nanoforum.org

European Nanotechnology Gateway

European Nanotechnology Education Catalogue

March 2005

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INTRODUCTION

Education Catalogue for Higher Education in Nanotechnology

The Education Catalogue is to be used as a complete handbook for people in the university system (professors, students, career advisors, etc.) on the education opportunities available related to nanoscience and nanotechnology.

What is Nanotechnology?

Nanotechnology is the manipulation or self –assembly of individual atoms, molecules, or molecular clusters into structures to create materials and devices with new or vastly different properties.
The definition of nanotechnology is based on the prefix "nano", which is from the Greek word meaning "dwarf".
Nanotechnology opens a completely new world of opportunities and solutions in all kinds of areas: the field of diagnostics and analytics, textile industry, energy sector, electronics and automotive industry…
Examples of nanotechnology-based products already on the market include new computer displays, scratch –free paints, and medical products such as heart valves. These products, however, represent only the tip of the iceberg and nanotechnology research is expected to have an impact upon virtually all sectors in the coming years and lead to new developments.

The need for Nanotechnology Courses

Nanotechnology is, by its nature, multidisciplinary, while the existing tertiary education system tends to compartmentalize by disciplines for example physics, chemistry, engineering or biology. As a result, many scientists are finding that they have gaps in their education. As organic materials from polymers to molecular electronics begin to have an impact on the semiconductor industry, companies such as Intel and ST Microelectronics are finding an increasing need for chemists and materials scientists. Similarly, the integration of sensors and other functions with materials such as textiles is requiring polymer chemists to work with electrical engineers, and the education system is beginning to adapt to this.

A further driver for Nanotechnology courses is the declining numbers of students willing to study the hard sciences such as physics and chemistry. The combinations of low student numbers with the high cost of equipping science laboratories has already led to the closure of many chemistry departments in the United Kingdom. Courses addressing the perceived needs of future labour markets, from tourism to nanotechnology have become increasingly popular with students, while those attracting higher numbers of applicants are similarly popular with university administrators.

There is, however, some need for caution. A distinction should be made between first (bachelors) and postgraduate degrees in nanotechnology. While it is admirable to attempt to produce a kind of renaissance scientist, i.e. a master of many disciplines, it is still unknown whether a three of four year taught course at the first degree level will allow students to gain the required level of expertise in any discipline to be useful to future employers, or even in an academic career. There is currently some debate among academics as to whether it would be better to have a sound understanding of one area of science first and then broaden this to include other disciplines.

This is not the case with postgraduate courses. Many of the postgraduate degrees are specifically designed to give scientists and engineers the multidisciplinary skills required to get to grips with nanoscience and nanotechnologies. Some courses go further, adding elements of entrepreneurship or business skills, and ensuring that graduates are much in demand by employers.

What is Nanoforum?

Nanoforum is a thematic network funded by the European Union, which aims to promote and raise the standard of nanotechnology activities throughout Europe. Nanoforum provides a linking framework for all nanotechnology activity within the European Community. It serves as a central location, from which to gain access to and information about research programmes, technological developments, funding opportunities and future activities in nanotechnology within the community.

As well as organizing workshops, it is a free-of-charge source of information for the European Community via www.nanoforum.org

Nanoforum comprises a consortium of leading European nanotechnology organisations:

The Institute of Nanotechnology (UK)	http://www.nano.org.uk
VDI Technologiezentrum (Germany)	http://www.vditz.de/
CMP Cientifica (Spain)	http://www.cmp-cientifica.com/
CEA-Leti (France)	http://www-leti.cea.fr/uk/index-uk.htm
Nordic Nanotech (Denmark)	http://www.nanotech.dk/
MalschTechnoValuation (Netherlands)	http://www.malsch.demon.nl/
BIT (Austria)	http://www.bit.ac.at/
METU (Turkey)	http://www.physics.metu.edu.tr/
Monte Carlo Group (Bulgaria)	http://cluster.phys.uni-sofia.bg:8080/
Unipress (Poland)	http://www.unipress.waw.pl/
NanoNed (Netherlands)	http://www.stw.nl/nanoned/

Reports produced by the Nanoforum consortium:

General Reports

- 1st Nanoforum General Report: "Nanotechnology helps solve the world's energy problems", first edition published in July 2003, updated in December 2003 and April 2004.
- 2nd Nanoforum General Report: "Nanotechnology in the Candidate Countries; Who's who and research priorities", first edition published in July 2003, updated in March 2004.
- 3rd Nanoforum General Report: "Nanotechnology and its implications for the health of the EU citizen", first edition published in December 2003.
- 4th Nanoforum General Report: "Benefits, Risks, Ethical, Legal and Social Aspects of Nanotechnology", first edition published in June 2004.

Socio-Economic Series

- "VC Investment opportunities for small innovative companies." April 2003.
- "Socio-economic report on Nanotechnology and Smart Materials for Medical Devices", December 2003.
- "SME participation in European Research Programmes", October 2004.

Background Studies to Policy Seminars

- "Nanotechnology in the Nordic Region", July 2003.
- "Nano-Scotland from a European perspective", November 2003.

Others

- "Nanotechnology in the EU – Bioanalytical and Biodiagnostic Techniques", September 2004.
- "Outcome of the Open Consultation on the European Strategy for Nanotechnology", December 2004.

STATISTICS

The education opportunities are divided into three main sections: Graduate Degrees, Undergraduate Degrees and Short Courses. The three sections are colour-coded to help the user. Finally, the courses are grouped together by country in alphabetical order.

Graduate Degrees and Courses

Undergraduate Degrees and Courses

Short Courses

The courses included in this handbook start in the Oct. 1, 2004 - Oct. 1, 2005 timeframe.

The Nanoforum authors strongly suggest that students and/or teaching professional contact these institutions directly, as some of the information may have changed.

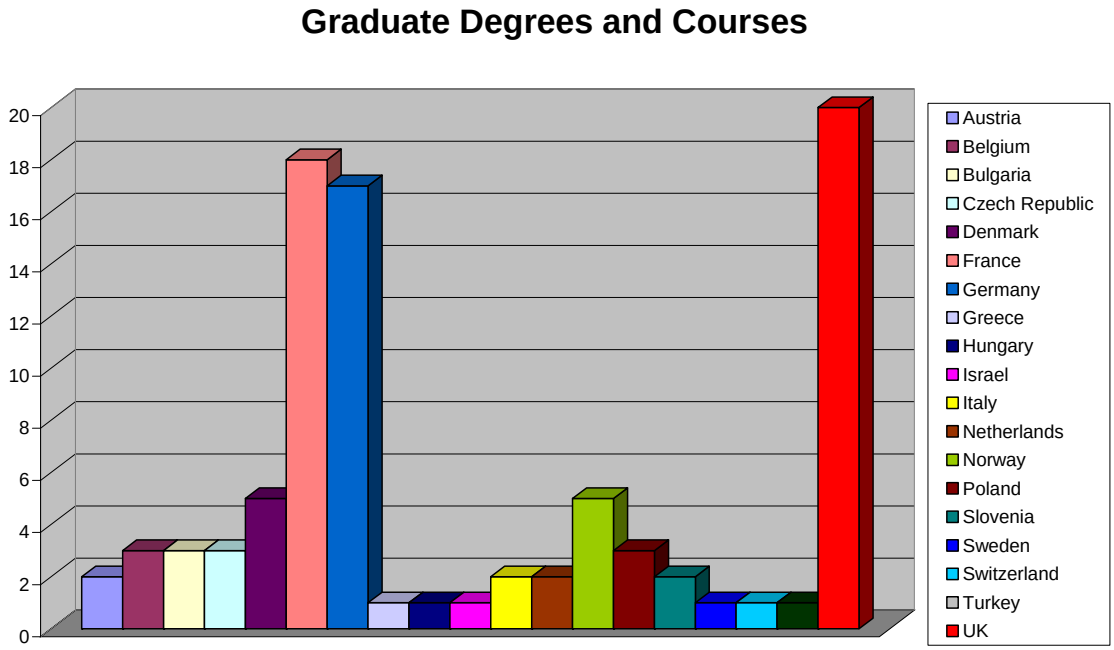

Figure 1. Number of graduate degrees and courses offered per country. These are advanced courses for those who have successfully completed an undergraduate degree. The United Kingdom presents the widest choice for graduates, with 20 different courses in nanoscience and nanotechnology. The UK is followed by France (18) and Germany (17). It is clear that these are the most common N&N courses to be found in the EU and associated states. This must reflect the multidisciplinarity of nanotechnology, and thus the need to broaden the training of graduates from traditional disciplines. It is reasonable to expect that the remaining states will start to reorganize their educational systems to address future demands for nanotechnologists.

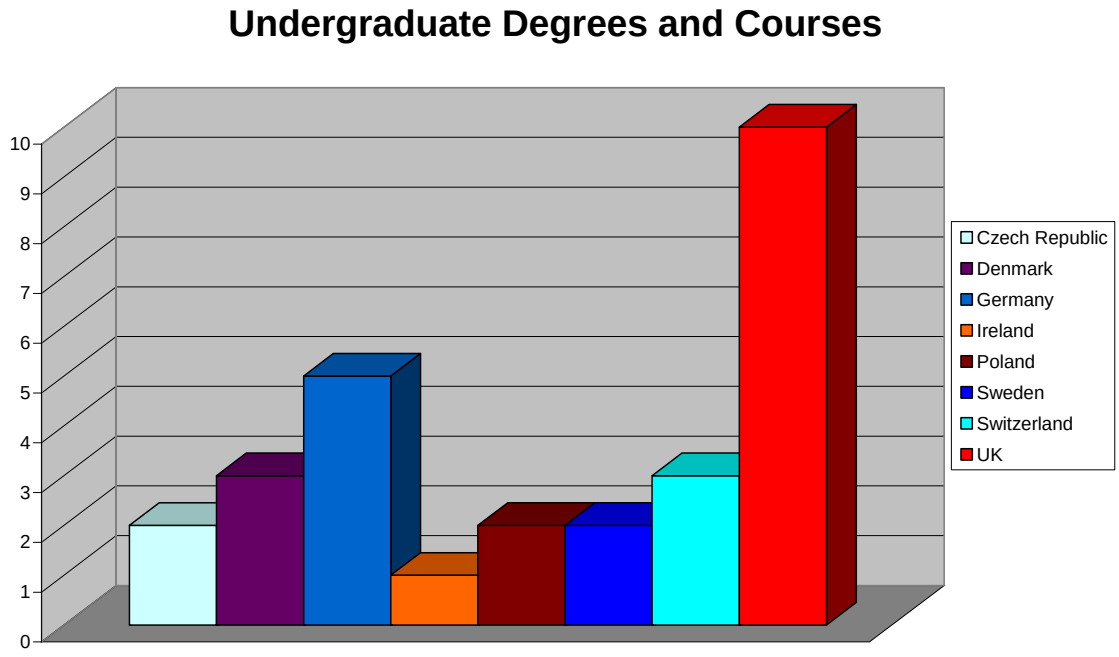

Figure 2. Number of undergraduate degrees and courses offered per country. Most countries do not offer nanotechnology courses for undergraduates, the main exception is the United Kingdom (10) followed by Germany (5). This can be expected to change with time as education systems evolve to meet R&D demands. At the moment these needs can be met through the advanced training of graduates who have gained a broad scientific expertise from traditional subjects.

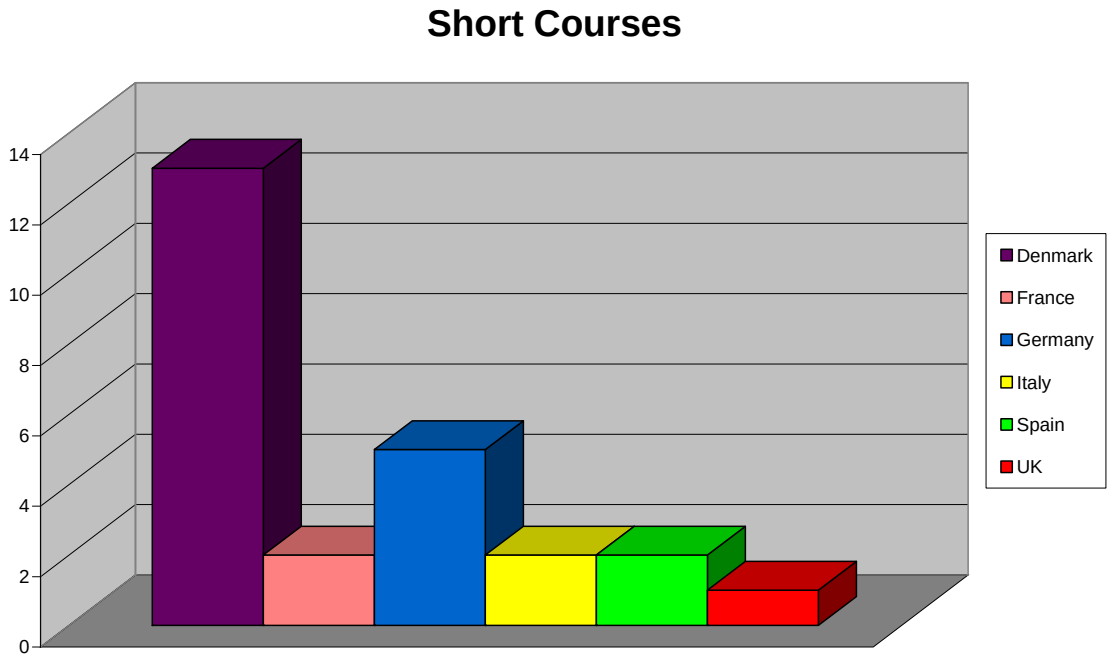

Figure 3. Number of short courses offered per country. The majority of short courses are held in Denmark. Noteworthy is that countries, such as Spain, which has not yet incorporated nanotechnology courses, as such, into its educational system, offer instead some short courses to graduate and undergraduate scientists and engineers as an alternative.

