

# Module-2

## Materials in 3D Printing for Aerospace Applications

# Description of the Module



This module focuses on material selection and utilization in additive manufacturing processes. It provides an overview of current material technologies used in additive manufacturing, with particular emphasis on aerospace applications. The module explores the structure–property–process relationships of materials, and emerging trends in material development.



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# Description of the Module

The content of the module is outlined below.

1. Introduction
2. Material Requirements for Aerospace Components
3. Polymeric and Composite Materials for 3D Printing
4. Metallic Materials for 3D Printing
5. Ceramic and Hybrid Materials for 3D Printing
6. Conclusions

# Targets

- Students from;
  - Aerospace Engineering
  - Aeronautical Engineering
  - Materials Engineering
  - Mechanical Engineering
- Engineers
- Technical staff



# Learning Objectives



Upon completion of this module, participants will be able to:

- Identify the material requirements specific to aerospace components.
- Explain current material technologies used in 3D printing.
- Classify materials suitable for 3D printing based on their properties and applications.
- Select appropriate 3D printing processes for aerospace-grade materials.



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# Learning Resources

- Scientific articles
- Industrial reports
- Books
- Thesis



# Self-assessment and Learning Activities



- Textbook
- Lesson presentations
- Lesson reviews
- Quizzes



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