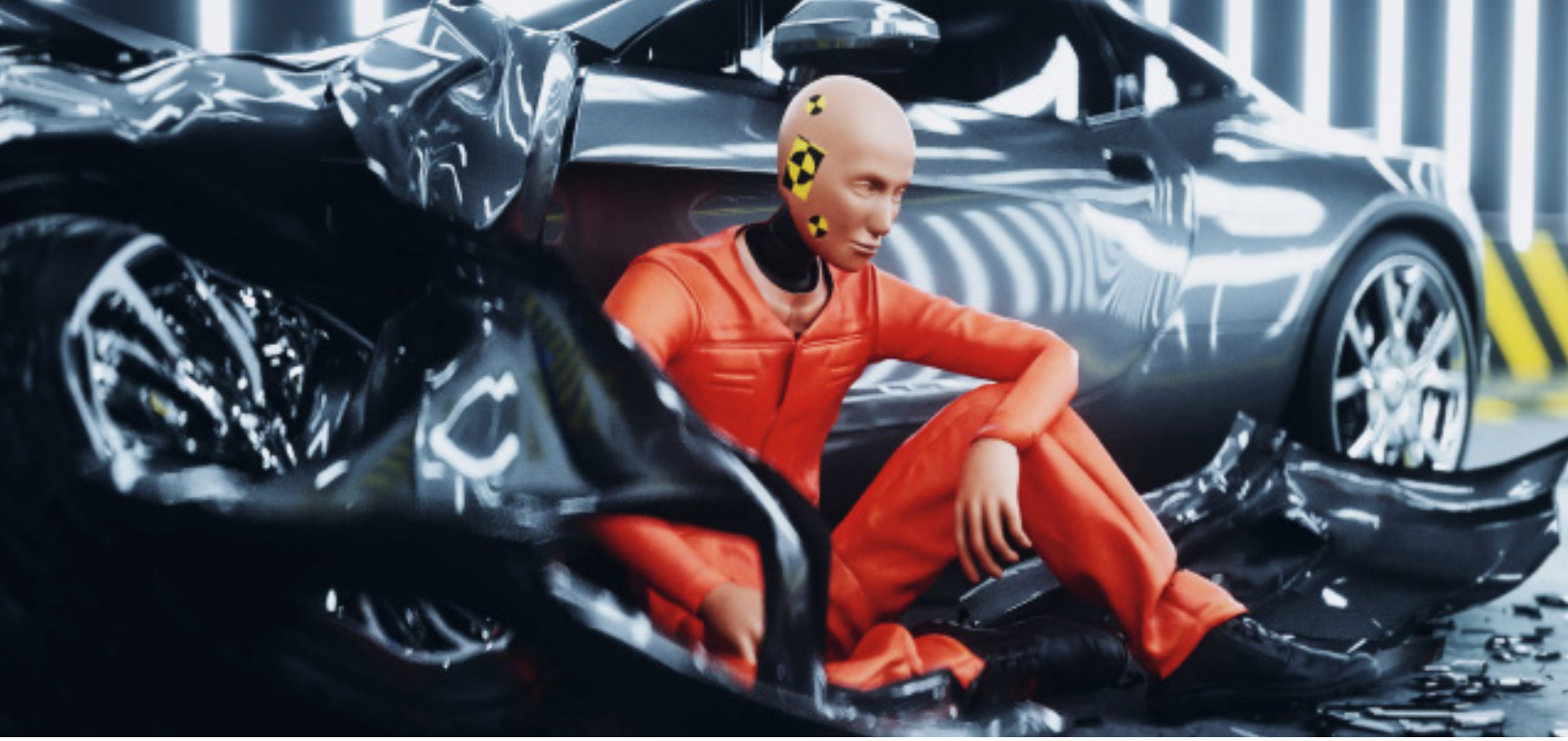
**CONTENT**

- Unit conversions
- Polynomial operations
- Solving algebraic equations
- Cartesian plane
- Slope & intercepts
- Linear & quadratic functions
- Euclidean geometry
- Congruency & similarity
- Angle measurements
- Trigonometric definitions
- Pythagorean Theorem
- Vectors & their basic operations
- Basic & derived physics quantities
- Distance-velocity-acceleration relationships
- More!

**Learn or review basic and intermediate mathematics and physics skills and build your confidence and competence!** This specially designed class is for students who want to advance to Vehicle Dynamics, Traffic Crash Reconstruction 1 and 2, and beyond but need to learn or refresh the math and physics that advanced course curricula presume they know.

In four days, our course instructors offer students the solid math and physics foundations they need in order to experience success in advanced courses rather than struggling with basic skills.

