FatSAM

SUMMER SCHOOL

On Additive Manufacturing and its Application to Computational Engineering

June, 24th - 27th 2025 | CET

Luleå University of Technology

Luleå, Sweden

Hybrid Event (in-person and online)

Free Registration

https://www.fatsam.eu/

TÜBİTAK

CIMNE

LULEÅ UNIVERSITY OF TECHNOLOGY

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No. 101159809.

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Day 1, 24th June 2025, Luleå University of Technology (In-person and online)

9.00 – 11.00	Simulation of Additive Manufacturing Part I Andreas Lundbäck
12.00 – 13.30	Material Modelling Part I Lars-Erik Lindgren
14.30 – 16.00	Simulation of Additive Manufacturing Part II Carl Andersson

Day 2, 25th June 2025, Luleå University of Technology (In-person and online)

9.00 – 11.00	Material Modelling Part II Lars-Erik Lindgren
12.00 – 13.30	Simulation of Additive Manufacturing Part III Andreas Lundbäck
14.30 – 16.00	Fatigue Erik Olsson

Day 3, 26th June 2025, TÜBİTAK (Online)

9.00 – 11.00	Additive Manufacturing of Metallic Materials: Microstructural Evolution Hüseyin Aydın
12.00 – 13.30	Laser Powder Bed Fusion: Impact of multi-laser processing and Powder Re-Use (Invited-AMRC, University of Sheffield) Evren Yasa Ozgur Poyraz Arun Nagalingam
14.30 – 16.00	High Temperature Mechanical Testing on Metallic Materials Hüseyin Aydın

Day 4, 27th June 2025, CIMNE (Online)

9.00 – 11.00	Fatigue Overview Lucia Barbu/ Sergio Jiménez
12.00 – 13.30	Advanced fatigue numerical formulation Sergio Jiménez
14.30 – 16.00	Fatigue4AM – Residual Stresses Influence Luis Antonio Gonçalvez

*All participants will receive a certificate of participation.

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Simulation of Additive Manufacturing Part I
Introduction and overview and history of simulation of welding and AM

Microstructure and Material Modelling Part I
Material modelling – overview, different types of material models, introduction to mechanism-based material model

Simulation of Additive Manufacturing Part II
Application, PBF, grain growth (cellular automata), phase changes.

Microstructure and Material Modelling Part I
Material modelling – Inco 718, relaxation, particles etc.

Simulation of Additive Manufacturing Part III
Simulation of AM, Validation, and Measurements

Fatigue
Fatigue AM (complementary to CIMNE)

Additive Manufacturing of Metallic Materials - Microstructural Evolution
Pre &Post proses microstructure evolution and effect on high temperature mechanical properties

Laser Powder Bed Fusion: Impact of multi-laser processing and Powder Re-Use
Multi-laser processing and powder re-use in LPBF

High Temperature Mechanical Testing on Metallic Materials
Overview- high temperature tensile/compression, creep and fatigue

Fatigue Overview
Introductory concepts on fatigue, history and state of the art

Advanced fatigue numerical formulation
Advanced fatigue simulation strategies with industrial examples

Fatigue4AM – Residual Stresses Influence
Extension of the previous formulation to account for residual stresses

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