The university degrees/courses are listed by country

EU and Associated States

Austria
Belgium
Bulgaria
Czech Republic
Denmark
France
Germany
Greece
Hungary
Ireland
Israel
Italy
Netherlands
Norway
Poland
Slovenia
Spain
Sweden
Switzerland
Turkey
UK

Note no courses were found for the following countries: Cyprus, Estonia, Finland, Iceland, Liechtenstein, Lithuania, Luxembourg, Malta, Portugal, and Romania.

EUROPEAN EDUCATION OPPORTUNITIES

Graduate Degrees & Courses

Degree /Course Title:
Master of Advanced Studies in Nanotechnology (extra-occupational)

Duration:
2 years

Location:
Graz University of Technology, Graz

Overview:
The highly interdisciplinary study course is a common initiative of the Graz University of Technology, the Karl-Franzens-University of Graz, and the Joanneum Research Forschungsgesellschaft mbH for graduate academics, who want to acquire extra qualification in nano sciences and technology. Students will develop skills and knowledge in physics, chemistry, modern high-resolution analytics, biochemistry, and bioinformatics. Each participant will have one personal mentor from the lecturer board as an advisor and guide through the course of study. The lectures will be held in German and English.

Pre-Requisites:
Graduate Students with a BSc., MSc., or Diploma in a relevant technical discipline

Tuition Fees:
The semester fee is **€ 1500,00**.

Contact details:
Contact Person: Prof. Dr. Emil List, Tel: +43 316 873 - 8468
Email: e.list@tugraz.at
Website: http://www.nanotech.tugraz.at/welcome.html

Graduate Degrees & Courses

Degree /Course Title:
Post-graduate MSc. in Micro- und Nanotechnology (extra occupational)

Duration:
5 semesters (including the master thesis)

Location:
University of Applied Sciences Vorarlberg, Achstr. 1, A-6850 Dornbirn/Austria

Overview:
The masters degree program is a cooperative venture between four established Universities of Applied Sciences and research institutions in the Euregio Bodensee: Vorarlberg University of Applied Sciences (FHV), Interstate University of Applied Sciences of Technology Buchs (NTB), Zurich University of Applied Sciences Winterthur (ZHW), and the Swiss Federal Laboratories for Materials Testing and Research (EMPA), which is the ETH (Swiss Federal Institute of Technology Zurich) domain's institution for multidisciplinary research into sustainable materials and systems engineering. Their aim is to establish a joint continuing education program for engineers: an in-depth postgraduate master's degree in micro and nanotechnology and its applications, which allows graduates to combine their traditional engineering knowledge and skills with new technologies.

Pre-Requisites:
Only graduate students with a degree in technics or in a natural science

Tuition Fees:
Semester fee is **€ 3000,00.**

Contact details:
Contact Person: Andrea Kubesch, Tel. +43 5572 20336 - 134
Email: andrea.kubesch@fh-vorarlberg.ac.at
Website: http://www.fhv.at/edu/ce/mnt

Graduate Degrees & Courses

Degree /Course Title:
Master of Nano-sciences and Nano-technology

Duration:
5 years

Location:
Katholieke Universiteit Leuven, Faculty of Engineering

Overview:
Not available

Pre-Requisites:
To have one of the following bachelor degrees: in Science, in Physics, Bio-engineering, in Chemistry, Bio-chemistry, Bio-technology, Biology. More information at: Office for International Students and Scholars Naamsestraat 22 3000 Leuven
Tel : +32/16/324271
Fax : +32/16/323773
E-mail: csb@dir.kuleuven.ac.be

Tuition Fees:
Not available. There are scholarships and exchange programmes, for a longer period, i.e. more than three months but not more than 18 months. More information at : http://www.kuleuven.ac.be/english/

Contact details:
Contact Person: Marie-Thérèse Deloddere
Tel : +32/16/324025
Email: trees.deloddere@dsa.kuleuven.ac.be
Website: http://www.kuleuven.ac.be/onderwijs/aanbod/opleidingen/N/CQ_50344836.htm

Graduate Degrees & Courses

Degree /Course Title:
Master of Materials Engineering

Duration:
2 years

Location:
Katholieke Universiteit Leuven, Faculty of Engineering. This programme is organised in cooperation with: Katholieke Hogeschool Brugge-Oostende (KHBO), RWTH Aachen, T.U. Delft, Imperial College London and Université Catholique de Louvain.

Overview:
The 'Master in Materials Engineering' (MME) targets to train young engineers and scientists in the field of materials science, with a view to their fulfilling functions in a business context (production and application) or in a pure research context (development) for specific materials. The MME programme has three options, each relating to a distinct research field and industry: Polymers and Composites (EUPOCO), Materials for Microelectronics (MATMIC), and Metals and Ceramics (METCER). At the start of the MME programme common courses aim to provide the student with a number of shared basic concepts, this implies a number of courses over the options as a backbone for materials science, after which a choice is made for one of the following options: The polymers and composites, the materials for microelectronics, and the metals and ceramics.

Pre-Requisites:
The candidate students need to show a clear interest in a specific domain of materials science and have a well developed analytical mind. The programme is open to engineers who are university graduates (Master of Science in Engineering, or Bachelor of Science in Engineering with a minimum 4 year study programme) and to other engineers (graduates from polytechnics, Fachhochschule, industriële hogeschool, etc.), as well as to chemists and physicists upon evaluation of their application. Non-European students have to pass a TOEFL Test with a minimum score of 550 for the paper-based test or 213 for the computer-based test.

Tuition Fees:
Not available.

Contact details:
Contact Person: Not available.
dept. MTM Kasteelpark Arenberg 44, B-3001 Heverlee
Tel. +32 16 32 13 00 fax +32 16 32 19 90
Website:
http://www.kuleuven.ac.be/onderwijs/aanbod2004/opleidingen/E/SC_50269221.htm

Graduate Degrees & Courses

Degree /Course Title:
M.Sc - Master of Nanophysics

Duration:
1 year minimum

Location:
University of Antwerp, Faculty of Science, Department of Biochemie & Biotechnologie, Antwerpen

Overview:
Advanced master for Flemish and international students who want to prepare themselves for a PhD in the field of nanostructures or who want to pursue a career in research and development.

Pre-Requisites:
Not available

Tuition Fees:
Not available

Contact details:
Contact Person:
Sonia Brunel
Tel: + 32 3 820 20 09
Fax: + 32 3 820 2 92
Email: sonia.brunel@ua.ac.be
Website: http://www.ua.ac.be/main.asp?c=*FACWET&n=2831&ct=000159&e=t5238

Graduate Degrees & Courses

Degree /Course Title:
Nanotechnologies for nanosized structures in optoelectronic.

Duration:
45 weeks (three terms)

Location:
University of Sofia, Department of Physics, James Bourchier Blvd. 5 Sofia

Overview:

The course goal is introduction in nanotechnologies and nanosized structure for optoelectronics: epitaxial technologies for thin lairs growing and semiconducting compounds A3B5 and A4B6. Optical and electrical properties of semiconducting compounds.

Pre-Requisites:
1)Master or Bachelor degree of physics
2) Master or bachelor degree of any natural science discipline or appropriate engineering degree.(In this case there is 1 year additional bachelor program).

Tuition Fees:
Free for students in University of Sofia. No information for other students. Please contact Prof. Ana Proykova anap@phys.uni-sofia.bg.

Contact details:

Course leader Neli Jeleva, contact email: zhelevan@phys.uni-sofia.bg

Graduate Degrees & Courses

Degree/Course Title:
Modelling of Nano-clusters; Phase transitions of molecular nanosystems.

Duration:
A PhD study at the Faculty of Physics is a three year research education on top of the Masters Degree

Location:
University of Sofia, Department of Atomic Physics
5 James Bourchie Blvd. Sofia-1126

Overview:
For general information on PhD studies at the University of Sofia check this website http://www.uni-sofia.bg/
For detailed research of the current PhD students
http://cluster.phys.uni-sofia.bg/

Pre-Requisites:
Master Degree in Physics, Chemistry, or Mathematics

Contact details:
Faculty of Physics, University of Sofia
Sofia-1126, 5 James Bourchier Blvd.
+359 2 8161 828
anap@phys.uni-sofia.bg

Graduate Degrees & Courses

Degree/Course Title:
Nanomaterials and Nanotechnology

Duration:
45 weeks (three terms)

Location:
University of Sofia, Department of Chemistry, James Bourchier Blvd. 1, Sofia

Overview:
The course goal is an introduction to nowadays nanomaterials and nanotechnologies. The acquired knowledge is in general nanotechnology, physics of the solid state nanostructures, chemistry of the nanosized materials, nanocolloids, industrial and biomedical nanotechnologies.

Pre-Requisites:
Master or Bachelor degree in chemistry or Master or Bachelor degree in a natural science discipline or appropriate engineering degree.

Tuition Fees:
Minimal for students who passed the examination with appropriate score; larger for the other students

Contact details:
Course leader Ceco Dushkin, contact email:
nhtd@wmail.chem.uni-sofia.bg

Graduate Degrees & Courses

Degree /Course Title:
MSc. in Material Science

Duration:
3 years

Location:
The Institute of Physics and Material Engineering, Faculty of Technology, Tomas Bata Universitv in Zlin

Overview:

Not available in English. In Ceska, information at: http://zkousky.utb.cz/

Pre-Requisites:
Not available in English

Tuition Fees:
Grants are possible. See: http://www.ft.utb.cz/czech/ufmi/_en_granty2003.html

Contact details:
Not available.
Web site: http://zkousky.utb.cz/

Graduate Degrees & Courses

Degree /Course Title:
M.Sc. – Applied Science, specialization on Nanotechnology

Duration:
Not available

Location:
University of West Bohemia, Faculty of Applied Sciences

Overview:
This program is a Parallel Study Program that offers a complete university education taught in English. Since 1990, the University has been coordinator and partner in numerous EU projects: Leonardo, Socrates, tempus, etc.

Pre-Requisites:
Not available

Tuition Fees:
Not available.

Contact details:
Contact Person:
Not available, More information in International Office, Univerzitni 8 30614 Pilsen
Tel: +420- 377-635-777
Fax: +420-377-635-0702
Email: bicanoa@rek.zcu.cz
Website:

Graduate Degrees & Courses

Degree /Course Title:
MSc. in Chemistry

Duration:
2 years

Location:
Faculty of Science, Charles University, Prague

Overview:
The master program has 7 specializations in chemistry: analytical chemistry, biochemistry inorganic chemistry, nuclear chemistry, organic chemistry, physical and macromolecular chemistry and physical chemistry in biology

Pre-Requisites:
Foreign students are accepted on the basis of written and oral entrance examinations taken in English (British A-level). Bachelor degree in Science is a requisite.
Foreign students (bachelors) can also apply for the magister study in a given specialization . Moreover, short term courses in specialized subjects at the magister level can be offered.

Tuition Fees:
Per year: 6900 Euros
Once the foreign students comply with the tuition fee requirements, they hold the same rights as the Czech students. No scholarship can be deduced from the tuition fees and the latter do not cover room and board and travel expenses.

Contact details:
Contact Person: Not available.
Student Department: Na Slupi 2, 128 00 Praha 2, Czech Republic.
Tel: + 420 2 2195 3144
Fax: +
Email: study@natur.cuni.cz
Website: http://www.natur.cuni.cz

Undergraduate Degrees & Courses

Degree / Course Title:
Bachelor in Material Engineering

Duration:
Not information available

Location:
The Institute of Physics and Material Engineering, Faculty of Technology, Tomas Bata University in Zlin

Overview:
The Institute of Physics and Material Engineering provides the elementary physical courses and the courses on Material Engineering. The students should follow the enrolling system of the Tomas Bata University in Zlin. Information at: http://zkousky.utb.cz/

Pre-Requisites:
Not available

Tuition Fees:
Grants are possible. See: http://www.ft.utb.cz/czech/ufmi/_en_granty2003.html

Contact details:
Not available, More information in International Office, Univerzitni 8 30614 Pilsen
Tel: +420- 377-635-777
Fax: +420-377-635-0702
Email: bicanoa@rek.zcu.cz
Website:

Undergraduate Degrees & Courses

Degree / Course Title:
Bachelor in Chemistry

Duration:
4 Years on the basis of a bachelor examination (first state examination).

Location:
Facultad of Science, Charles University, Prague

Overview:
The Bachelor of Science degree is awarded after a three-year period of study, on the basis of a bachelor examination (first state examination). There is also specialized bachelor study:

Pre-Requisites:
Anyone interested in attending the Faculty of Science as an undergraduate student should mail the appropriate Application form to the Student Department before 15 June, to the address : Na Slupi 2, 128 00 Praha 2, Czech Republic. In addition to the Application form, the application should provide the following documents in English: A certified list of subjects taken in the high school, a certified copy of the high school diploma and a health examination certificate, not older than one month. Foreign students are accepted on the basis of written and oral entrance examinations taken in English (British A-level)

Tuition Fees:
Per Year: 4900 Euros. Once the foreign students comply with the tuition fee requirements, they hold the same rights as the Czech students. No scholarship can be deduced from the tuition fees and the latter do not cover room and board and travel expenses.

