



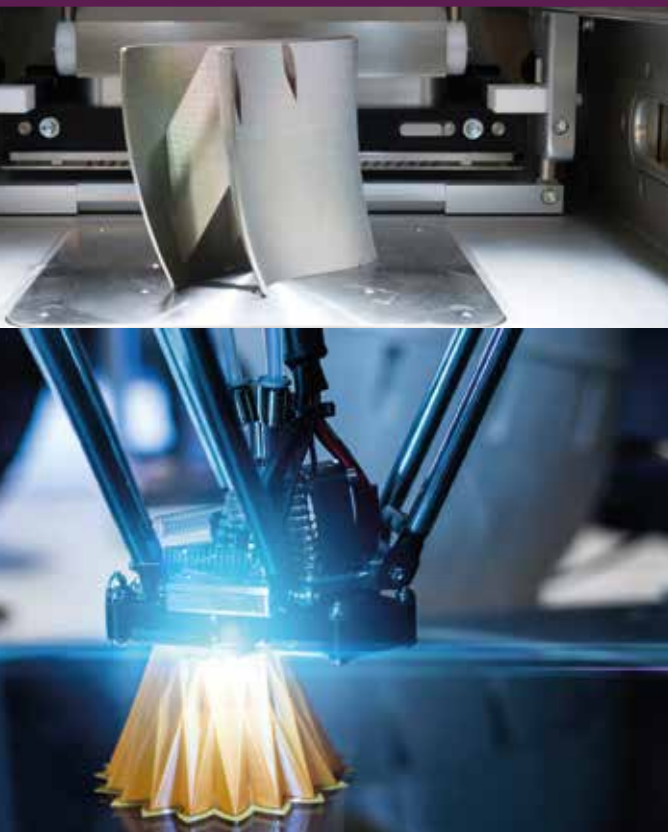
# Mechanical Engineering ENGINEER



With a speciality in advanced manufacturing processes



## GRADUATE TRAINING PROGRAM BY APPRENTICESHIP in Bordeaux



Currently in the process of obtaining the "C.T.I." accreditation (Commission of Engineer's Titles)

An Engineering Diploma from E.N.S.A.M. ("Ecole Nationale Supérieure d'Arts et Métiers"), with a specialization in Mechanical Engineering - advanced manufacturing processes is done in partnership with the Institute for Industrial Engineering Techniques ("ITI Aquitaine")

### TRAINING OBJECTIVES

Engineers specializing in Mechanical Engineering - Advanced Manufacturing Processes, have to deal with issues at the heart of innovation and competitiveness in the factory of the future. Training enables them to :

- Adapt the definition of a product according to the subtractive and/or additive elaboration processes
- Specify the need, choose and implement the combination of Materials and processes according to technical requirements, quality, costs and deadlines.

The holder of this engineering degree will be a specialist in material removal and addition ("3D printing"). As the designer of the processes associated with it, they will be involved in every stage of the process (definition-industrialization-manufacture, assembly and testing), obtaining the elements and mechanical systems for the manufacture of products.

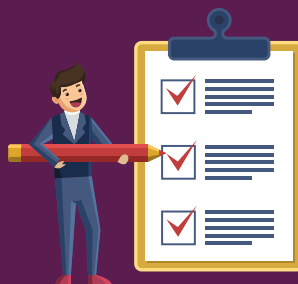
The training will cover areas of expertise such as "traditional" industrial automation with high precision machining, as well as new skills linked to additive manufacturing.

### > LOCATION

Bordeaux, a city with a future! Recently listed as a UNESCO World Heritage Site and voted France's 2nd city. Bordeaux and its suburbs offer numerous economical, industrial, cultural and patrimonial assets. In addition, its remarkable geographical location, amid the river, the ocean and countryside, the Bordeaux metropolis is considered to be one of the most attractive regions in France

### > ADMISSION

- **Having a level 2 or 3 qualification** : BTS, DUT, science or technical degree or equivalent by July
- Being **under 30 years** old when signing the apprenticeship contract
- Passing the **entry tests and interviews**
- Signing an **apprenticeship contract** with a company



**MARCH**

Deadline for applications

**MARCH/APRIL**

Interviews and eligibility

**MAY > SEPT.**

Signing of the apprenticeship contract

**OCTOBER**

Beginning of the training



Application files available at

[www.formation-maisonindustrie.com](http://www.formation-maisonindustrie.com)

# CONTENTS OF THE TRAINING



## TEACHING UNITS

### ENGINEERING SCIENCE

- Maths
- Mechanics
- Materials' Engineering
- Statistics/Experimental design
- The Materials' resistance
- Electronics
- Materials' Integrity
- Information Systems
- Analysis and signal processing for NDT (Non Destructive Testing)
- Robotics/Collaborative robots: strategic significance

### MANAGEMENT

- Health, Safety and Environment
- Production Management
- Conducting Meetings
- Management/Team building
- Strategic management
- Employment Law - legal environment
- Human resources' management
- Economics - Business management and marketing
- English
- Communication