Lessons begin with basic math and physics and progress through intermediate concepts. Our course instructors present such basics as perimeter and area, order of operations, angle measurements, and unit conversions before advancing to more complex topics, such as linear and quadratic functions, vectors, and much more. Students learn to apply the proper equations in order to solve for velocity, acceleration, and distance. Confidence and skills are solidified with practice problems.



## DATES: APR. 20 - 24

**PREREQUISITES**
Crash Investigation 1 & 2;
Math & Physics Review for Crash Reconstruction

# 4 VEHICLE DYNAMICS

Vehicle Dynamics presents advanced physics and math concepts as applied to traffic crash reconstruction. The course focuses on mechanics, the study of motion and forces, and the effects of such forces during a crash.

> Vehicle Dynamics teaches the advanced math procedures and the applied physics necessary for Traffic Crash Reconstruction 1, Traffic Crash Reconstruction 2, and other advanced reconstruction courses.

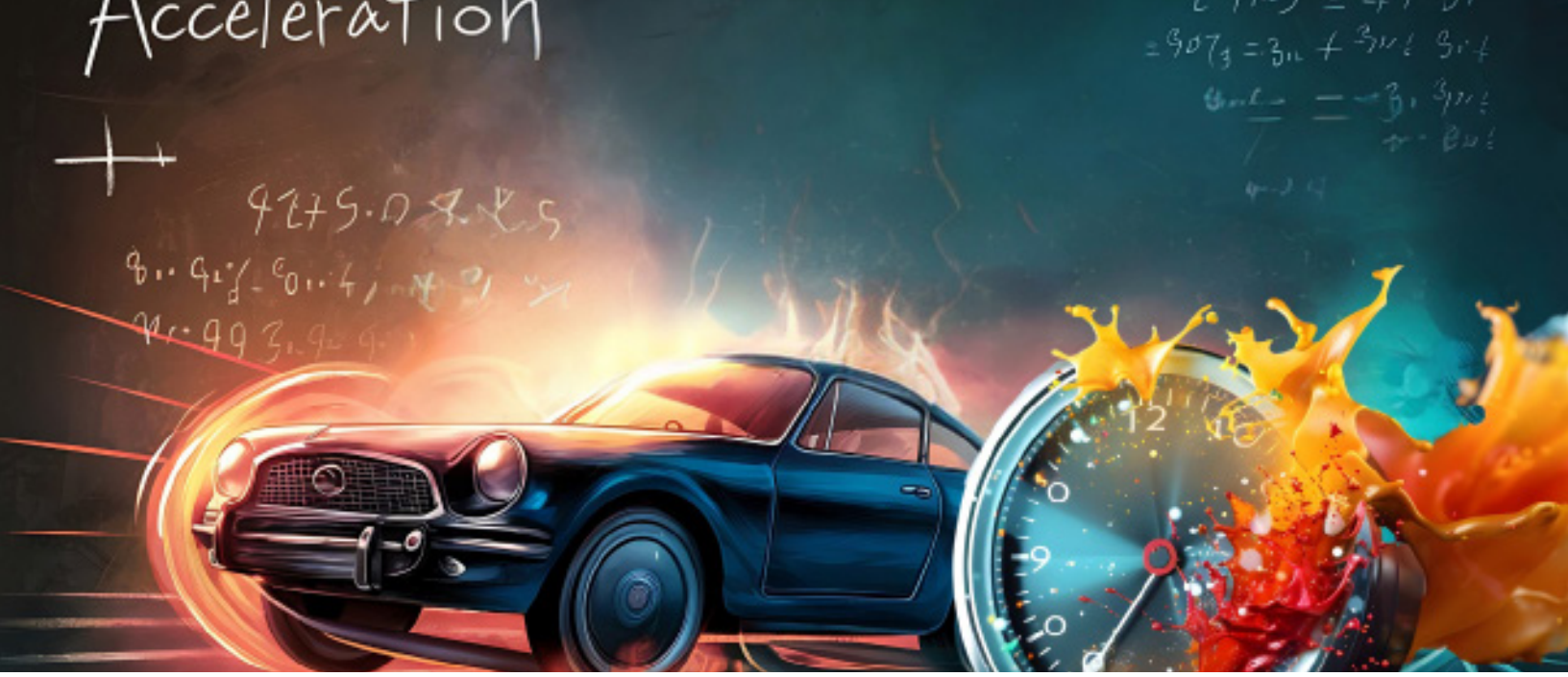
Curriculum covers Newton's Laws of Motion and the proper use of equations of motion to solve for velocity, time, acceleration, and distances of travel. Once these concepts are understood, instruction continues to vehicle braking, drag factors, and coefficients of friction and time-distance analysis.

