Vehicle Dynamics

Learn the essential physics and math to advance to Traffic Crash Reconstruction.

COURSE CONTENT:

- **Newton's laws of motion**
- **Coefficient of friction and drag factor**
- **Introduction to basic motion equations: velocity, time, acceleration, and distance**
- **Momentum - collinear (inline)**
- **Time-Distance Analysis**
- **Physics & mathematics overviews**

Vehicle Dynamics introduces students to the mathematical formulas and physics that are relevant to traffic crash investigation and reconstruction. The course curriculum focuses on mechanics, motion and forces, and the effects of such forces during a collision event.

The third course in our essential five-class series, Vehicle Dynamics is an introduction to basic mathematical procedures and the basic laws of physics necessary for those who wish to attend Traffic Crash Reconstruction 1 and Traffic Crash Reconstruction 2.

Our expert course instructors present Newton's Laws of Motion and the proper application of physics principles to equations of motion in order to solve for velocity, time, acceleration, and travel distances. Following the presentation of these concepts, instruction advances to the discussion of vehicle braking, drag factors, and the coefficients of friction and time-distance analysis.

Register Now

EVERETT, WASHINGTON
January 29 - February 2, 2024

COURSE SPONSOR:
Everett Police Department

COURSE LOCATION:
Snohomish County 911
1121 SE Everett Mall Way
Everett, WA 98208

TUITION
$995 per person

REGISTRATION
Seats are limited.
Register or learn more at:
nucps.northwestern.edu/crashsequence

Northwestern | CENTER FOR PUBLIC SAFETY
nucps.northwestern.edu

Traffic Crash Reconstruction 1

Develop the foundations for a successful traffic crash reconstruction career.

COURSE CONTENT:

- Engineering mechanics
- Equations of motion calculations
- Vehicle behavior in collisions
- Principal direction of force analysis
- Introduction 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

Based on the most recent edition of our authoritative textbook, *Traffic Crash Reconstruction*, this course instructs students in analyzing and interpreting information that has been collected at lower levels of a crash investigation in order to describe — in as much detail as possible — a collision and the events leading to the actual impact.

Our teaching format provides the optimum training and practice in necessary reconstructions skills, as students apply the lessons from daily lecture material to real-world case study situations.

After completing Traffic Crash Reconstruction 1, students will be able to reconstruct crash situations using momentum and mechanics.

PREREQUISITES:
Crash Investigation 1; Crash Investigation 2; Vehicle Dynamics
Participants should possess an understanding of physics and math skills that include high-school level algebra, geometry, and trigonometry.

ACTAR MEMBERS EARN:
80 ACTAR CEUs

Register Now

EVERETT, WASHINGTON
February 12 - 23, 2024

COURSE SPONSOR:
Everett Police Department

COURSE LOCATION:
Snohomish County 911
1121 SE Everett Mall Way
Everett, WA 98208

TUITION
$1,295 per person

REGISTRATION
Seats are limited.
Register or learn more at:
nucps.northwestern.edu/crashsequence

Northwestern | CENTER FOR PUBLIC SAFETY
nucps.northwestern.edu

Traffic Crash Reconstruction 2

Build upon your crash reconstruction knowledge and take your skills to a new level.

COURSE CONTENT:

- Engineering mechanics
- Equations of motion calculations
- Vehicle behavior in collisions
- Principal direction of force analysis
- Introduction 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

Traffic Crash Reconstruction 2 (TCR2) is the fifth and final course in our foundational series and is a continuation of the skills learned in Reconstruction 1. Students receive expert instruction through lecture and daily real-world case studies, which tie lectures to hands-on analysis. Upon successful completion of TCR2, students will possess the core skills for traffic crash reconstruction.

In TCR2, students expand on their understanding of crashes and learn to analyze collisions using conservation of energy and delving into special velocity calculations for such situations as vehicle falls, flips, and rollovers. Participants obtain basic skills for analyzing EDR data and how to apply it to traditional reconstructions. They also are introduced to the Monte Carlo Statistical Analysis and learn to solve momentum-based crash sequences using spreadsheet analysis.

TCR2 is a prerequisite to many of our advanced elective courses and is based on the authoritative material from our textbook *Traffic Crash Reconstruction*.

PREREQUISITES:
Crash Investigation 1 & 2; Vehicle Dynamics; Traffic Crash Reconstruction 1. *Participants should possess an understanding of physics and math skills that include high-school level algebra, geometry, and trigonometry.*

ACTAR MEMBERS EARN:
80 ACTAR CEUs

Register Now

EVERETT, WASHINGTON
March 11 - 22, 2024

COURSE SPONSOR:
Everett Police Department

COURSE LOCATION:
Snohomish County 911
1121 SE Everett Mall Way
Everett, WA 98208

TUITION
$1,295 per person

REGISTRATION
Seats are limited.
Register or learn more at:
nucps.northwestern.edu/crashsequence

Northwestern | CENTER FOR PUBLIC SAFETY
nucps.northwestern.edu