

# Master in Materials Science

Materials for micro and nano technologies

13<sup>TH</sup> EDITION • ACADEMIC YEAR 2011-2012

Istituto Universitario  
di Studi Superiori  
Pavia

IUSS  
Sapere Aude

IUSS ISTITUTO UNIVERSITARIO DI STUDI SUPERIORI • Viale Lungo Ticino Sforza 56, Pavia - Italy [www.iusspavia.it/master\\_sm\\_en](http://www.iusspavia.it/master_sm_en)

## GOALS • STRUCTURE • DURATION

### GOALS

The Master The Master in Materials Science is a third cycle qualification program not leading to a PhD and aims at giving its students outstanding scientific and professional capabilities in the various aspects of advanced materials and their applications to **micro-electronics, photonics**, and sensors and devices for **energy control and management**.

A primary objective of the Master Course is the integration between education and the labour market.

The Program benefits from support and strong interactions with industries and research centres playing a leading role in applied research, and plans its activity according to their requests for experts in innovative materials. With a strong interdisciplinary approach to Materials Science, particular attention is given to the most recent scientific and technological achievements in the field and to the materials with the highest technological content.

### DURATION

The program starts in November 2011 and ends in October 2012

The first phase is **strictly residential and requires full-time commitment**.

### PROGRAM STRUCTURE

**The first phase** (November to April) consists of academic lectures, seminars, and specialized lectures for 48 academic credits and starts with fundamental training on Physics and Chemistry of Materials, Optical Properties, Sample Preparation and Processing, and Characterisation Methods. This accounts for previous knowledge of students coming from different backgrounds and provides them a common well assessed basis for the successive topics: Materials and Devices for microelectronics, photonics, and energy management, as well as Research Management.

**The second phase** (24 credits) consists of a 5 - 6 months internship by a partner institution.

It is designed to provide a direct involvement of the students in applied research by learning and mastering a technique of particular relevance in Materials Science.

Each partner institution specifies each year the subject and number of internships offered to students. **During the internship period students are paid by the hosting institution.**

## ADMISSION • FEE • LOCATION

### ADMISSION REQUIREMENTS AND PROCEDURES

The Master's Program is a post-graduate course open to students of any nationality holding a degree (at least 4 years but preferably 5 years) in Chemistry, Engineering, Physics or related disciplines. Up to twenty candidates will be attending to the Master's program. A good knowledge of English and an appropriate scientific background in the basis of Materials Science are required.

#### APPLICATIONS AND ADMISSION PROCEDURE

For application details see:

APPLICATION PROCEDURES: [www.iusspavia.it/master\\_sm\\_en](http://www.iusspavia.it/master_sm_en)  
DEADLINE FOR APPLICATIONS: **September 30<sup>th</sup>, 2011**

### SCHOLARSHIPS AND FINANCIAL AID

The fee does not cover accommodation and costs of living in Pavia. However, the Pavia University College System will offer many of its facilities to enrolled students at specially reduced rates. A considerable number of fee reductions and scholarships will be offered to deserving students; the Master Program strongly encourages the students to apply for honour loans and gives support for obtaining loans at favourable conditions.

### LOCATION

The activities of the first phase of the Master will be held in the **Almo Collegio Borromeo**, an historical institution of the XVI century, where the students of the Master usually find their accommodation when requested.

ALMO COLLEGIO BORROMEO: PIAZZA BORROMEO, 9 - 27100 PAVIA  
[WWW.COLLEGIORBORMEO.IT](http://WWW.COLLEGIORBORMEO.IT)



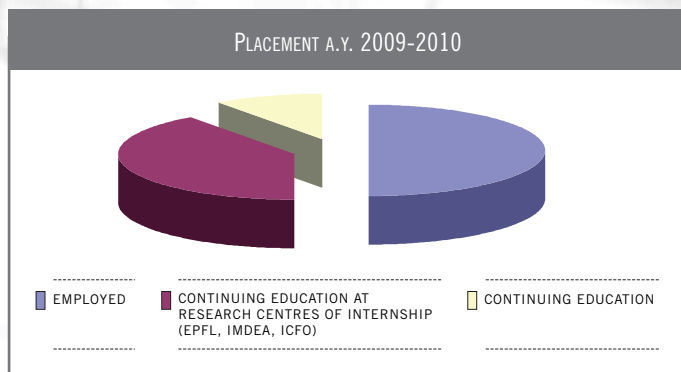
### FEES

The enrolment fee is 7000 Euro, it includes all regular classes and seminars, and handout teaching material.

