

# Fire Safety Program - ME 673 Fire Modeling

## Course Objectives

This course introduces students to concepts of fire behaviour necessary for fire modeling through an overview of existing methods for calculation and simulation of a variety of applications in fire safety. The strengths and pitfalls of different modeling approaches and methods are outlined via discussion and presentation of results from actual case studies in fire modeling.

The course includes a hands-on introductory tutorial in the use of several fire modeling packages with application to compartment fire analysis to introduce students to the range of tools available for modeling different fire situations.

## Course Outline

- Introduction and Context for Fire Models
- Design Fires and General Principles of Fire Behaviour
- Correlations, Algebraic Models and Zone Models for Fires
- Computational Fluid Dynamics (Field) Models for Fires
- Tutorials: CFAST, NRC Spreadsheets, FDS, other specific software
- Fire Models and Fire Modeling Solution Issues and Case Studies

## Recommended References

- Versteeg, HK and Malalasekera, W "An Introduction to Computational Fluid Dynamics", Prentice-Hall, Toronto.

## Supplementary Materials:

- Chapra, S.C. and Canale, R.P. 'Introduction to Computing for Engineers' McGraw-Hill, Inc. Toronto.

## Contact Us

For information on Fire Safety Group courses, registration, and admissions:

Allison Walker

Graduate Administrator, MEng & Recruitment

Dept. of Mechanical and Mechatronics Engineering

University of Waterloo

Engineering 5, Room3019

200 University Avenue

Waterloo, ON, Canada

N2L 3G1

Phone: (519) 888-4567 x 33341

e-mail: a22walker@uwaterloo.ca

