



ADVANCED
JOINING
PROCESSES
COURSE

Online / Live Stream
6, 7, 8 and 12, 13, 14 april 2021

WHY THIS PROGRAM



The Advanced Joining Processes course (AJP course) has been conceived to ensure that executives and professionals whose work is related to Advanced Joining Processes can **increase their knowledge on the most current trends**, using a learning process that relies only on digital tools. 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, AJP 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 AJP 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

GOALS



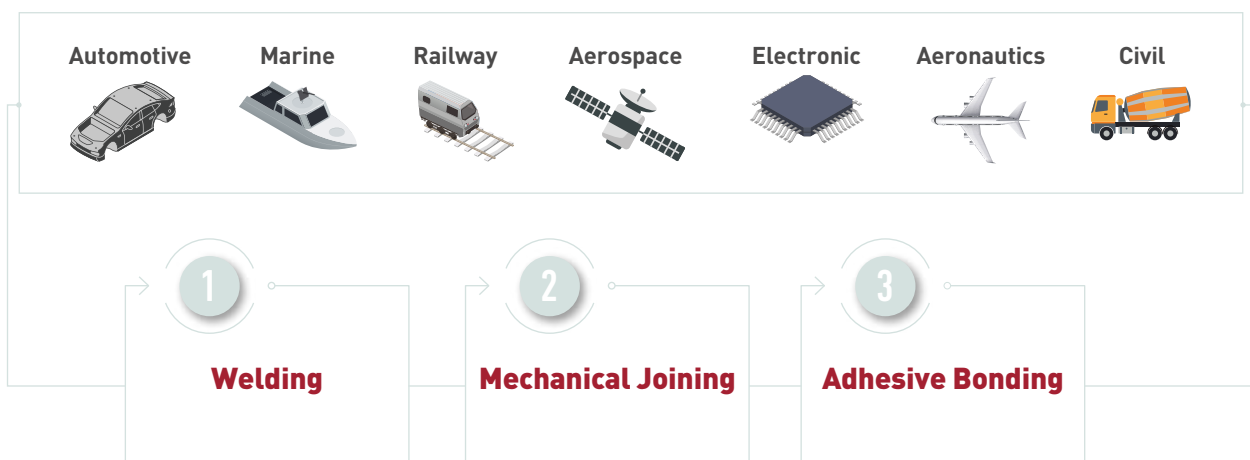
The AJP course has been conceived to ensure that executives and professionals whose work is related to Advanced Joining Processes can increase their knowledge on the most current trends, using a learning process that relies only on digital tools. This course aims to provide its trainees with the knowledge 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.

METHODOLOGIES



- Exposure of programmatic contents, using industrial and academic examples. Questions to which the trainees relate to will be given emphasis.
- The programmatic contents will be interspersed with debates/reflection moments, where each trainee will be given the opportunity to clarify their issues, encouraging the sharing of professional experiences.

LEARNING SOLUTION



COURSE STRUCTURE



Part A – Welding (2 days)

1. **Laser welding (8h - 6th April)**
 - Arnold Gillner (Fraunhofer Institute for Laser Technology ILT, Germany)
2. **Weld manufacturing, design and analysis (8h - 7th April)**
 - Gregory Glinka (University of Waterloo, Canada) and Rakesh Goyal (John Deere, USA)

Part B – Mechanical Joining (2 and 1/2 days)

3. **Friction stir welding (8h - 8th April)**
 - Reza Beygi and Krishna Kishore Mugada (INEGI, Portugal)
4. **Design and analysis of bolted joints (8h - 12th April)**
 - Sayed Nassar (Oakland University, USA)
5. **Deformation assisted joining - overview (4h - 13th April)**
 - Paulo Martins (University of Lisbon, Portugal)

Part C – Adhesive Bonding (1 and 1/2 day)

6. Introduction and overview (4h - 13th April)

- Lucas da Silva (INEGI, Portugal)

7. Functionally graded joints (2h - 14th April)

- Eduardo Marques (INEGI, Portugal)

8. The behaviour of adhesives under impact loads (2h - 14th April)

- Eduardo Marques (INEGI, Portugal)

9. Fatigue of adhesive joints (4h - 14th April)

- Alireza Akhavan-Safar (INEGI, Portugal)

[Full course structure details >](#)

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

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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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KRISHNA KISHORE MUGADA

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

Expert in Tool Design for FSW

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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 . INVESTMENT



- 48 hours
- 4 hour sessions

- 2pm - 10pm Greenwich Mean Time (GMT)
- 2 sessions per day



- 6, 7, 8 and 12, 13, 14 APRIL 2021



- 3000 € + IVA

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/>



**INEGI - INSTITUTE OF SCIENCE AND INNOVATION
IN MECHANICAL AND INDUSTRIAL ENGINEERING**

Campus da FEUP | Rua Dr. Roberto Frias, 400 | 4200-465 Porto
T. +351 229 578 710 | F. +351 229 537 352 | inegi@inegi.up.pt
www.inegi.pt