Contact details:
Contact Person: Not available.
Student Department: Na Slupi 2, 128 00 Praha 2, Czech Republic.
Tel: + 420 2 2195 3144
Fax
Email: study@natur.cuni.cz
Website: http://www.natur.cuni.cz

Graduate Degrees & Courses

Degree /Course Title:
MSc in Nanotechnology

Duration:
Most courses are 13 weeks. Some can be taken separately during a PhD or as a part of an undergraduate degree.

Location:
Department of Micro and Nanotechnology, Technical University of Denmark

Overview:
The course contains several modules:

Nano-1: introduction to nanotechnology	Nano-2: Nanosystems Engineering
Nano-3W: Expt. Micro- and Nanotechnology	Nano- and micro-fabrication
Transport in Nanostructures	Quantum Mechanics

And practical courses:

Nano-P: Nano-systems project	Nanolithography

Pre-Requisites:

Tuition Fees:

Contact details:
Antti-Pekka Jauho
Building 344, room 026
Tel.: (+45) 4525 6335
E-mail: antti@mic.dtu.dk

33 Department of Micro and Nanotechnology
Technical University of Denmark

Graduate Degrees & Courses

Degree /Course Title:
PhD at CAMP

Duration:
A PhD study at CAMP is a three year research education on top of the Masters Degree

Location:
Technical University of Denmark, The Center for Atomic-scale Materials Physics

Overview:
For general information on PhD studies at the Technical University of Denmark check this website www.adm.dtu.dk/studier/phd/index_e.htm

Pre-Requisites:

Tuition Fees:

Contact details:
CAMP
Department of Physics
Technical University of Denmark
Building 307
DK-2800 Kgs. Lyngby
Helle W. Wellejus (head of administration):
+45 4525 3224
helle@fysik.dtu.dk

Graduate Degrees & Courses

Degree /Course Title:
Masterprojects at CAMP

Duration:
2-year Master of Science (MSc) Programme

Location:
Technical University of Denmark, The Center for Atomic-scale Materials Physics

Overview:
At www.fysik.dtu.dk/education/master/index.php you can find some of the projects, you can participate in and the pre-requisites.

Pre-Requisites:

Tuition Fees:

Contact details:
CAMP
Department of Physics
Technical University of Denmark
Building 307
DK-2800 Kgs. Lyngby
Helle W. Wellejus (head of administration):
+45 4525 3224
helle@fysik.dtu.dk

Graduate Degrees & Courses

Degree /Course Title:
Nanoscience MSc Degree.

Duration:
About 1-2 weeks each course (5-10 ECTS each).

Location:
iNANOschool, University of Aarhus, Aarhus, Denmark

Overview:
iNANOschool is a graduate school in nanoscience and nanotechnology at the University of Aarhus. The school is related to the Interdisciplinary Nanoscience Center (iNANO). Currently the volume of iNANOschool is about 50 Ph.D. students.
iNANO is collaboration between research groups at the Faculty of Science (Department of Physics and Astronomy, Department of Chemistry, Department of Molecular Biology, and The Institute of Biological Sciences) and the Faculty of Health Sciences (Institute of Anatomy, Department of Biophysics, and Institute for Experimental Clinical Research).
The MSc. features a thesis project, which may be pursued at the University - in the labs of one of the existing research groups - or in collaboration with relevant research units from the industry in the Copenhagen area.

Pre-Requisites:
Any talented student with at least four years of studies in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Medicine, Pharmaceutics, Biotechnology or Materials Science can apply.
Further information, including instruction on how to apply, can be found at http://www.inanoschool.dk.
For information on iNANO in general, see http://www.inano.dk.
You are also encouraged to contact one of the iNANOschool directors or the iNANOschool coordinator:

- *Prof. Flemming Besenbacher, director, fbe@inano.dk*
- *Prof. Niels Chr. Nielsen, vice-director, ncn@inano.dk*
- *Dr. Peter Thostrup, coordinator, thostrup@inano.dk*

Tuition Fees:
Not available on website.

Contact details:
Contact Person: Dr.Peter Thostrup, (Coordinator),
Email: thostrup@inano.dk

Graduate Degrees & Courses

Degree /Course Title:
Nanoscience PhD degree.

Duration:
Not defined.

Location:
iNANOschool, University of Aarhus, Aarhus, Denmark

Overview:
iNANOschool is a graduate school in nanoscience and nanotechnology at the University of Aarhus. The school is related to the Interdisciplinary Nanoscience Center (iNANO). Currently the volume of iNANOschool is about 50 Ph.D. students.
iNANO is collaboration between research groups at the Faculty of Science (Department of Physics and Astronomy, Department of Chemistry, Department of Molecular Biology, and The Institute of Biological Sciences) and the Faculty of Health Sciences (Institute of Anatomy, Department of Biophysics, and Institute for Experimental Clinical Research). The Ph.D. degree will formally be given by The Faculty of Science or The Faculty of Health Sciences at the University of Aarhus, depending on the research project. The Ph.D. study will be subject to the general rules for Ph.D. studies at the Universities in Denmark and the additional rules issued by the relevant Faculty.

Pre-Requisites:
Required entrance qualification for candidate studies: BSc. in nanotechnology or an equivalent degree.

Tuition Fees:
Not available on webpage.

Enrollment at "nanotechnology" is made through the Danish nation wide coordinated enrollment system at: http://www.ivuc.dk/udl/ .

Contact details:
Contact Person: Prof. Flemming Besenbacher, Director
Email: fbe@inano.dk

Undergraduate Degrees & Courses

Degree /Course Title:
Nanoscience and Nanotechnology BSc.Degree

Duration:
3-5 years

Location:
Nano-Science Center, University of Copenhagen, Copenhagen

Overview:
The core of basic classical subjects from biology, chemistry, physics and mathematics, upon which nanotechnology rests, is part of the curriculum. There is a wide choice of subjects during the third year. This allows you to leave the University with a well-rounded BSc.-degree, or, alternatively, to prepare yourself for MSc.
The third year may qualify for further studies towards the MSc-degree, not only in nanotechnology, biochemistry, biochemistry, chemistry, physics, bioinformatics and human biology. The students may attend courses at other institutions of higher education within the area of Copenhagen. Already there exists a co-operation with MIC (the Centre of Microelectronics) at the Technical University of Denmark on courses in nanotechnology.
The MSc. features a thesis project, which may be pursued at the University - in the labs of one of the existing research groups - or in collaboration with relevant research units from the industry in the Copenhagen area.

Pre-Requisites:
Required entrance qualification for candidate studies: BSc. in nanotechnology or an equivalent degree.

Tuition Fees:
Not available on webpage.

Enrollment at "nanotechnology" is made through the Danish nation wide coordinated enrollment system at: http://www.ivuc.dk/udl/ .

Contact details:
Contact Person: Anette Uhl
Nano-Science Center Universitetsparken 5, 2100 Copenhagen
Tel.: 35 32 04 03 / **Fax:** 35 32 04 60
Email: uhl@nano.ku.dk
Website: http://www.nano.ku.dk/education/

Undergraduate Degrees & Courses

Degree / Course Title:
BSc

Duration:

Location:
Technical University of Denmark

Overview:
On www.fysik.dtu.dk/education/bachelor/index.php you will find a suggested plan of courses (in Danish). In addition to these courses you can choose among all the courses at DTU, thereby creating your own unique bachelor education. After the BSc you should follow a master education - either at DTU (i.e. by continuing your studies in physics and nanotechnology) or at any other national or international university.
Includes courses such as:
Quantum Mechanics
Nanoscale Materials Physics
Electronic Structure Methods in Material Physics, Chemistry and Biology
Advanced Quantum Mechanics

Pre-Requisites:

Tuition Fees:

Contact details:
Jane Hvolbæk Larsen,
Associate Professor
Department of Physics
Building 312
Technical University of Denmark
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Telephone (Direct): (+45) 4525 3222
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Undergraduate Degrees & Courses

Degree / Course Title:
Nanoscience BSc.Degree

Duration:
Not defined.

Location:
iNANOschool, University of Aarhus, Aarhus, Denmark

Overview:
iNANOschool is a graduate school in nanoscience and nanotechnology at the University of Aarhus. The school is related to the Interdisciplinary Nanoscience Center (iNANO). Currently the volume of iNANOschool is about 50 Ph.D. students.
iNANO is collaboration between research groups at the Faculty of Science (Department of Physics and Astronomy, Department of Chemistry, Department of Molecular Biology, and The Institute of Biological Sciences) and the Faculty of Health Sciences (Institute of Anatomy, Department of Biophysics, and Institute for Experimental Clinical Research).

Pre-Requisites:
Information, including instruction on how to apply, can be found at: http://www.inanoschool.dk.
For information on iNANO in general, see http://www.inano.dk.
You are also encouraged to contact one of the iNANOschool directors or the iNANOschool coordinator:

- *Prof. Flemming Besenbacher, director, fbe@inano.dk*
- *Prof. Niels Chr. Nielsen, vice-director, ncn@inano.dk*
- *PhD Peter Thostrup, coordinator, thostrup@inano.dk*

Tuition Fees:
Not available on website.

Contact details:
Contact Person: **Contact Person:** Prof. Flemming Besenbacher, Director
Email: fbe@inano.dk

Short Courses

Degree/Course Title:
Surface reactivity and nanocatalysis

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
The ability of surfaces to catalyze chemical reactions is fundamental for heterogeneous catalysis. The surface reactivity depends on the chemical composition of the material as well as the physical extent of the surface. A catalyst typically consists of nano-scale metal particles on an insulating support. The course will introduce both the theoretically and the experimentally based understanding of surface reactivity, in general terms, as well as the conditions of specific importance for the nano-scale catalyst particles. The latter includes relations between choice of support and metal system and 1) the geometrical build-up of particles, 2) the geometry of particles and their electronic structure, 3) the electronic structure and the ability to form covalent bindings with gas molecules, 4) charge conditions for particles and their reactivity, and 5) borderline structure at the support-particle transition and reactivity.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

Contact details:
Faculty of Science
Ny Munkegade, Building 520
University Interdisciplinary Nanoscience Center (iNANO)
The University of Aarhus
8000 Aarhus C
Tel: +45 8942-3586
inano@inano.dk
www.inano.dk

Short Courses

Degree/Course Title:
Nanovirology

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
Vira play an important role in biological nanoscience as they: a) represent tools for identification and dissection of natural nanomachines, b) allow the production of genome and randomized sequence libraries and function-based selection of individual species from these, and c) natural and artificial virus components may serve as building blocks in nanoparticles for, e.g., drug and gene delivery and immunization. The course introduces virus replication and virus genetics, virally based selection from molecular form libraries, 3D structural analysis of virus particles, viral nanomachines for cell intrusion, intracellular traffic, self-assembling virus systems, controlled viral immune recognition, virus tools for control of cell functions and integrated nanomachines for drug and gene transport and delivery.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

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Short Courses

Degree/Course Title:
Nanoscale analytical tools

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
The development of nanotechnology is highly dependent on analytical methods, which enable materials, structures and functional units to be characterized at a nano and subnano scale. The course describes the most important methods, among others the scanning probe techniques that have revolutionized the characterization of nanostructures (scanning tunneling microscopy (STM), atomic force microscopy (AFM) and X-ray microscopy, older established techniques as X-ray diffraction and electron microscopy which still play an important role, and X-ray crystallography, small-angle scattering of X-ray and neutrons, and nuclear magnetic resonance (NMR) used for the structural analysis of everything from materials to biological macromolecules.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Short Courses

Degree/Course Title:
Nano-optics

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
The purpose of the course is to introduce the many optical tools used today in nanotechnology and nanoscience. Optical techniques are used to both passively characterize nanosystems and, to an increasing extent, actively control and manipulate nanosystems. On the basis of laser light and the interaction between light and nanoparticles, the course describes how laser light can be used to follow and control dynamic processes in chemical and biological systems. The course consists of traditional lectures during which the students with different background (chemistry, biology, physics, and medicine) acquire knowledge to most fundamental aspects of nano-optics. The other part of the course is aimed at cross-disciplinary projects where the students groupwise will work on specific nanooptical problems. This phase will focus on the students' ability to draw on their common competences neglecting traditional demarcations, and their ability to communicate the achieved results both orally and as a written text

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Short Courses

Degree/Course Title:
Nanomodelling

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
Nano-modelling is concerned with the theory and computer simulation of phenomena on the nano-scale. The small length scale requires a description of the interaction of single atoms. This can be done by use of classic potentials or by use of a quantum mechanical descriptions. Through this course the student will be able to use and understand the atomic interaction potentials in methods ranging from molecular mechanics descriptions over Hartree-Fock (HF) and density functional theory (DFT) calculations to methods for dealing with strongly correlated electron systems. In molecular dynamics simulations the enzymatic reactions, including protein structures with thousands of atoms, will be manageable. By the use of the HF and DFT methods we will be able to investigate problems in, e.g., nano and enzyme catalysis and nanomaterials. Finally, the strongly correlated electron methods will be used to, e.g., investigate Coulomb blockades in molecular electronics. The course will consist of lectures and computer exercises. The course will be evaluated in the form of student presentations based on a modelling problem of current interest and will be formulated as a "research proposal".

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Short Courses

Degree/Course Title:
Nanomedicine

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
The course will impart knowledge to the student on nanoscientific aspects of medicine, including a description of rational drug design (modelling, structural bioinformatics, combinatory chemistry, and screening), therapeutics and multifunctional medicine (small molecule, peptide and nucleic acid based), drug delivery (nanoparticles, transporters, cell targeting), organ targeting (virally based vectors, aptamers) and full-body detection methods (tissue NMR, luminescence, CT).

