

Schedule of Seminars and Webinars

June 2011 – December 2011

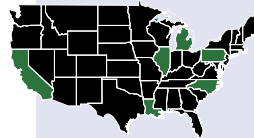
Automotive • Aerospace • Commercial Vehicle

Technical areas *include*:

- Aerospace
- Electronics (Communications and Controls)
- Design Processes/Quality & Reliability
- Engines & Propulsion
- Environment/Emissions
- Fuels/Lubricants
- Management
- Materials/Chemicals
- Noise/Vibration/Harshness (NVH)
- Safety
- Systems & Components
- Tests & Testing
- Vehicle Dynamics & Handling

←----- See inside for course overviews, dates & locations

Convenient Locations!



Seminars held in Michigan, Illinois, California, Pennsylvania & more!



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Online: www.sae.org/events/training



SAE seminars receive the IACET CEU.
For more information, visit www.sae.org/iacet

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Hybrid and Electric Vehicles: Current Production, Future Strategies Webinar 



Improving Fuel Efficiency with Engine Oils
Internal Combustion Systems: HCCI, DoD, VCT/VVT, DI and VCR


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
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



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






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














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Commercial Vehicle Braking Systems 
Compact Heat Exchangers for Automotive Applications
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Fundamentals of Commercial Vehicle Aerodynamics

I.D.# C0919 – www.sae.org/pdevent/C0919

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This seminar will detail the fundamentals of aerodynamics and the tools (wind tunnels, track testing, and airflow visualization) used in the design of commercial vehicles. Testing of scale models, measurement methods, and data interpretation will be covered, as well as the influence of crosswinds and interpretation of surface pressures. Attendees will receive a copy of the SAE J1252: Wind Tunnel Test Procedure for Trucks and Buses.

Instructor: Jack Williams



Registration Information:

Fees – List: \$1,285; **SAE Members – Classic:** \$1,157;
Premium: \$1,092; **Elite:** \$1,028
1.3 CEUs

Digital Avionics Fiber Optics Technology and Standards for Aerospace

I.D.# C0924 – www.sae.org/pdevent/C0924

September 12, 2011 • Norwalk, California

This comprehensive seminar introduces participants to aerospace fiber optics technology. Additionally, this seminar provides an overview of important standards that are available to them during the system design and development process. This one-day seminar begins with a discussion on the basic physics of light and its application to fiber optics. Following a fundamental overview of fiber optic cable, connector, and transceiver technologies, participants learn about supportability, maintainability, manufacturing quality, and installation concerns, with emphasis given to design interface controls and life cycle cost parameters. Prior lessons learned are summarized with an emphasis on aerospace fiber optic design engineering and support principles. The seminar concludes with an in-depth description of relevant military and aerospace standards along with an example digital fiber optic system design and development methodology case study.

Instructor: Mark Beranek



Registration Information:

Fees – List: \$725; **SAE Members – Classic:** \$653;
Premium: \$616; **Elite:** \$580
0.7 CEUs

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REGISTRATION INFORMATION



If you have a disability that may impact your participation in this seminar, please call 2 weeks prior to the start date so that we can address your needs.

Condition of Sale: If you cannot attend, you may send a substitute or transfer to a future offering. The member discount may be adjusted based on the substitute's SAE membership level. A full refund is issued if you notify SAE at least 14 days prior to seminar start date. If canceled less than 14 days prior, the full fee is charged. For \$50, you may process a one-time transfer to a future offering within one year of canceled seminar. Canceling may reduce group discounts. To cancel, transfer or send a substitute, call SAE Customer Service at 1-877-606-7323 or 1-724-776-4970. For the SAE Membership registration rates, member dues must be current at the start of the event.

Note: SAE reserves the right to change instructors or cancel seminars and cannot be held responsible for costs incurred other than the registration fee. Prices subject to change.

Introduction to AS5553 and Counterfeit Electronic Parts Avoidance Training

I.D.# C0950 – www.sae.org/pdevent/C0950

June 20, 2011 • Norwalk, California

The SAE AS5553 standard was created in response to the significant and increasing volume of counterfeit electronic parts entering the aerospace supply chain and standardizes requirements, practices and methods for counterfeit parts risk mitigation. The resulting document presents solutions to address counterfeit electronic parts issues across a large cross-section of the electronics industry. This comprehensive one-day seminar introduces participants to AS5553 and specifically addresses counterfeit part risk mitigation methods in electronic design and parts management, supplier management, procurement, part verification, material control, and response strategies when suspect or confirmed counterfeit parts are discovered. The latter part of the course will highlight counterfeit detection techniques and part compliance verification methods. Several examples of counterfeit parts will be reviewed in detail. The course will conclude with a hands-on learning exercise in identifying, under a microscope, characteristics that can be found in counterfeit electronic parts. In addition to the seminar handout, a copy of the AS5553-Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition standard is provided to each registrant.

