

Post-Conference Training

June 6-7, 2012 (Wed-Thur), 9a-5p, **University of Michigan-Dearborn**
(two days, includes light continental breakfast at 8:30am, lunch each day)

Please Note: Final course selection, BASED ON REGISTRATION RESPONSE,
will be announced May 1, 2012.
Registration Confirmations will be sent to registered students after this date.

Course Fee: \$450 (Students with valid ID: \$250)

Probabilistic Design Using LS-OPT® and LS-DYNA®

Instructor: Anirban Basudhar, Ph.D. (LSTC)



Objective

To provide an understanding of reliability assessment and robust design using LS-OPT® v4.2 and LS-DYNA®. The graphical user interface is used to teach input preparation and post-processing.

Course Contents

- **Reliability Theory.** Fundamentals of Reliability Assessment. Examples illustrating the importance of incorporating reliability in design.
- **Experimental Design and Metamodeling.** Importance of metamodeling in probabilistic design. Introduction to various metamodel types and experimental designs.
- **Introduction to the Graphical User Interface.** A demonstration of the GUI to set up a reliability assessment problem using LS-DYNA for simulation.
- **Running LS-OPT and using the post-processor.** Run LS-OPT and do post-processing using the Viewer and DYNA STATS.
- **Reliability Analysis.** Use of probabilistic analysis to determine the reliability of the structural design, subject to the variation of the parameters. Direct and Metamodel-based Monte Carlo analysis.
- **Reliability-based Design Optimization.** Run an optimization that incorporates variations of the parameters and the probability of failure.
- **Robust Parameter Design.** Run an optimization that will minimize the sensitivity of the objective to varying parameters.
- **Bifurcation/Outlier Analysis.** Investigate scatter in the results, with the goal of understanding bifurcations in the structural behavior.
- **Robustness of Metal Forming.** Conduct a robustness analysis of a metal forming analysis.