***Please note: Instructors assume that students possess working knowledge of the skills taught in Math & Physics Review for Crash Reconstruction.***

**CONTENT**

- Newton's Laws of Motion
- Friction and drag factor
- Basic equations of motion
- Solving for velocity, time, acceleration, and distance
- Momentum - collinear (in-line)
- Time-Distance Analysis
- More!

***ACTAR-Accredited Professionals Earn 40 ACTAR CEUs***




## DATES: MAY 11 - 22

### PREREQUISITES

Crash Investigation 1 & 2; Math & Physics Review for Crash Reconstruction (recommended); Vehicle Dynamics

# 5 TRAFFIC CRASH RECONSTRUCTION 1

## Engineering Mechanics & Momentum

In Traffic Crash Reconstruction 1, students synthesize lessons from the previous courses in order to learn to determine how a crash occurred.

Incorporating the latest edition of our seminal textbook ***Traffic Crash Reconstruction***, curriculum focuses on analyzing and interpreting information collected during previous stages of an investigation in order to describe — in as much detail as possible — the crash and the events leading to actual impact. Students apply the lessons from daily lecture material to real-world case study situations — an instruction format that provides students with the training necessary to reconstruct traffic collisions. After successfully completing this course, students will have the ability to reconstruct crash situations using momentum and mechanics.

A copy of *Traffic Crash Reconstruction* is included in the course tuition.

### CONTENT

- Engineering mechanics
- Equations of motion
- Vehicle behavior in collisions
- Principal direction of force
- Intro to human factors
- Time-distance analysis
- Conservation of momentum
- Oblique & collinear analysis
- Post-collision drag factors
- Newton's Laws of Motion
- Identifying & analyzing road marks
- Driver strategy & tactics
- Eight real-world case studies

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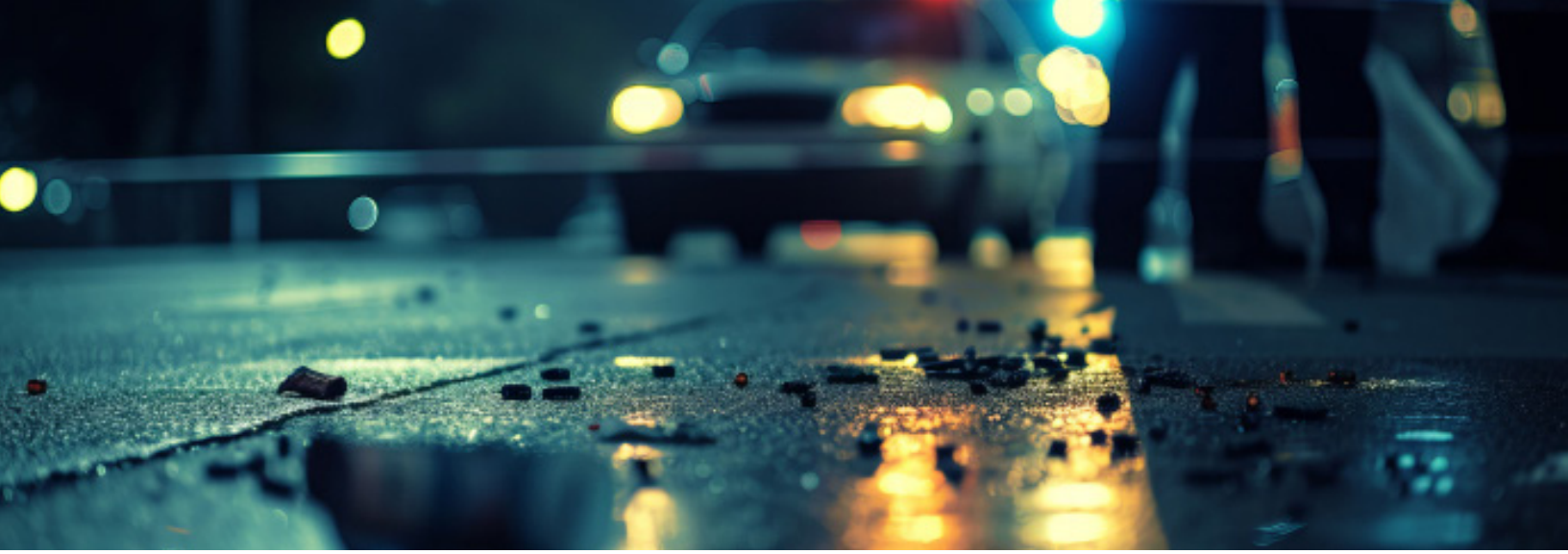

## DATES: JUL. 6 - 17

**PREREQUISITES**
Crash Investigation 1 & 2; Math & Physics Review for Crash Reconstruction; Vehicle Dynamics; Traffic Crash Reconstruction 1

*ACTAR-Accredited Professionals Earn 80 ACTAR CEUs*

# 6 TRAFFIC CRASH RECONSTRUCTION 2

## *Energy, Statistics & Data Event Recorders*

Our series capstone course, Traffic Crash Reconstruction 2 (TCR2), is a continuation of the skills learned in Reconstruction 1. Drawing from the latest edition of *Traffic Crash Reconstruction*, this advanced course ties lecture material to hands-on analysis through daily, real-world case studies.

