Short Courses Offered by Dr. Averill M. Law

Course	Format	Pages
Simulation Modeling for System Design and Optimization, I: Fundamental Principles	**Public, Onsite**	**3-4**
Simulation Modeling for System Design and Optimization, II: Advanced Concepts	**Public, Onsite**	**5**
Design of Experiments for Simulation Modeling	**Public, Onsite**	**6**
Agent-Based Simulation	**Online, Onsite**	**7**
How to Validate Your Models and Simulations	**Online, Onsite**	**8**
Discrete-Event, Agent-Based, and System Dynamics Simulation, and When to Use Each	**Public, Onsite**	**9**
Applied Statistics for Engineers and Scientists	**Onsite**	**10**

" The seminar provided me with all of the necessary skills to use simulation modeling in the future. I was very impressed by your knowledge, dedication, and professionalism. *"*

Industrial Engineer, Vancouver Port Authority (Canada)

OVERVIEW OF SIMULATION MODELING

Simulation modeling allows system developers and analysts to predict the performance of existing or proposed systems under different configurations or operating policies. This process, carried out before the existing system is actually changed or the new system is built, eliminates the risk of unforeseen bottlenecks, underutilization or overutilization of resources, and failure to meet specified system requirements.

Unfortunately, many people still believe that simulation is largely an exercise in computer programming when, in fact, programming represents only 25 to 50 percent of a sound simulation study. Our courses on simulation modeling and analysis are designed to provide you with the *complete set of skills* actually needed for simulation-project success — *vendor training or university courses that focus on how to use a simulation product is clearly not sufficient.* You will learn the latest and most-important simulation techniques in a small fraction of the time that you could by self study or by attending simulation conferences. Each topic builds on previous ones and is presented in an intuitive and understandable manner.

COURSE 1

Simulation Modeling for System Design and Optimization, I: Fundamental Principles

This course is designed for operations research analysts, systems and industrial engineers, military planners, computer scientists, and technical managers who would like to use simulation to design and optimize real-world systems. It encompasses a full spectrum of applications, including defense, manufacturing, healthcare, transportation, supply chains, business processes, communications networks, and more. The course presents definitive methods for developing a simulation model, ensuring its validity, choosing simulation software, selecting input probability distributions, analyzing simulation runs, and project management. A case study illustrates the step-by-step application of simulation modeling techniques. *Students will have an opportunity to analyze simulation input and output data in class using Excel and ExpertFit.* The prerequisite for this seminar is a basic course in statistics, or the equivalent.

Versions of this seminar have been given for organizations such as Boeing, GM, Hewlett-Packard, IBM, Lockheed Martin, Los Alamos National Lab, NASA, NATO, NSA, U.S. Air Force, U.S. Army, and U.S. Navy.

Critical Questions That the Seminar Will Answer:

- What is a definitive overall approach for conducting a simulation study?
- What is the best simulation software?
- How do you decide on an appropriate level of model detail?
- What are the proven techniques for ensuring model validity and credibility?
- How can you accurately model the randomness in your system?
- How can you determine the correct length of a simulation run?
- What are 21 critical pitfalls that can sabotage your simulation project and how can they be avoided?

THE TRUE COST OF INADEQUATE TRAINING

The cost for one of our state-of-the-art courses is far less than a potential $1,000,000 error due to inadequate technical training!

" Your course is absolutely outstanding. Well worth the expense. I will recommend it to my associates. "
Senior Consultant, Booz Allen & Hamilton
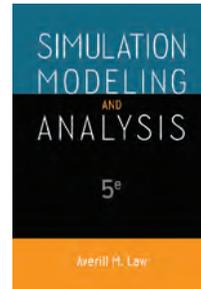
What You Will Learn:

1. Designing and Optimizing Systems via Simulation Modeling

- New system design: ensuring that system requirements are met
- Existing system modification: analyzing alternative configurations
- Components and logic of a simulation model
- 10 crucial steps in a sound simulation study

