

Welcome to the 2016 IPFW Engineering Research and Design Conference. The purpose of this event is to bring together engineering students and professionals, both from academia and industry, to share details of current practices, projects, and challenges related to *modeling & simulation (M&S)* of engineering systems.

M&S is a valuable tool that has been applied to a wide-variety of engineering systems, e.g. structural, thermal, energy, dynamic, and manufacturing, and has been used to assist engineers making data-driven, technical decisions in a wide-variety of application domains. The Modeling & Simulation Lab here at IPFW supports research studies, senior design projects, course projects, and student competitions, as well as industry-sponsored projects.

At this symposium, we have seven industry talks, including a lunch talk dealing with M&S applied to a biomechanics problem. In addition, we have five speakers from academia who will describe M&S accomplishments and activities here at IPFW. Student research and design projects, both undergraduate and graduate, will also be displayed via posters.

Best wishes for an enjoyable and informative symposium!

Don Mueller, Associate Professor of Mechanical Engineering
Zhuming Bi, Associate Professor of Mechanical Engineering
Bongsu Kang, Professor of Mechanical Engineering
Mohammad Alhassan, Associate Professor of Civil Engineering



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IPFW Engineering Research and Design Conference

Modeling & Simulation Symposium

29 April 2016

9:30 am to 2:00 pm

IPFW Walb Ballroom

9:30 - 9:50 **Refreshments – Posters on display from ME 544 Modeling and Simulation of Mechanical Engineering Systems and student projects – Opening Remarks**

Modeling & Simulation in Industry

9:50 - 10:10	Modeling Sealing Products	Greg Zheng, FEA Analyst Mark Sitko, Product Dev. Engineer	Research & Development Trelleborg Sealing Solutions Americas
10:10 - 10:30	Modeling and Simulation at Tuthill Transfer Systems	Matt Wenger, Design Engineer	Tuthill Transfer Systems
10:30 - 10:50	Simulation of Fluid Dynamics in Centrifugal Pumps at Franklin Electric	Gabriel Davila Hydraulic Engineer – CFD Specialist	Franklin Electric

10:50 – 11:00 **Break – Posters on display from ME 544 Modeling and Simulation of Mechanical Engineering Systems and student projects**

11:00 - 11:20	Modeling and Simulation in the Development of Pneumatic Actuators	Matt Williams	New Product Engineering PHD, Inc.
11:20 - 11:40	Modeling – What is this all about anyway?	Rick Mavrakis, CEO	Dial-X
11:40 - 12:00	Modeling and Simulation – A Consultant’s Perspective	Patrick Pemberton, Consultant	Patrick Pemberton Consulting, LLC

12:00 – 1:00 **Lunch – Simulating the Biomechanics of Total Joint Replacement** **Chadd Clary, Principal Engineer** **Depuy Synthes Joint Reconstruction**

Modeling & Simulation in Academia

1:00 - 1:15	Using Modeling and Simulation in Undergraduate Courses in Engineering Mechanics	Josué Njock-Libii	Mechanical Engineering – IPFW
1:15 - 1:30	M & S in Undergraduate Research: Design of a Fuel Cell and a Wind Turbine Diffuser	Soriotious (Akis) Lyrintzis and Alfonso Costas	Mechanical Engineering – IPFW
1:30 - 1:45	Modeling and Simulation in Systems Engineering	David Cochran, Director Jason Barnes, Associate Director	Center of Excellence in Systems Engineering – IPFW
1:45 - 2:00	Modeling and Simulation Laboratory Activities	Don Mueller	Mechanical Engineering – IPFW