



**UNIMORE**  
UNIVERSITÀ DEGLI STUDI DI  
MODENA E REGGIO EMILIA

Dipartimento di Scienze e Metodi  
dell'Ingegneria

# Digital Multiphysics Simulation for Machine Design

(I Semester, 6 CFU)

Prof. Davide Castagnetti

Master Degree in Digital Automation Engineering

Curriculum: Digital Design

Course presentation

# Aim of the course

**To describe** numerical methods for digital simulation

**To simulate** complex multiphysics problems

# Digital Multiphysics Simulation

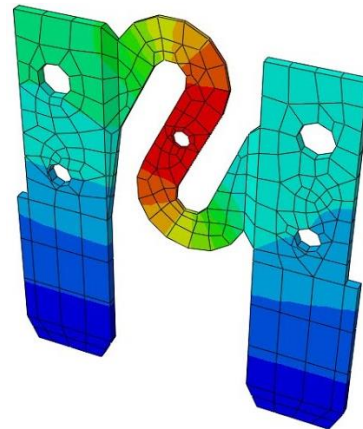
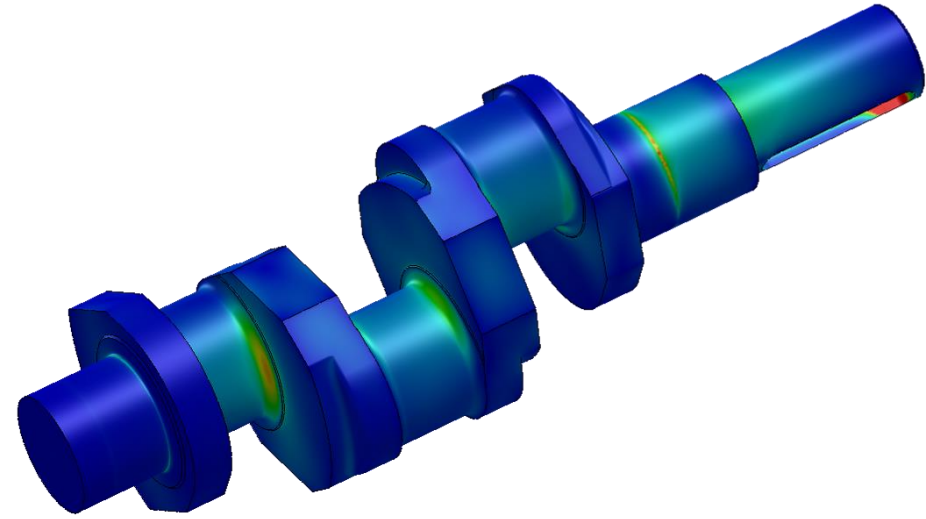
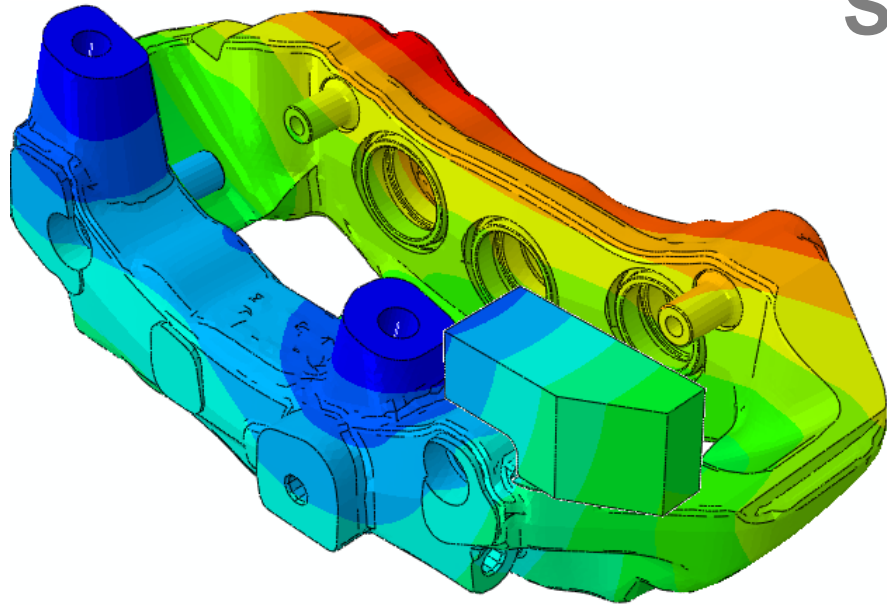
**To predict** the response of a system

