

Computational Design for AI in Manufacturing –LIVE VIRTUAL COURSE

July 13-17, 2020

Course Schedule

Day 1

- Morning: 9 am – 12 pm
 - Computational design and manufacturing workflow
 - Overview of advanced manufacturing processes
- Afternoon: 1 pm – 5 pm
 - Solid modeling and design representations
 - From geometry to hardware abstraction languages
 - Lab 1: Designing and printing models using a virtualized 3D printer

Day 2

- Morning: 9 am – 12 pm
 - Parametric modeling and CAD
 - Procedural modeling
 - Deformation methods
- Afternoon: 1 pm – 5 pm
 - Lab 2: Designing parametric models for additive manufacturing
 - Computer simulation and virtual testing
 - Lab 3: Predicting design performance for additive manufacturing

Day 3

- Morning: 9 am – 12 pm
 - Inverse methods and performance-driven design
 - Introduction to optimization
 - Topology optimization
- Afternoon: 1 pm – 5 pm
 - Optimizing design for multiple objectives

- Performance space representations
- Lab 4: Design for AM using topology optimization

Day 4

- Morning: 9 am – 12 pm
 - Interactive design applications
 - Integrated design tools for domain-specific applications
 - Introduction to AI and machine learning
- Afternoon: 1 pm – 5 pm
 - Symbolic AI methods
 - Machine learning methods
 - Lab 5: Designing and building a machine learning model

Day 5

- Morning: 9 am – 12 pm
 - Advanced AI tools for design customization
 - Lab 6: Data-driven models for design customization
- Afternoon: 1 pm – 5 pm
 - Data-driven systems for computational design
 - Automated discovery of optimal designs
 - Intelligent manufacturing systems
 - Course review: developing an end-to-end computational design and manufacturing workflow