

## Master in Materials science and engineering

# Bio refinery and bio materials 1st and 2nd year

### Présentation

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The course Biorefinery and Biomaterials of the Master Science and Materials Engineering is aimed at students wishing to move towards the professions of valorization of plant biomass into chemicals, energy and biomaterials.

This training is offered in French and English in 1st year and in English in 2nd year of master.

The transformation of plant biomass into energy, chemicals and polymers is an important component of the green economy. It contributes to drastically reducing greenhouse gas emissions, intensifying recycling and limiting waste.

Bioenergy, biofuels, bioproducts and biopolymers are today realities. However, the growth of their production must be considerably accelerated so that their contribution is up to the stakes. This development involves new skills.

The biorefinery is the operation that goes from the plant resource to the production of energy and chemicals. Although similar in definition to a refinery, the great diversity of materials and the richness of their chemical composition make the biorefinery a process engineering operation with very specific conditions. The chemistry associated with it is also different from petrochemistry:

- the structure of plant constituents is constructed with three essential atoms (C, H, O) - against two for petroleum (C, H) - which is a source of greater complexity;
- these structures represent complex organic architectures, which can be valorised as such, which can be an asset for the production of products and materials with new properties.

### Admission

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To integrate a master 1: hold a level 3 license or equivalent.

To integrate a master 2: to hold a master 1 or equivalent.

Registration deadline: May 13, 2019

See the website: [online application](#)

### Poursuite d'études

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PhD in Engineering - Materials, Mechanics, Environment, Energy, Processes, Production

### Infos pratiques :

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- > **Composante** : Grenoble INP
- > **Durée** : 2 ans
- > **Type de formation** : Formation initiale / continue
- > **Lieu** : Grenoble - Domaine universitaire

### Programme

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A quarter of the teaching units (EU) common

with the course Electrochemistry and Processes of the master SGM.

Average hourly volume: 60 h (master 1) and  
50 h (master 2) for a UE = 6 ECTS.  
Internship = 30 ECTS (Master thesis).  
Teaching English or French = 48 h.  
Teaching related to professional integration =  
12 ECTS.