2. Selecting Simulation Software

- Important software features
  - Modeling flexibility
  - Ease of use
  - Hierarchy
  - Interoperability with other applications
  - Animation
  - Support for multi-core processors
  - Statistical capabilities
  - Quality documentation
- Live demonstrations of software

3. Building Valid, Credible, and Appropriately Detailed Simulation Models

- Determining the level of model detail
  - Importance of a precise problem formulation
  - Involving subject-matter experts in model development
  - Sensitivity analyses
  - Iteratively increasing model complexity
- Techniques for increasing model validity and credibility
  - Regular interaction with management
  - Use of a written "assumptions document"
  - Structured walk-through of assumptions document before programming
  - Comparison of model and system outputs for an existing system

- Animation
- Statistical techniques for model validation
- Management's role in the modeling process
  - Problem formulation
  - Approval of important model assumptions
  - Methods for enhancing management confidence in the model

4. Modeling Randomness in Real-World Systems

- Deciding between fitted theoretical distributions (e.g., exponential or normal) or empirical distributions when system data exist
- Using a triangular distribution in the absence of data
- ExpertFit distribution-fitting software
- Computer implementation of input models
  - Random-number generators
  - Generating random values from a distribution

5. Reaching Correct Decisions from Simulation Output Data

- Critical importance of statistics for output-data analysis
- Defining experimental parameters
  - Determining the required number of simulation runs and their length
  - Specifying warmup-period duration
- Estimating desired measures of performance

6. Case Study

- A detailed application of simulation techniques

7. 21 Critical Pitfalls in Simulation Modeling and How to Avoid Them

- Modeling and validation
- Simulation software
- Modeling the randomness in a system
- Design and analysis of simulation experiments

■ Simulation Modeling for System Design and Optimization, II: Advanced Concepts

This course will discuss practical and easy-to-understand statistical techniques for comparing alternative system designs, variance-reduction techniques for obtaining more precise comparisons for the same amount of computing, the use of experimental design techniques to determine important system factors, agent-based simulation, and simulation-based optimization. All topics will be illustrated by one or more examples. ***Students will compare firsthand two or more simulated systems using proper statistical techniques, and run and analyze an agent-based simulation model.*** The prerequisite for this seminar is the "Fundamental Principles" course, or permission of the instructor. Versions of this seminar have been given for organizations such as AT&T, Boeing, IBM (Belgium), Northrup Grumman, Norwegian Defence Research Establishment, Sandia National Labs, U.S. Air Force, U.S. Army, U.S. Forces Korea, and U.S. Navy.

Each attendee who is taking this seminar as a stand-alone course will receive a copy of the book ***Simulation Modeling and Analysis*** (5th edition, McGraw-Hill, 2015) by Averill M. Law as part of their registration fee – this book is widely considered to be the "bible" of simulation.

What You Will Learn:

1. Advanced Techniques for Output-Data Analysis
- ■ Analyzing steady-state simulations
- ■ Estimating probabilities and percentiles
- ■ Dealing with multiple measures of performance

2. Comparing Alternative System Designs
- ■ Confidence intervals for comparing two or more systems
- ■ Using the variance-reduction technique common random numbers to obtain more precise comparisons
- ■ "Tricks" for synchronizing random numbers across different system designs
  - Multiple random-number streams
  - Generation of all entity attributes upon arrival
  - "Wasting" random numbers
  - "Feeding" the same entity arrivals to several simulation models

3. Design of Experiments for Simulation Modeling
- ■ How experimental design can identify important system factors
- ■ The danger of changing one factor at a time
- ■ Designs for factor screening and prediction

4. Agent-Based Simulation
- ■ What is agent-based simulation and for what applications is it ideally suited
- ■ Available simulation software and toolkits
- ■ Demonstration and analysis of two agent-based simulations

5. Simulation-Based Optimization
- ■ How the integration of optimization modules into simulation software has added a whole new dimension to simulation modeling
- ■ Live optimization of a model with 7 decision variables

ONSITE TRAINING

We can present a seminar on virtually any aspect of simulation at your facility. Topics include system design and analysis, model validation, agent-based simulation, design of experiments, manufacturing, and management overview. Previous clients include:

ALCOA (2)[1]	**Hewlett-Packard**	**Missile Defense**	**Northrop Grumman**	**UPS**
AT&T (8)	**IBM** (6)	**Agency**	**NSA** (5)	**U.S. Air Force** (24)
Boeing (5)	**Intel**	**MITRE** (2)	**Raytheon**	**U.S. Army** (38)
Caterpillar (3)	**Lockheed Martin** (10)	**Motorola**	**Sandia National**	**U.S. Forces Korea**
Coca-Cola	**Los Alamos**	**Nabisco**	**Labs** (3)	**U.S. Navy** (21)
General Electric	**National Lab** (2)	**NASA** (3)	**3M** (2)	**Whirlpool** (3)
General Motors (6)	**M&M/Mars**	**NATO**	**Time Warner**	**Xerox** (2)

[1] Indicates number of seminars

Learn how to make better and more cost-effective decisions with our state-of-the-art simulation training!

Design of Experiments for Simulation Modeling

Simulation models often have many input factors and determining which ones have a significant impact on performance measures (responses) of interest can be a truly daunting task. The common approach of changing one factor at a time is very often *incorrect*, because for many models factors *interact* to impact on the responses. In this course, we give a comprehensive presentation of design of experiments (DOE) *specifically for simulation modeling*, whose major goal is to determine which factors have the greatest effect on the response. Another important use of DOE is to develop a metamodel (a simplified model of the simulation model) based on the important factors to *predict* the model response for factor-level combinations that were not actually simulated due to execution-time or setup-time constraints, or because a prediction is needed in real time. A metamodel can also be used to find the factor combination that *optimizes* the simulation response.

We discuss a simple and widely applicable approach for determining significant factors in the context of simulation modeling. Methods designed for physical experiments, which are discussed in university courses or implemented in statistical software, make assumptions that are *rarely satisfied* in practice. *Students will analyze simulation-response data in class using a leading DOE software package, and be prepared to apply their knowledge the following week at work.* Versions of this seminar have been presented to Australian Department of Defence, Lockheed Martin, Middle East Technical University/Roketsan (Turkey), NSA, Sasol Technology (South Africa), and U.S. Navy. Each attendee will receive the book *Simulation Modeling and Analysis* **(5**th **edition, McGraw-Hill, 2015)**.

What You Will Learn:

1. **Factorial Designs**
   - Determining which factors have the largest impact on the simulation responses *(factor screening* or *sensitivity analysis)*
   - Main effects and interaction effects and their correct interpretation
   - Why the ubiquitous one-factor-at-a-time approach is generally not recommended
   - Failure of classical statistical assumptions and how to circumvent this in simulation modeling
2. **Fractional Factorial Designs**
   - Finding the important factors with less computational effort
   - Confounding of effects
   - Resolution III, IV, V, and higher-level designs
   - Minimum-run design**s**
3. **Metamodels and Response Surfaces**
   - Central composite designs for fitting metamodels
   - *Predicting* model responses for factor combinations that were not simulated
   - Finding the factor-level combination that *optimizes* a simulation response
4. **Metamodels for Simulation Modeling**
   - Latin hypercube designs
   - Kriging and neural network models
5. **Critical Dangers of Using Standard Designs and Analyses for Simulation Modeling**
6. **Commercial DOE Software Appropriate for Simulation**
7. **Numerous Examples to Illustrate the Mechanics and Applications of DOE**
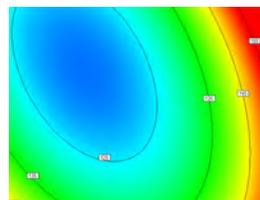
Contour plot for a simulation response

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ABOUT THE INSTRUCTOR

DR. AVERILL M. LAW, the President of Averill M. Law & Associates, is one of the world's foremost experts on simulation modeling. He has been a simulation or statistics consultant to numerous organizations including Accenture, Boeing, Booz Allen & Hamilton, Caterpillar, ConocoPhillips, Defense Modeling and Simulation Office, Ford, Hewlett-Packard, Kimberly-Clark, M&M/Mars, Monsanto, Oak Ridge National Lab, SAIC, 3M, Tropicana, U.S. Air Force, U.S. Army, U.S. Marines, U.S. Navy, and Xerox.