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

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Short Courses

Degree/Course Title:
Nanomaterials and Nanosynthesis

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
Nanomaterials are materials with unique physical/chemical/biological properties, which can be ascribed to their composition with components on the 1 – 100 nm scale. Examples include quantum dots, nanoporeous materials, nanocomposites or semiconductor supralattices over nanotubes, thin organic Langmuir-Blodgett-film, self-assembling monolayers or micelles in biological membranes or nanostructured, biocompatible materials. The aim of the course is to describe the different materials and in particular to describe a number of synthesis techniques by bottom-up or top-down methods. The two halves of the course are devoted to organic and inorganic methods of synthesis. The course consists of lectures, theoretical student workshops, and a larger laboratory exercise. The course is coordinated with the N2 course: Nanoscale analytical tools.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Short Courses

Degree/Course Title:
Nanoelectronics

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Short Courses

Degree/Course Title:
Nanobiocompatibility

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
The course focuses on the interaction between chemically and/or topographically nanostructured solid-state materials and biological systems during the first minutes/hours after contact. Emphasis will be devoted to the human physiological system. The interactions include protein adsorption and the subsequent cell adhesion. The detailed progress of these processes influences the biocompatibility of the solid matter. The laboratory classes will focus on some of the following techniques: quartz crystal microbalance, surface plasmon resonance, ellipsometry, atomic force microscopy, NMR spectroscopy, and fluorescence microscopy for characterization of these adsorption processes. Content: lectures, invited speakers and laboratory classes.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

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Short Courses

Degree/Course Title:
Micro and nano-size biosensors for measuring biological processes

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
The course will introduce the participants to state of art biosensor technology including:
- Oligonucleotide probes based on advanced nucleic acid analogues LNA and PNA for in situ hybridization, quantitative PCR and DNA microarrays
- Building molecular scaffolds from random sequences and using in vitro evolution to select aptamers
- Monitoring gene expression with Green Fluorescence Protein (GFP) or a gene cassette/box containing the necessary genes for bioluminescence
- Biosensors for estrogen using ligand-mediated conformational changes of estrogen receptors
- Bacterial biosensors for methane and nitrate, protecting complex enzymes inside living bacteria

The participants will get a broad overview of state of the art techniques and applications during the five course days. Each day will start with lectures by the organizers, guest teachers and invited lecturers, followed in the afternoon by practical laboratory demonstrations of measurement principles. In the evening the participants will make short presentations of key discussion topics based on background literature supplied to the participants before the course. The participants will also be asked to present their own research via short presentations during the course.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

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Short Courses

Degree/Course Title:
Current and applied nanoscience/nanotechnology

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
Internationally the nanotechnological research field is in rapid progress and each week brings new and exciting publications. At the same time the results from basic research are gaining ground in technological applications. This course aims at up-dating the students on important research and application trends and in particular to ensure the current information on topics out of their own specific research field. The course consists of lectures by Danish and international experts who will outline a group of subjects and their development. Additionally, student presentations of current research examples from the literature or existing industrial applications of nanotechnology will be held in a study group.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Short Courses

Degree/Course Title:
Bionano tools and protein structure

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
In this course the student will be introduced to a number of analytical measurement and analytical tools used for the structure-function analysis of biological macromolecules – or biological nanomachines such as functional proteins, membrane pumps and channels. Through a combination of lectures and exercises/demonstrations the course will describe X-ray crystallography, liquid- and solid-state nuclear magnetic resonance (NMR) spectroscopy, (cryo-) electron microscopy (EM), confocal microscopy, surface plasmon resonance, circular dichroism (CD), mass spectroscopy, atomic force microscopy (AFM), small-angle scattering of X-rays and neutrons (SAXS and SANS), and fluorescence resonance energy transfer (FRET). The course will furthermore describe various numerical methods for protein structure analysis and prediction.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Short Courses

Degree/Course Title:
Bio-nano techniques

Duration:
1 - 2 week intensive course

Location:
Aarhus University, iNANO

Overview:
The course introduces a number of fundamental techniques in bio-nanotechnology, including 3D visualization of fluorescent particles in living cells, laser bleaching, laser trap for measuring mechanical forces, FRET detection of conformation changes, membrane protein topology, molecular motors, total internal reflection fluorescence microscopy, cell sorting (FACS), and nano probing based on nucleic acid hybridization. Also methods for intracellular localization and self-assembly systems will be described.

Pre-Requisites:
The students expected to apply for an iNANOschool scholarship have a background in traditional combinations of Biology, Molecular Biology, Chemistry, and/or Physics or alternative combinations with other fields such as Mathematics, Economy, Medicine, Pharmaceutics, Biotechnology or Materials Science.

Tuition fees:

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Graduate Degrees & Courses

Degree/course Title
Master in Physics, specialising in physics of nanostructures (R)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Montpellier, France

Overview
M1 (first year): it gives a general training in basic physics and provides skills in experimental physics and numeric modelling.
M2 (second years): this degree is centered on the field developed in Montpellier University: photonic crystal, optic and transport in mesoscopic structures based on semiconductor and carbon nanotubes. The programme includes: physics of nanostructures (30 h) and 3 optional courses to choose among 6 specialities:

- Nanotransport
- Nanophotonics
- Structures and dynamics of disordered system
- Modelling of condensed matter
- Nanomaterials' dynamics and spectroscopy
- Physic system of soft matter

The second semester is devoted to a 5-month work experience in laboratories to prepare students for research careers (after a PhD) in Physics.

Organizers
Université Montpellier II

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS) in physics, for M2 : a diploma taken after 4 years at university in physics or physics sciences, students of "Grandes Ecoles" (scientific prestigious higher education institutes) and foreign students with equivalent diploma (240 ECTS)

Tuition fees

Contact details
Contact person: Jean Paul Albert
Phone: 04 67 14 32 37
Web: http://www.physique.univ-montp2.fr/article5.html

Graduate Degrees & Courses

Degree/course Title
Master degree in Micro and Nano Technologies for Integrated Systems.

Duration
2 years. First diploma delivered in July 2006

Location
Grenoble, France, Lausanne Switzerland, and Turin, Italy: one semester in each universities

Overview
The INPG works in closed collaboration with the two other institutes to offer a joint programme which will take place on the last two years of the engineer training. Each institute is in charge of one semester.
Students will follow a balanced training in:
- Micro and nanotechnologies (nanostructure Physics, nanostructure for optical and magnetic application, Microélectronics and nanosciences...)
- Microsystem design and electronics. (Optoelectronics, system design, Nanoelectronics…)
This training is aimed to students wanting to combine international experience and nanotechnologies skills. Students will receive an International engineer degree.

Organizers
Organized by the Institut Polytechnique de Grenoble (INPG), the Ecole Polytechnique de Lausanne (EPFL) and Politecnico de Torino.

Pre-Requisites
45/60 students per year recruited in the second year of the engineer training of INPG, EPFL and Politecnico di Torino

Tuition fees
No information given

Contact details
Contact person: Mrs Pagionata Morfouli
Phone: 04 76 85 60 57
Email: morfouli@enserg.fr
Web: http://www.nanotec.inpg.fr

Graduate Degrees & Courses

Degree/course Title
Master in Material's Sciences, specialism Nanotechnologies and Nanosciences (P)

Duration
2 years

Location
Dijon, France

Overview
The master is centred on micro and nanophysics, nanocomponents and their characterisation.
The main courses are:
- Nanophysics and Nanooptics
- Physical chemistry of coatings and interfaces.
- Nanostructures' Manufacturing Technologies
- Nanotechnologies tools
- Biophysics and modelling.
- Micro and nanosensors.

This programme prepares students for production and development engineer careers in industries (nanomaterials and nanosystems for optic, chemistry, biology and pharmaceutical).
Different options are offered for semester 3 and 4 according to the student's projects (Industry or Research).

Organizers
University of Dijon (France)

Pre-Requisites
25 students (+ 5 students in block-release training). Opened to graduate students in physics and chemistry. Selection on the basis of one's application.

Tuition fees

Contact details
Contact person: Eric Bourillot
UFR de Science et Technologies
9 rue Alain Savary
BP 47 870 - 21 078 Dijon cedex
Email : eric.bourillot@u-bourgogne.fr
web: http://eunomie-u-bourgogne.fr/masternano/pageformation.html

Graduate Degrees & Courses

Degree/course Title
Master in Nanophysics, Nanocomponents, Nanomeasurement (R)

Duration
2 years, with 5 months of work experience.

Location
Toulouse

Overview
This master offers an advanced formation centred on nanophysics, nanocomponents and nanomeasurement, with a particular emphasis on instrumentation.
M1: the courses provide general skills in Physics
M2: The training programme (160 hours / 60 ECTS) includes:
- Nanosciences and quantum physics (15 h)
- Nanotechnologies and auto-assembly
- Physics and chemistry of surfaces (15 h)
- Quantum optoelectronics.
- Nanoelectronics and spintronics,
- Quantum physics (15h)
- Nanobiotechnologies,

These courses are completed with a work experience in a laboratory preparing students for research activities (after a doctorate) or careers in Industry.

Organizers
Université Paul Sabatier de Toulouse and the Institut National des Science Appliquées (INSA) de Toulouse.

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS), for M2 : a diploma taken after 4 years at university in physics or physics sciences, students of "Grandes Ecole" (scientific prestigious higher education institutes) and foreign students with equivalent diploma (240 ECTS).

Tuition fees

Contact details
Contact person: Jean Claude Ousset
Email: ousset@cemes.fr
Phone: 05 62 25 78 68
Xavier Marie Email: marie@insa-tlse.fr
Web: http://www.ups-tlse.fr/

Graduate Degrees & Courses

Degree/course Title
Master of Sciences and Technologies, special field: Optic and Nanotechnologies. (R)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Troyes, France

Overview
This master provides training for R & D activities in nanotechnologies field through optical methods and tools. This programme is centred on Optical Microscopy with local probes and on a familiarization with the other microscopies (Atomic Force Microscopy AFM, Scanning Tunnelling Microscopy STM), providing courses in:
- Molecular nanodetection
- Crystalline or nanostructured objects
- Modelling of the electromagnetic fields.

The master prepares students for careers in organisms, laboratories, firms (in biology, physics, materials chemistry, optoelectronic and photonic) with an original approach based on optical sciences.

Organizers
Université de Technologie Troyes (UTT)

Pre-Requisites
Candidate in M1: bachelor's degree (180 ECTS) in physics, chemistry, or Applied Mathematics; in M2: students holding a diploma taken after 4 years at University in physics, chemistry, biochemistry; information, system and technology, or applied mathematics; students in the last year of an engineer training.

Tuition fees
418 euros per years (it corresponds to the University Inscription Cost)
80 euros for registration fees

Contact details
Contact person : Gilles Lerondel
Master S & T - spécialité "Optique et nanotechnologies"Université Technique de Troyes - 12 rue Marie Curie BP 2060 - 10010 Troye cedex - France
Phone: 03 25 71 58 74 Email: master.ont@utt.fr
Web: http://www.utt.fr/

Graduate Degrees & Courses

Degree/course Title
Master in Materials' sciences, specialism Nanotechnologies and microstructures (P)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Orsay, (Paris), France

Overview
M1: this year gives to students in-depth based training in the field of materials, composing of:
- A period of knowledge homogenization (50h),
- A core syllabus on materials (400h),
- A specialism (50h) constituting an introduction to the second year specialism

M2: The Micro and Nano technologies specialism (450 hours) includes 4 courses:
- General training (100h)
- Manufacturing Technologies (100 h)
- Characterisation Technologies (100h)
- Nanostructures for electronics, magnetism and optronics (100 h)

The Master trains students to join research laboratories in nanosciences or high tech industries.

Organizers
Université Paris Sud, UFR des sciences

Pre-Requisites
Opened to students having a Bachelor's degree in Chemistry, Physics (fundamental physics and Physics and applications).
Selection on the basis of one's application (possibility to enter directly in the second year with equivalences 240 ECTS).

Tuition fees

Contact details
Contact person : André Dubault, Maître de conférences, Section 28
Phone: 01 40 79 46 79
Email: andre.dubault@espci.fr Web: http://www.u-psud.fr/

Graduate Degrees & Courses

Degree/course Title
Master with a specialism Micro and Nanotechnologies (R or P)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Orsay, (Paris) France

Overview
M1: Three different M1 allow students to enter the micro and nanotechnologies specialism (M2):
- Information, System and Technology (EEA)
- Basics and applied Physics
- Physics Advanced technologies and interdisciplinary

These programmes give to students an advanced based training in their field.
M2: The Micro and Nano technologies specialism exists in two different directions: professional (450 h) and research (160 h). It covers four fields: nanotechnologies, components, microsystems and Micro-opto electronimechanical systems with courses as nanostructures for nanoelectronics, nanomagnetism, nanophotonics...
Depending on the direction chosen the master opens doors to professional insertion or allows students to pursue a PhD.

Organizers
Université Paris Sud 11 (UPS), Faculté de science d'Orsay, ENS Cachan.

Pre-Requisites
M1 opened to students having a Bachelor's degree in Chemistry, Physics, Physics and applications, and engineer students in the last year of the engineer training.
Selection on the basis of one's application (possibility to enter directly in the second year with equivalences 240 ECTS).

Tuition fees

Contact details
Contact person: Guy Demoment (UPS) and Jean Paul Louis (ENS Cachan)
Email: elisabeth.bouissy@eea.u-psud.fr Phone: 01 69 15 72 23

Graduate Degrees & Courses

Degree/course Title
Master in Chemistry specialism Nanosystems and inorganic solids (R)

Duration
2 years: one year for core syllabus, and one years of specialism (possibility to enter directly in the second year)

Location
Orsay, (Paris), France

Overview
M1: The first year offers students an advanced basic training in the field of chemistry.