Instructor: Phil Zulueta and Katherine Whittington



Registration Information:

Fees – List: \$785; **SAE Members – Classic:** \$707;
Premium: \$667; **Elite:** \$628
0.7 CEUs

KEY



CERTIFICATE PROGRAM



ACTAR APPROVED SEMINARS



WEBINARS

New Accessing and Interpreting Heavy Vehicle Event Data Recorders



I.D.# C1022 – www.sae.org/pdevent/C1022

December 12-15, 2011 • Norwalk, California

Recent advances in commercial vehicle equipment have increased the potential for incident-related data to be recorded surrounding a collision event. What some have called a “black box” is more properly referred to as a Heavy Vehicle Event Data Recorder (HVEDR) as defined by the SAE J2728 HVEDR Recommended Practice. The term HVEDR is used to describe any type of electronic function that has the capability of storing data surrounding a defined event within an electronic control module found on a heavy truck or bus and that communicates on the SAE J1939 or J1587/J1708 data communications protocol. This course highlights the various vehicle systems and triggering events that may provide data useful in a collision investigation. Guided by recognized industry experts, techniques for preservation and interpretation of HVEDR data will be explored. This highly interactive workshop includes in-class instruction, demonstrations and practical hands-on experiences for acquiring and analyzing data from commercial vehicles.

Instructor: Timothy Cheek and John C. Steiner

i **Registration Information:**
Fees – List: \$1,995; **SAE Members – Classic:** \$1,945;
Premium: \$1,696; **Elite:** \$1,845
 2.6 CEUs

Acquiring and Analyzing Data from Sensors and In-Vehicle Networks

I.D.# C0522 – www.sae.org/pdevent/C0522

June 23-24, 2011 • Troy, Michigan

After reviewing the traditional approach of acquiring data directly from sensors, the course will focus on the newer approach of obtaining data from the in-vehicle network. Attention is given to the complications of taking data from the in-vehicle network and how to overcome them, current trends and applications, wireless data acquisition (Wi-Fi and cellular), GPS, relevant technical standards, and how to simultaneously acquire network data with direct sensor measurements. Both PC-based and logger (flight recorder) data acquisition will also be covered. In addition, a practical guide for analysis and presentation techniques will be covered along with examples.

Instructor: Richard Walter

i **Registration Information:**
Fees – List: \$1,265; **SAE Members – Classic:** \$1,139;
Premium: \$1,075; **Elite:** \$1,012
 1.3 CEUs

New A Holistic Introduction to Commercial Telematics

I.D.# C0947 – www.sae.org/pdevent/C0947

November 14-15, 2011 • Troy, Michigan

This two-day seminar will begin with a review of the origins, technologies, and systems used in creating and operating modern-day telematics systems. The main technologies will be broken down into five categories, all of which are required to operate in unison in order for the system to be successful. This will include automotive technologies necessary to gain access to vehicle operating data, wireless technologies to establish communications, navigation technologies to introduce location, antennas that enable wireless, and data management to manage and make data useful. A series of practical examples will allow attendees the opportunity to work through each of the functional technologies and implement a simple telematics solution. The seminar will conclude with a discussion of the issues that drive a cost vs. buy decision on the specific elements in the telematics value chain, as well as various applications currently being deployed and the exploration of future applications within the telematics market. Attendees are encouraged to bring a laptop computer with a dual-boot Linux operating system installed.

Instructor: Emad Isaac

i **Registration Information:**
Fees – List: \$1,155; **SAE Members – Classic:** \$1,040;
Premium: \$982; **Elite:** \$924
 1.3 CEUs

Controller Area Network (CAN) for Vehicle Applications

I.D.# C0120 – www.sae.org/pdevent/C0120

September 26-27, 2011 • Troy, Michigan

The Controller Area Network has become the standard of choice for most automotive manufacturers. Approved for use as an ISO and EPA diagnostic network, its usage continues to grow. This seminar covers the theory and use of the CAN protocol, and its applications in the automotive industry. Details on how the CAN protocol and other standards (J2411, J2284, J1939, ISO 11898, etc.) complement each other will be presented. Attendees will learn about CAN application layers; the latest J1939, J2284, J2411, and IDB standards, regulations, and implementation requirements; and details of device hardware and software interfaces. Also presented will be demonstrations using system development tools. The SAE standard, J1939 Recommended Practice for a Serial Control and Communications Vehicle Network, is included in the course materials.

Instructor: Mark Zachos

i **Registration Information:**
Fees – List: \$1,285; **SAE Members – Classic:** \$1,157;
Premium: \$1,092; **Elite:** \$1,028
 1.3 CEUs

Also available as a SAE-Learning opportunity – www.sae.org/e-seminars/can



Control Systems Simplified

I.D.# C0525 – www.sae.org/pdevent/C0525

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This seminar begins by introducing the highly mathematical field of control systems focusing on what the classical control system tools do and how they can be applied to automotive systems. Dynamic systems, time/frequency responses, and stability margins are presented in an easy to understand format. Utilizing Matlab and Simulink, students will learn how simple computer models are generated. Other fundamental techniques in control design such as PID and lead-lag compensators will be presented as well as the basics of embedded control systems. During this interactive seminar, attendees will utilize case studies to develop a simple control design for a closed loop system. And, with the aid of a simple positioning control experiment, students will learn the major components and issues found in many automotive control applications today.

