CONCEPT

Traffic Collision Investigation and Reconstruction: Scene Mapping, Speed Analysis and Reporting

18 – 22 October 2027
London - Central London four-star



Traffic Collision Investigation and Reconstruction: Scene Mapping, Speed Analysis and Reporting

Ref: 510_16854 **Date:** 18 – 22 October 2027 **Location:** London - Central London four-star **Fees:** 25300 SAR

Introduction:

Traffic collision investigation and reconstruction often fails at the point it matters most: the scene is cleared before tyre marks and debris are measured, vehicle data is lost, and speed estimates rest on opinion rather than physics. Findings then collapse under challenge from courts, insurers or road owners. This Core Concept course trains investigators to secure and map a collision scene, read physical and electronic evidence, calculate speeds from energy and momentum, and defend their conclusions. Each participant reconstructs a case collision and produces a Collision Reconstruction Report.

Course Objectives:

- Manage a serious collision scene safely and identify, record and preserve short-lived physical evidence before the road reopens
- Measure and map a collision scene using baseline and coordinate methods, total station survey, photogrammetry and drone imagery
- Interpret tyre marks, gouges, debris fields and vehicle crush to establish points of impact, travel paths and rest positions
- Calculate pre-impact and impact speeds from skid and yaw marks, momentum exchange and crush energy, and state the uncertainty range
- Integrate event data recorder records, video and human and road factors into a defensible sequence of events
- Write a collision reconstruction report and present its findings as expert evidence under cross-examination

Target Audience:

- Traffic police officers who attend fatal and serious injury collisions and prepare case files
- Road authority engineers who review collision sites and identify road environment contributions to crashes
- Fleet safety specialists who investigate crashes involving company vehicles and drivers
- Insurance and loss adjusting investigators who test liability and speed claims after vehicle collisions
- Forensic and technical support staff who survey scenes and examine damaged vehicles for investigators

Course Outline:

Day 1: Collision Scene Safety, Evidence and Investigation Roles

- Serious Collision Scene Command: Cordons, Traffic Management and Responder Safety
- Collision Phases Model: Perception, Pre-Impact, Engagement and Post-Impact Travel
- Transient Evidence Log: Tyre Marks, Fluid Trails, Debris and Lamp Filaments
- Evidence Continuity Record: Labelling, Chain of Custody and Vehicle Recovery Holds
- Witness and Driver First Account Capture With Scene Photograph Sequence

Day 2: Scene Measurement, Mapping and Physical Evidence Reading

- Baseline and Triangulation Measurement With a Reference Point Plan
- Total Station Survey Workflow: Setup, Point Coding and Scale Diagram Output
- Photogrammetry and 3D Laser Scanning Point Clouds for Scene Recording
- Drone Mapping Overview: Flight Planning, Ground Control Points and Orthomosaics
- Tyre Mark Classification: Locked-Wheel Skids, ABS Marks, Yaw and Acceleration Marks

Day 3: Vehicle Examination, Damage Analysis and Event Data

- Vehicle Examination Checklist: Brakes, Steering, Tyres, Lamps and Seat Belts
- Crush Profile Measurement and Principal Direction of Force Assessment
- Point of Impact Location From Gouges, Scrapes and Debris Distribution
- Event Data Recorder Retrieval Overview: Pre-Crash Speed, Brake Status and Delta-V
- Dashcam, CCTV and Telematics Footage Timing and Speed Extraction

Day 4: Speed Calculations, Vulnerable Road Users and Contributing Factors

- Drag Factor Testing and Speed From Skid Distance Worked Examples
- Critical Speed From Yaw Mark Radius Using Chord and Middle Ordinate
- Conservation of Linear Momentum Two-Vehicle Impact Calculation
- Pedestrian Throw Distance and Motorcycle Slide Analysis
- Human, Vehicle and Road Factors: Perception-Reaction Time, Sight Lines and Surface Condition

Day 5: Case Collision Reconstruction and Expert Evidence Practice

- Case File Review: Two-Vehicle Junction Collision With Scene Survey Data
- Sensitivity Analysis and Uncertainty Ranges for Calculated Speeds
- Collision Reconstruction Report Structure: Evidence, Analysis, Opinion and Limitations
- Expert Witness Testimony Rehearsal: Examination in Chief and Cross-Examination
- Collision Reconstruction Report Presentation and Peer Technical Challenge

Skills You Will Gain:

- Collision Scene Management
- Evidence Preservation
- Forensic Scene Surveying
- Tyre Mark Interpretation
- Vehicle Damage Analysis
- Collision Speed Calculation
- Vehicle Data Interpretation
- Expert Witness Testimony

Why Attend This Course:

- Return with a Collision Reconstruction Report built from a full case collision that shows your method from scene to conclusion
- Recognise within the first hour at a scene which marks and items must be recorded before they are lost
- Show the working behind every speed figure so that a court, insurer or road authority can follow and test it
- Compare scene and analysis practice with police, road authority, fleet and insurance investigators

Conclusion:

A reconstruction holds only when every conclusion traces back to measured evidence and sound physics. The course moves from scene command and evidence preservation, through measurement, mapping and tyre mark reading, to vehicle examination, crush analysis and event data, then to speed calculations, pedestrian and motorcycle cases and human and road factors. The final day applies these methods to a case collision, tests the uncertainty in the results and closes with each participant presenting a Collision Reconstruction Report and rehearsing expert evidence.