ADVANCES IN WELDING AND JOINING TECHNOLOGIES

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PRE-REQUISITES : There are no pre-requisites in educational qualification.

INTENDED AUDIENCE : Bachelor/Master/PhD students having background in Mechanical/Material Science/Metallurgical engineering/ Production Engineering/Manufacturing Technology

INDUSTRIES APPLICABLE TO : No industry support is required

COURSE OUTLINE :

The progress of several welding and joining processes is ever increasing with the development of new materials and their application in modern technologies. The microjoining and nanojoining is even more challenging area with the development of miniature components. This course is primarily designed from fundamental understanding to the most recent advances in welding and joining technologies. The syllabus is oriented to the advancement of the joining technologies which is different from conventional welding and joining processes. The modules cover almost all the direction of joining technologies and it is blended with fundamental development to the recent technologies. Audience will be able to develop fundamental understanding on different perspective and recent development in this field through the lectures and reinforce their knowledge by solving assignments. This course is presented in a lucid and simplified way to make it enjoyable to the beginners.

ABOUT INSTRUCTOR :

Prof. Swarup Bag is currently working as an Associate Professor in the Department of Mechanical Engineering, Indian Institute of Technology Guwahati PhD: Mechanical Engineering (Manufacturing Science): IIT Bombay, Mumbai, India (2006 2009). ME: Mechanical Engineering (Production Engineering): Indian Institute of Engineering Science and Technology, Shibpur, WB, India (2000 2002). BE: Mechanical Engineering: Jalpaiguri Govt. Engg. College, Jalpaiguri, WB, India (1996 2000).

COURSE PLAN :

Week 1: Fundamentals of welding and joining

Week 2: Laser and electron beam welding

Week 3: Solid state welding processes

Week 4: Computational welding mechanics

Week 5: Microjoining and nanojoining

Week 6: Welding metallurgy

Week 7: Welding and joining of non-metals

Week 8: Metal transfer in welding and metal printing