Instructor: Farhad Bolourchi



Registration Information:

Fees – List: \$1,265; **SAE Members – Classic:** \$1,139;
Premium: \$1,075; **Elite:** \$1,012
1.3 CEUs

Designing On-Board Diagnostics for Light and Medium Duty Emissions Control Systems

I.D.# C0707 – www.sae.org/pdevent/C0707

July 25-27, 2011 • Troy, Michigan

This course is designed to provide a fundamental understanding of how and why OBD systems function and the technical features that a diagnostic should have in order to ensure compliant and successful implementation. Fundamental design objectives and features needed to achieve those objectives for generic on-board diagnostics will be covered. The course will also include a review of the California Air Resources OBD II regulation, providing students with a firm foundation for reading and understanding the requirements, including the in-use rate portion of the regulations and how to properly calculate and output the required rate information. Relationships between the regulation and various SAE and ISO recommended practices will be reviewed. The course will also explore the relationship of the OBD system with the underlying control system. Note that because of proprietary considerations, this class does not provide details of algorithm design, algorithm performance, or algorithm application. The class will cover general OBD algorithm designs and the features required to promote sound OBD system design.

Instructor: John Van Gilder



Registration Information:

Fees – List: \$1,605; **SAE Members – Classic:** \$1,445;
Premium: \$1,364; **Elite:** \$1,284
2.0 CEUs

New Electrohydraulic Controls for Mobile Equipment & Vehicles

I.D.# C1011 – www.sae.org/pdevent/C1011

August 3-5, 2011 • Troy, Michigan

December 14-16, 2011 • Troy, Michigan

As more electronics are used in mobile applications, there is a greater need for engineers, managers, and technicians to understand electrohydraulic technologies. This three-day seminar examines the systems and component level details needed to better understand how the cross-functional disciplines of electrical, mechanical, and fluid power engineering are utilized to offer performance and functional advantages through electrohydraulic technologies. Using a systems engineering block diagram approach, key components covered in this seminar include electromechanical actuation, electronic controllers, networks, valves, and sensors. In each section, examples of existing products are shown and elements of risk are discussed. This course also examines environmental specifications and fluid issues that are specific to electrohydraulics.

Instructor: David E. Ewel



Registration Information:

Fees – List: \$1,545; **SAE Members – Classic:** \$1,391;
Premium: \$1,313; **Elite:** \$1,236
2.0 CEUs

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P91053

Embedded Control Systems Design Workshop

I.D.# C0922 – www.sae.org/pdevent/C0922

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This highly interactive and entertaining seminar will help you learn fundamental concepts needed to design, implement, and calibrate a control function using a microcontroller model car. Overviews of engine, transmission, hybrid control functions and related sensors and actuators including electronic control signals will be presented, as well as microcontroller functions, control algorithms and software, and calibration of the system. This embedded control system design seminar will focus on designing an embedded system by teaching each focus area and then showing how all areas connect. The focus areas include control system architecture; control algorithms; sensors and actuators; microcontroller; software; and calibration. The discussion will be based on engine, transmission, and electric drive propulsion system functionality. Participants will be involved in both a lecture format and a 'hands on' lab to design, implement and calibrate a control function using a microcontroller Robocar.

Instructor: Dennis Bogden



Registration Information:

Fees – List: \$1,265; **SAE Members – Classic:** \$1,139;

Premium: \$1,075; **Elite:** \$1,012

1.3 CEUs

Emissions-Related OBD Systems: A Design Overview

I.D.# C0708 – www.sae.org/pdevent/C0708

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This one day seminar is designed to provide an overview of the fundamental design objectives and the features needed to achieve those objectives for generic on-board diagnostics. The basic structure of an on-board diagnostic will be described along with the system definitions needed for successful implementation. Please note that because of proprietary considerations, this class does not provide details of algorithm design, algorithm performance, or algorithm application. The class will cover general OBD algorithm designs and the features required to promote sound OBD system design. Individuals desiring a more in-depth look at On-Board Diagnostics should consider attending SAE seminar ID# C0707 Designing On-Board Diagnostics for Light and Medium Duty Emissions Control Systems.

Instructor: John Van Gilder



Registration Information:

Fees – List: \$785; **SAE Members – Classic:** \$707;

Premium: \$667; **Elite:** \$628

0.7 CEUs

Fundamentals of Shielding Design for EMC Compliance

I.D.# C0835 – www.sae.org/pdevent/C0835

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

It is important for electronic and hardware engineers to be knowledgeable not only of a product's intended function and performance, but also its ability to perform within electromagnetic compatibility (EMC) limits. This seminar introduces practical shielding theory, design fundamentals, and configurations, including shielding products, common and differential modes, electromagnetic fields, and enclosure shielding. A segment on enclosure testing is presented in conjunction with an aperture attenuation modeling program (which is used to model attenuation characteristics at various frequencies and aperture size prior to expensive FCC/CE compliance or MIL-STD 461 testing). Honeycomb vent panels, plating attenuation comparisons, and galvanic compatibility per MIL-STD 1250 will also be discussed.

