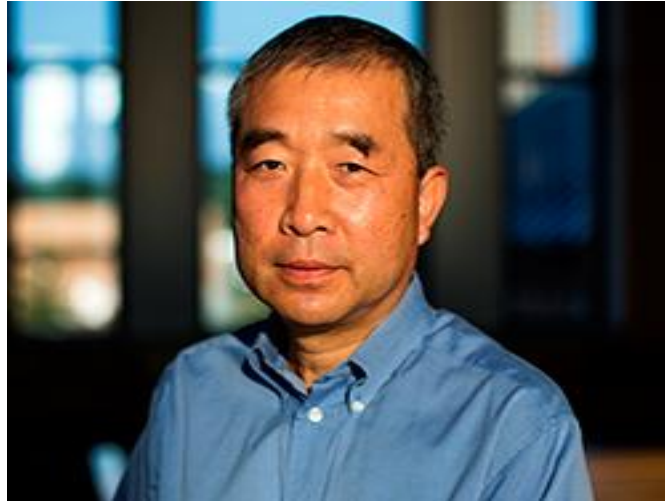


Kviečiame dalyvauti paskaitų cikle

„Advanced Methods for Design, Manufacturability, Structural Integrity Evaluations of Marine Structures“

12-15 d., 201 a., 17:00



Pingsha Dong

**Professor: Naval Architecture and Marine Engineering;
Director: Welded Structures Laboratory**

Education

Ph.D., Mechanical Engineering, University of Michigan
M.S., Welding Engineering, Harbin Institute of Technology
B.S., Welding Engineering, Harbin Institute of Technology

Dr. P. Dong also serves as:

- Editorial Board Member, Int. J. of Science and Technology of Welding and Joining (2002-2010)
- Associate Editor, ASME Transaction Journal of Offshore Mechanics and Arctic Engineering (2003-Present)
- Editorial Board Member, International Journal of Pressure Vessel and Piping (2006-Present)

Rugsėjo 12 d. 201 aud. 17:00

Topic I (2 hrs): Trends, challenges, and technology enablers

- Structural lightweighting trends and challenges in producibility
- Key issues and research thrust areas:
 - Multi-material structure and dissimilar material joining
 - Fitness-for-purposed based quality definition and design rules
 - Accuracy control in modular constructions
- Enablers: math-based approach: integrated considerations from materials and processing to welding/joining, to final structural performance requirements
- Real-world examples

Rugsėjo 13 d. 201 aud. 17:00

Topic II (5 hrs): First-principle based descriptions of thermal manufacturing processes

- Major metal manufacturing processes in marine structure construction
- Thermomechanical interactions and effects on dimensional accuracy
- 1-bar, 3-bar, and n-bar model based descriptions
- Practical applications
 - Thermal cutting accuracy control
 - Shrinkage and distortion estimation and mitigation techniques
 - Real-world examples
- Finite element modeling requirements:
 - Simplified procedures and justifications
 - Examples
- Residual stress and distortion control: principles, methods, applications

Rugsėjo 14 d. 201 aud. 17:00

Topic III (5 hrs): Advanced design and structural integrity analysis methods

- Principles of joint design and weld sizing
- Static, fatigue, and fracture failure modes
- Traction structural stress method and finite element implementation
 - Basic concept, stress concentration definition, and calculation method
 - Quantitative weld sizing
 - Characterization of fatigue behaviors and master S-N curve method
 - Structural strain method
- Applications in design and fatigue analysis of LNG membrane joints
- Applications in simplified fatigue assessment of welded subsea umbilicals

Rugsėjo 15 d. 201 aud. 17:00

Topic VI (2-3 hrs): Detailed case studies and Q/A on problems from students

- Accuracy control and optimum cutting sequence for laser and plasma cutting of high strength lightweight plates
- Buckling distortion control in construction of lightweight shipboard structures
- Fitness-for-purpose based weld quality definition for resistance welding of aluminum sheets
- Q/A on questions and problems from audience

