Materials Behavior and Characterization under Dynamic Loading [171018L10]

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Overview

Dynamic loading could occur in a variety of ways, such as during impact, explosions or blasts, or a crash as we have all realized that such situations could result in significant damage to infrastructure and also the loss of human life. As examples, damage could occur by impact from a bullet, flying debris, blast loading during an explosion, or high-speed wind storms. Dynamic loading implies that the loads are applied and damage progression occurs over relatively short time duration. It is essential to understand the nature of the loading, the damage caused by fracture, localized failure or gross yielding, and how materials and structures could be engineered to withstand the dynamic loads. This short course will present the basic principles of analyzing materials subjected to dynamic loading. In particular, the course will introduce dynamic fracture behavior in solid and composite materials, high strain rate characterization in solid, composite and cellular materials, along with examples of materials and systems where such know-how is applicable.

Objectives

(i) To familiarize the participants with high strain rate behavior and dynamic fracture of materials
(ii) To provide the basic understanding of energy absorbing materials and structures
(iii) To provide exposure to analytical and numerical simulation techniques
(iv) To motivate them for further study/research in these areas

Modules	**Topic: [171018L10] Materials Behavior and Characterization Under Dynamic Loading** **Duration- September 03- September 07, 2019 (One Week Course)** **Number of participants for the course will be limited to Fifty.**
You Should Attend If…	Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. Student students at all levels (BTech/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.
Registration and Fees	All course registrations will be processed via the national GIAN portal link: http://www.gian.iitkgp.ac.in/GREGN/index, where Rs. 500/-one-time fee is payable in addition to the course fee. The participation fees for taking the course is as follows: **Industry/ Research Organizations: Rs. 3000** **Academic Institutions: Rs. 2000** **Students: Rs. 1000** The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis. Registration fee can be directly deposited via National Electronic Funds Transfer (NEFT) to the account "**GIAN-MATDYN-2019**" **(Account Number:718400301000357)** Bank: VIJAYA Bank, MNNIT Branch, Allahabad-211004, UP, INDIA; IFSC Code: **VIJB0007184** **Last Date of Registration: August 20, 2019**

The Faculty

Prof. Sanjeev Khanna is La Pierre Professor in the Department of Mechanical & Aerospace Engineering, University of Missouri-Columbia, Columbia, MO 65211. His research interests include Solid mechanics, experimental mechanics, optical mechanics, quasi-static and dynamic fracture of monolithic and composite materials, dynamic behavior of materials, composite materials development and characterization, nano-composites, nano-mechanical behavior of materials, residual stress measurement.

Welding engineering and design of welded structures: spot welding and friction stir welding. Integration of mechanics, materials, and design in the engineering curriculum, introducing problem based learning (PBL) with writing emphasis in engineering. Energy efficiency and conservation in industrial and agricultural systems, energy education and training.

Prof. K.K. Shukla is Professor in the department of Applied Mechanics, MNNIT Allahabad, Prayagraj and presently the Director of NIT Jamshedpur. His research interest includes Composite Plates and Shells, Smart Structures, Retrofitting & Strengthening of RCC Structures, Computational Mechanics, Stability & Dynamics of Structures, Multi-scale Composites.

Dr. A.K. Upadhyay is Associate Professor in the department of Applied Mechanics, MNNIT Allahabad, Prayagraj. His research interest includes Plates and Shells, Composite Structures, Crashworthiness and Energy absorbers, Impact and Blast Loaded structures, Ballistic Impact and Lightning strike on composite structures.

Course Coordinator

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