Instructor: Michael J. Oliver



Registration Information:

Fees – List: \$725; **SAE Members – Classic:** \$653;

Premium: \$616; **Elite:** \$580

0.7 CEUs

In-Vehicle Networking with LIN and FlexRay Applications

I.D.# C0136 – www.sae.org/pdevent/C0136

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This two-day seminar covers the theory and practices of in-vehicle multiplex networking. Attendees learn about FlexRay and LIN SubBus, and other network standards. Attendees explore the latest OBD II regulations and implementation requirements, along with device hardware and software interfaces. Proprietary applications are discussed and system development tools are demonstrated.

Instructor: Mark Zachos



Registration Information:

Fees – List: \$1,225; **SAE Members – Classic:** \$1,103;

Premium: \$1,041; **Elite:** \$980

1.3 CEUs



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SAE International

Understanding and Using the SAE J2534-1 API to Access Vehicle Networks

I.D.# C0733 – www.sae.org/pdevent/C0733

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This course is designed to give you an understanding of the J2534-1 API, enabling you to create your own programs that accomplish your vehicle communication needs. In addition to learning how to use each of the J2534-1 functions, you will have the opportunity to write a program that collects messages off of the CAN vehicle bus and another program that reads trouble codes off of a J1850 vehicle. Note that because of the proprietary nature of the information, this class does not provide details on reprogramming algorithms or proprietary data collection. Attendees will receive a copy of the SAE J2534-1 Recommended Practice for Pass-Thru Vehicle Programming.

Instructor: Mark Wine



Registration Information:

Fees – List: \$825; **SAE Members – Classic:** \$743;
Premium: \$701; **Elite:** \$660
0.7 CEUs

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P90843

Design FMEA Update: What's New in J1739 Webinar



I.D.# WB0955 – www.sae.org/pdevent/WB0955

Presented in three, 2-hour sessions, 11:30 a.m. - 1:30 p.m.
ET – via telephone/internet

Upcoming open enrollment dates being scheduled. Please check the webinar webpage for future offerings.

The new J1739 has been revised to address common problems with the application of Design FMEA today. Such problems include the time spent debating ranking systems, potential problems hidden in the Risk Priority Number, false starts and rework of FMEA because of a lack of understanding of product and process functions, and a lack of emphasis on prevention controls or early detection of problems. This course is not intended to cover all of the details of completing a Design FMEA. Rather, its focus is on recent changes from the former J1739 FMEA Recommended Practice to the new J1739 FMEA Standard and how those familiar with performing Design FMEA should adjust their approach.

Similarities in content exist between this course and the Process FMEA Update: What's New in J1739 Webinar; however each is uniquely designed to address what's new for each type of analysis.

Instructor: Bill Haughey



Registration Information:

Fees – List: \$515; **SAE Members – Classic:** \$464;
Premium: \$438; **Elite:** \$412
0.7 CEUs

Design for Manufacturing & Assembly (DFM/DFA)

I.D.# 92047 – www.sae.org/pdevent/92047

August 1-2, 2011 • Troy, Michigan

Design for Manufacturing and Assembly (DFM+A), pioneered by Boothroyd and Dewhurst, has been used by many companies around the world to develop creative product designs that use optimal manufacturing and assembly processes. Correctly applied, DFM+A analysis leads to significant reductions in production cost, without compromising product time-to-market goals, functionality, quality, serviceability, or other attributes. In this two-day seminar, you will not only learn the Boothroyd Dewhurst Method, you will actually apply it to your own product design! This seminar will include information on how DFM+A fits in with QFD, concurrent engineering, robust engineering, and other disciplines. In addition, there will be a brief demonstration of computer software tools, which simplify the DFM+A analysis.

Each participant will receive and use the hard-bound authoritative reference textbook, *Product Design for Manufacture and Assembly*, written by Geoffrey Boothroyd, Peter Dewhurst and Winston Knight.

Instructor: Kevin Zielinski



Registration Information:

Fees – List: \$1,395; **SAE Members – Classic:** \$1,256;
Premium: \$1,186; **Elite:** \$1,116
1.3 CEUs

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ACTAR APPROVED SEMINARS



WEBINARS

Design Reviews for Effective Product Development

I.D.# C0004 – www.sae.org/pdevent/C0004

October 4, 2011 • Troy, Michigan

This seminar describes how formal design reviews can improve products by uncovering potential problems before they are discovered at a later stage of development or application, when the costs of correction are much higher. A broad range of effective techniques for organizing and conducting design reviews will be presented. Specific guidance and tools to assist attendees in structuring design reviews tailored to their own company, specification, or contract requirements will also be provided. Material covered will be applicable to all types of development programs, ranging from components to complete vehicles, and for both OEMs and suppliers.