During the internship, students receive a payment from the hosting institution allowing them on average to payback their investment.

## PROFESSIONAL PROFILE AND PLACEMENT

Typically our students find a position in the R&D divisions of industries playing a leading role in advanced materials or centres for applied research; a small fraction prefers basic research. According to the results of the previous years, the internship represents a strong opportunity for placement into a permanent position: some students are permanently hired during or even at the beginning of the internship.



## OUR PARTNERS

Here is a partial list of partner industries

- OCLARO (S. DONATO M.S.E, I)
- AGILENT (TORINO, I)
- DELFT CENTRE FOR SUSTAINABLE ENERGY - TU DELFT (NL)
- CAMERON ITALIA (VOGHERA, I)
- EPFL (ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE, CH)
- FLAME SPRAY (MILANO, I)
- IMEC (LEUVEN, B)
- IRCI (BORGARO T.S.E, I)
- MEMC (MILANO, I)
- PAN-PLA (VIGEVANO, I)
- PIRELLI (MILANO, I)
- PLAST - OPTICA (UDINE, I)
- SAES GETTERS (LAINATE, I)
- ST-MICROELECTRONICS (AGRATE, I)
- WHITHFORD (BRESCIA, I)
- NUMONYX (Agrate, I)

## IUSS

### IUSS

IUSS-PAVIA, Institute for Advanced Study was launched in 1997 under a special "program agreement" with the Ministry of Education, University and Research, inside a unique system in the country, which can claim the historical presence of illustrious academic colleges. In July 2005 it was recognized as an independent and autonomous "Scuola Superiore ad ordinamento speciale" in virtue of the excellent quality of activities carried out, attaining the same status as the Scuola Normale and the Scuola Sant'Anna in Pisa, and SISSA in Trieste. In keeping with the completeness of its education and training fields, which allows a strong interdisciplinary approach, the mission of the IUSS is to contribute to the intellectual growth of a small number of selected students by offering them, at each step of their higher education, qualified programs enhancing their capabilities and knowledge.

The Institute is also committed to scientific progress by preparing young researchers and developing scientific research programs.

### IUSS core programs

- Undergraduate courses offered, on a merit base, to a small number of selected talented students of Pavia's University.

- Master degrees characterized by a strong international vocation.
- Ph.D. programs providing an interdisciplinary approach and exposure to cutting edge research.
- Advanced Short term courses and Seminars.

**Professor Roberto Schmid** - DIRECTOR OF IUSS

**Professor Giorgio Spinolo** - DIRECTOR OF THE MASTER

**Don Ernesto Maggi** - RECTOR OF ALMO COLLEGIO BORROMEO

## ITALY AND PAVIA

Located in northern Italy, at 30 kilometres from Milan, Pavia is an ancient university town, crossed by the Ticino river.

Placed between Milan, Italy's industrial and financial heart, and Genoa, a Mediterranean harbour, this town offers excellent living standards.

Pavia's artistic, cultural and scientific assets, and its historic Colleges system coupled with the availability of valuable human resources and technological infrastructures, make IUSS a natural gateway to advanced education and research.

## HOW TO REACH US

us By plane

Milano-Linate, Milano-Malpensa, "Orio al Serio" in Bergamo airports

By train

Pavia is on the Milan (30 min.) Genova (90 min.) railway track, for trains timetable: <http://www.trenitalia.com>

## For further information

IUSS - Istituto Universitario di Studi Superiori

Viale Lungo Ticino Sforza, 56 - 27100 Pavia, Italy

Website: [www.iusspavia.it/master\\_sm\\_en](http://www.iusspavia.it/master_sm_en)

Email: [master.sm@iusspavia.it](mailto:master.sm@iusspavia.it)