

National Master's Degree (DNM) in Science, Technology and Health, with a specialization in Applied Physics and Physical Engineering, Optics and Nanotechnologies (ONT)

Introduction

Nanotechnologies and their applications in the field of optics, through innovative materials, devices for light-matter control at the nanoscale, or bio-detection, represent a major technological challenge.

The Optics and Nanotechnologies master (ONT) objective is to meet a growing need in a strongly developing field.

ONT is one of the 4 master II degrees related to the cursus named "**Mention Applied Physics and Physical Engineering**". **The degree is jointly awarded by UTT and the Université de Reims Champagne-Ardenne.**

The full Master list is given below :

- Physique, Spectrométrie, Ingénierie et Instrumentation (M1 and M2 in Reims city)
- Sciences Physique, Agrégation (M1 and M2 in Reims)
- **Optics and Nanotechnologies (M2 at UTT, taught in english)**
- Mécanique, Matériaux et Procédés Avancés (M2 à l'UTT)

Pedagogical objectives

The Master 2 ONT is based on nano-optics as a transversal discipline in order to tackle a very broad and particularly rewarding field: nanotechnologies.

The ONT course offers training mainly in the field of nanosciences and related physical sciences. It trains in research & Development (R&D) in the field of nanotechnologies via the tools and methods of nano-optics (understanding of physical phenomena, modeling), the fabrication of nanostructures and materials, the characterization of their physico-chemical properties in particular by nanoscopy, nanospectroscopy and other local probe techniques.

Professional Objectives

The ONT training leads students in R&D in nanotechnologies, a field with a strong fundamental component and multiple applications: plasmonics, lighting, biomedical and environmental sciences (biosensors, energy production and storage, decontamination).

Taught entirely in english, the training is international oriented.

Objectives related to research

Duration

Une ou deux années universitaires, selon le niveau d'entrée

Places

Université de Technologie de Troyes

Internship(s)

Yes, Compulsory

Teaching languages

- Unknown label

Rhythm

- Full time
- With blocked release periods

Conditions

- Attending

Research themes

The courses are oriented towards nanosciences and their challenges (energy, sensors): detection of individual objects, control of light-matter interactions, plasmonics, energy transfer and modeling in nano-photonics.

Labs

This master II cursus is supported by research teams in UTT :

- [Light, Nanomaterials, Nanotechnologies \(L2n\)](#)
- The scientific and technological platform [Nano'Mat](#) comprising 1000 m² of clean room and equipment dedicated to nanotechnologies

3 reasons to choose this Master

A diploma resolutely focused on Research & Development

ONT master leads to careers in research through academic route (PhD thesis) or companies (Ingénieur R&D), in internationally recognized laboratories.

A master oriented toward international

Taught in english, ONT training is a gateway to an internationally oriented professional career. It also provides access to double Master's degree with partner universities (Taiwan, Germany, Mexico) via a semester abroad.

A recognized national Master's degree

The Optics and Nanotechnologies programme is a national Master's degree, recognised as a European post-graduate diploma and university degree.

Admission

Prerequisite

Prerequisites training

- Enrollment in ONT – Master 2 : requires a Master I (240 ECTS) or equivalent national or international diploma corresponding to 240 ECTS (Credits).

In the case of students from outside a European country, the jury will have to decide on an admission to the first or second year by evaluating the achievements of each student, in the light of the documents provided.

Specific routes

- UTT double diploma, for students already registered at UTT as engineer students.

[Apply Application Help \(pdf\)](#)

Information

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Physique

<http://candidature.utt.fr/>

What's next ?

Level of education obtained after completion

Level of education obtained after completion

- Bac +5
- National Master's Degree (DNM)

Further studies

Graduates of the Mechanics, Materials and Advanced Processes course can continue their studies in this field of expertise.

The training course attests to research aptitude: the UTT Doctoral School "Sciences for Engineering" offers young researchers the opportunity to carry out their thesis work, for a duration of approximately 3 years, in the [doctoral speciality Materials, Mechanics, Optics and Nanotechnology](#).

programmeme

Course organization

Duration of studies: one academic year.

For students enrolled in the engineering cycle at UTT and who wish to follow a Master's course in parallel, specific admission procedures have been set up.

- Semester 1 (17 weeks from early September to mid-January)
- Semester 2: 6-month internship (from early February to late July)

The Master's degree is linked to the acquisition of a minimum level in a foreign language.