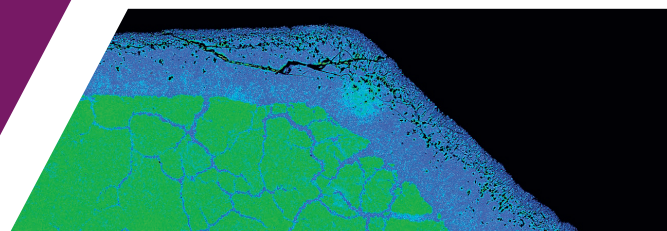


Master of Science Advanced Manufacturing and Materials Science (AM²S)

*FROM MATERIALS SCIENCE TO ADVANCED
MANUFACTURING FOR THE INDUSTRY
OF THE FUTURE 4.0*

Campus of Aix-en-Provence



INTRODUCTION

The manufacturing industry is undergoing dramatic changes. Industry 4.0 will change how manufacturing works, and as a result, it will also change who is needed to work within the industry. The objective of AM²S is to prepare engineers for these future challenges. This program will provide future engineers and researchers the knowledge and skills to understand, use and develop Industry 4.0 concepts based on smart approaches, including the digital revolution. This MSc is in partnership with Texas A&M University, as part of the Transatlantic Partnership for Industry of the Future AM².

PUBLICS

- M1 Students

CAREERS

- Working in a major manufacturing company in many sectors, such transport or energy, or in a mechanical or/and materials engineering research laboratory
- Working in an industry with a scientific approach in the sectors of the matter transformation or/and part manufacturing

PROCEDURE

Applications open in mid-May
Deadline middle of July

KEY STRENGTHS

- Registered in the French National Directory of Professional Certifications (RNCP « Génie Mécanique » 31495)
- Leading industrial partners in the transport, aerospace and automotive sectors
- 20% experts from industry
- Use of innovative industrial resources
- Program designed and taught by the Mechanics, Surfaces and Materials Processing Laboratory, which is a leading innovator in Advanced Materials, Manufacturing Sciences and Engineering.

PREREQUISITES

- First year Master of Science in Mechanical Engineering or Materials Science & Engineering
- Equivalent foreign degree
- For Arts et Métiers students: 2A/B selection processes
- Engineering degree

PARTNERS

- **Academic partners:**
 - Texas A&M University
 - University of Bristol
 - Danish Technical University
 - Karlsruhe Institute of Technology
- **Industrial partners:**
 - Airbus, Renault, PSA, CEA, Safran, Thyssen Group, Saint-Gobain, Stil
- **Institutional partners:**
 - Clusters: Safe, Henri-Fabre Project
 - IRT M2P



COST OF MSc

Nationally recognized degree

Tuition fees for EU/EEA and non-EU/EEA citizens : around €243/academic year

Must be paid by registration day

Social security costs may be added (no more than € 217)

There is no application fee

PROGRAM

Full-time academic program in two semesters:

Teaching language: English

ECTS credits: 30 credits/session (60 ECTS for the M2)

■ October to January (300 h of courses, 30 ECTS): scientific modules to understand the relationship between materials and processes in the new context of smart and digital concepts + two elective paths (Materials Science elective or Advanced Manufacturing elective)

The scientific modules are (150 h, 5 mandatory courses, 15 ECTS):

- Multi-scale and multi-physics manufacturing (30 h)
- Kinetic processes and mechanical behaviour in materials science (30 h)
- Numerical methods for mechanical engineering (30 h)
- Scientific project (30 h)
- Scientific communication in a foreign language (30 h)

The 2 elective scientific paths are (150 h, 3 mandatory and 2 elective courses, 15 ECTS):

- Materials science courses: advanced materials, mechanics of materials, surface integrity, experimental methods for material and mechanical characterization, fracture mechanics and fatigue of materials, mechanical behavior of materials in extreme conditions, corrosion, advanced numerical methods for scale transition.
- Advanced manufacturing courses: smart manufacturing, tribology for manufacturing, metrology for manufacturing, innovative manufacturing processes, precision manufacturing, advanced casting, digital manufacturing.

■ February to September (Master's thesis, 30 ECTS): individual project for 6 months, in a university research laboratory or a research department in the industry, either in France or abroad.

CONTACT

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*For more information:
[https://artsetmetiers.fr/fr/
am2s-advanced-manufacturing
-and-materials-science](https://artsetmetiers.fr/fr/am2s-advanced-manufacturing-and-materials-science)*