M2: students have the possibility to choose the Micro and Nano technologies specialism (450 hours). This M2 is Research training, allowing students to join research laboratories in nanosciences and to pursue a PhD.
This master prepares students for research careers in public or private sector.

Organizers
Université Paris Sud (UPS) 11 - UFR des sciences d'Orsay.

Pre-Requisites
Opened to students having a Bachelor's degree in Chemistry
Selection on the basis of one's application (possibility to enter directly in the second year with equivalences: 180 + 60 ECTS).

Tuition fees

Contact details
Contact person: Alain Fuchs
Email: fuchs@lcp.u-psud.fr
Web: http://www.u-psud.fr/ja.nsf/offre.formation.htm!OpenPage

Graduate Degrees & Courses

Degree/course Title
Master in Physics and Materials' Sciences, specialism Materials' Sciences, Nanosciences (R)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Marseille, France

Overview
M1:the first year(500h)provides in-depth training in Physics:Signal processing, photonics, condensed matter, quantum mechanics...with a 3 months work experience.
M2 (second years, 168h): The aim of the programme is to give concepts and tools to understand, and analyse materials from their descriptions at the atomic scale. M2 is centred on three themes:
- Physics of solid to characterize electronic and atomic structures
- Statistic mechanics to study phase changes
- Characterisation techniques

These courses are completed by a 4 months work experience in laboratories.
This master prepares students for a PhD, thus, student will obtain all the knowledge needed for a Research or an engineer career, after a thesis.

Organizers
Université Paul Cezanne - Aix -Marseille III

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS) in Physics, for M2 : a diploma taken after 4 years at University in physics or physics sciences, students of "Grandes Ecoles" (scientific prestigious higher education institutes) and foreign students with equivalent diploma (240 ECTS)

Tuition fees

Contact details
Contact Person: G. Tréglia
Phone: 04 91 28 90 46 Email: sanange@up.univ-mrs.fr
Web: http://www.univ.u-3mrs.fr/cgi-bin/WebObjects/SiteAix

Graduate Degrees & Courses

Degree/course Title
Master in Electronics, electrotechnics, automatics specialism electronics, Nanotechnologies, components and systems (R or P)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Montpellier, France

Overview
M1: The first year gives important basis of electronics.
M2 the second year provides a training based on the components and electronic system for signal processing, energy and measurement. This master offers two optional courses in the nanotechnologies field:
- Nanostructures and nanocharacterisation for the Research direction
- Microsensors and associated systems, Nanocharacterisation for the Professional direction.

Depending on the direction chosen, students pursue a PhD (2/3 of the doctors works in the industry and 1/3 in University and Research centers) or join the working life in large and small firms of different sectors (microelectronics, optoelectronics, telecommunications, microsensors and characterisations…)

Organizers
Université Montpellier II (with POLYTECH'Montpellier)

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS) in Electronics, electrotechnics, automatics (EEA), for M2: a diploma taken after 4 years at University in EEA, students of "Grandes Ecoles" (Scientific prestigious higher education institutes) and foreign students with equivalent diploma (240 ECTS)

Tuition fees

Contact details
Contact Person: J-C Vaissière
Phone: 04 67 14 32 21 Email: vaissiere@cem2.univ-montp2.fr
Web: http://www.ufr.univ-montp2.fr/

Graduate Degrees & Courses

Degree/course Title
Master in Physics and Materials' engineering for microelectronics and nanotechnologies

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Montpellier, France

Overview
The master provides a professional training on materials, microelectronics technologies and nanotechnologies. The programme includes courses on physics, materials and components modelling… It is supported by the skills of the university's research laboratories in semiconductors, liquid crystals and nanomaterials...
M1's programme:
- Semiconductors
- Computer processing of data
- Materials elaboration

M2's programme:
- Design and
- Nanostructures

These courses are completed by a 6 months work experience at the end of M2. Many students are hired in the microelectronic sector (ATMEL, Motorola, Philips, ST microelectronics…)

Organizers
Université Montpellier II

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS) in Electronics, electrotechnics, automatics
(EEA), Physics and Chemistry; for M2: a diploma passed after 4 years at university, students of "Grandes Ecoles" (scientific prestigious higher education institutes) and foreign students with equivalent diploma (240 ECTS)

Tution fees

Contact details
Contac person: Hervé Peyre, Email : herve.peyre@ges.univ-montp2.fr
Web: http://www.physique.univ-montp2.fr/lmd/master-phymatech.html

Graduate Degrees & Courses

Degree/course Title
Master in Microelectronics, microtechnologies and telecommunications, specialism micro and nanotechnologies (R)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Lille, France

Overview
M1 (the first year) offers courses in signal processing, integrated circuits technologies, optical fibres...
M2 (second year) includes 3 compulsory courses (in micro and opto electronics) and 5 optional courses to choose among 11 courses. Four of them correspond to the nanotechnologies field:
- Nanocomponents
- Nanocharacterisation
- Electronics and organic molecular nanotechnologies
- Nanophotonics

The master prepares students for PhD and for research careers in design, characterisation for microelectronics, optoelectronics and microsystems.

Organizers
Université Lille I

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS) in Electronics, electrotechnics, automatics (EEA), Electrical engineering and Physics. For M2: a diploma passed after 4 years at university in the same fields (240 ETCS)

Tuition fees

Contact details
Contact person: Rachel Haouche
Phone 03 20 43 48 31
E-mail: rachel.haouche@univ-lille1.fr

Graduate Degrees & Courses

Degree/course Titles
Masters in Nanotechnologies (P)

Duration
1 year

Location
Lyon

Overview
This programme targets students from different disciplines (Physics, Chemistry, biology, mechanics, EEA...), it offers a complementary expertise in nanotechnologies by preparing students to promote and introduce nanotechnologies in industrial sectors linked with their training of origin.

The Master's organization is as follows:

First semester:
- Infrastructures of nanotechnologies (such as nanostructured materials, nanotechnologies tools)
- Practice on scientific nanotechnologies equipments (analysis and manufacturing)
- Case study in R&D teams working in this field. (Around 450 hours and 30 ECTS)

Second semester: 6 month work experience (30 ECTS)

Organizers
Université Lyon 1

Pre-Requisites
For Master nanotechnologies (P) : a diploma passed after four years at university or an engineer degree in physique, chemistry, information, systems and technology, mechanics, biology, biochemistry.

Tuition fees

Contact details
Contact person: J. MEYER
j.meyer@ipnl.in2p3.fr

Graduate Degrees & Courses

Degree/course Title
Master Physics and engineering, specialism Physics of material: from Nanostructures to large
Instrument facilities (R)

Duration:
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Grenoble

Overview
M1: this programme provides a general Physics training in condensed matter and functional materials, with different specialisms constituting an introduction to the second year.
M2: This year focuses on elaboration, characterization and offers a wide range of optional courses:
- Magnetism and magnetic nanostructures,
- Semiconducting and semiconducting nanostructures,
- Physics and chemistry of nanomaterials…

The second semester is devoted to a 4 months work experience.
This training is supported by Grenoble Laboratories' strength in Physics (Grenoble owns two high performance facilities: Synchrotron radiation and Neutron) and prepares students for thesis in many fields : advanced materials, nanostructures, large instruments facilities.

Organizers
Université Joseph Fourier and INPG

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS), with a description of their education.
For M2 candidates must have an equivalent level to M1 (180 ECTS + 60 ECTS).

Tuition fees

Contact details
Contact person: Joël Chevrier
Email: chevrier@grenoble.cnrs.fr

Graduate Degrees & Courses

Degree/course Title
Master in Electronics, electrotechnical, automatic, signal processing specialism Micro and Nanoelectronics (P or R)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Grenoble

Overview
M1: The first year offers training in electronics with different specialisms constituting an introduction to the second year.
M2: the programme aims at producing experts in micro and nanotechnologies providing advanced training in:
- Physics of materials,
- Physics of components,
- Integrated circuits and electronic systems design.

It focuses on silicon technologies, an important speciality of Grenoble's area where many laboratories are established (CNRS, CEA, France Telecom R&D, ST Microelectronics…)
Half of the graduates enter directly in working life. The masters prepare for a PhD.

Organizers
Université Joseph Fourier and INPG

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS) with a description of their education.
M2 candidates must have an equivalent level to M1 (180 ECTS + 60 ECTS).

Tuition fees

Contact details
Contact person: Gilbert Vincent
Email: VINCENTGi@chartreuse.cea.fr
Web: http://www.ujf-grenoble.fr/ujf/fr/formation/lmd/lmd/Masters/physique.phtml

Graduate Degrees & Courses

Degree/course Title
Master Physics and Engineering, specialism thin Films engineering, Micro and Nanostructures (P)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Grenoble

Overview
M1: this programme offers a training in Physics and Engineering, with different specialisms constituting an introduction to the second year.
M2: The Micro and nanostructures specialism provides in-depth training which enables participants to obtain manufacturing and characterization skills for thin films (metals, semiconducting, polymers, nano and micro structures…).
The second semester is devoted to a six months work experience.
This master benefits from a unique environment through contacts with industry (Motorola, ST Microelectronics, Philips, CEA - LETI, MINATEC…) offering a training close to the technical and industrial needs. It prepares students for engineer research careers in R & D centre in Microelectronics, microtechnologies, Optics and metallurgical field.

Organizers
Université Joseph Fourier and INPG

Pre-Requisites
To apply for M1: a bachelor's degree (180 ECTS), with a description of their education.
M2 candidates must have an equivalent level to M1 (180 ECTS + 60 ECTS).

Tuition fees

Contact details
Contact person: Philippe PEYLA
Email: Philippe.Peyla@ujf-grenoble.fr
Phone: 04 76 51 41 39
Web: http://www.ujf-grenoble.fr/ujf/fr/formation/lmd/lmd/Masters/physique.phtml

Graduate Degrees & Courses

Degree/course Title
Master with a specialism Materials sciences and nano-object (R)

Duration
2 years: one year for core syllabus, and one year of specialism (possibility to enter directly in the second year)

Location
Orsay, Paris

Overview
M1: Two M1 open doors to the Materials Sciences and Nano-objects Specialism (M2):
- Physics, Advanced Technologies and Interdisciplinary Sciences
- Basic and applied sciences

These programmes provide basic training in their field and offer optional courses constituting an introduction to the M2's specialism.
M2: The second year is composed of
- A core syllabus including courses in condensed matter (basic physics and chemistry) and modelling and numerical simulation
- A unit "Nanostructures and Interfaces" with the following courses: nano-objects electronic properties; magnetic materials, magnetism and spintronics, transport for quantum conductors, advanced materials for optics.

Organizers
Université Paris Sud, UFR des sciences

Pre-Requisites
M1 opened to students having a Bachelor's degree in Chemistry, Physics, Physics and applications, and engineer students in the last year of the engineer training.
Selection on the basis of one's application (possibility to enter directly in the second year with the equivalence of 240 ECTS).

Tuition fees

Contact details
Contact person: Tiina Suomijarvi and Alain Cordier
Email: tiina@ipno.in2p3.fr and cordier@lal.in2p3.fr
Web: http://www.u-psud.fr/Orsay/index.nsf/Page/MasterPhysique

Graduate Degrees & Courses

Degree/course Title
DEA in condensed matter: materials, nanostructured and soft matter

Duration
1 year

Location
Strasbourg France

Overview
The main subjects of this training are: materials, nanostructured and soft matter. They correspond to three principal research orientations of Strasbourg's area.
The objectives of the programme are:
- To allow students to make a choice among different research directions in condensed matter,
- To provide knowledge and work methods to pursue a PhD.
- To prepare students for research careers (basic and applied research in material physics, biophysics…)

It is divided into theoretical (170 h) and practice courses (work experience of 700h).
Examples of theoretical courses: semiconducting micro and nanostructures, local probes and spectroscopy, films' physics, polymers' physics, biophysics, materials' magnetism…

Organizers
Université Louis Pasteur Strasbourg

Pre-Requisites
Capacities: 30 students
Students must have a diploma passed after 4 years at universities, in Physics or must be in the third year of an engineer training (or equivalence: 240 ECTS).

Tuition fees

Contact details
Contact person: Rodolfo Jalabert
Phone: 03 88 10 70 76
Email: deamc@ipcms.u-strasbg.fr
Website: http://www-ulp.u-strasbg.fr/article.php?r=3&a=1080719801&l=0

Short Courses

Degree/course Title
Nanosciences and nanotechnologies

Duration
November 22 and 23, 2004 (2 days)

Location
Paris

Overview
The objectives of this summer school are to present:
- The international state-of-the-art
- The new materials properties at nanoscale
- The properties needed for materials and manufacturing processing in nano-objects realisation
- Application possibilities in different sectors
- Orientation for Research

Organizers
College Polytechnique

Pre-Requisites
Managers, technical, scientific or marketing senior management
Researchers in electronic industries

Tuition fees
1210 euros duty-free

Contact details
Collège de Polytechnique
Boulevard Poissonnière F-75002 Paris
Email: info@collegepolytechnique.com
Web: http://www.collegepolytechnique.com

Short Courses

Summer School Title:
European School on Nanoscience Nanotechnology (ESONN 2005)

Duration:
August 21th - September 9th 2005, (3 weeks)

Location:
Grenoble, France

Overview:
The academic and practical courses will cover the elaboration, functioning and characterization of nano-objects. The program emphasizes the role of laboratory courses. Half of the program is devoted to practical work in Grenoble clean-room facilities (CIME) and research laboratories.

