

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - NOC:Advances in Additive Manufacturing of Materials: C

Subject Co-ordinator - Prof. Bikramjit Basu

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Introduction to additive manufacturing
- Lecture 2 - Introduction and classification of AM processes
- Lecture 3 - Advantages of AM over Conventional Manufacturing
- Lecture 4 - Design aspects in 3D printing
- Lecture 5 - Introduction to Engineering Materials
- Lecture 6 - Properties of material classes
- Lecture 7 - Introduction to material characterization
- Lecture 8 - Introduction to mechanical property of materials
- Lecture 9 - Overview of AM Processes and Demonstration of industry-scale L-PBF machine
- Lecture 10 - Overview of AM Processes
- Lecture 11 - Binderjet 3D printing: Process Science
- Lecture 12 - Scientific Case study: Binderjet 3D printing of Ti6Al4V
- Lecture 13 - Scientific Case study: Binderjet 3D printing of Ti-6Al-4V with in situ polymerisable ink
- Lecture 14 - Scientific Case study: Binderjet 3D printing of Ti-6Al-4V with in situ polymerisable ink
- Lecture 15 - Scientific Case study: Zirconia based bioceramics: binderjet printing using the novel binder
- Lecture 16 - Scientific Case study: Binderjet 3D Printing of bioceramics
- Lecture 17 - Inkjet Cell Printing
- Lecture 18 - Process Science of Laser-based AM Process of metallic materials
- Lecture 19 - Microstructure development during Laser-based AM Process
- Lecture 20 - Introduction to Lattice Structures
- Lecture 21 - Introduction to Cellular structure and Topology Optimisation
- Lecture 22 - Scientific case study: SLM Printing of Ti6Al4V lattice structures and properties
- Lecture 23 - Scientific case study: SLM Printing of SS316L lattice structures and properties
- Lecture 24 - Labscale Demonstration of Directed Energy Deposition (DED)-printing of Materials
- Lecture 25 - Additive Manufacturing of Materials - Applications, solutions and Future Perspective
- Lecture 26 - Additive Manufacturing of Materials - Applications, solutions and Future Perspective
- Lecture 27 - Introduction to biological system
- Lecture 28 - Introduction to biological system
- Lecture 29 - Introduction to Biological System

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- Lecture 30 - Introduction to biological system
- Lecture 31 - Fundamentals of Rheology
- Lecture 32 - Process Science: 3D extrusion (Bio)printing/4D Bioprinting
- Lecture 33 - Process Science: 3D extrusion (Bio)printing/4D Bioprinting
- Lecture 34 - Scientific case study: 3D extrusion printing of Alginate-Gelatin hydrogels
- Lecture 35 - 3D extrusion printing of Gelatin glycidyl methacrylate/alginate/nanocellulose-based hydrogel
- Lecture 36 - Scientific case study-3D extrusion bioprinting of GelMA hydrogels for hard tissue
- Lecture 37 - 3D extrusion (Bio)printing of GelMA hydrogels for hard tissue
- Lecture 38 - 3D (Bio)printing of GelMA hydrogels for neural tissue regeneration
- Lecture 39 - 3D (Bio)printing of GelMA hydrogels for neural tissue regeneration
- Lecture 40 - Labscale demonstration of 3D extrusion printing of hydrogels
- Lecture 41 - 3D printing of cranium models mediated bone flaps for patient-specific Cranioplasty surgery
- Lecture 42 - 3D printing of cranium models mediated bone flaps for patient-specific Cranioplasty surgery
- Lecture 43 - 3D printing of Ceramic Dental implants
- Lecture 44 - 3D printing of Ceramic Dental implants
- Lecture 45 - Emerging topics in AM - Introduction to artificial intelligence and machine learning
- Lecture 46 - Emerging topics in AM - Introduction to artificial intelligence and machine learning
- Lecture 47 - Emerging topics in AM - Introduction to artificial intelligence and machine learning
- Lecture 48 - Scientific case study - DED of SS316L melt pool prediction using machine learning
- Lecture 49 - Scientific case study - AI/ML for regression and Classification analysis in DED 3D printing
- Lecture 50 - Challenges and opportunities in Additive Manufacturing
- Lecture 51 - Challenges and opportunities in Additive Manufacturing
- Lecture 52 - Challenges and opportunities in Additive Manufacturing
- Lecture 53 - Challenges and opportunities in Additive Manufacturing
- Lecture 54 - Challenges and opportunities in Additive Manufacturing
- Lecture 55 - Challenges and opportunities in Additive Manufacturing
- Lecture 56 - Challenges and opportunities in Additive Manufacturing
- Lecture 57 - Emerging opportunity: Bioprinting in Space
- Lecture 58 - Emerging opportunity: Bioprinting in Space
- Lecture 59 - Summary of key concepts in AM
- Lecture 60 - Summary of Emerging topics and challenges in AM