Instructor: Angelo Mago



Registration Information:

Fees – List: \$725; **SAE Members – Classic:** \$653;
Premium: \$616; **Elite:** \$580
0.7 CEUs

Failure Modes and Effects Analysis (Product & Process) in Aerospace

I.D.# C0939 – www.sae.org/pdevent/C0939

June 21-22, 2011 • Norwalk, California

This interactive Failure Modes and Effects Analysis (FMEA) product and process seminar introduces the participant to the analytical process by which potential failure modes, failure effects and causes of failure are identified. Engaging in a systematic method of studying failure can improve future outcomes. The severity, occurrence and probability of detection of a failure mode are used to prioritize which failure modes are most critical. Methodology is introduced for dealing with the effects of failure. The Design FMEA link to manufacturing is explained and amplified in terms of downstream Process FMEA. This course is based on “learning by doing” with interactive, in-class Design and Process FMEA generation and analysis in a lively team environment. This course will also detail relevant portions of the SAE Aerospace Recommended Practice for FMEA, ARP 5580 which is included in the course materials.

Instructor: Jim Breneman



Registration Information:

Fees – List: \$1,125; **SAE Members – Classic:** \$1,103;
Premium: \$1,041; **Elite:** \$980
1.3 CEUs

Finite Element Analysis for Design Engineers - Hands-on FEA Workshop

I.D.# 93006 – www.sae.org/pdevent/93006

November 21-22, 2011 • Troy, Michigan

This seminar provides design engineers with skills necessary for proper use of FEA (Finite Element Analysis) in the design process and to ensure that this powerful tool is implemented in the most efficient and productive way. The seminar offers hands-on exercises focusing on the analysis of FEA errors and proper modeling techniques. Attendees study different types of analyses typically performed by design engineers, discuss common misconceptions and traps in the FEA and review Implementation of Management of FEA in the design environment. The seminar provides opportunities to discuss and exchange FEA experiences. The seminar layout allows for some customization so problems of particular interest to students can be discussed in class.

All topics are illustrated by hands-on examples using FEA software SolidWorks Simulation. However, acquired skills are not software specific and no prior exposure to any FEA software is required. The SAE book, *Finite Element Analysis for Design Engineers*, by Paul Kurowski is included in the course materials.

Instructor: Paul Kurowski



Registration Information:

Fees – List: \$1,325; **SAE Members – Classic:** \$1,193;
Premium: \$1,126; **Elite:** \$1,060
1.3 CEUs

Fundamentals of Geometric Dimensioning & Tolerancing (GD&T) Webinar



I.D.# WB0933 – www.sae.org/pdevent/WB0933

Presented in eight, 2-hour sessions, 2:00 – 4:00 p.m. ET – via telephone/internet

Upcoming open enrollment dates being scheduled. Please check the webinar webpage for future offerings.

Geometric dimensioning and tolerancing (GD&T) is used as a symbolic way of showing specific tolerances on drawings. GD&T is a valuable tool that effectively communicates the design intent to manufacturing and inspection. It is governed by the technical standard ASME Y14.5M-1994, which was updated earlier this year. This course introduces participants to the GD&T system, providing a working knowledge of the correct interpretation and application of each symbol, general rules, the datum system, and ‘bonus’ tolerance and highlighting some of the changes in the updated Y14.5 standard. The material is reinforced with many practice exercises.

Instructor: John-Paul Belanger



Registration Information:

Fees – List: \$915; **SAE Members – Classic:** \$824;
Premium: \$778; **Elite:** \$732
1.6 CEUs

Geometric Dimensioning & Tolerancing

I.D.# C0133 – www.sae.org/pdevent/C0133

June 20-22, 2011 • Troy, Michigan
December 7-9, 2011 • Troy, Michigan

This in-depth course covers the GD&T system, including why it reduces costs, how to interpret the symbols, and how to apply these tolerances correctly. Participants will learn the basic definitions and rules, the importance of datums, the meaning of each tolerance, and sample ways of gaging geometric tolerances. The class is mainly lecture, with many practice exercises. Participants are encouraged to bring sample parts and/or prints (with or without GD&T already applied) to class for questions. Time is reserved for discussing the application of GD&T to your parts/prints.

Instructor: John-Paul Belanger or John Stolter



Registration Information:

Fees – List: \$1,605; **SAE Members – Classic:** \$1,445;
Premium: \$1,364; **Elite:** \$1,284
2.0 CEUs

Introduction to Design Review Based on Failure Modes (DRBFM) Webinar



I.D.# WB1047 – www.sae.org/pdevent/WB1047

Presented in three, 2-hour sessions, 11:30 a.m. - 1:30 p.m. ET – via telephone/internet

June 6, 7 & 9, 2011
September 26, 28 & 30

Design Review Based on Failure Modes (DRBFM) is a methodology focused on change management and continuous improvement. It centers on early prevention and engineering knowledge, eliminating time spent debating ranking systems, waiting for lead engineers to document and list their concerns, identifying what types of concerns are open for discussion and resolution, and brainstorming without any actionable closure.

This Webinar will explain all phases of the DRBFM methodology and provides details on how to accomplish the specific steps.

