

Waste management by three dimensional / four dimensional printing

Overview

In today's highly competitive environment, management of physical waste (their selection, maintenance, inspection and re-usability) plays a key role in determining operational performance and profitability of any manufacturing plant or industry. Waste management, by three dimensional/four dimensional printing being the novel way of optimizing these processes, attempts to minimize the waste on our planet and directly or indirectly influences manufacturing/production/operation/service cost, processes and quality, and throughput. There is particular interest in the application of waste management by applying principles of three dimensional and four dimensional printing to the management of engineering systems in any industrial unit where the cost, life cycle and performance of the functional prototypes are of major significance. Waste management for any engineering system needs to focus on maintenance, renewal and enhancement activities, with an integrating mechanism, on delivering sustainable outputs valued by customers and funding providers at the lowest whole-life cost emphasizing on creating knowledge of how waste material degrade and fail to optimize maintenance and renewal interventions. It is essential that industries across India, many organizations of which being environment conscious, promote a consistent waste management approach to their systems in overall manufacturing, production and supply chain domain to develop their novel methods, standards and framework for achieving excellence in reducing the waste.

This course is organized in the following manner:

- (i.) Exposing participants to the fundamentals of three dimensional and four dimensional printing for waste management,
- (ii.) Building in confidence and capability amongst the participants in the application of three dimensional and four dimensional printing and problems in terms of mechanical and structural framework,
- (iii.) Providing exposure to practical problems and their solutions, through case studies and live projects in three dimensional and four dimensional printing for waste management,
- (iv.) Enhancing the capability of the participants to identify, control three dimensional/four dimensional printing-related problems in engineering system.

Course participants will learn these topics through lectures and hands-on experiments. Also case studies and assignments will be shared to stimulate research motivation of participants.

Modules	Waste management by 3D/4D printing : Dec. 18 – Dec 22 Number of participants for the course will be limited to Thirty.
You Should Attend If...	<ul style="list-style-type: none">▪ you are manufacturing/mechanical engineer or research scientist interested in fundamentals of three dimensional and four dimensional printing.▪ you are civil or non-destructive test engineer interested to learn application of 3D/4D printing in your profession.▪ you are a student or faculty from academic institution interested in learning how to do research on 3D/4D system or subsystem or want to work with additive manufacturing technologies.
Fees	The participation fees for taking the course is as follows: Participants from abroad: US \$500 Industry/ Research Organizations: 10,000 Academic Institutions (Faculty/UG/PG/Ph.D students): Free 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/food on payment basis.

The Faculty



Fernando Fraternali is Professor of Structural Mechanics at the University of Salerno, Italy. Most of his research work concerns computational mechanics; multi-scale numerical modeling and simulation of materials and structures; and the computational design and engineering of innovative materials, such as highly nonlinear phononic crystals, environmentally compatible composite materials, nano materials and biomaterials.



Rupinder Singh is Professor of Production Engineering at Guru Nanak Dev Engineering College, Ludhiana, India. His research interest is development of 3D and 4D materials for additive manufacturing applications.

Course Co-ordinator

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