



Mechanical and
Mechatronics Engineering
www.mme.uwaterloo.ca

Masters of Engineering Fire Safety

ME 770

Topics in Heat and Fluid Flow

FIRE MODELLING

a one-week modular course

February 8 - 12, 2010

to be held at

WRESTRC

(Waterloo Region Emergency Services Training &
Research Complex)

**1001 Erb's Road, RR#3
Waterloo, ON., N2J 3Z4**



ATTENTION

- ARCHITECTS
- DESIGNERS
- ENGINEERS
- BUILDING CONSULTANTS
- REGULATORY OFFICIALS

DESCRIPTION

The UW Fire Safety Program

The UW Master of Engineering in Fire Safety is a new graduate studies program that requires successful completion of 3 core courses and 3 specialty elective courses in Fire Safety as well as 2 other graduate level courses. For students who are not eligible for admission into the UW Graduate program, successful completion of four courses can be applied towards a Departmental certificate in Fire Safety. Courses are currently delivered in a week-long (40 hr) intensive lecture-laboratory format with graded course material due over the subsequent term. For more information on admission please visit

www.mme.uwaterloo.ca

ME 770: FIRE MODELLING

This course will introduce the student to theory, practice and hands-on aspects of a variety of methods currently used in fire modelling and analysis. A brief introduction to some common fire modelling software will also be provided. Participants are encouraged to bring their views and experiences to partake in class discussions throughout the course. *The Friday Forum* and other discussion periods will provide opportunities for exchange of information on related topics.

Course material will be provided in hardcopy and mounted on the UW-ACE web-based course information system. Registered students will have access to course notes, handouts, assignments and laboratory exercises, as well as supplemental course material. Your registration fee also includes lunch and coffee breaks.

*This course is limited to 35 people, therefore
please register early.*

COURSE OUTLINE AND EVALUATION

CLASSROOM SESSIONS

1. Finite Element Theory (FEM) Introduction
2. Finite Volume (CFD) Methods Introduction
3. Practical considerations in FEM/CFD
4. Applications and Issues: FEM/CFD in Fires
5. CFAST/FDS in Fire Applications

TUTORIAL SESSIONS

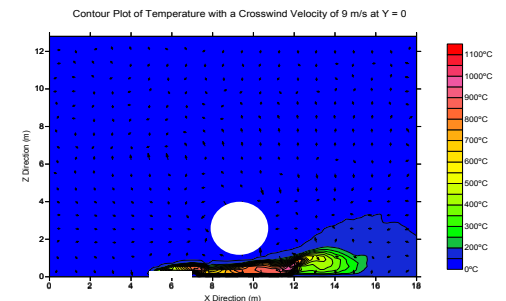
Introductory sessions on the use of Abaqus, CFAST and FDS in fire analysis will be arranged for those students not familiar with these tools.

THE FRIDAY FORUM

As part of the course evaluation, each student is required to prepare an independent project on a Fire Modeling topic of their choice. Preliminary work is presented at The Friday Forum – A mini-conference with presentations on a wide variety of topics related to Fire Analysis and Modeling.

COURSE EVALUATION

Assignments, exercises and a major course project will be used in the evaluation of each student. Due dates and mark weightings will be provided by the instructors during the lecture period.



THE LECTURERS

This course will be given by lecturers from Civil and Mechanical and Mechatronics Engineering, with experience in fire behaviour, computational modelling and numerical analysis. They have conducted research relating to materials and structural design, FEM analysis, as well as fire growth and smoke movement.

Kaan Inal is an Assistant Professor of Mechanical and Mechatronics Engineering at the University of Waterloo with extensive experience in micro-structural analysis, deformation of materials and finite element modelling with both thermal and structural applications. His research interests cover a wide range from materials deformation and behaviour to the use of high performance and parallel computing in engineering analysis.

Timo Tikka is an Associate Professor of Civil Engineering at Lakehead University and Acting Chair of his Department. He is adjunct professor to UW and member of the UW Fire Research Group. He has extensive research experience in non-linear structural analysis and behaviour of reinforced concrete columns, composite steel-concrete columns, FRP reinforced columns and beams, structural frames and concrete encased steel columns subjected to fire.

Beth Weckman is a Professor of Mechanical and Mechatronics Engineering at the University of Waterloo and member of the UW Fire Research Group. She currently co-ordinates the MEng – Fire Safety program at UW. She is engaged in laboratory- and large-scale experiments and analysis of fire behaviour, including the use of field data for validation/comparison with detailed computational models of various fire scenarios.

refreshTALENT

**Enrol today in our new
MEng certificate program,
Fire Safety**

HOW TO REACH WRESTRC

The Waterloo Region Emergency Services Training and Research Center is located in Southwestern Ontario, about 90 minutes' drive west of Toronto.

By road

Take Highway 401 to exit 278
Exit onto Highway 8 West
Follow 8 West to 7/8 West (toward Stratford)
Take 7/8 West to Fischer-Hallman Rd North
Take Fischer-Hallman Rd North to Erb St. W
Turn Left onto Erb St W
Follow to Gate 3 of the Regional Landfill and WRESTRC Facility
Turn Left into Gate 3
Follow road to the main Administration Building with parking.

By air

Arriving by air you can land at Waterloo-Wellington, Hamilton or Toronto Pearson International Airport.

ACCOMMODATION

Accommodation is not included in the course fee. It can be booked on the UW campus or at a local hotel.

Need help with travel or a list of hotels?

Please contact

Mrs. Ethel Spike
Mechanical & Mechatronics Engineering
University of Waterloo, Waterloo, ON, N2L 3G1
Phone (519) 888-4567 ext. 36740
ethel@mecheng1.uwaterloo.ca

ME 770

Topics in Heat and Fluid Flow FIRE MODELLING

PLEASE TYPE OR PRINT:

NAME _____

TEL. _____ FAX _____

TITLE _____ PEng Y N

HIGHEST EDUCATION _____

ORGANIZATION _____

ADDRESS _____

CITY _____

PROV/STATE _____ POSTAL CODE _____

EMAIL _____

I cannot attend this course, but please send information on future courses.

COURSE FEES

Registered Graduate Students incl
(UW-QUEST open for registration May. 2009)

Not registered in Graduate program \$2500
(4 course certificate - \$8000)

Fees by cheque or money order, payable to:

The University of Waterloo

To register, return this form and cheque to:

Ms. Lisa Baxter
Mechanical & Mechatronics Engineering
University of Waterloo, Waterloo, ON, N2L 3G1
Phone (519) 888-4567 ext. 32019
lbaxter@uwaterloo.ca