Students initially expand their understanding of crash reconstruction concepts and analyze collisions using conservation of energy. Instructors then move on to cover special velocity calculations for such situations as vehicle falls, flips, and rollovers. Students also learn basic skills for analyzing Event Data Recorder (EDR) information and how to apply such data to traditional reconstructions. Finally, students are introduced to the Monte Carlo Statistical Analysis and learn to solve momentum-based collision sequences using spreadsheet analysis.

Upon successful completion of this course, students will possess the ability to reconstruct crash situations using energy and statistical analysis of momentum-based collision reconstructions.

### CONTENT

- Work & energy
- Damage energy
- Energy & momentum
- Force balance
- After-impact drag factors
- Occupant kinematics
- Heavy & light vehicle EDR usage in crash reconstruction
- Special velocity calculations, including sideslips, falls, vaults & flips
- Monte Carlo Statistical Analysis
- More!

## DATES: FEB. 23 - 27

### PREREQUISITES

Traffic Crash Reconstruction 1; Traffic Crash Reconstruction 2 is strongly encouraged

### CONTENT

- Identifying & documenting information from the road, vehicle & body
- Investigating pedestrian & bicycle hit-and-run crashes
- Pedestrian motion as a result of a vehicle collision
- Pedestrian & bicycle crash reconstruction techniques
- Vehicle speed estimates
- Vehicle dynamics review
- Time-distance analysis
- Pedestrian / bicycle strategy & tactics
- Pedestrian visibility
- Lab / Field projects
- Case analysis / case studies

# PEDESTRIAN & BICYCLE CRASH RECONSTRUCTION

Vehicle-vs.-pedestrian and vehicle-vs.-bicycle collisions often result in severe injuries to the pedestrian or bicyclist, escalating the importance of investigating and reconstructing these crashes. In this specialized course, students learn the mathematical equations for modelling such collisions and the appropriate formulas for varied crash scenarios.

Participants obtain the skills to determine first-contact positions of pedestrians, bicycles, and vehicles and to estimate the speed of a striking vehicle. Other course topics include human body motion as a result of an impact, empirical data for pedestrian walking and running, and bicycle collisions. Students also receive an introduction to injury biomechanics.

This course includes three valuable lab workshops. An outdoor, nighttime pedestrian visibility workshop exposes students to the different effects of illumination, luminance, and glare. Participants learn to discern the roles that visual acuity and contrast sensitivity play in the driving process. Other lab projects include developing data from pedestrian and bicycle velocities and studying drag factors of bodies on various surfaces.

**After completing this course, students are able to:**

- Determine first contact positions;
- Estimate the speed of a striking vehicle;
- Use appropriate equations to calculate vehicle speeds based on pedestrian, bicycle, and vehicle configurations;
- Understand human body motion as a result of an impact;
- Develop and use empirical data for pedestrian walking and running; and,
- Understand the bicycle collision.

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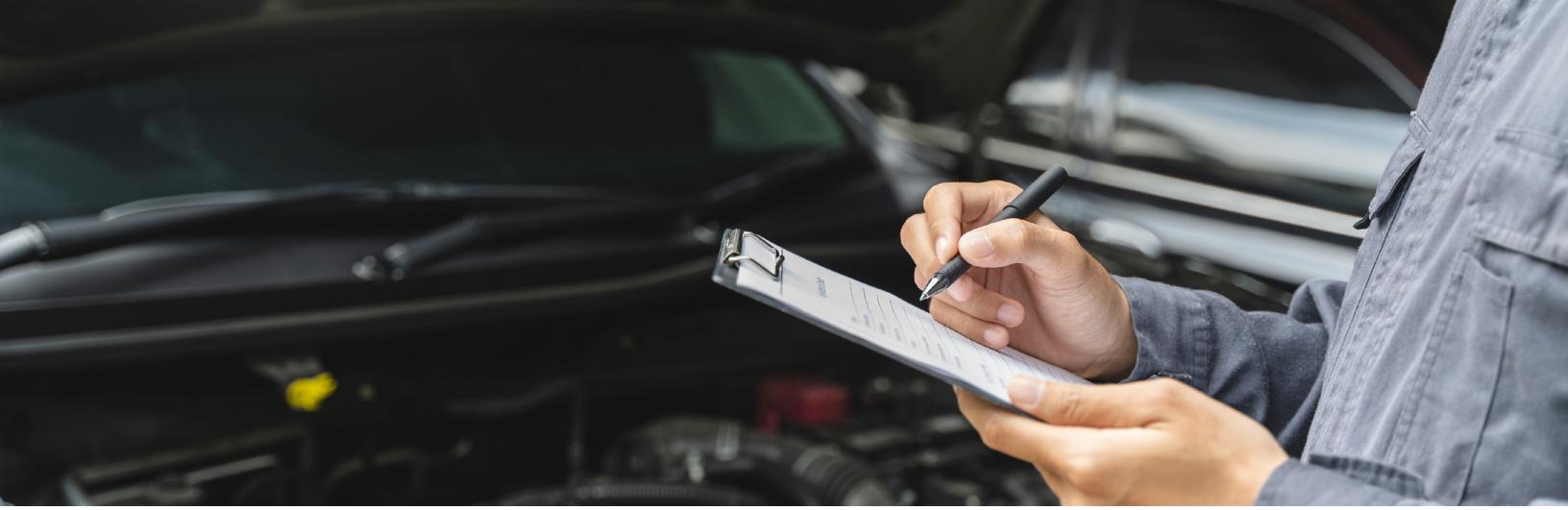