Organizers / Institutions:
Organized by: Université J.Fourier (UJF) and
Institut National Polytechnique de Grenoble (INPG)
Co-Organized by: CNRS and CEA

Pre-Requisites:
This 3 weeks course is aimed at providing training for graduate students, postdoctoral and senior scientists from European universities and laboratories in the field of Nanosciences and Nanotechnologies in Physics or Biology.

Fees: (For ESONN 2004)
Full Fee: **2000 Euros**
Scientists from academic laboratories: **1500 Euros**
Students (enrolled in a doctoral program: **1000 Euros**

Contact details:
Contact Person: No name given
Email: esonn@inpg.fr
Web : http://www.esonn.inpg.fr/

Graduate Degrees & Courses

Degree / Course Title:
M.Sc. in Advanced Materials

Duration:
2 years including 6 month for Master Thesis

Location:
Ulm University

Overview:
The International Master Program on Advanced Materials, started in September 2002, is a state-of-the-art graduate curriculum in the area of Advanced Materials in nanomaterials and biomaterials, designed primarily for international students, and taught entirely in English. The interdisciplinary course of studies emphasises nanomaterials and biomaterials. It combines these topics with the necessary foundations in materials science, chemistry, physics, engineering sciences, biology and medicine.
Maximum 40 students will be accepted into the International M.Sc. Course each year, ensuring small class sizes and immediate student-teacher interaction. Partner universities are available for study-abroad segments with full credit transfer into program in Ulm.

Pre-Requisites:
Bachelor´s degree or a comparable degree in physics, chemistry, material science, engineering sciences, biology or a closely related field. Good knowledge of English, typically demonstrated by a TOEFL score of 560 (for the paper-based test) or 215 (for the computer-based test).

Tuition Fees:
No extra fee is charged.

Contact details:
Contact: Admissions Committee Advanced Materials,
Prof. Othmar Marti, Tel.: +49 (0) 731 50 - 23010
Email: adv-mat@uni-ulm.de
Website: http://www.uni-ulm.de/adv-mat/

Graduate Degrees & Courses

Degree / Course Title:
Ph.D., International Post Graduate School of Engineering and Advanced Technologies

Duration:
3 years

Location:
Technische Universität (TU) Berlin, Berlin

Overview:
During the specific programme "nano- and optical technologies" the Ph.D. candidate carries out an original research project and writes a thesis. He will participate in special courses and seminars ensuring the interdisciplinary exchange. Two mentors will supervise the candidate in order to prepare better for obtaining a Ph.D..

Research topics and include: epitaxy, nanostructures, diode lasers and amplifiers, and laser systems (Prof. Dr. Bimberg); characterization of laser materials, development of laser systems, optical components, nonlinear optics, holographic data storage, micro material processing, and laserspectroscopy in biophysical chemistry (e.g. photossynthesis) and environmental spectroscopy for pollution detection in air and water (Prof. Dr. Eichler).

Pre-Requisites:
Ph.D.-Candidates who wish to register for nano- and optical technologies must be approved by the physics faculty administration and apply for the post graduate programme.

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Dr. Hans-Juergen Suessespeck, Tel. +49 (0)30 314 - 23731
Email: suessespeck@wtb.tu-berlin.de
Website: http://www.ips.tu-berlin.de (soon)

Graduate Degrees & Courses

Degree / Course Title:
Ph.D., Materials and Concepts for Quantum Information Processing

Duration:
3 years

Location:
University of Dortmund, Dortmund

Overview:
The Departments of Physics and Computer Sciences offer several grants for Ph.D. or Postdoctoral studies within the program "Materials and Concepts for Quantum Information Processing" (Graduiertenkolleg 726) which is funded by the German National Science Foundation. Interested candidates can participate in a topical research program on quantum computing in which different research teams of experimental and theoretical physics and computer science are involved. Projects are planned in the field of nuclear magnetic resonance, optics of semiconductor quantum dots and spin systems, preparation of nanocrystals and nanostructures, theory of spin relaxation, decoherence in solids, and algorithms of quantum computing.

Pre-Requisites:
Only graduate Students (M.Sc. or diploma) can apply for grants in this programme.

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dr. Ulrike Woggon, Tel. +49 (0)231 755 - 3531
Email: woggon@fred.physik.uni-dortmund.de
Website: http://ls11-www.cs.uni-dortmund.de/people/stadel/gk/gk.html

Graduate Degrees & Courses

Degree Title:
Joint European Masters in Materials Sciences

Duration:
2 years

Location:
Technische Universität Hamburg-Harburg (TUHH)

Overview:
This International Masters Program, presented by the European Consortium of Innovative Universities (ECIU), is organized in cooperation with the universities of Aveiro (Portugal) and Aalborg (Denmark). It aims to specialise students in the science and engineering of ceramics, metals, polymers, and composites for technical applications like electronics or biomaterials. Integrating course units are delivered by academic staff from the 3 partner universities and other leading guest researchers. Special emphasis is put on nanotechnologies, which play a major role in these course units (up to 20%). In addition, nanotechnology subjects may be chosen for term and master thesis, seminars and internships. Close contacts with the Industry will be provided through off-campus work assignments in industry (internships). Students may participate in international conferences, like "Nanocomposites" in March 2005 at TUHH.

Pre-Requisites:
A good first degree in Materials Science/Engineering and related areas, e.g. Physics or Chemistry. Certified proof of a thorough command of English (through e.g. IELTS with a minimum of 6.5 or equivalent test)

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: n.n., Tel.: +49 (0)40 428 78 3499
Email: study@tu-harburg.de
Website: http://www.tuhh.de/eciu-gs/pro_joint_mat.html

Graduate Degrees & Courses

Degree /Course Title:
M.Sc. in Nanomolecular Science

Duration:
2 years

Location:
International University Bremen (IUB)

Overview:
Nanomolecular Science is a research area where physics, chemistry, life sciences and engineering meet. It is a key ingredient of many future technologies and employment prospects are excellent.

In the interdisciplinary M.Sc. program, courses and labs are tought by faculty from physics, chemistry, life sciences and engineering: for example, on preparation and characterization of nanostructures, functional nanomaterials, surface techniques, theory and computer modeling, applications of nanosystems. The M.Sc. curriculum closes with a Master thesis.

Pre-Requisites:
Bachelor in a relevant field or equivalent qualification.

Tuition Fees:
Tuition fees are **EUR 20000** per academic year. Tuition waivers and a limited number of fellowships are available and are distributed based on performance.

Contact details:
Contact Person: Dr. Svenja Frischholz, Tel.: +49 (0)421 200 - 4338
Email: s.frischholz@iu-bremen.de
Website: http://www.iu-bremen.de/nanomol/

Graduate Degrees & Courses

Degree / Course Title:
Ph.D. in Nanomolecular Science

Duration:
3 years

Location:
International University Bremen (IUB)

Overview:
The interdisciplinary Ph.D. program consists of independent research in the group of a participating faculty member and culminates in a Ph.D. thesis.
There is also a corresponding M.Sc. program of study in Nanomolecular Science at IUB, where physics, chemistry, life sciences and engineering meet.

Pre-Requisites:
Master, diploma or equivalent in a relevant field.

Tuition Fees:
Tuition fees are **EUR 20000** per academic year. Tuition waivers and a limited number of fellowships are available and are distributed based on performance.

Contact details:
Contact Person: Dr. Svenja Frischholz, Tel.: +49 (0)421 200 - 4338
Email: s.frischholz@iu-bremen.de
Website: http://www.iu-bremen.de/nanomol/

Graduate Degrees & Courses

Degree /Course Title:
Ph.D., International Graduate School Nano-Bio-Technology

Duration:
max. 3 years

Location:
Center for NanoScience (CeNS) at Ludwig-Maximilians-University, Munich

Overview:
The International Graduate School Nano-Bio-Technology offers an ambitious education and research program with intensive support for excellent young scientists who are interested in interdisciplinary research. Regular lectures, seminars, and summer and winter schools provide the students with an effective introduction into the interdisciplinary fields of Nano- and Biotechnology. The Graduate School Nano-Bio-Technology is an International Doctoral excellence program in Nano-Bio-Technology with the lectures and seminars being held in English and a large number of international participants. In addition to the doctor's degree, the doctoral candidates will receive a letter of acknowledgement, verifying their participation in the Graduate School.

Pre-Requisites:
Highly motivated German and international students with an exceptional academic record having completed their diploma or master's degree in the fields of Physics, Chemistry, Biochemistry, Biology, or Medicine are eligible to apply.

Tuition Fees:
No extra fee is charged

Contact details:
Contact Person: Prof. Dr. Christoph Bräuchle, Tel.: +49 (0)89 2180 - 77547
Email: info@cens.de
Website: http://www.cens.de

Graduate Degrees & Courses

Degree /Course Title:
MSc. Molecular Science

Duration:
1,5 years

Location:
Friedrich-Alexander-University Erlangen-Nuremberg, Germany

Overview:
The consecutive master-bachelor-course "Molecular Science" has been established at Friedrich-Alexander-University Erlangen-Nuremberg in a cross-disciplin-effort by the departments for biology, chemistry and pharmacy. It is based on a scientific, chemistry oriented bachelor programme (3 years) followed by a master programme (1,5 years), that offers in-depth-courses in Molecular Life Science or Molecular Nanoscience.

Pre-Requisites:
B.Sc., or Diploma degree.

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dr. Andreas Hirsch, Tel.: +49 (0)9131 85 - 22537
Email: hirsch@chemie.uni-erlangen.de
Website: http://www.chemie.uni-erlangen.de/Molecular-Science/

Graduate Degrees & Courses

Degree /Course Title:
Master of Engineering, Micro- and Nanotechnology (M.Eng.)

Duration:
1,5 years

Location:
Munich University of Applied Sciences (FH München), Munich

Overview:
The master programme encompasses planning, manufacturing and application of functional structures. Based on commercially well-established microtechnology the fundamentals and innovative applications of nanotechnology will be introduced. Graduates in micro- and nanotechnology will have engineering as well as natural-scientific expertise. Main topics are new materials with superhard properties, molecular adhesives, effective catalysts and membranes or highly selective pharmaceuticals. Further issues are the miniaturisation of integrated circuits for ultrahigh memories and superfast computers.

Pre-Requisites:
Applicants must have a B.Sc. or diploma in Science or Engineering with good grade (2.5) and practical experience (e.g. Praxissemester or at least 18 weeks in a company of relevant industry).

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dr. Stefan Sotier, Tel. +49 (0)89 1265 - 2951
Email: stefan.sotier@fhm.edu
Website: http://www.fh-muenchen.de/home/fb/fb06/studiengaenge/mikro_nano/home.htm

Graduate Degrees & Courses

Degree / Course Title:
Certificate in Nano-Biotechnology (Distance Education Program Nano-biotechnology)

Duration:
1 year

Location:
University of Kaiserslautern, Germany

Overview:
The online-based course for natural scientists and engineers consists of a combination of distance education parts (off-campus) and residential phases on weekend (on-campus). Learning material suitable for self-instruction and multimedia-based learning units will be available to the participants. The certificate is obtained by means of written tests and of tasks to be sent in regularly over the two semesters. The course language is English.
This unique offer in Germany combines the most modern educational devices and makes it possible to acquire high-level scientific knowledge.

Pre-Requisites:
Postgraduates with natural sciences or engineering background are admitted to the distance education on nano-biotechnology.

Tuition Fees:
1400 €.

Contact details:
Contact Person: Dr. Maria Elisabetta Berbenni, Tel. +49 (0)631 205 4941
Email: berbenni@rhrk.uni-kl.de
Website: http://ecampus.zfuw.uni-kl.de/nano-engl/nbt-top.html

Graduate Degrees & Courses

Degree / Course Title:
Physicist (Dipl.-Phys.), major field of study: "solid state physics and nanotechnology "

Duration:
2 years during graduate course in physics

Location:
Ludwig-Maximilians-University (LMU), Munich

Overview:
The faculty of physics offers students during graduate courses several major fields of study in order to document specialization in one of the faculty's most important research fields. One option is "solid state physics and nanotechnology". In addition to normal physics courses the students will choose from several lectures and seminars from solid state physics, nanotechnology and materials science. They will also write their diploma theses in the chosen research area.

Pre-Requisites:

Successful undergraduate courses in physics (Vordiplom)

Tuition Fees:
No extra fee is charged.

Contact details:
Office of the department of physics, Tel.: +49 (0)89 2180 - 2470
Email: geschaeftsstelle@physik.uni-muenchen.de
Website: http://www.physik.uni-muenchen.de/studium/studiengaenge/dp/Festkoerperphysik (in German)

Graduate Degrees & Courses

Degree /Course Title:
Engineer (Dipl.-Ing.) or Physicist (Dipl.-Phys.), Micro- und Nanostructures

Duration:
5 years

Location:
Saarland University, Germany

Overview:
The cross-disciplinary programme is application-oriented and embedded in an ideal research area with nano-bio-technology being a research focus at the Saarland University. The student programme puts strong emphasis on practical experience, multi-disciplinary education, and international orientation. In the basic course units mathematics, physics, technics, and informatics as well as bionics and chemistry for engineers are taught. In the main course specific nanotechnology topics like nanostructure physics, nano-bio-technology or nanocomposites are offered. By chosing their main fields of study the students can determine from physicist or engineer what degree they want to do.

Research cooperations are found world-wide and particular lectures being held in English and French.

Pre-Requisites:

Tuition Fees:

Tuition fee for semester is **€ 128,00** including a ticket for public transport service (Semesterticket).

