ENFP 489W/629W

Wildland Fires: Science and Applications

New Fire Protection Engineering Course Offered in Fall 2014

QUESTIONS OR COMMENTS

Please contact:

Dr. Michael J. Gollner

Assistant Professor

Dept. of Fire Protection Engineering

3104A JM Patterson Building

mgollner@umd.edu

Daniel Gorham

Graduate Research Assistant

Dept. of Fire Protection Engineering

3106 JM Patterson Building

dgorham1@umd.edu

- This course presents an introduction to the global problem of wildland fires with an overview of the social, political and environmental related issues. The course includes detailed coverage of the science, technology and applications used to predict, prevent and suppress wildland fires.

- Some specific topics covered will include relevant codes and standards, remote sensing, fire spread theory, risk mapping, research instrumentation, suppression, ignition sources and extreme fire behavior. Engineering analyses in many of these areas, as well as specific coverage of fire protection design in the wildland-urban interface will also be covered.

- Students are expected to have an undergraduate-level understanding of calculus, fluid dynamics, heat transfer and thermodynamics; however students without these requirements showing a strong interest are encouraged to contact the instructor for permission to take the course.

See course outline on reverse.

Tentative Course Outline

Background on Wildland Fires
- Fire triangle, physical/chemical process of fire

History of Major Fires
- Major loss fires: structures, forests, lives
- Wildland-Urban Interface
- Case studies

Contemporary Issues
- Political, Social and Financial
- Groups and organizations involved

Ignition
- Sources: lightning, accidental, arson, etc.
- Smoldering vs. Flaming
- Forest fuel ignition experiment
- Prevention

Fire Behavior
- Fuel
- Weather
- Topography

Ecology
- Forest fuels
- Moisture content
- Bulk fuel characterization

Meteorology/Fire Weather
- Fire danger conditions
- Fire induced weather events

Topography
- Land features associated with fire behavior: canyons, valleys, gulches, saddles

Fire Spread
- Modeling/Prediction
- Types of spread: firebrands/spotting, smoldering, surface fire, crown fire

Extreme Fire Behavior
- Mass Fires
- Fire Whirls

Prescribed Fire

Remote Sensing
- GIS, satellite, UAV

Instrumentation

Suppression/Attack
- Aerial, hand-crews, engines, fire breaks

Wildland-Urban Interface
- Applicable codes, standards and guidelines