## DATES: JUN. 8 - 12

**PREREQUISITES**
None

**CONTENT**

- Proper forensic investigation methods
- Industry standard terminology
- Research techniques
- Technical report writing
- Hands-on work with damaged vehicles, including:
  - Brake systems
  - Suspension system
  - Throttle system
  - Wheel systems
  - Steering system

# NEW & EXCLUSIVE! PASSENGER VEHICLE FORENSIC MECHANICAL INSPECTION FOR COLLISION INVESTIGATORS

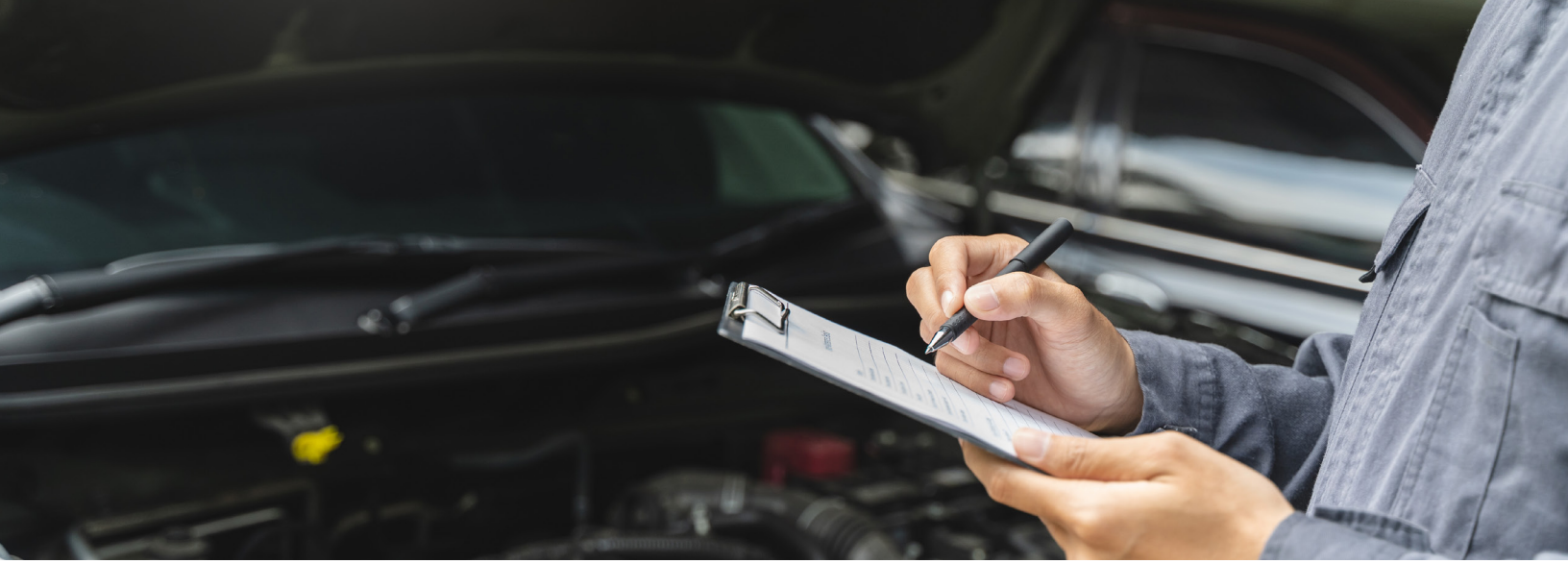
Our unique blend of lecture and hands-on experience gives students the training required to confidently perform forensic mechanical inspections of collision-damaged passenger vehicles.