Contact details:
Contact Person: Prof. Dr. Walter Zimmermann, Tel. +49 681 302 - 2763
Email: wz@lusi.uni-sb.de
Website: http://www.uni-saarland.de/fak7/physik/NanoMikro/InfoMikroNano.htm

Graduate Degrees & Courses

Degree / Course Title:
Physicist (Dipl. Phys.), major fields of study: nanoelectronics

Duration:
5 years

Location:
University of Hannover, Hannover

Overview:
The technical physics study programm offers students during graduate courses several interdisciplinary major fields of study including a practical training for three month in industry and courses in business and patent rights.

The nanoelectronics courses range from solid state physics to electrical and mechanical engineering. Students will learn e.g. the physics and construction of micro- and nano devices, coating processes, quantum- and electrical devices.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels).

Contact:

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dr. Herbert Pfnür, Tel : +49 (0)511 762 - 4819
Email: pfnuer@fkp.uni-hannover.de
Website: www.physik.uni-hannover.de

Graduate Degrees & Courses

Degree / Course Title:
Physicist (Dipl. Phys), major field of study: applied physics

Duration:
5 years

Location:
Technical University of Dresden

Overview:
Five departments of TU Dresden (experimental physics, semiconductor spectroscopy, opto electronics, ion beam physics, and semiconductor physics) have established a new major field of study giving a comprehensive overview of many subjects in modern applied physics. Special emphasis is put on measurements of high tech materials for e.g. display or electronics applications on the nanometerscale. The creative atmosphere of "Silicon Saxony" has already led to newly founded firms like CreaPhys or NovaLED, which might be a job option after study.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels).

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dr. Lukas Eng, Tel : +49 (0)351 463 - 33427
Email: eng@iapp.de
Website: http://iapp.de/iapp/lehre/index.php

Graduate Degrees & Courses

Degree / Course Title:
Mechanical engineering (Dipl. Ing.), major field of study: surface- and nanotechnology

Duration:
5 years

Location:
Technical University of Dresden

Overview:
During the main courses in the mechanical engineering programs "production engineering" and "mechatronics" at TU Dresden students may choose lectures in "surface and nanotechnology".

This course is offered in cooperation with the Fraunhofer Institute for Material and Beam Technology (IWS) in Dresden, where diploma theses can be done and practical courses are held.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels).

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dr.-Ing. habil. Eckhard Beyer, Tel : +49 (0)351 463 – 31993
Email: petermann@iof.mw.tu-dresden.de
Website: http://www.tu-dresden.de/mw

Graduate Degrees & Courses

Degree /Course Title:
Diploma in Nanostrukturwissenschaft - Nanostructure and Molecular Sciences (Dipl. Nanostrukturwissenschaftler/-in)

Duration:
5 years

Location:
University of Kassel, Kassel

Overview:
The Science Department of the University of Kassel has established the interdisciplinary course of study in Nanostructure and Molecular Sciences in 2003. Students will learn methods, acquire integrative skills and technological competence in high technologies. Focus is given to an interdisciplinary scientific education based on the close cooperation between biology, chemistry, and physics at the department. This new course of study is accompanied by the new founded Center for interdisciplinary Nanostructure Science and Technologies (CINSaT) at University Kassel. The theme for the diploma thesis can be chosen from any research field of CINSaT.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels)

Tuition Fees:
No extra fee is charged

Contact details:
Contact Person: Prof. Dr. Josef Salbeck, Tel.: +49 (0)561 804 - 4425
Email: salbeck@uni-kassel.de
Website: http://www.cinsat.uni-kassel.de/studiengang/studiengang.html

Graduate Degrees & Courses

Degree / Course Title:

Engineer (Dipl.-Ing.), Nanostructure Technologies

Duration:
4 years

Location:
Julius-Maximilians-University, Würzburg

Overview:
The aim of this course of studies is to qualify students with specific knowledge in nanomaterials and structural techniques in this key subject for manufacturing and analyzing devices and systems based on nanometer structures.
The course of study is based on a two year undergraduate course of fundamental science and engineering based on the physics study path. In graduate courses students can choose from courses about nanotechnology, nanostructure materials, nanostructuring techniques, devices and systems, nano- and optoelectronics, energy engineering, and biomedical engineering. Practical courses and diploma theses will be offered in cooperation with local companies. In addition, excellent research opportunities in nanostructure technology and application oriented research will be given in the micro structure laboratory and the biophysics lab at Würzburg University as well as in the Center for applied energy research in Bavaria, ZAE (Zentrum für Angewandte Energieforschung).

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels)

Tuition Fees:
No extra fee is charged

Contact details:
Contact Person: Prof. Dr. Alfred Forchel, Tel. +49 (0)931 888 - 5100
Email: forchel@physik.uni-wuerzburg.de
Website: http://www.physik.uni-wuerzburg.de/nano/ (in German)

Undergraduate Degrees & Courses

Degree /Course Title:
B.Sc. in Nanosciences

Duration:
3 years

Location:
University of Bielefeld

Overview:
Based on the application oriented teaching and research programs of the physics dept. and the depts. of chemistry, biology, and engineering, with a very good reputation in biophysics, nano- and microelectronics, molecular physics and laser physics, the bachelor of science-course has been developed in order to educate students in cooperation with industrial companies, where practical courses, studies and theses will be offered.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels).

Tuition Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dario Anselmetti, Tel. +49 (0)521 106 - 5389
Email: dario.anselmetti@physik.uni-bielefeld.de
Website: http://www.physik.uni-bielefeld.de/nano.html

Undergraduate Degrees & Courses

Degree / Course Title:
Engineer in Physics (Diplom-Ingenieur FH)

Duration:
4 years

Location:
University of Applied Sciences (Fachhochschule), Isny

Overview:
The University of Applied Sciences Isny offers a modular course of study for Physics with a special profile in optical engineering and micro- and nanotechnologies. Students will learn the relevant physics, electronics and chemistry skills for physics engineers and can specialize in optical engineering and micro- and nanotechnology.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels)

Tuition Fees:
The fee is **230 €** per month.

Contact details:
Contact Person: Prof. Dr. Axel Donges Tel.: +49 (0)7562 9-7070
Email: info@fh-isny.de
Website : http://www.nta-isny.de/fachhochschule/die_studiengaenge/allgemeine_physik/

Undergraduate Degrees & Courses

Degree /Course Title:
Engineer in Physical Electronics (Diplom-Ingenieur FH)

Duration:
4 years

Location:
University of Applied Sciences, Isny

Overview:

The University of Applied Sciences Isny offers a modular course of study for Physical Electronics with a special profile in micro- and nanotechnologies. During the fist two years students will learn the relevant electronics, physics, and chemistry skills for electronics engineers and can specialize in micro- and nanotechnology in the third year. Lectures in the micro- and nanotechnologies profile include micro- and nanotechnology, microprocessor technology and optoelectronics.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels)

Tuition Fees:
The fee is **230 €** per month.

Contact details:
Contact Person: Prof. Dr. Axel Donges Tel.: +49 (0) 7562 9-7070
Email: info@fh-isny.de
Website: http://www.nta-isny.de/fachhochschule/die_studiengaenge/physikal._elektronik/

Undergraduate Degrees & Courses

Degree /Course Title:
BSc. Molecular Science

Duration:
3 years

Location:
Friedrich-Alexander-University Erlangen-Nuremberg, Germany

Overview:

The consecutive master-bachelor-course "Molecular Science" has been established at Friedrich-Alexander-Universität Erlangen-Nuremberg in a cross-disciplin-effort by the departments for biology, chemistry and pharmacy. It is based on a scientific, chemistry oriented bachelor programme (3 years) followed by a master programme (1,5 years), that offers in-depth-courses in Molecular Life Science or Molecular Nanoscience.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Abitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels). There is a local numerus clausus which restricts access to students with certain grade levels.

Tuition Fees:
none

Contact details:
Contact Person: Prof. Dr. Andreas Hirsch
Email: hirsch@chemie.uni-erlangen.de
Website: http://www.chemie.uni-erlangen.de/Molecular-Science/

Undergraduate Degrees & Courses

Degree /Course Title:
Engineer (Dipl.-Ing. FH), Bio- and Nanotechnologies

Duration:
3,5 years

Location:
University of Applied Sciences (Fachhochschule Südwestfalen), Iserlohn

Overview:
Students in this interdisciplinary course of study will acquire applied scientific skills in materials science and environmental engineering with degrees in promising fields as biotechnology, environmental technology, or surface- and nanotechnology. During graduate course the students can specialize in biotechnology or surface- and nanotechnology.

Pre-Requisites:
Certificate of secondary school completion equivalent to the German Fachabitur (i.e. International Baccalaureate, High School Diploma, GCSE A-levels)

Tuition Fees:

No extra fee is charged.

Contact details:
Contact Person: Prof. Dr. Peter Meisterjahn, Tel. +49 2371 566 - 105
Email: meisterjahn@fh-swf.de
Website: http://www-in.fh-swf.de/fb-in/studium.bnt/bnt.htm

Short Courses

Spring School Title:
Interdisciplinary Nanoscience: from basic research to applications

Duration:
May 18 - May 19, 2004

Location:
University of Hamburg

Overview:
The two day course comprises basics and applications of nanoanalytics as well as on nanoparticle synthesis and their applications. Lecturers come from international labs and from the local university of Hamburg.

Organizers / Institutions:
Organized by: Competence Center for Nanochemistry (CC NanoChem)

Pre-Requisites:
The course is open to everybody.

Fees:
No extra fee is charged.

Contact details:
Contact Person: Prof. Dr. Roland Wiesendanger, Tel.: +49 (0)40 42838 - 5244
Email: wiesendanger@physnet.uni-hamburg.de
Web : http://www.nanoscience.de/hansenanotec/aktuelles/veranstaltungen/springschool-web.pdf

Short Courses

Summer School Title:
Chemical Nanotechnology (Chemische Nanotechnologie)

Duration:
September 27 – October 01, 2004 (1 week)

Location:
Leibniz-Institut für Neue Materialien gGmbH, Saarbrücken

Overview:
The summer school Chemical Nanotechnologies at the Leibniz-Institute for New Materials gives a comprehensive overview of current developments and the basics underlying the innovative field of chemical nanotechnology. Topics include preparation, characterization, and application of nanoscale materials in industry and life sciences.

Organizers / Institutions:
Organized by: Network of Excellence for Chemical Nanotechnology (CC NanoChem)

Pre-Requisites:
Undergraduate students and postgraduates in natural sciences are welcome. The number of participants is limited.

Tuition Fees:
Standard fee: **€ 70**; undergraduates: **€ 50**

Contact details:
Contact Person: Dr. Martin Schubert, Tel.: +49 (0)681 93 00 – 399
Email: koordination@cc-nanochem.de
Web : http://www.cc-nanochem.de/SummerSchool2004.pdf

Short Courses

Summer School Title:
Heraeus Summer School "Molecules: Building blocks for future nanoelectronics"

Duration:
August 02 – August 13, 2004 (2 weeks)

Location:
Leucorea-Stift, Wittenberg

Overview:
The goal of this summer school is to provide an overview of the current state of the field of **Molecular Electronics** to postgraduate and postdoctoral researchers working in physics, chemistry and biology. We shall cover different aspects of this multidisciplinary topic such as the experimental techniques to contact molecules, organic chemistry, theoretical approaches to describe the electronic transport in molecular circuits, and technological applications.

Organizers / Institutions:
Organized by: Institut für Theoretische Festkörperphysik, Universität Karlsruhe and Institut für Nanotechnologie, Forschungszentrum Karlsruhe

Pre-Requisites:
Since the number of participants is limited to 50-60 students, potential participants are requested to apply by submitting a brief summary of their research interests and recent publications. Applications must be sent before **April 30, 2004**

Fees:
Successful applicants will have to cover their travel expenses and will be asked to pay a registration fee of **100 €**. Accomodation will be covered by the Wilhelm and Else Heraeus Foundation. We strongly recommend the students to present a poster with their recent results or current projects.

Contact details:
Contact Person: Juan Carlos Cuevas, Universität Karlsruhe
Email: cuevas@tfp.physik.uni-karlsruhe.de
Web : http://www-tfp.physik.uni-karlsruhe.de/Summerschool/school.html

Short Courses

Spring School Title:
Magnetism goes Nano – Electron Correlations, Spin Transport, Molecular Magnetism

Duration:
February 14 – 25, 2005

Location:
Research Centre Jülich, Institute of Solid State Research (IFF)

Overview:
The IFF Spring School 2005 will address these new developments in magnetism on a graduate student level. The lectures will be given entirely in English. In the beginning a basis for the understanding of the major phenomena and aspects in magnetic systems, including the theoretical framework for a quantitative description, will be built. The School will then advance to the peculiarities of magnetism in systems of reduced dimensions, covering thin films, quantum wires and dots, and magnetic clusters. Finally, it will bridge the gap to molecular magnetism and touch upon the major principles of quantum information physics.

Organizers / Institutions:
Research Centre Jülich, Institute of Solid State Research (IFF)

Pre-Requisites:
The course is intended for students after their second year of studies in physics, chemistry, information technology, and materials science, as well as for graduate students and young scientists in these disciplines.