Dr. Law has presented more than 570 simulation or statistics short courses in 20 countries. He has written or coauthored numerous papers and books on simulation, operations research, statistics, manufacturing, and communications, including the definitive book *Simulation Modeling and Analysis* that has more than 164,000 copies in print and considered the "bible" of simulation. He developed ExpertFit, which has been the leading distribution-fitting software since 1983. He also produced several videotapes on simulation modeling. Dr. Law has been the keynote speaker at simulation conferences worldwide. *He was awarded the 2009 INFORMS Simulation Society Lifetime Professional Achievement Award.*

Dr. Law has been a tenured faculty member at the University of Wisconsin-Madison and the University of Arizona. He has a Ph.D. in operations research from the University of California at Berkeley.

■ Agent-Based Simulation

NEW

This course provides a comprehensive discussion of agent-based simulation (ABS), which has been the "hottest" topic in simulation modeling since 2005. In an ABS autonomous agents (people, vehicles, organizations, etc.), which have attributes and potentially complex behaviors, interact with each other and their environment over time. ABS is particularly useful in the following situations: (1) when the "system" has entities that naturally interact with each other and their environment, (2) when it is important for entities to learn and adapt their behavior, and (3) when the movement and actions of entities depend on situational awareness, rather than being "scripted."

ABS has been successfully applied to a diverse set of problems, and improved software packages and faster computers have facilitated the model-development and analysis process. However, learning ABS on one's own is *difficult*, at best, due to the genuine lack of clarity and consistency in the literature. Much of the confusion is due to the literal "smokescreen" of characteristics that are often associated with ABS, including autonomy, agents interacting with each other and their environment, time stepping, learning, adaptation, simple behavioral rules defined "locally," emergence, bottom-up modeling, and complex adaptive systems. Based on 10 years of extensive research, we discuss what we believe to be the real essence of ABS. *Many* of the so-called fundamental tenets of ABS such as time stepping and emergence are shown to not be required. The original development of this seminar benefited from funding by the U.S. Army. There are no prerequisites for the course.

What You Will Learn:

1. Agents and Agent-Based Simulation
- ■ Agents as autonomous entities with attributes and complex behaviors
- ■ Time stepping versus next-event time advance
- ■ Bottom-up modeling and possible emergent system-level behavior
- ■ Three major situations in which to use ABS
- ■ Relationship of ABS to discrete-event simulation (DES)

2. Historical Perspective
- ■ Cellular automata
- ■ Schelling's segregation model
- ■ SEAS model
- ■ Sugarscape model
- ■ Complex adaptive systems

3. Software for Agent-Based Simulation
- ■ What commercial DES software can be used for ABS
- ■ Latest developments in open-source toolkits for ABS, and their modeling flexibility, ease of use, and quality of documentation
- ■ Important defense-related ABS

4. Development and Analysis of Five Agent-Based Simulation Models
- ■ A supply chain model
- ■ Spread of a disease
- ■ Competition between wolves, sheep, and grassland
- ■ A model of military combat

- ■ Example to illustrate learning and adaptation for agents

5. Successful Applications of Agent-Based Simulation
- ■ Defense
- ■ Homeland security (evacuation of crowds, border control)
- ■ Supply chains
- ■ Epidemiology
- ■ Market behavior (consumer, financial, electric)
- ■ Traffic flows
- ■ Sociology
- ■ And many more …
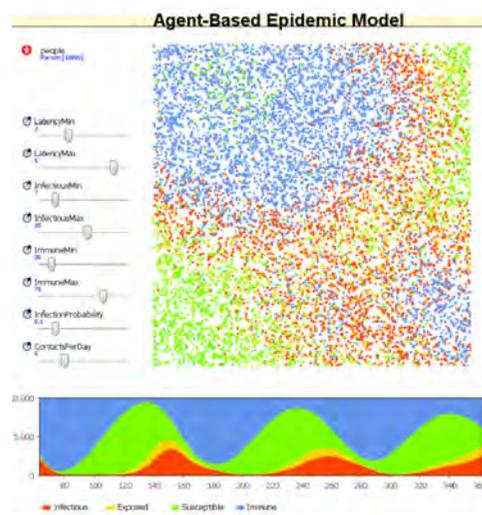
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❝ *This is the most comprehensive explanation of agent-based simulation that I have seen. I feel that I actually understand agent-based simulation now, which I did not as of 8:00 AM.* ❞

