

Advanced Fire Dynamics Simulator and Smokeview

Possible Instructors: Kevin McGrattan, Ph.D., David Sheppard, Ph.D., P.E., Daniel Swenson, Ph.D.

Course Description

This workshop is a hands-on workshop on advanced techniques in using the Fire Dynamics Simulator (FDS) modeling and Smokeview visualization software. The course is intended for current users of FDS who are comfortable creating simple FDS input files from scratch without assistance. The course consists of many short modules covering specific topics. Each module includes a lecture section and a workshop section in which the student works example problems on a personal laptop computer.

Course Objectives

Upon completion the participant should understand

- Complex geometry
- HVAC (Heating, Ventilation, Air Conditioning) networks
- Tracking gas species through the domain
- Implementing pre and post flashover fires
- Pyrolysis modeling and flame spread
- Advanced topics in combustion
- Creating and removing obstructions
- Smoke detectors and sprinklers
- Grid transformations
- Advanced Smokeview techniques: custom iso-surfaces, texture mapping, render files, and cad view.
- Basics of the Graphical User Interface program, PyroSim

Prerequisite

Successful completion of SFPE's Introduction to FDS course or equivalent is a prerequisite for the advanced course. Each student should have an understanding of fire dynamics, heat transfer, and fluid dynamics theory to gather the greatest understanding possible from the course. Each student should be able to develop FDS input files, develop design fire scenarios, and review FDS results using Smokeview without assistance.

Requirements

Attendees must bring a laptop computer with a minimum 1 GB of RAM and 10 GB of free hard disk space. The computer should have a spreadsheet program for analyzing data and Adobe Acrobat for reading the documentation. The attendees should also make sure that they have sufficient security privileges on their computers to allow the software to be installed during class.

Before coming to class, attendees should have download the most recent version of FDS and Smokeview software from the NIST website and make sure the programs run on their computer. The NIST website is <http://www.bfrl.nist.gov>. Follow the links for software, fire simulation software, and the NIST Fire Dynamics Simulator and Smokeview.

Professional Development Hours

A certificate of 28 CEUs will be offered. Upon completion of a post-test attendees will be awarded a certificate of attendance