

Agenda

Presented by Dr. Gregory H. Nail

Exploring Applications of Fluid Mechanics

- | | |
|---------------------|-----------------------|
| Flow measurement | Aircraft |
| Meteorology | Pipelines |
| Medical | Rivers and streams |
| Automotive | Submerged surfaces |
| Marine applications | Pumps and compressors |
| Other applications | |

Fluid Mechanics – Basics and Definitions

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|-----------------------|----------------------|
| Definition of a fluid | Dimensions and units |
| Fluid properties | |

Fluid Statics – Theory

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|----------------------|------------------------------|
| Hydrostatic pressure | Forces on submerged surfaces |
| Archimedes Principle | |

Fluid Statics – Applications

- | | |
|---------------------------|----------------------------------|
| Hydrostatic pressure | Forces on flat inclined surfaces |
| Forces on curved surfaces | Archimedes Principle |

Fluid Dynamics – Theory

- Continuum assumption
- Viscosity and shear stress
- Newtonian versus non-Newtonian fluids

Examples and Equations

- | | |
|-------------------------------------|-------------------------------------|
| Shear stress examples | Viscometer example |
| Journal bearing example | Closed system versus control volume |
| Velocity vectors and streamlines | |
| Volumetric flowrate versus velocity | |
| Conservation of mass | Bernoulli’s Equation |
| Bernoulli Effect | Water pipeline example |
| Siphon example | Sluice gate example |
| Venturi meter example | Laminar versus turbulent flow |
| Pipe flow | Major and minor loss |
| Work-energy equation | Pressure drop in a pipeline example |
| Gravity flow example | Turbine power example |
| Pump power example | |

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Practical Fluid Mechanics

Live, Interactive Webinar - Friday, March 8, 2024

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Learning Objectives

You’ll be able to:

Explore applications for fluid mechanics in pipelines, medical systems, automotive and aircraft systems, and hydrology and hydraulics, among others.

Define fluids and explore fluid properties.

Understand the theories of fluid statics and fluid dynamics.

Examine Bernoulli’s Equation and the work-energy equation.

Discuss examples, including a siphon example, sluice gate example, gravity flow example and a pump power example.



HalfMoon Education Live Webinars

Practical Fluid Mechanics

Live, Interactive Webinar - Friday, March 8, 2024



Explore applications for fluid mechanics

Discuss Newtonian versus non-Newtonian fluids

Learn basic principles and definitions

Explore examples, including a shear stress example and a water pipeline example

Learn about fluid statics and fluid dynamics

Continuing Education Credits

Professional Engineers

6.0 PDHs

Landscape Architects

6.0 HSW CE Hours

6.0 LA CES HSW PDHs

Architects

6.0 HSW CE Hours

6.0 AIA LU | HSW

International Code Council

.6 CEUs (Building)



Webinar Information

Log into Webinar 8:00 - 8:30 am CST	Break 11:45 am - 12:15 pm CST
Morning Session 8:30 - 11:45 am CST	Afternoon Session 12:15 - 3:30 pm CST

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Faculty

Dr. Gregory H. Nail is an associate professor in the Engineering Department at the University of Tennessee at Martin where he teaches a variety of courses including fluid mechanics, hydraulics and hydrology, and hydraulic and hydrologic modeling. He holds a professional engineer's license based on having passed both the Civil and Mechanical discipline-specific exams. Prior to coming to UT-Martin in 2002, he worked as a research hydraulic engineer for the United States Army Corp of Engineers for 11 years. He is a former member of the Executive Committee of the Tennessee American Water Resources Association, and he has lectured on various HEC-RAS modeling topics at the Annual Tennessee Water Resources Symposium and at other venues. Dr. Nail earned his B.M.E. degree from Auburn University and his M.S. and Ph.D. degrees from Texas A&M University.

Credit Information

This webinar is open to the public and is designed to qualify for 6.0 PDHs for professional engineers, 6.0 HSW continuing education hours for licensed architects, and 6.0 HSW continuing education hours for landscape architects in all states that allow this learning method. Please refer to specific state rules to determine eligibility.

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The Landscape Architecture Continuing Education System has approved this course for 6.0 HSW PDHs. Only full participation is reportable to the LA CES.

The International Code Council has approved this event for 0.60 CEUs in the specialty area of Building (Preferred Provider No. 1232).

Attendance will be monitored, and attendance certificates will be available after the webinar for those who attend the entire course and score a minimum 80% on the quiz that follows the course (multiple attempts allowed).

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6.0 HSW PDHs (LA CES)

Additional Learning

- Natural Ventilation Principles and Techniques**
- Monday, February 12, 2024 | 9:00 am - 4:00 pm CST
 - Basement Design and Construction: Adding Economical Below-Grade Living Space**
- Tuesday, February 13, 2024 | 8:30 am - 4:20 pm CST
 - Restoring Natural Areas in Urban Areas**
- Wednesday, February 14, 2024 | 8:30 am - 5:00 pm CST
 - Designing and Constructing with Steel Joists**
- Wednesday, February 14, 2024 | 9:00 am - 4:00 pm CST
 - Drone Applications for Engineers**
- Thursday, February 15, 2024 | 9:30 am - 4:50 pm CST
 - How to Design for Snow and Ice Loads**
- Thursday, February 15, 2024 | 1:00 - 4:00 pm CST
 - Handling Archaeological Issues on Construction Projects**
- Thursday, February 15, 2024 | 9:00 am - 12:15 pm CST
 - How to Obtain, Interpret, and Change a FEMA Flood Map**
- Friday, February 16, 2024 | 12:00 - 3:15 pm CST
 - Confronting Both Climate Change and Sea Level Rise: An Action Plan for Our Planet**
- Tuesday, February 20, 2024 | 8:30 - 11:50 am CST
- Wednesday, February 21, 2024 | 8:30 - 11:50 am CST
 - 2021 International Residential Code: Energy Conservation**
- Tuesday, February 20, 2024 | 12:00 - 4:30 pm CST
 - Culvert Design and Construction**
- Tuesday, February 20, 2024 | 9:00 am - 4:30 pm CST
 - Topographic Surveys, Easements and Original vs. Retracement Surveys**
- Wednesday, February 21, 2024 | 9:00 am - 4:05 pm CST
 - Roadmap to Ethical Issues in Construction: A Primer for Design Professionals**
- Wednesday, February 21, 2024 | 11:00 am - 1:00 pm CST
 - Deep Dive into Constructed Stormwater Wetlands**
- Thursday, February 22, 2024 | 10:00 am - 12:00 pm CST
 - Introduction to Surface Spreading Managed Aquifer Recharge**
- Friday, February 23, 2024 | 10:00 am - 1:00 pm CST
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