

Learning Module Outline

Short Description	
Description of the module	<p>Case Studies from Aerospace Applications</p> <p>This module focuses on 3D printing case studies involving both polymeric and metallic materials used in aerospace applications. The polymer-based case study addresses the manufacturing of airframe structures for drones, while the metallic material case study centers on the production of aero-engine components. The module discusses appropriate manufacturing methods based on the type of material and provides a step-by-step algorithm outlining the entire process. The content of the module is outlined below.</p> <ol style="list-style-type: none"> 1. Introduction 2. Case Study-1: 3D Printing of a Polymeric Material for Airframe Structures 3. Case Study-2: 3D Printing of a Metallic Material for Aero-engine Components 4. Conclusions
Target Groups	
Targets	<ul style="list-style-type: none"> • Engineering students (Aerospace, Aeronautical, Materials and Mechanical Engineering) • Engineers and technical staff in aerospace and aeronautical industries
Learning Objectives	
Learning Objectives for this module	<p>Upon completion of this module, participants will be able to:</p> <ul style="list-style-type: none"> • Identify process requirements specific to aerospace materials. • Select appropriate process parameters for 3D printing operations. • Design and sequence process steps involved in 3D printing workflows. • Understand and apply digital tools used in 3D printing processes.
Learning Resources	
Resources	<ul style="list-style-type: none"> • Scientific articles • Industrial reports • Books • Thesis • Tutorials • Application videos

Self-assessment and Learning Activities	
Self-assessment and Learning Activities to be created	<ul style="list-style-type: none"> • Textbook • Lesson presentations • Lesson reviews • Quizzes