Operations Research Analyst, IRS

How to Validate Your Models and Simulations

NEW

The purpose of this course is twofold. First, we present a ***comprehensive*** discussion of practical techniques for validating existing models and simulations. We also describe a detailed seven-step approach for building models that are valid, credible, and appropriately detailed, so that they are actually used in the decision-making process. All techniques will be illustrated by one or more examples based on actual simulation projects. The development of this seminar has benefited from contracts with the Defense Modeling and Simulation Office and the Office of Naval Research.

A highlight of this seminar is the discussion and illustration of an ***assumptions document,*** which is a detailed report delineating all model concepts, assumptions, algorithms, and data summaries. It serves as the main vehicle for communications among the project team, and it is a "blueprint" for creating the simulation computer program. It should ***not*** be confused with a conceptual model, which can be thought of as initial ideas on what a model will look like.

Dr. Averill M. Law, the course instructor, has been intimately involved in the problem formulation, validation, and analysis of approximately 40 simulation models. He has been a validation consultant to organizations such as Booz Allen and Hamilton, Ford, ITT, Stanley Black & Decker, U.S. Air Force, U.S. Army, U.S. Marines, and U.S. Navy.

Versions of this seminar have been presented to Boeing, Lockheed Martin, NSA, Raytheon, Sasol Technology (South Africa), U.S. Army, U.S. Navy, International Council on Systems Engineering (INCOSE), International Society for Optical Engineering (SPIE), and International Test and Evaluation Association (ITEA).

What You Will Learn:

1. **Seven Important Steps in a Sound Study**
2. **Formulating the Problem Precisely**
3. **Talking to Appropriate Subject-Matter Experts (SMEs)**
4. **Interacting with the Decision Maker on a Regular Basis**
   - Helps ensure that the correct problem is being addressed
   - Enhances the credibility of the simulation model
5. **Using Quantitative Techniques to Validate Components of the Model**
6. **Developing a Written Assumptions Document**
   - Purpose, components, and format
   - Detailed example
7. **Performing a Structured Walk-through of the Assumptions Document**
   - Format and important benefits
   - Required attendees
8. **Using Sensitivity Analysis to Determine Important Model Factors**
   - The critical danger of varying one factor at a time
   - Introduction to the proper design of experiments

9. **Results Validation**
   - Comparison of model output data with the comparable output data from a similar *existing system* using numerical statistics and graphical plots
   - Use of a Turing test
   - Evaluation of model output data by SMEs
   - Comparison of model output data with the comparable output data from *another model* that is thought to be "valid"
   - Use of confidence intervals and hypothesis tests to make comparisons
10. **Using Animation to Show that a Model is not Valid and to Enhance Credibility**
11. **Guidelines for Obtaining Good Model Data**
    - Two fundamental principles
    - Common problems with data
12. **Additional Topics**
    - Model calibration and how it differs from validation
    - Independent model validation
13. **6 Critical Pitfalls and How to Avoid Them**

WORLDWIDE AUDIENCE

People have attended Dr. Averill M. Law's public seminars from the following countries: Australia, Austria, Brazil, Canada, Chile, Columbia, Denmark, England, Finland, Germany, Iceland, Indonesia, Italy, Japan, Lebanon, Mexico, Netherlands, Peru, Saudi Arabia, Singapore, Sweden, Switzerland, United Arab Emirates, and the U.S.