This DRBFM Webinar will provide roles and responsibilities of management, design engineers, manufacturing engineers, facilitators and technical experts. Those interested in DRBFM will benefit from understanding the rationale behind this methodology and learn to guide teams through the paradigm shifts and mindset that are needed.

Instructor: Bill Haughey



Registration Information:

Fees – List: \$515; **SAE Members – Classic:** \$464;
Premium: \$438; **Elite:** \$412
0.6 CEUs

Introduction to Failure Modes & Effects Analysis for Product Design & Manufacturing Process Design (Product & Process FMEA)

I.D.# 92002 – www.sae.org/pdevent/92002

November 3-4, 2011 • Troy, Michigan

Designed to assist individuals responsible for design and development activities in the completion of a Design FMEA and Process FMEA, this course introduces participants to the analytical process in which potential failure modes, failure effects, and causes of failure are identified. Criticality and risk analysis concepts for dealing with the effects of failure will be covered. Analysis is used to identify corrective actions and controls necessary to eliminate failure modes or minimize the effect of failure. Attendees will also receive the SAE Standard for FMEA, J1739, which is covered in the course materials. During the class, the instructor will review the updates to standard J1739 (revised Jan 2009).

Please note this seminar combines course material covered in ID# 90034, Introduction to Failure Mode & Effects Analysis for Product Design (Design FMEA) and ID# 90033, Introduction to Failure Mode & Effects Analysis for Manufacturing Processes, Assembly Processes & Service (Process FMEA).

Instructor: E. Harold Vannoy



Registration Information:

Fees – List: \$1,285; **SAE Members – Classic:** \$1,157;
Premium: \$1,092; **Elite:** \$1,028
1.3 CEUs

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ACTAR APPROVED SEMINARS



WEBINARS

Mechatronics: Introduction, Modeling and Simulation

I.D.# C0949 – www.sae.org/pdevent/C0949

October 27-28, 2011 • Troy, Michigan

While progress is being made in lowering the barriers between traditional engineering disciplines and formal education programs, this seminar is designed to provide engineers with mechanical or electrical engineering backgrounds the knowledge to effectively interact with colleagues from the other discipline in an efficient and productive manner. This two day seminar is designed for the engineer with little or no mechatronics systems experience and will begin with an introduction to mechatronics principles and components, including sensors, actuators, control strategies, and instrumentation. The instructor will then guide the participants through the analysis, synthesis and design of mechatronics systems through the use of modeling and simulation tools. Emphasis will be given to a unified energy flow approach to model mechatronics systems that are comprised of multidisciplinary components. A key element of this seminar is the use of computer simulation exercises to enhance and reinforce the learning experience. The instructor will conduct modeling and simulation exercises for this class using commercial vehicle and automotive mechatronics systems examples. Attendees desiring a more direct hands-on learning experience are encouraged to bring a personal laptop computer with the demonstration version of the 20-sim modeling simulation software installed prior to arrival (available at <http://www.20sim.com/downloads/download-form>.) The text, *Mechatronic Modeling and Simulation Using Bond Graphs*, authored by Shuvra Das is included with the seminar.

Instructor: Shuvra Das



Registration Information:

Fees – List: \$1,345; **SAE Members – Classic:** \$1,211;

Premium: \$1,143; **Elite:** \$1,076

1.3 CEUs

Model Based Design: Delivering Quality Electronic Products Faster

I.D.# C0806 – www.sae.org/pdevent/C0806

June 6-7, 2011 • Troy, Michigan

This two-day course will provide you with math-based tools to greatly accelerate electronic product development, and to simultaneously deliver a more robust design. Participants will learn the basic theory of finite state machines with a heavy emphasis on simple, real-world examples. Through a series of hands-on learning modules, attendees will gain the understanding and experience to build an executable spec simulation environment. Tools and techniques will be provided so that the attendees can bring these skills back to work and implement the process immediately. Companies which use the executable spec methodology will soon dominate the market for mobile mechatronics.

Instructor: Peter J. Schubert



Registration Information:

Fees – List: \$1,365; **SAE Members – Classic:** \$1,299;

Premium: \$1,160; **Elite:** \$1,092

1.3 CEUs

Process FMEA Update: What's New in J1739 Webinar



I.D.# WB0956 – www.sae.org/pdevent/WB0956

Presented in three, 2-hour sessions, 11:30 a.m. - 1:30 p.m. ET – via telephone/internet

Upcoming open enrollment dates being scheduled. Please check the webinar webpage for future offerings.

The new J1739 has been revised to address common problems with the application of Process FMEA today. Such problems include the time spent debating ranking systems, potential problems hidden in the Risk Priority Number, false starts and rework of FMEA because of a lack of understanding of process functions, and a lack of emphasis on prevention controls or early detection of product defects. This course is not intended to cover all of the details of completing a Process FMEA. Rather, its focus is on recent updates to the J1739 standard and how those familiar with performing Process FMEA should adjust their approach. Similarities in content exist between this course and the Design FMEA Update: What's New in J1739 Webinar, however each is uniquely designed to address what's new for each type of analysis.