Forensic work focuses on the throttle, steering, brakes, suspension, wheels, drivetrain, and lamps while also covering passenger airbag and restraint systems. Our expert instructors provide foundational lessons about each component, then students put those lectures to work by mechanically examining and manipulating that component in a damaged vehicle.

Course instruction emphasizes what to document during a vehicle inspection and the proper methods for gathering, analyzing, and recording facts about vehicle damage, crash conditions, and other relevant circumstances. This course includes the disassembly, isolation, measurement, testing, and reassembly of throttle, steering, and brake system components. It also incorporates a comparison study of undamaged vehicles to provide a thorough understanding of commonly damaged passenger vehicle components.

Students learn how to research information and document technical reports using industry-standard terminology to support their findings.

Participants who successfully complete this course will be able to identify parts and pieces of vehicle component systems and clearly explain how different components may have factored into a crash.



## DATES: JUN. 22 - 26

# ADVANCED CRASH RECONSTRUCTION UTILIZING HUMAN FACTORS RESEARCH

### PREREQUISITES

Traffic Crash Reconstruction 1 & 2; Microsoft Excel proficiency is recommended

### CONTENT

- Perception-response time
- Interactive Driver Response Research (IDRR)
- Driver decision-making
- Nighttime recognition
- Gap acceptance for left & right turns
- Through movements for drivers, riders & pedestrians
- Pedestrian walking speeds
- Acceleration
- Lateral acceleration (swerving) for cars, motorcycles, and commercial vehicles
- Forward & backward accelerations
- Driver responses to traffic signals, deceleration choices, reaction time & probability of stopping
- More!

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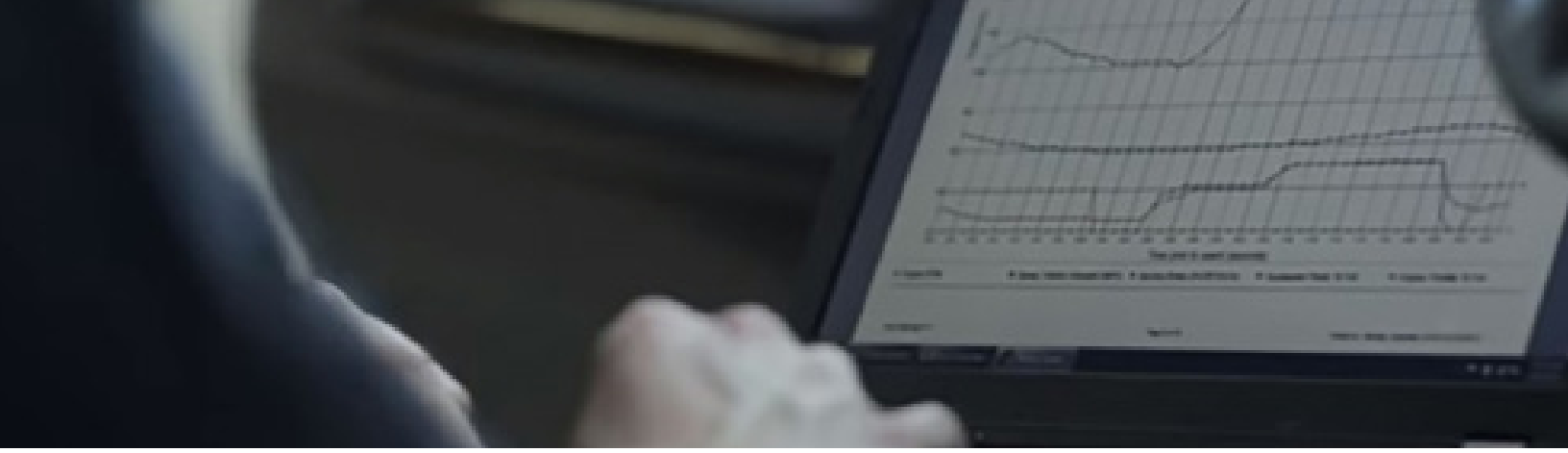
Obtain a better understanding of the human role in various crash scenarios and learn to compare and evaluate human actions. Curriculum focuses on assessing the human role in the crash sequence, including such topics as: driver and pedestrian behavior; response and reaction times; delayed response; recognition and perception; nighttime recognition and impairment; and more.

Participants are introduced to Driver Research Institute's Response cloud-based software. This research-based human factors tool helps analyze driver responses and is based on research by course instructor Dr. Jeff Muttart and other professionals. Students receive a 7-day trial of Response and learn how to incorporate it into their reconstructions.