■ Discrete-Event, Agent-Based, and System Dynamics Simulation and When to Use Each

This one- or two-day seminar provides a comprehensive introduction to discrete-event (DE) simulation, agent-based (AB) simulation, and system dynamics (SD). It will be of interest to operations research analysts, systems and industrial engineers, government and military planners, computer scientists, business analysts, healthcare professionals, managers, and more. Each type of simulation (paradigm) is described in detail and similarities/differences are given. Common applications of each are discussed, and illustrated by live model demonstrations and analyses. The best-available software and the latest technology for DE, AB, and SD simulation are presented. We also give examples of situations where it might be advantageous to use several simulation paradigms in one composite model (e.g., DE/AB and DE/continuous).

DE and SD simulation have been used since the 1950s. In contrast, AB simulation is much newer but has been the **"hottest" topic in simulation** since 2005, despite the lack of any general consensus on what constitutes an AB simulation. We dispel this confusion and discuss the relationship between DE and AB simulation. There is no prerequisite for this seminar.

Each attendee will receive a copy of the book ***Simulation Modeling and Analysis*** (5th Edition, McGraw-Hill, 2015) by Dr. Averill M. Law, which is widely considered the "bible" of simulation. Versions of this seminar have been presented to Caterpillar, the Naval War College, and the U.S. Navy.

What You Will Learn:

1. **Classification of Simulation Models**
   - Discrete event (DE, AB) vs. continuous (SD)
   - Dynamic vs. static
   - Stochastic vs. deterministic
   - Top-down vs. bottom-up modeling
2. **Detailed Descriptions of DE, AB, and SD**
   - Methods for advancing model time
   - Approaches for model development (DE - process-flow diagrams, programming; AB - programming, state charts; SD - stock and flow diagrams)
   - Three situations where an AB simulation is required rather than a traditional DE simulation
3. **Typical Application Areas for Each Type of Simulation**
   - DE - defense, manufacturing, healthcare, transportation, services, communications networks
   - AB - epidemiology, evacuation of facilities, defense, supply chains, consumer behavior, traffic flows, sociology
   - SD - designing/improving policies or strategies for business, government, and the military
4. **Important Factors in Selecting Simulation Software**
   - Modeling flexibility (ability to model complex system logic) and ease of use (intuitive user interface and amount of programming required)
   - Concurrent 3-D animation and dynamic graphics/statistics

   - Statistical capabilities for stochastic simulations - numerous input probability distributions, easy mechanism for making independent model replications for each of several different system configurations (scenario manager), confidence intervals based on replications
   - Support for multi-core processors and cloud computing
   - Quality documentation and numerous example models
5. **Situations Where Several Simulation Paradigms Will be Required in One Composite Model**
   - When the model requires elements of both DE and AB simulation (e.g., a model of a clinic that treats patients resulting from the outbreak of a disease)
   - When the model has both discrete and continuous components (e.g., a model of an unloading facility for tankers carrying crude oil)
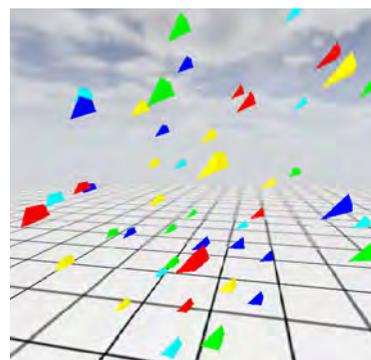
The famous Boids AB simulation

Created using ExtendSim© by Imagine That, Inc.

" *I would recommend this course for anyone who works with simulations of any type.* "

Operations Research Analyst, U.S. Army

Applied Statistics for Engineers and Scientists

Statistics is undoubtedly one of the most useful of all disciplines, since virtually all organizations have data from which inferences must be drawn. In this course you will learn the fundamental concepts of applied statistics including descriptive statistics, confidence intervals, hypothesis tests, regression analysis, and analysis of variance, and be able to apply them *immediately* to the problems that you encounter on the job. This will be accomplished by lectures that carefully explain each statistical technique and then illustrate it by one or more examples using real-world data. This is reinforced by an extensive number of in-class exercises that students perform using Excel. *Whether you are new to statistics or looking for a refresher course, you will find this live seminar a great way to get up to speed in just four days. Internet courses where you read a book or PowerPoint slides on your own can simply not compare!* Versions of this seminar have been presented to Caterpillar, Institute of Industrial Engineers, Lockheed Martin, the U.S. Army, and the U.S. Navy (four times).

