FUNDAMENTALS OF ADDITIVE MANUFACTURING TECHNOLOGIES

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

COURSE OUTLINE :

The progress of additive manufacturing processes is ever increasing with the development of the digital platform in the manufacturing sector, which is essential for the growth of modern technologies. This course is primarily designed for fundamental understanding of different additive manufacturing technologies for realizing the metallic and non-metallic objects. The syllabus is oriented to cover from basic understanding to practical applications of this technology to develop the products. Therefore, the academic people, as well as the industrial practitioner both, will be benefitted from this course. The special emphasis is given to link computer interface with the digital manufacturing process and their demonstration using commercially available software. The modules cover almost all the direction of additive manufacturing technologies, and it is blended with fundamental development to the recent technologies. The audience will be able to develop a fundamental understanding of different perspectives and recent development in this field through the lectures, skill development through demonstration, 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. Sajan Kapil completed his Bachelor's degree in Mechanical Engineering from G. B. Pant Engineering College Pauri, Master's degree in Computer Assisted Manufacturing from IIT Guwahati & University of Stuttgart and Ph.D. from IIT Bombay. After that, he joined the Department of Mechanical Engineering IIT Guwahati as an Assistant Professor. His areas of research include 3D printing, Manufacturing Automation, and CAD/CAM. At IIT Bombay, he had developed an Additive Manufacturing process called "Hybrid Layered Manufacturing". He had simplified the manufacturing process of complex geometries by generating both 3 and 5-axis metal deposition toolpaths. He has published his research work in 13 international journals, 7 Indian patents, and more than 20 conferences. He has developed a new elective course entitled as 'Additive Manufacturing Technologies' at IIT Guwahati. He is involved in teaching the subjects like 'Additive Manufacturing Technologies', 'Kinematics of Machinery', 'Engineering Drawing', and 'Manufacturing Laboratory', at IIT Guwahati.

COURSE PLAN :

Week 1 : Introduction to Additive Manufacturing
Week 2 : Computer Aided Process Planning for Additive Manufacturing
Week 3 : Computer Aided Process Planning for Additive Manufacturing
Week 4 : Liquid Additive Manufacturing
Week 5 : Liquid Additive Manufacturing
Week 6 : Sheet Additive Manufacturing
Week 7 : Wire Additive Manufacturing
Week 8 : Wire Additive Manufacturing
Week 9 : Wire Additive Manufacturing
Week 10 : Powder Additive Manufacturing
Week 11 : Powder Additive Manufacturing
Week 12 : Powder Additive Manufacturing