### COURSE INSTRUCTOR

**Jeff Muttart, M.S., Ph.D.,** is an internationally respected researcher in driver behavior. A recipient of the National Transportation Safety Board Award for Contributions to Safety and the Wallace Award for Excellence in Research, he is the author of more than 50 peer-reviewed articles on traffic safety and driver response in crash and near-crash events. A frequent conference speaker, he was the keynote speaker at WREX16, the world's largest crash reconstruction conference.



## DATES: SEPT. 14 - 18

**PREREQUISITES**
Traffic Crash Reconstruction 1 & 2; CDR Operator

# CRASH DATA RETRIEVAL ANALYSIS & APPLICATIONS

Learn about the function of CDR / EDR data that is obtainable from electronic control modules installed in most late-model vehicles and applying it to your crash reconstructions. Crash Pulse recording methodologies, crash sensing and critical timelines, delta-v recording variations, and airbag-system deployment decision making are just a few of the topics covered in this five-day course.

Students work with case examples, CDR reports from actual crashes, and some crash tests. Each generation of modules for all supported vehicle families — along with line-by-line analysis of most parameters — are included in the course curriculum. Students receive copies of the CDR reports used in class for later reference.

Instructors discuss applying data to the crash at hand, including delta-v and closing-speed analysis, principle direction of force (PDOF) calculation and applications, and comparison of such precrash parameters as vehicle speed, throttle position, engine speed, and brake application. Further lessons involve methods of comparing internally recorded data, information from external sources and how they handshake for comparison, and using CDR data in a situationally appropriate reconstruction.

### CONTENT

- CDR / EDR terms & conventions
- Airbag deployment decision-making basics
- Crash sensing & critical timelines for decision making & other system inputs
- Crash Pulse recording methodologies (e.g., g vs. time or delta-v)
- Delta-V recording variations: which systems record x-axis only; which record x & y axis; and, for what time periods
- Calculating principle direction of force from CDR data
- NHTSA CFR 49 Part 563 Rule with examples
- Pre-crash data sources & impacts on accuracy
- And More!

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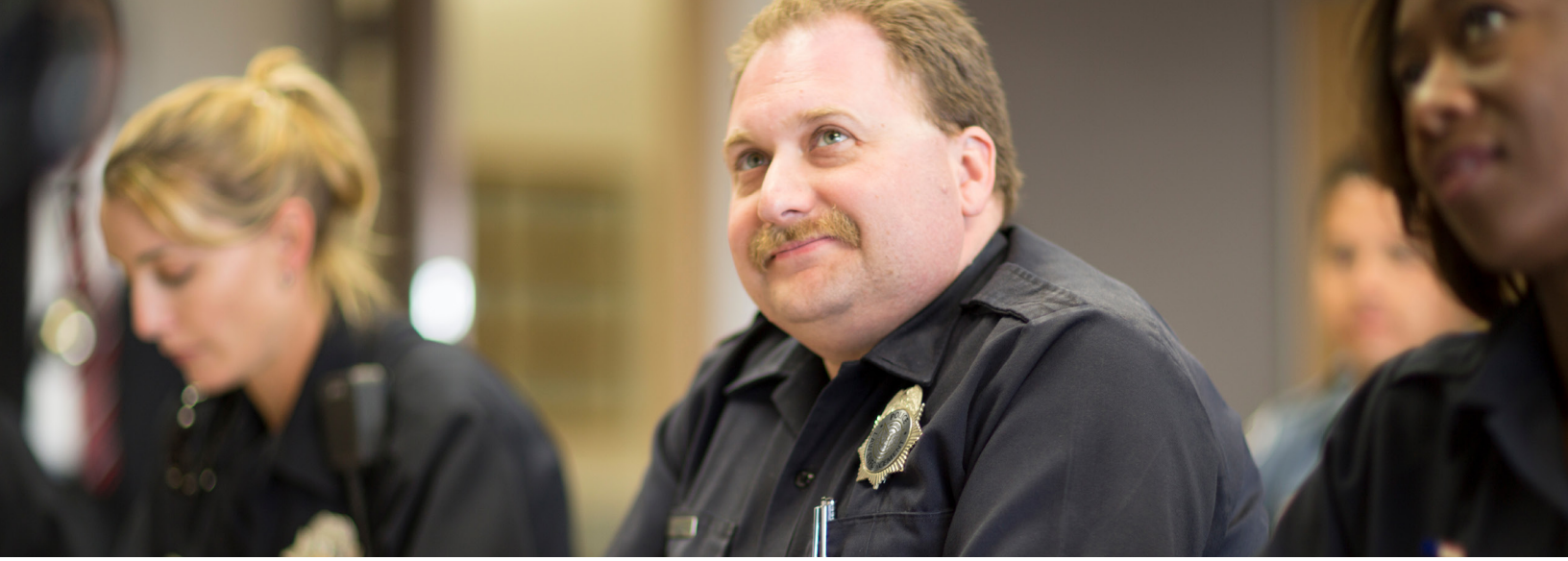


## DATES: SEPT. 21 - 25

**PREREQUISITES**
None

# SUPERVISION OF CRASH INVESTIGATION UNITS

Developed specifically for first-line supervisors who coordinate their troop or agency's crash units, this one-week course teaches the basic management and communications skills required for leading efficient and cohesive crash teams.