Instructor: Bill Haughey



Registration Information:

Fees – List: \$515; **SAE Members – Classic:** \$464;

Premium: \$438; **Elite:** \$412

0.7 CEUs

Reverse Engineering: Technology of Reinvention

I.D.# C0559 – www.sae.org/pdevent/C0559

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This course focuses on the application of modern technologies used to decode the design details and manufacturing processes of an existing part in the absence of the original design data. It emphasizes the real-life practice of reverse engineering in the aerospace industry from both scientific and legal points of view. Attendees will learn the applicability and limitations of reverse engineering through case studies and hands-on exercises. Various measurement instruments, ranging from traditional micrometers to computer-aided laser probes, will be compared for their merits and shortcomings. The statistics of dimensional measurements and the acceptable tolerance of variations, with emphasis on industrial standards in real-life practice will be discussed. Material identification, manufacturing process verification and the system compatibility of the subject part to be reverse engineered will be covered in substantial detail. In addition, the materials specifications will be exemplified as useful supporting documents for substantiation data.

Note: Participants should bring a calculator for in-class exercises.

Instructor: Wego Wang



Registration Information:

Fees – List: \$1,225; **SAE Members – Classic:** \$1,103;

Premium: \$1,041; **Elite:** \$980

1.3 CEUs

Statistical Tolerance Design

I.D.# 88033 – www.sae.org/pdevent/88033

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

This seminar will include a review of statistical theory and present statistical methods, which are used to better select and/or analyze Tolerance Stack-ups. The Probability (RMS) Method, the Monte Carlo Simulation Technique and tolerance optimization techniques will be discussed along with guidelines on which method(s) to use in given situations. Attendees will also view a demonstration of a microcomputer Monte Carlo Simulation program that analyzes the effects of form and assembly variation on the quality of a finished product. This seminar will provide an overview of Design of Experiments (DOE) methods, which enable effective analysis of critical product dimensions and tolerances. Note: Participants should bring a scientific calculator for several in-class exercises.

Instructor: Kevin Zielinski



Registration Information:

Fees – List: \$775; **SAE Members – Classic:** \$698;
Premium: \$659; **Elite:** \$620
0.7 CEUs

Tolerance Stack-up Fundamentals Webinar



I.D.# C0842 – www.sae.org/pdevent/C0842

Presented in four, 90-minute sessions, 11:30 a.m. - 1:00 p.m. ET – via telephone/internet

August 2, 4, 9 & 11, 2011

Analysis of tolerance stacks varies widely. This webinar introduces the basic tools to create a common methodology for tolerance stack-ups, and ensure seamless documentation. Participants will create 1-D tolerance stacks for parts and assemblies that use geometric dimensioning and tolerancing using a tolerance stack spreadsheet. This simple, manual spreadsheet method produces an easily interpreted and checked documentation trail, and is easily adaptable to common electronic spreadsheet programs. Multiple examples will be provided to assist engineers in applying tolerance stack-up fundamentals to Y14.5 issues.

Instructor: John-Paul Belanger



Registration Information:

Fees – List: \$585; **SAE Members – Classic:** \$527;
Premium: \$497; **Elite:** \$468
.8 CEUs

Tolerance Stack-Up Analysis

I.D.# C0022 – www.sae.org/pdevent/C0022

November 10-11, 2011 • Troy, Michigan

This course is designed to help product design personnel create tolerance stacks for parts and assemblies that use Geometric Dimensioning & Tolerancing. Those who will benefit most are designers and engineers who are responsible for creating the GD&T callouts for engineering drawings and product models, and who want to be more confident in how the assigned geometric tolerances interact and stack up. The course begins with a quick review of Y14.5 concepts, and then introduces the benefits and uses of a tolerance stack spreadsheet. Participants then learn detailed procedures for performing tolerance stacks on parts and assemblies, beginning with coordinate tolerances and moving on to geometric tolerances. The course will eliminate confusion over how to include the bonus and shift in a tolerance stack: for example, when using tolerance of position with the MMC modifier. The simple, manual spreadsheet method used throughout the course produces a straightforward documentation trail that is easily interpreted, and readily adaptable to any company's electronic spreadsheet program. Results can be quickly and easily checked, and revisions can be made with ease. Students receive extensive practice at creating stacks, and should bring a calculator or laptop computer equipped with MS Excel for the numerous student exercises.

Each attendee will receive a copy of the "Tolerance Stack Analysis Using GD&T" textbook and an Excel template for generating stacks.

Instructor: John-Paul Belanger or John Stolter



Registration Information:

Fees – List: \$1,295; **SAE Members – Classic:** \$1,166;
Premium: \$1,101; **Elite:** \$1,036
1.3 CEUs

Vibration Analysis using FEA: A Hands-on Workshop

I.D.# C0830 – www.sae.org/pdevent/C0830

Upcoming open enrollment dates being scheduled. Please check the seminar webpage for future offerings.

