

# TRAINING COURSES

Training offered by APT Research, Inc.

Each year since 2004, APT has offered training for S&MA professionals. Approximately 200 professionals obtain continuing education credits each year. APT Research offers classes for both government and industrial personnel. APT conducts training classes at our Huntsville, AL facility or on-site for clients who request them. These classes can be specially tailored to meet the needs of the students' organization. Contact APT for further information on coordinating an on-site class at your location.

For more information, please visit  
[www.apr-research.com/capabilities/training.html](http://www.apr-research.com/capabilities/training.html)

## System Safety Engineering

The System Safety Engineering course builds upon your knowledge as a safety professional or a supervisor/manager, to develop competence and sharpen skills in the techniques that support hazard discovery, the assessment and control of risk, and in reviewing work of this kind performed by others. You will receive guidance in the management of limited resources for the optimum control of risk.

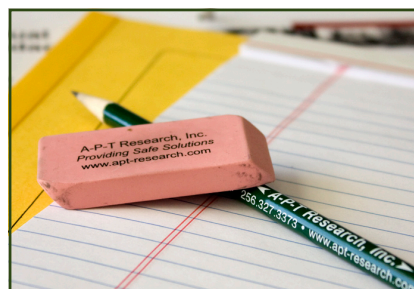
## Software System Safety

To set the stage for the Software System Safety (SwSS) process, this course will provide an introduction and review of Risk Management, System Safety, and Software Development. Following the introduction and review, the course will provide details of the SwSS process, beginning with a discussion of the importance of integrating SwSS activities into the System Safety Program, the Software Development activities, and Systems Engineering activities. The relationship of the Software Hazard Criticality Matrix (SHCM) and Level of Rigor (LOR) to the overall System Safety effort will be included, as well as the importance of identification and tracking of safety-critical requirements. Specific analyses and evaluation tools will be discussed and illustrated by examples. Details of the SwSS process will be discussed for each of the Soft-

ware Development phases: 1) concept refinement, 2) requirements and architecture development, 3) design and coding, 4) test, validation, and verification, and 5) software release (delivery). The course will also cover developing safety related metrics and supporting software safety technical reviews.

## Explosives Safety

Designed primarily for individuals who develop, assemble, test, inspect, approve, transport, store or in some other way handle explosive items or material, the Explosive Safety Course is an overview of hazards inherent to explosive operations; associated safety precautions; and methods to analyze, test and obtain approval for explosive activities. The subjects covered in this 3-day class include explosive item recognition, hazardous stimuli, reaction effects, personnel protection, construction criteria, lightning protection, quantity-distance, risk analysis, explosives modeling, an introduction to explosive testing, hazard classification, and insensitive munitions.



## Huntsville, AL 2011 Schedule

### April

- 24-25 SAFER

### May

- 15-17 Explosives Safety

### June

- 11-15 System Safety Engineering\*
- 19-21 Software System Safety

### July

- 10-11 SAFER

### August

- 13-17 System Safety Engineering\*

### September

- 18-20 Software System Safety

### November

- 5-9 System Safety Engineering\*
- 13-14 SAFER

### December

- 4-6 Explosives Safety

## Registration & Cost Information

256.327.3370

[training@apr-research.com](mailto:training@apr-research.com)

Call or email for on-site training

## Technical Information

Adriaan Ostrander

256.327.3398

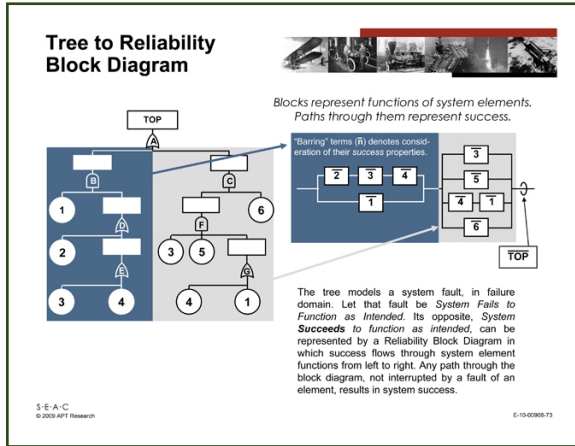
[aostander@apr-research.com](mailto:aostander@apr-research.com)

