



ADVANCED
JOINING
PROCESSES
COURSE

Online / Live Streaming
04 to 29 april 2022

WHY THIS PROGRAM



This course aims to provide its trainees with the knowledge and the decision-making tools to **face new challenges arising from current market demands**, while remaining oriented towards a circular economy and keeping aware of environmental needs. With this in view, this course will build a remotely taught course on advanced joining processes that will enable executives and professionals to **fully understand the new requirements in this area**, accompanied by practical exercises and regular spaces for open discussion of these topics.

With this course, it is intended that, regardless of their geographical situation, professionals and executives will have **access to exclusive, highly relevant and updated content**. The value proposition of this course is also very high, given that acquiring the same knowledge level using current training procedures would require spending significant resources.

The partners involved in this proposal are **leaders in several key areas of joining processes**, making it a truly multidisciplinary course, enabling a holistic view of new trends. The team is composed of worldwide renowned experts in their fields, who are also closely connected with industrial partners. This is especially important, as the course is intended to act as a vehicle that streamlines the communication of the latest developments between I&R Centres and industries that use joining methods.

FOR WHOM



The course intends to assist all those whose work involves joining processes, and trainees will **acquire deep knowledge on current and emerging trends in this field**.

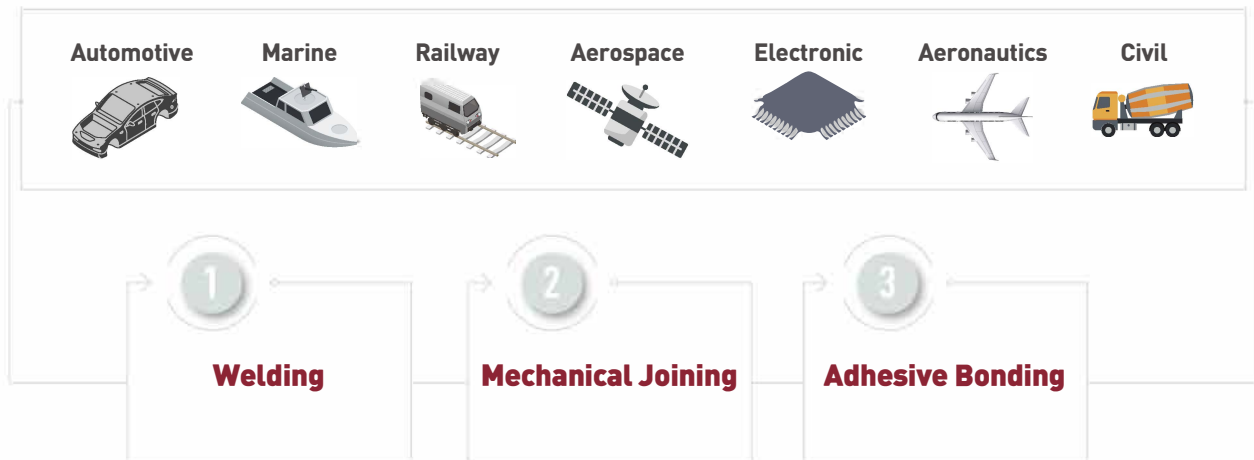
- **Innovation, engineering, production, industrial managers.**
- **Product development engineers** who wish to consolidate knowledge regarding joint design
- **Multidisciplinary teams** associated with projects involving joining technologies
- **Consultants** who wish to support product development using joining technologies

METHODOLOGIES



- Exposure of **programmatic contents**
- Analysis of **industrial and academic examples**
- Moments of **debate/reflection**
- Contact with **experts** and sharing of **professional experiences**

LEARNING SOLUTION



COURSE STRUCTURE



Part A – Welding

1. **Laser Welding of metals and non metals**
 - Arnold Gillner (Fraunhofer Institute for Laser Technology ILT, Germany)
2. **Weld manufacturing, design and analysis**
 - Gregory Glinka (University of Waterloo, Canada) and Rakesh Goyal (John Deere, USA)
3. **Friction stir welding**
 - Reza Beygi (INEGI, Portugal)

Part B – Mechanical Joining

1. **Design and analysis of bolted joints**
 - Sayed Nassar (Oakland University, USA)
2. **Deformation assisted joining - overview**
 - Paulo Martins (University of Lisbon, Portugal)

Part C – Adhesive Bonding

1. **Introduction and overview**
 - Lucas da Silva (INEGI, Portugal)
2. **Joint design**
 - Eduardo Marques (INEGI, Portugal)
3. **Design of functionally graded bonded joints**
 - Eduardo Marques (INEGI, Portugal)

4. **Design of temperature and impact resistant joints**
 - Eduardo Marques (INEGI, Portugal)
5. **Fatigue of adhesive joints**
 - Alireza Akhavan-Safar (INEGI, Portugal)
6. **Numerical modelling of fatigue in adhesive joints**
 - Alireza Akhavan-Safar (INEGI, Portugal)
7. **Experimental determination of fatigue response of adhesives and bonded joints**
 - Alireza Akhavan-Safar (INEGI, Portugal)

TEAM



LUCAS DA SILVA

Full Professor at the Department of Mechanical Engineering of the University of Porto

Expert on Adhesive Bonding Technologies

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SAYED A. NASSAR

Distinguished Professor of Mechanical Engineering, and founding director of the Fastening and Joining Research Institute (FAJRI) at Oakland University (OU) in Rochester, Michigan-USA

Expert on Bolted Joints

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GREGORY GLINKA

Professor Emeritus in the Department of Mechanical and Mechatronics Engineering at the University of Waterloo.

Expert on Fatigue of Welded Joints

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RAKESH GOYAL

Staff Engineer at the John Deere Enterprise Technology and Engineering Center

Expert on Weld Manufacturing and Design

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PAULO A. F. MARTINS

Professor of Manufacturing at the Department of Mechanical Engineering of Instituto Superior Técnico, University of Lisbon.

Expert on Deformation Assisted Joining

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ARNOLD GILLNER

Chair of Laser Technology in RWTH Aachen University - Fraunhofer ILT

Expert on Laser Welding

[Read More >](#)



ALIREZA AKHAVAN-SAFAR

Post-doc researcher at Institute of Science and Innovation in Mechanical and Industrial Engineering

Expert on Fatigue of Adhesive Joints

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REZA BEYGI

Post-doc researcher at the Institute of Science and Innovation in Mechanical and Industrial Engineering

Expert in Welding Metallurgy and Dissimilar Welding

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EDUARDO A. S. MARQUES

Post-doc researcher at Institute of Science and Innovation in Mechanical and Industrial Engineering

Expert on Joint Design and Impact

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FORMAT . DATES



▪ **48 hours**

- 24 hours live-streamed, and
- 24 hours of video-on-demand



▪ **4, 5, 7, 8, 12, 13, 19, 20, 22, 26, 27, and 29 of April 2022**

INVESTMENT



▪ **Full Course** 3000€ + VAT

- **Part A** 1500€ + VAT
- **Part B** 750€ + VAT
- **Part C** 750€ + VAT

INFORMATION . REGISTRATION



▪ **Lucas da Silva**
Course Organizer



- **lucas@inegi.up.pt**
- **T. +351 225 081 706**

Registration should be completed online at <https://www.inegi.pt/en/programs/advanced-joining-processes/>



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