After a back-to-basics review of crash investigation and reconstruction, our authoritative instructors introduce leadership and motivational principles, communication techniques, decision making, and more. Instruction emphasizes the importance of accurate and thorough data collection, and the class features a unit on technical report writing and reviews.

Our curriculum enhances the learning experience with an innovative mix of academic principles and practical applications. With an emphasis on student interaction and participation, this course blends concepts and strategies with practical, hands-on how-to's.

### CONTENT

- Review of basic Crash Investigation & Reconstruction principles
- Team development
- Leadership
- Communication techniques
- Decision making
- Ethics
- Applying CDR reports to crash reconstruction
- Crash scene video analysis and application to reconstruction
- Data accuracy
- Technical report writing

# *Celebrating* Student Milestones

**Northwestern University Center for Public Safety recognizes our students' hard work and dedication of in pursuit of continued professional education through multiple achievement awards and milestone logos.**

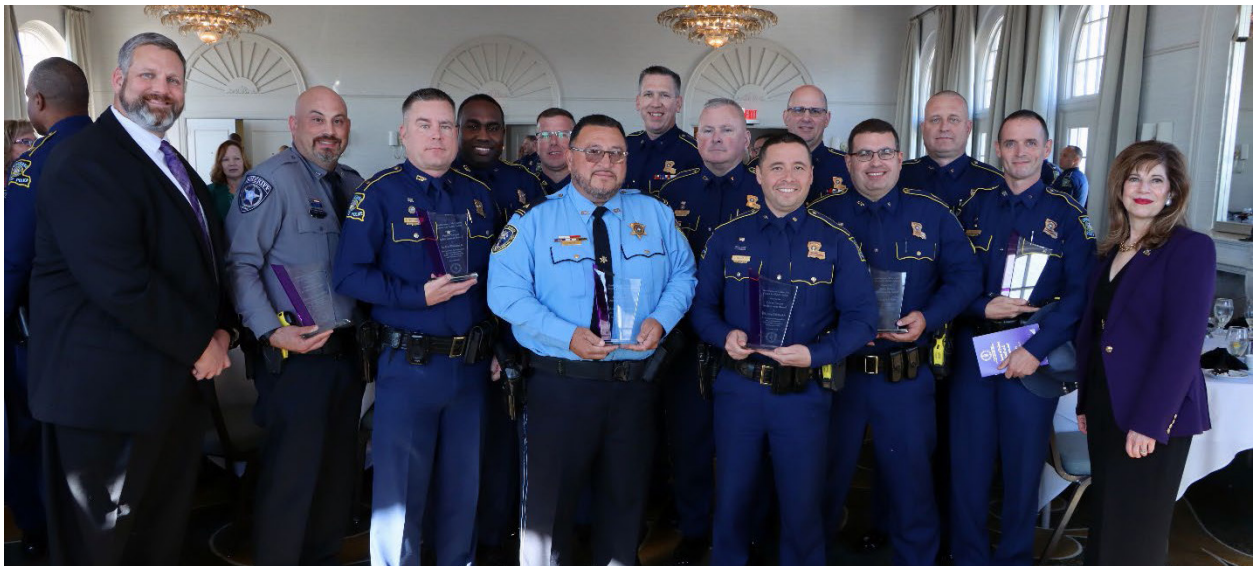
## Fricke Cooper Achievement Award

Crash Investigation & Reconstruction students who have successfully completed the required nine courses (the Crash Series, CDR Analysis & Applications, and three elective courses in Crash Investigation & Reconstruction) are invited to apply by October 1, 2025, for this elite annual award. Visit **nucps.northwestern.edu/crash** for more information.

*Recipients of the NUCPS Fricke Cooper Achievement Award are honored at an annual luncheon.*

## NUCPS Traffic Crash Reconstruction E-mail Signature Logo

To receive this email signature logo, students must have successfully completed Crash Investigation 1, Crash Investigation 2, Vehicle Dynamics, Traffic Crash Reconstruction 1, and Traffic Crash Reconstruction 2. Each e-mail signature logo is customized with the month and year applicants completed TCR2. Visit **nucps.northwestern.edu/crash** to download an application.



*The 2024 Fricke Cooper Achievement Award recipients with NUCPS' Adam Hyde in Baton Rouge.*