

Master's degree **Control and durability of materials (CDM)**

(Contrôle et durabilité de matériaux)

About the programme

The Master in *Control and durability of materials* is a Master's degree (Research and Professional) which constitutes the materials branch of the Master's degree in Chemistry from the University of Burgundy's [Science and Technology Department](#) and is a full-fledged component of the graduate school EIPHI.

The field of durability and material control concerns entire areas of both basic and applied research, as it encompasses all stages of the development, use, degradation and recycling of materials. The objective of the training is also to train students to be capable of taking on responsibilities in the field of materials characterization and control in analysis laboratories but also in direct relation to an industrial process. Hence, the training covers many industrial fields such as metallurgy, ceramics, microelectronics, nano-technologies, cement industry, glass, etc. This master's degree will therefore provide training in research methods and approaches and instruct the student on major scientific advances, all experimental methods and industrial applications in the field of materials control and characterization. These theoretical and practical lessons are based on the know-how of the support laboratories. They also aim to provide students with a high level of professional training in materials related to their various applications, including coatings, functionality, sustainability and durability. The existence of a well-developed partnership between the University and companies makes it possible for industrial players to collaborate consistently.

The objectives of Master's degree *Control and durability of materials*

The Master CDM offers training in the field of materials science, their control, characterization, physico-chemical properties, reactivity, formulation, elaboration, treatment, degradation.

Upon completion of their training, graduates will be able to as follows:

- analyze and apprehend the fundamental processes and factors that govern the evolution of a material in interaction with an external environment;
- identify the structural, nano and micro-structural, mechanical and morphological characteristics of materials, while mastering the implementation of the techniques and methods involved as well as the developing of instruments;
- have a good knowledge of materials processing procedures (thin layers, solid materials, powders, nano-particles, hybrids...);
- evaluate the ageing of systems and optimize or enhance the durability of materials;

- have a thorough knowledge of the materials properties in their various forms;
- know the risks and constraints associated with the use of materials characterization techniques;
- know the tools for simulation and modelling, data processing, analysis of results;
- work on a research or industrial project and collaborate with requesters;
- know about the technological and scientific industrial communities of the field.

The activity sectors involved

The training provided by the master program corresponds to numerous industrial sectors: metallurgy, nanotechnologies, chemistry, fields of transport (automotive and aeronautics), energy, tooling and machine tools, electronics and cement. In addition, the skills developed in this type of training may prove useful for those in for fields such as archaeology, art restoration and forensic science.

Some job examples

Researcher, research engineer, design engineer, university professor, lecturer, project manager, applied research engineer, laboratory engineer, production engineer, head of safety department, environmental engineer, safety engineer, head of control laboratory, quality control manager, quality consultant, method engineer, process engineer, method manager...

How to enter the Master's degree

The training is open on selection for holders of a Bachelor's degree in science such as chemistry, physics, material science...

Continuing education

Students who have obtained the CDM Master's degree can continue their doctoral studies, notably at the [Carnot Doctoral School](#) via EUR EIPHI. Some PhD grants will be reserved for the best Master students while many other grants will be offered.

Contact

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