### INDUSTRIAL TECHNOLOGY

- CAD/CAM
- Quality
- Functional dimensioning/ Tolerancing
- Manufacturing methods
- Core Maintenance principles
- Precision assembly
- NDT (Non-destructive Testing)
- Innovation
- Projects on Polymer additive manufacturing
- Projects on Metal additive manufacturing
- Projects on subtractive manufacturing
- Projects on Complex machining
- Assembly - Finishing system
- Projects on sheet metal implementation
- Final innovation project with a focus on R & D

## APPRENTICESHIP RHYTHM (in weeks)

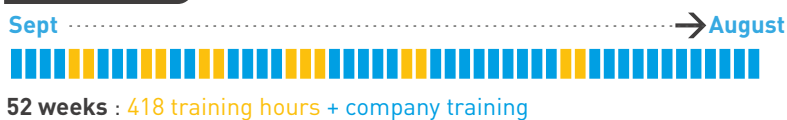
### 1<sup>ST</sup> YEAR



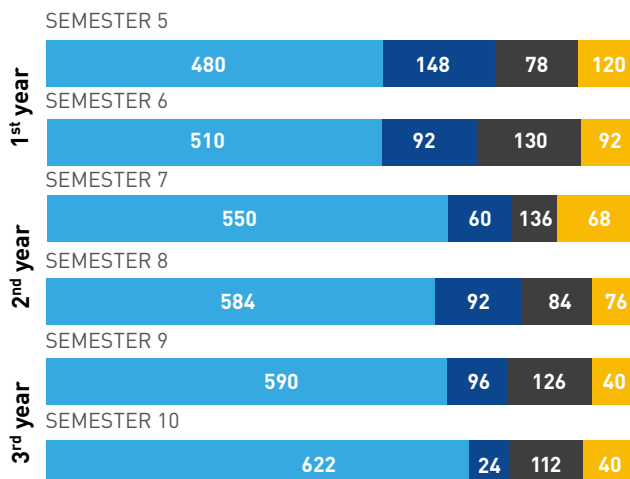
### 2<sup>ND</sup> YEAR



### 3<sup>RD</sup> YEAR



## TEACHING UNITS ALLOCATION (in hours)





## IN COMPANY TRAINING

### ADVANTAGES

**A TRAINING WHICH IS BOTH FREE AND REMUNERATED**

**AN INTERNATIONAL DIMENSION**



The compulsory foreign internship is a rewarding experience, essential both for obtaining the degree and for pursuing a career in engineering. It must last at least 12 weeks and can be split up, for example, into 2 different periods of six weeks each.

### PROJECT-BASED INSTRUCTION

Technology Module in project mode in every semester

#### EXAMPLES :

##### Semester 5 :

- Polymer additive manufacturing
- Subtractive manufacturing (machining)

##### Semester 10 :

- Final innovation project with a focus on R & D

### PROJECT EXAMPLES SUGGESTED BY MANUFACTURERS

During the final two years, an industrial project is undertaken for the company, under the supervision of the apprenticeship tutor, accompanied by the pedagogical tutor.

#### Examples

##### Aeronautic subcontracting :

Involvement in the development of the Design and Methods office's technical expertise for the design and additive manufacturing of metal and plastic parts for the Aerospace and Defence Industries.

##### Biomedical sector :

Development of new laser-assisted Bio-printing solutions: mechanical design, layout, definition file, specifications, upgrading of the existing system.

##### Aeronautics sector :

Writing of a guide in the methodology of Design in metal additive manufacturing, creation of a cost simulator, study of the properties of aluminium powders from different suppliers.

**Eduniversal Ranking 2022  
TOP 10**

**Engineering schools specialized in Aeronautics, Mechanics & Automotive - « Foundation Degree »**



Arts et Métiers ParisTech

Engineer with a specialization in mechanics in partnership with ITII Aquitaine, Champagne-Ardennes and « PACA » (Provence, Alpes ans Azur Coast)



# WHAT HAPPENS NEXT?

## EQUIPMENT...



Formlabs 2



ProX 100 3D System



F170 de Stratasys

## JOB PROSPECTS

Within the various industrial sectors (Aerospace, automotive and equipment manufacturers, electronics and micro-electronics, transformation industries, chemical industries), in a production or service based company, in France or abroad, the production maintenance engineer will be able to apply their skills in the following positions :

### PRODUCTION

#### DESIGN OFFICE

- Design-Redesign Engineer
- Product Development Engineer

#### METHODS OFFICE

- Industrialisation engineer
- Process development engineer

#### RESEARCH & INNOVATION OFFICE

- Network & Telecom engineer

## INFORMATION AND APPLICATIONS

Application files available at  
[www.itii-aquitaine.com](http://www.itii-aquitaine.com)  
ou [www.cfai-aquitaine.org](http://www.cfai-aquitaine.org)

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