What You Will Learn:

1. **Introduction**
   - Populations and samples
   - Types of data
2. **Random Variables and Probability Distributions**
   - Discrete random variables (Bernoulli, binomial, and Poisson)
   - Continuous random variables (normal, t, F, exponential, gamma, and lognormal)
   - Characteristics of a random variable (mean, median, variance, standard deviation)
3. **Point Estimation**
   - Unbiased estimator
   - Variance of a point estimator
   - Estimators for the mean and variance
4. **Descriptive Statistics**
   - Graphical plots (histogram, box plot, scatter plot)
   - Numerical summaries (sample mean, variance, and skewness)
5. **Confidence Intervals Based on a Single Sample**
   - Correct interpretation
   - For large sample sizes
   - For normally distributed data
   - Intervals for means and proportions
6. **Hypothesis Tests Based on a Single Sample**
   - Hypotheses and test procedures
   - Type I error, type II error, and power
   - P-values
   - Tests for means and proportions
   - Shortcomings
7. **Inferences Based on Two Samples**
   - Hypothesis tests and confidence intervals
   - Comparing two means
   - Comparing two proportions
8. **Regression Analysis**
   - Linear regression models with one or more independent variables
   - Estimating model parameters
   - Validating the model
9. **Analysis of Variance (ANOVA)**
   - Testing equality of three or more means
   - Determining which means are different

TESTIMONIALS FOR APPLIED STATISTICS COURSE

This is one of the best classes that I have had in nine years at the Naval Surface Warfare Center. I learned a lot and much more than I thought. I give this seminar a 10 overall.

Electrical Engineer, U.S. Navy

The seminar was just what I needed and has already helped in my work. Thank you for the excellent instruction.

Cost Analyst, U.S. Air Force

Excellent class – very practical!

Systems Engineer, Lockheed Martin

Thank you for a great course. The level of detail was very good and we covered a lot of useful material.

Senior Design Engineer, General Dynamics SATCOM

Instructor knows the material very well and can apply it to real-world problems.

Operations Research Analyst, U.S. Army

It was a great experience to attend your seminar. I came into the seminar with no idea what statistics is and I left with a broad understanding of the subject.

Engineer, U.S. Navy

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Register and make payment one month in advance for a 10% discount on public seminars.

Course Fees and General Information

COURSE FEES:

- **Course 1: $2400** ■ **Course 2: $1800 ($900 with Course 1)**
- **Course 3: $2400** ■ **Course 4: $495** ■ **Course 5: $795**

There is a **10% discount** for registrations received and payments made one month or more before the first day of the seminar. There is a **group discount** when three or more people from your organization register for the same course. There is also a **discount for full-time faculty members and graduate students**. Contact us for details about discounts.

PAYMENT

Payment can be made by using our website **www.averill-law.com**, by credit card (VISA, MasterCard, or American Express), by check, or by purchase order. Payment must be received prior to the first day of class.

SCHEDULE

Class runs from 8:30 A.M. to 4:30 P.M. Registration is at 8:00 A.M. on the first day of class.

LOCATIONS AND HOTEL ACCOMMODATIONS

Seminars are presented at conveniently located hotels. For hotel information, see our website **www.averill-law.com** or call us at 520-795-6265. This information will also be given in your confirmation letter. Hotels will block a group of rooms until approximately four weeks before the seminar. Mention Averill M. Law & Associates and the seminar when you contact the hotel.

CANCELLATIONS

Refunds, less a $100 cancellation fee, will be given for cancellations made 14 or more calendar days before the first day of the seminar. After that only student substitutions or class transfers will be allowed.

Circumstances may make it necessary for Averill M. Law & Associates to cancel a seminar.