

Rich Consulting LLC

Accident Reconstruction Consulting & Training

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Monte Carlo Analysis for Traffic Crash Reconstruction with Microsoft Excel

Preapproved for 16 ACTAR CEUs

Class Description

This two-day class will instruct students how to program Monte Carlo Analyses with Microsoft Excel. No experience with Excel is required. The instructors will teach the required Excel skills contemporaneously with the Monte Carlo skills. Periods of instruction, in which students follow along with the instructors, will be followed by class projects, in which students will learn by doing their own Monte Carlo analyses (MCA). Class projects will include EDR analysis.

Course Topics

- Mathematics needed for MCA
 - Mean, median, standard deviation
 - Normal and uniform distributions
 - The Empirical Rule
 - How to select the correct distribution for your analysis
 - Percentiles
- Basic MCA using Excel's built-in random number generator and histogram tool
- Sources for quantifying the uncertainty in crash reconstruction measurements and assumptions
- Auditing another expert's MCA
- Debugging your own MCA
- Advanced MCA
 - Programming your own random numbers
 - Filtering inputs and results to eliminate impossible results
 - Creating your own histogram and cumulative probability charts
 - How to handle results that are not normally distributed
- How to write a report that includes an MCA
- Projects include various EDR analyses and time-distance

Prerequisite

All students must have successfully completed a course in Traffic Crash Reconstruction or have an engineering degree with at least 1 year of crash reconstruction experience.

Computer and Software Requirements

All students must have a laptop computer running the **Office 365 Excel version** with Excel **installed on the laptop**. The online Excel version does not have all the tools needed for this course. Earlier versions of Excel cannot be supported by the instructors. A 30-day trial version of Office 365 is available for FREE on Microsoft's website (<https://www.microsoft.com/en-us/microsoft-365/try>).

Certificate Requirements

Students must complete all class projects and pass a final exam to receive a certificate of completion.

About the Instructors

Andrew Rich and Michelle Fish are co-owners of Rich Consulting, LLC, which is based in Fairlawn, Ohio. Both instructors are retired law enforcement officers, are ACTAR accredited and have Mechanical Engineering degrees. Both instructors also teach EDR Analyst classes for IPTM and are co-authors of Fundamentals of Statistics for Traffic Crash Reconstruction, published by IPTM. Mr. Rich and Ms. Fish have over 13 years of experience teaching private and police reconstructionists how to use Excel for traffic crash reconstruction.

Class Schedule, Hosting and Registration

- Call us today to learn how you can host a class and obtain free tuition.
- Contract classes and tuition classes are available
- A schedule of classes and registration is available online at www.rich-llc.com/training