

Master of Science in Engineering Physics

track: Semiconductor Nanotechnologies
(L-Ness, Como Campus)



Master of Science in Engineering Physics

Presentation

The objective of this programme is to prepare an engineer who is able to innovate both in the industrial environment and in fundamental research. The graduates will have a broad cultural and scientific foundation on solid-state and modern physics, and its state-of-the-art applications in photonics and nanoelectronics.

The Semiconductor Nanotechnology track, whose second year will be held at the Como campus, will comprise experimental laboratory modules set in the active research environment of the L-NESS Inter-university centre. These modules will directly introduce the students to hands-on semiconductor nanostructure characterization.

Career opportunities in the Physics Engineering field are extremely wide and varied.

In particular, graduates can approach all the sectors in which advanced technological systems are developed, such as photonic devices, semiconductor- and graphene-based nanoelectronics, and thin film deposition. Moreover, masters graduates can work in strategic consultancy companies or can continue their academic education with a PhD program towards a professional career in academic or industrial research.

The program is taught in English.

Eligible students

Students holding a Bachelor degree in Physics Engineering, Industrial Engineering or Information Engineering and at least 15 years of education are eligible for application. The Commission will evaluate case by case students with different background.

Subjects

The Semiconductor Nanotechnologies track shares a number of basic subjects with the other two Engineering Physics tracks: Photonics and Nano-



technologies, and Nanophysics and Nanotechnology.

Subjects common to all three tracks, taught to all Engineering Physics students at the Milano Leonardo Campus during the first year:

- Mathematical Methods for Engineering
- Solid State Physics
- Photonics I
- Automatic Controls
- Electronics
- Computer Science
- Management

Specialized courses covering the following subjects are taught during the second year at the Como Campus of the Polimi:

- Semiconductor Nanostructures
- Graphene electronics

Career opportunities

The graduate in Engineering Physics can approach all the sectors in which technological systems based on modern physics are developed, such as lasers and their applications, photonics, thin film deposition, innovative materials such as graphene, and microelectronics.

The physical engineer can therefore find employment in companies working in the fields of materials engineering and optoelectronic technologies; companies which use innovative systems and technologies; companies which work with physical, optical and photonic technologies, and public and private research centres.



L-Ness



Como Campus

POLITECNICO DI MILANO



POLO TERRITORIALE DI COMO

The Physics Department at the Politecnico di Milano, thanks to an agreement with the Federal Polytechnic in Zurich (ETHZ) and the extremely important support of the Como Campus, created a facility for research and technological transfer on nanostructured materials in Como. The structure is an integral part of the L-NESS Inter-university Centre (Laboratory for Silicon Epitaxial Nanostructures and Spintronics) founded together with the University of Milano-Bicocca.

The multidisciplinary approach of the L-NESS is reflected in intense collaborations among researchers active in the growth of materials, their characterization, and their atomistic modeling. Finally, strong emphasis is placed on developing strategic partnerships with the global high-tech industry.

Research activities:

- Silicon germanium epitaxy
- Graphene based devices
- III-V epitaxy and nanostructures
- Spintronics in semiconductors
- Positron annihilation spectroscopy

The L-NESS occupies a unique position in the Italian research landscape because of the extraordinary concentration of advanced research infrastructure:

- deposition equipment for semiconductor hetero-epitaxy
- e-beam lithography fabrication facilities
- characterization systems for thin films, with a special emphasis on advanced heterostructures and defects in semiconductors
 - advanced atomistic modeling know-how (ab initio and semi-empirical)

Due in part to the origins of the centre, the L-NESS workforce is very international, and English is commonly used as the working language. Active research links are maintained with research labs located in Europe and elsewhere in the world.

The Como Campus is the "oldest" of the 7 campuses distributed in the Lombardy Region. Thanks to collaboration with the Chamber of Commerce and the Industrial Federation of Como city, the Como Campus was established in 1989.

The Como Campus offers the opportunity to enroll in fully-English taught programmes with a highly international student body. Our campus is located in a small, beautiful city providing user friendly facilities.

There are many international students at the Como Campus attending the international Specializing Masters, the Erasmus + or the Master of Science programmes. Here they find both the high quality teaching of the Politecnico di Milano with its up-to-date and advanced teaching methods and the student services.

Como city is situated in the middle of some green mountains overlooking the lake. The city offers a very wide range of truly amazing landscapes and panoramas. Como is also located in a strategic position between Switzerland and Milan. It is around 25 km far from Lecco, Varese and Lugano, respectively.

Como has been a tourist spot since the Roman Age. The historical centre within the old medieval walls is rich with artworks and monuments. Its valleys offer a series of opportunities for mountain lovers.

Como Campus is situated within the city of Como, a few minutes walking distance from Como Borghi Railway Station and 20 minutes walking distance from the town centre. You can easily reach the Como campus buildings by public transportation.

There are many cultural events in both the city and its surroundings. Special offers and discounts are provided for by some local organizations and associations (movies, plays, classical music concerts, etc.).

Contacts

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