Progress in the commercial FEA software and in computing hardware has now made it practical to use advanced types as an everyday design tool of design engineers. In addition, competitive pressures and quality requirements demand a more in-depth understanding of product behavior under real life loading conditions. This seminar introduces one of the advanced types of FEA: vibration analysis. By considering time dependent loads and inertial effects, vibration analysis allows for a more in-depth product simulation thus reducing product development cost and time. The course reviews basic concepts of vibration analysis and illustrates how they are implemented in FEA to simulate product behavior. The most common types of vibration analysis such as modal, time response, frequency response and random vibrations are covered. Participants will have the opportunity to practice skills learned utilizing the commercial FEA software SolidWorks Simulation.

Instructor: Paul Kurowski



Registration Information:

Fees – List: \$1,265; **SAE Members – Classic:** \$1,139;
Premium: \$1,075; **Elite:** \$1,012
1.3 CEUs

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ACTAR APPROVED SEMINARS



WEBINARS

Advanced Diesel Particulate Filtration Systems



I.D.# C0502 – www.sae.org/pdevent/C0502

November 7-8, 2011 • Troy, Michigan

This seminar covers many DPF (diesel particulate filtration)-related topics using fundamentals from various branches of applied sciences such as porous media, filtration and materials sciences and will provide the student with both a theoretical as well as an applications-oriented approach to enhance the design and reliability of aftertreatment platforms. Structure, geometry, composition, performance, applications and optimizations of DPFs are some of the main topics covered in this advanced level seminar. Computer simulation techniques for analysis and optimization of DPF performance are also demonstrated.

Instructor: Athanasios Konstandopoulos and Mansour Masoudi



Registration Information:

Fees – List: \$1,225; **SAE Members – Classic:** \$1,103;
Premium: \$1,041; **Elite:** \$980
1.3 CEUs

Automotive Fuel Cell Systems

I.D.# C0112 – www.sae.org/pdevent/C0112

August 10-12, 2011 • Troy, Michigan

Fuel cell technology promises to revolutionize the automotive industry, offering tremendous potential to increase efficiency and reduce emissions for many types of vehicles. This course will provide a detailed understanding of the processes, subsystems and vehicle characteristics relating to fuel cell systems for automotive applications. The course starts with the principles of fuel cells and electrochemical conversion of hydrogen. Each of the supporting subsystems needed for operation of the fuel cell stack is developed to determine the overall fuel cell system efficiency. Vehicle system integration, performance and fuel economy are then related to fuel cell system characteristics. Attendees will receive the text *Fuel Cell Systems Explained*, written by J. Larminie and A. Dicks.

Instructor: Douglas J. Nelson



Registration Information:

Fees – List: \$1,695; **SAE Members – Classic:** \$1,526;
Premium: \$1,441; **Elite:** \$1,356
2.0 CEUs

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Basic Hybrid and Electric Vehicle Safety Webinar



I.D.# C0904 – www.sae.org/pdevent/C0904

Presented in one, 2-hour session – 11:30 a.m. – 1:30 p.m. ET – via telephone/internet

July 28, 2011

This 120-minute webinar reviews safety concerns and precautions related to high-voltage circuits present in hybrid, plug-in hybrid, electric, and fuel cell hybrid vehicles. HV circuits are discussed in general to provide an understanding of “where the risk lies”. The effects of electrical current on the human body are summarized and existing protective measures, along with the standards that govern such measures, are described. Specific issues related to vehicle development, service, and operation are explained, along with onboard fault detection systems used to protect individuals from electrical injury. A general understanding of electrical and mechanical engineering is helpful, but is not required.

Instructor: Jack Rosebro



Registration Information:

Fees – List: \$245; **SAE Members – Classic:** \$221;
Premium: \$208; **Elite:** \$196
.2 CEUs

Part of the Hybrid Technology Webinar series:

Introduction to Hybrid Powertrains Webinar – www.sae.org/pdevent/C0903 - see description on page 15

Basic Hybrid and Electric Vehicle Safety Webinar – www.sae.org/pdevent/C0904

Plug-In Hybrids: Opportunities and Challenges Webinar – www.sae.org/pdevent/C0905 - see description on page 15

Hybrid and Electric Vehicles: Current Production, Future Strategies – www.sae.org/pdevent/C0906 - see description on page 14

Combustion and Emissions for Engineers

I.D.# 97011 – www.sae.org/pdevent/97011

July 18-20, 2011 • Troy, Michigan

Public awareness regarding pollutants and their adverse health effects has created an urgent need for engineers to better understand the combustion process as well as the pollutants formed as by-products of that process. To effectively contribute to emission control strategies and design and develop emission control systems and components, a good understanding of the physical and mathematical principles of the combustion process is necessary. This seminar will bring issues related to combustion and emissions “down to earth,” relying less on mathematical terms and more on physical explanations and analogies.

Instructor: Bruce Chehroudi



Registration Information:

Fees – List: \$1,545; **SAE Members – Classic:** \$1,391;
Premium: \$1,313; **Elite:** \$1,236
2.0 CEUs