## Other Courses Available

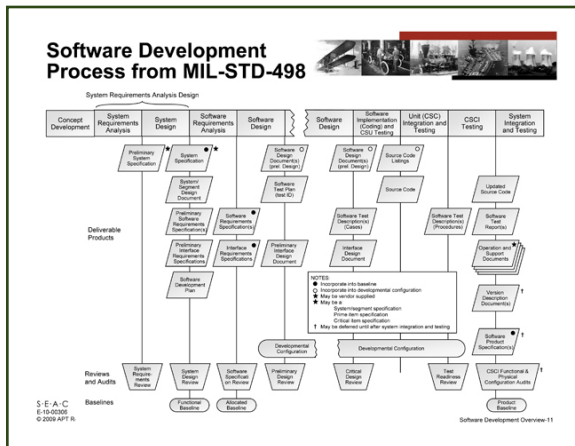
- Quantitative Risk Assessment
- Flight Safety
- SAFER
- IMESAFR

\*Receive 3.0 CEUs

# System Safety



# Software System Safety



# Explosives Safety

**Hazard Classes/ Divisions**

Each hazard class is further broken down into hazard divisions.

DOT/DOD Hazard Class Divisions for Class 1		DOT Hazard Class 2 thru 9 Divisions	
Hazard Division	Hazard	Hazard Division	Materials
1.1	Mass Explosion	<b>Class 2</b>	<b>Gases</b>
1.2	Non-mass explosion, fragment producing	2.1	Flammable Gases
1.2.1	Contains more than 1.6 lb (0.752 kg) net explosive weight quantity distance (NEWOD) or that exhibit a single-round hazardous fragment distance (as estimated using the principles of DQESB TP-16) of more than 250ft (76 m) regardless of NEWOD	2.2	Non-flammable, compressed gas
1.2.2	Contains less than or equal to 1.6 lb (0.752 kg) NEWOD and that exhibit a single-round hazardous fragment distance (as estimated using the principles of DQESB TP-16) of 250ft (76 m) or less regardless of NEWOD	2.3	Toxic gases
1.2.3	No SD, Type V reaction in FCO, BI, and SCO	<b>Class 3</b>	<b>Flammable &amp; Combustible Liquids</b>
1.3	Mass fire, minor blast or fragment	<b>Class 4</b>	<b>Flammable Solids</b>
1.4	Moderate fire, no blast or fragment	4.1	Flammable solids, desensitized explosives, self-reactive materials, readily combustible solids
1.5	Explosive substance, very insensitive (with mass explosion hazard)	4.2	Spontaneously combustible materials
1.6	Explosive article, extremely insensitive (no mass explosion hazard)	4.3	Dangerous when wet materials
		<b>Class 5</b>	<b>Oxidizing Sub &amp; Organic Peroxides</b>
		5.1	Oxidizer
		5.2	Organic peroxides
		<b>Class 6</b>	<b>Toxic &amp; Infectious Substances</b>
		6.1	Toxic materials
		6.2	Infectious substances
		<b>Class 7</b>	<b>Radioactive materials</b>
		<b>Class 8</b>	<b>Corrosive materials</b>
		<b>Class 9</b>	<b>Miscellaneous hazardous materials</b>

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# Continuing Education

Attendees of each course will be credited with Continuing Education Units (CEU) upon completion of the course.

- System Safety – 3.0 CEU
- Software System Safety – 2.4 CEU
- Explosives Safety – 2.4 CEU

# Target Audience

The APT training courses are especially recommended for directors, heads of department, staff officers, managers, and analysts responsible for:

- System Engineering
- System Integration
- System Master Planning
- Air/Land/Sea Systems
- System Software Engineering
- System Safety

# APT Instructors

- Pat Clemens
- Mike Swisdak
- Sid Smith
- Tom DeLong
- Jerry Rufe
- Howard Kuettner

# About APT Research

A-P-T Research, Inc. is an employee-owned, small business based in Huntsville, Alabama. APT provides professional engineering services in a variety of disciplines including systems engineering, risk assessment and analysis, test planning, range safety, system safety, software system safety, explosives safety, industrial and quality engineering, quality assurance, mission assurance, Independent Verification and Validation (IV&V), software development and modeling, and related areas. APT currently supports more than 50 customers of which approximately 40 are government agencies.

## APT Point of Contact

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