**To anticipate and identify** any design issue

**To reduce** costs and time in product development

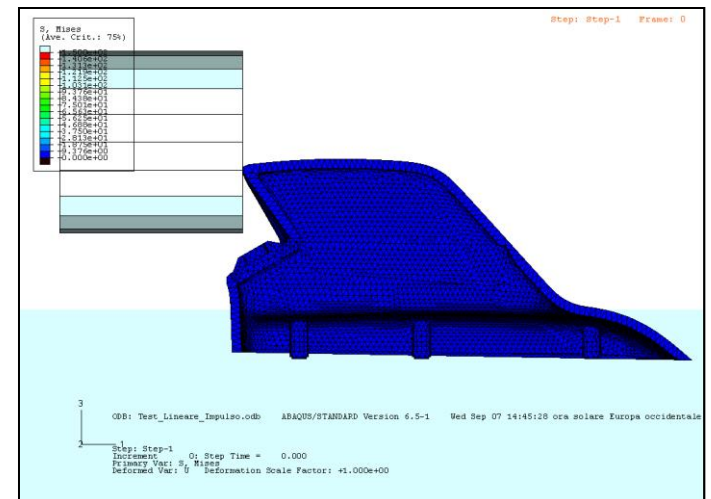
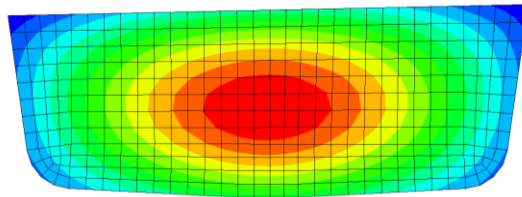
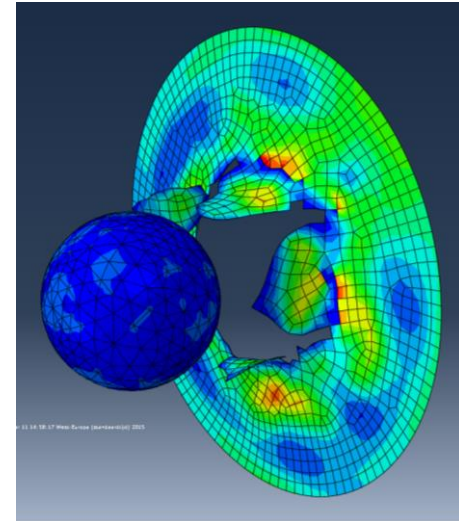
# Digital Multiphysics Simulation

Static



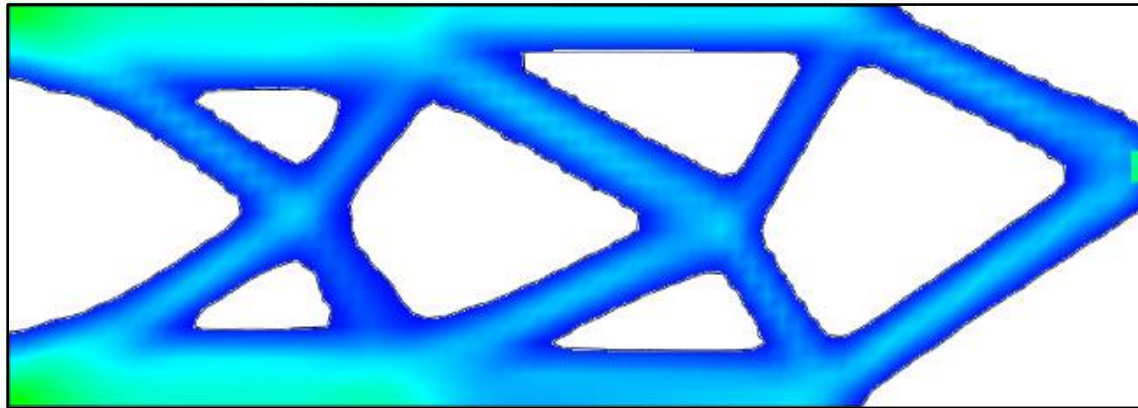
# Digital Multiphysics Simulation

## Dynamic



# Digital Multiphysics Simulation

Optimization



# Program

**Overview** on Machine Design

**Finite Element Method**: theory and application

**Structural optimization**

# Organization

**Theoretical lessons** (14 hours)

**Simulation exercises** (40 hours): **Abaqus** Multiphysics

**Solidworks** Simulation

**Exam:** oral presentation of a **group project**  
on industrial application





# Contacts

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