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Course web site: https://umd.instructure.com/courses/1149559  
Course duration: 12 weeks (08/31-11/20/2015)  
TA: TBD (Email: TBD)

Course objectives
Fire modeling has become a major component in fire protection engineering. A basic description of fire modeling requires some understanding of both fire physics and scientific computing. We review in this course the fundamentals of enclosure fire dynamics, including relevant concepts in thermodynamics, combustion, fluid mechanics and heat transfer. We also provide an introduction to computer-based enclosure fire modeling, including zone modeling and Computational Fluid Dynamics (CFD).

The objectives of the course are to provide a fundamental understanding of enclosure fire dynamics, review the concepts used in hand calculations of enclosure fire properties, provide an introduction to CFAST and FDS as leading fire modeling software used by fire modeling practitioners and as examples of the zone modeling and CFD approaches.

Outline
1. Week 1: Introduction and Overview of Fire Modeling  
2. Week 2: Introduction to FDS and CFAST  
3. Week 3: Governing Equations  
4. Week 4: Fuel Sources  
5. Week 5: Combustion  
6. Week 6: Mid-Term Exam  
7. Week 7: Fire Plumes  
8. Week 8: Ceiling Jet and Fire Detection  
9. Week 9: Vent Flows  
10. Week 10: Heat Transfer  
11. Week 11: Water-Based Fire Suppression  
12. Week 12: Final Exam

Course material
Course format
The typical format of the course during Week n is as follows: (1) Modules: release of Week n material (video and notes) on Friday of Week (n-1); (2) Discussion Board: initial contributions to the Week n discussion on Monday-Wednesday and review on Wednesday; (3) Discussion Board: last contributions to Week n discussion on Friday; (4) Homework Assignments: due date on Monday of Week (n+1).

Course grading
- Weekly homework assignments (40% - 200 points); Discussion Board participation (10% - 50 points); Mid-Term Exam (25% - 125 points); Final Exam (25% - 125 points).
- Weekly homework assignments: the assignments are problems that require solutions. Showing details, e.g. intermediate steps in a calculation or a line of argument, and adding comments are strongly encouraged for full credit and are a requirement for partial credit.
- The Mid-Term Exam will cover Modules taught in weeks 1-5; the Final Exam will cover all Modules. The Exams are to be completed individually, without correspondence to fellow students or colleagues. The Mid-Term Exam will take place during week 6 of the course; the Final Exam will take place during week 12 of the course.
- Late homework will be penalized at a rate of 10% of the grade per day unless special arrangements are made.
- A+ = 97-100; A = 93-96; A- = 90-92; B+ = 87-89; B = 83-86; B- = 80-82; C+ = 77-79; C = 73-76; C- = 70-72; D+ = 67-69; D = 63-66; D- = 60-62; F < 60

Course evaluation
- Comments/feedback during or at the end of the term are welcome and encouraged. In addition to individual comments sent directly to the instructor (atrouve@umd.edu), a formal online evaluation will be proposed to students at the end of the term. This evaluation will be completely anonymous

Code of Academic Integrity
The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity of the Student Honor Council, please visit http://shc.umd.edu/SHC/HonorPledgeInformation.aspx.