Accomodation Fee:
320 € including breakfast and dinner. (Deadline for Registration: December 3, 2004)

Contact details:
Contact Person : Rainer Hölzle, Tel.: +49 (0)2461 61-3151
Email: r.hoelzle@fz-juelich.de
Web : http://www.fz-juelich.de/iff/src/fs/2005/flyer2005.pdf

Short Courses

Summer School Title:
Techniques in Nanobioanalytics: Theory , Application in Life Sciences and Practical Training

Duration:
July 7 – July 15, 2005

Location:
CeNTech GmbH, Gievenbecker Weg 11, Münster

Overview:
Topics: Electron Microscopy (XPS, REM, TEM, ESEM)
Atomic Force Microscopy (AFM, SNOM)
Imaging Techniques: New Methods & Analysis
Mass spectroscopy (MALDI, SIMS, Laser SNMS)

Organizers / Institutions:
Center for NanoTechnology (CeNTech), Münster

Pre-Requisites:
Target Groups: Graduates & Postgraduates, Members of Scientific Institutions,
Scientists from interested Companies

Tuition Fees:
Network Partners & Students (from Nano2Life, Frontiers): 950 €
Scientific Institutions: 1250 €
Companies: 1650 €
Day-ticket: 350 €

Contact details:
Contact Person: Dr. Holger Winter, Tel.: +49-(0)251-53406 200
Email: hw@centech.de
Web : http://www.centech.de

Graduate Degrees & Courses

Degree /Course Title:
Postgraduate Course "Nanoscience and Nanotechnology"

Duration:
2 years (4 semesters).

Location:
Lab for Thin Films Nanosystems and Nanometrology ,
Aristotle University of Thessaloniki, Greece.

Overview:

A detailed listing of the Four-semester coursework given on the webpage: http://nn.physics.auth.gr. There is an English version.

Prof. S. Logothetidis is the Director of Lab for Thin Films Nanosystems and Nanometrology and the Director of the Postgraduate Course "Nanoscience and Nanotechnology" in the Aristotle University of Thessaloniki

Pre-Requisites:
None found on web page.

Tuition Fees:
None found on web page.

Contact details:
Contact Person: Mara Chachamidou, MSc Management of Technology
Lab for Thin Films - Nanosystems & Nanometrology (LTFN)Aristotle
Solid State Physics Section, Department of Physics
University of Thessaloniki
GR-54124 Thessaloniki, Greece
Phone: +30 2310 998129
Fax: +30 2310 998390
E-mail: mchacham@auth.gr
Website: http://www.physics.auth.gr/thinfilmslab

Graduate Degrees & Courses

Degree /Course Title:
MSc. And PhD. Degrees in Materials Science and Atomic and Molecular Physics

Duration:
5 years for MSc and 3 years for PhD. program

Location:
Institute of Physics, Eötvös Loránd University,Budapest

Overview:
Not available in English.
But graduation courses (7^{th} and 8^{th} semesters) offered in English at
http://ion.elte.hu/hirek/kredit/

Pre-Requisites:
Applicants must present proof of one of the following**:** Hungarian Secondary School Maturity Certificate (*Érettségi Bizonyítvány*) or the accepted equivalent from another country, a higher education diploma and completion of preparatory courses especially designed for graduates of vocational technical schools. Applicants must also present a document certifying fitness of health. Admission to the Faculty is subject to performance and intake. A special form must be completed before 1st March of the year of entry. Applicants have to pass a written examination and are called to an oral interview in late June. The results are published within a month. The academic year starts in mid-September and ends in early July.

Tuition Fees:
Not available for MSc. Program
The tuition fee is 3500 EUR per semester for the PhD. Program.

Contact details:
Information for the PHd. Program at dhteo@teo.elte.hu, Phone: +36-1 372-2695, the Scientific Secretary of the Ph.D. School of the Faculty of Science.
Information for the MSc. Program at ELTE TTK Tudományszervezési és Egyetemközi Kapcsolatok Osztálya Pázmány Péter stny. 1/A., Budapest, Hungary, H-1117

Undergraduate Degrees & Courses

Degree / Course Title:
Physics and Chemistry of Advanced Materials

Duration:
4 years

Location:
Trinity College, College Green, Dublin 2

Overview:
In the 1st and 2nd years, students study Chemistry, Physics and Mathematics. In the 3rd and 4th years, students take specialised courses in materials Physics and Chemistry. In their 4th year, students carry out a research project, usually in an industrial laboratory, to familiarise themselves with the applications of advanced materials in real-life situations.

http://www.tcd.ie/Advanced_Materials/nd.htm

Pre-Requisites:
Mathematics, ordinary level Grade C or above and C or above at higher level in two of the following subjects: Chemistry, Physics, Physics/Chemistry, Biology or Agricultural Science, Applied Mathematics
OR
Mathematics, higher level Grade C and C or above at higher level in one of the following subjects: Chemistry, Physics, Physics/Chemistry, Biology, Agricultural Science, Applied Mathematics

Tuition Fees:

€750 per annum. See http://www.tcd.ie/Treasurers_Office/fees8.htm

Contact details:
Dr. John Donegan, Department of Physics, Trinity College Dublin
Email jdonegan@tcd.ie

Graduate Degrees & Courses

Degree /Course Title:
MSc / PhD Nanoscience and Nanotechnology

Duration:
N/A (currently being authorized)

Location:
The Graduate School Technion City, Haifa 32000

Overview:
This is an interdisciplinary program recently approved by the Technion senate and is currently in the process of being authorized by the Council of Higher Education.

http://www.graduate.technion.ac.il/eng/

Pre-Requisites:
Applicants have to apply in written form, it will then be decided.

Tuition Fees:

Contact details:
Tel. +972 4 8292573
Fax. +972 4 8295635
Email: gradsc@tx.technion.ac.il
Website: http://www.graduate.technion.ac.il/eng/

Graduate Degrees & Courses

Degree /Course Title:
International MSc. in Nanotechnologies

Duration:
1 year

Location:
Classes will be held in the modernly equipped VEGA Park, 2 km. from downtown Venice

Overview:
CIVEN is an association between the University of Padova and the University Ca' Foscari of Venezia , it is fully funded by the Government of the Veneto Region. CIVEN is also part of Veneto Nanotech.
International Master in Nanotechnologies (IMN) aims at providing students with scientific knowledge, practical expertise and managerial tools, focusing on business applications of nanotechnologies.
The curriculum combines a scientific education in nanoscience and nanotechnology (360 hours) with a business administration programme (120 hours). Moreover, you will attend 40 hours of workshops dedicated to specific topics. The programme is completed by a 3-month internship in a company active in nanotechnology, which will enable you to apply on the job the scientific knowledge and the managerial skills acquired in the courses.
During courses (first and second term), the standard daily timetable includes 4 hours of class in the morning from Monday to Friday and lab activities, workshops and individual study in the afternoon. IMN is a full time graduate programme. Attending all classes is compulsory. There is no IMN part-time degree.

Pre-Requisites:
None found on web page.
15 students were admitted to IMN in the Year 2004.

Tuition Fees:
The costs, scholarship and criteria decided by the selection committee for next master edition will be communicated after **June 2004**.

Contact details:
Associazione CIVEN
Via della Libertà, 12 30175 Venezia-Mestre
Tel. +39 049 8273096 / Fax +39 049 8273095
Email: info@civen.org
Website: http://www.civen.org/EN/CIVEN/contacts.php

Graduate Degrees & Courses

Degree /Course Title:
MSc. in Nanotechnologies

Duration:
1 vear

Location:
Torino Politecnico, Corso Duca degli Abruzzi, 24, 10129 Torino, Italy

Overview:
The program of the Master is focused both on theoretical lectures and on laboratory activities on subjects such as solid state physics, processes for micro and nanotechnolo-gies, basics of micro and nanosciences, basics of characterization techniques and phenomena of micro and nanostructures, design of micro and nano-electronic devices, MEMS, MOEMS, NEMS (www2.polito.it/ricerca/thin-film/Activity/Nano/Eng.pdf).

The Torino Politecnico, through the Facoltà di Ingegneria dell'Informazione, has recently planned and activated for the next academic year 2004-2005 a Master in Nanotechnolo-gies for ICT. The Master (Laurea Specialistica, two academic years after the three years of the first level of Laurea) is realized in partnership with the Institut National Polytechnique de Grenoble (INPG) and the Ecole Polytechnique Fédérale de Lausanne (EPFL).

Pre-Requisites:

Tuition Fees:
€1,363 per semester

Contact details:
Tel +39 011 564 6111
Email: info@infotech.polito.it
Website: http://www.polito.it/ateneo/facolta/III_fac_ing/index.en.html

Short Courses

Summer School Title:
Nanoscience - linking disciplines

Duration:
27.09. - 1.10.2004

Location:
Venice International University Venice, Italy

Overview:
Some of the subjects are CARS-microscopy: High resolution microscopy without labels; Fluorescence Nanoscopy through Reversible Optically Saturable Transitions.

For more info please visit: http://www.nanoscience.uni-muenchen.de/lmu/venice2004/Program_Venice_2004_Sprecher_fweb.pdf

Organizers / Institutions:
Venice International University (VIU), Isola di San Servolo, 30100 Venice, Italy

Pre-Requisites:
Please note: Registration deadline is Sep 1, 2004.The total number of participants is limited to 120 persons. It is recommended to register early and online.

http://www.cip.physik.uni-muenchen.de/~gumpp/cens/anmeldung.htm

Fees:

Registration	before August 15th	Aug. 15th - Sept. 15th
CeNS members	100 €	150 €
Reg. CeNS associates	50 €	75 €
External participant	200 €	200 €

Contact details:
Tel. +39 041 271 9511
Fax +39 041 271 9510
E-mail: viu@univiu.org,
Web : http://www.univiu.org/

Short Courses

Summer School Title:
Course: Nanotechnology - Imaging and Engineering at the Nanoscale

Duration:
23.11.04 - 24.11.04, 2 days

Location:
Rome, Italy, Consiglio Nazionale delle Ricerche (CNR)

Overview:
This course provides an overview of methods for accessing the nanometer lengthscale. It covers the principles of scanning probe techniques ranging from surface physics to biology, from highly specialized experiments to routine materials testing, demonstrating the usefulness of these methods for both scientific and industrial work. The course describes state-of-the-art micro- and nanoengineering methods to create nanostructures that are needed for future applications (nanolithography, nanoelectronics, nano-optics, data storage and bio-analytical nanosystems). The fabrication and application of the new instruments that allow atomic resolution/manipulation as well as highly integrated multi-purpose scanning probe microsystem using parallel probes, including lab-demonstration.

Organizers / Institutions:
Italian National Research Council, http://www.ismn.cnr.it/home_english.htm

Pre-Requisites:
n/a

Fees:
CHF 1,100; EUR 750

Contact details:
Via dei Taurini, 19 - 00185 Roma Italy
Phone: +39 06 499 37741
Fax: +39 06 499 37760
Web: http://www.ismn.cnr.it/eventi.htm

Graduate Degrees & Courses

Degree /Course Title:
MSc. in NanoScience Degree

Duration:
2 years

Location:
TU Delft University & University Lieden, The Netherlands

Overview:
Leiden University and Delft University of Technology work in close collaboration on both research and education. This cooperation is at its strongest at the graduate level (MSc and PhD). The MSc programme in NanoScience enables you to take full advantage of the scientific, technological and educational expertise and facilities available at both locations. In addition, you are afforded the opportunity to participate in the workshops, summer schools, and mini-conferences organized for MSc and PhD students at both universities.
The MSc programme in NanoScience is attractive to those students who wish to gain the skills and experience required in NanoScience and Nanotechnology. It opens the door to a career in industry and is a stepping-stone for those graduates with the ambition and aspiration to pursue a PhD degree.

Pre-Requisites:
To be determined from 4 options: 1) Student from another country other than The Netherlands, 2) student from a Dutch university other than Delft and Leiden, 3) student from Leiden University or Delft University of Technology and 4) graduate from a Dutch higher education institution (HBO/HTO/HLO).

Tuition Fees:
The tuition fees for 2004-2005 are as follows:
EU/EFTA nationals younger than 30 years: **€ 1,445 per year**
EU/EFTA nationals older than 30 years: **€ 1,965 per year**
Non-EU/EFTA nationals: **€ 11,000 per year***
* NOTE! The fees are subject to change.

Contact details:
Contact Person: Ms. Ann O'Brien
Email: a.obrien@tnw.tudelft.nl
Website: http://www.msc-nanoscience.tudelft.nl/

Graduate Degrees & Courses

Degree /Course Title:
Top Master in Nanoscience (M.Sc.). (An international English-language Master's degree programme)

Duration:
2 years

Location:
Materials Science Center (MSC), University of Groningen, Groningen, The Netherlands

Overview:
The two-year programme provides a new interdisciplinary and professional training in nanoscience, with an emphasis on nanostructured materials. The first year is mainly spent following courses. Roughly half of those consist of compulsory modules, dealing with basic topics, such as: a general introduction into nanoscience and nanotechnology; optical, electrical and magnetic properties of nanostructured and macromolecular materials; among others. The other courses may be chosen from a list of advanced and often highly specialized topics and also comprise the preparation of a colloquium and an essay on topics of the students own choice within the field of nanoscience.
The second year is reserved for an experimental or theoretical research project under supervision of one of the senior scientists of the Materials Science Centre.

Pre-Requisites:
A Bachelor's degree in physics or chemistry and sufficient proficiency in English (TOEFL score of at least 550) are required. Students are selected on the basis of academic potential and results in the Bachelor's phase, supported by a letter of application, lists of accomplishments, letters of recommendation, and an interview in Groningen. All students will receive fellowships; these may be supplemented by interest-free loans. Students who complete the programme will be offered a PhD position at MSC.

Tuition Fees:
Not available. Questions can be sent to the Programme Co-ordinator, Dr. N.J.I. Mars.
Email: n.j.i.mars@fwn.rug.nl

Contact details:
Contact Person: Theo Jurriens
University of Groningen , Faculty of Mathematics and Natural Sciences
Nijenborgh 4, 9747 AG Groningen, The Netherlands
Tel: +31 (0) 50 3634346 **Fax:** +31 (0) 50 3634500
Email: jurriens@fwn.rug.nl **Website:** www.rug.nl/msc and www.fwn.rug.nl/topmasters

Graduate Degrees & Courses

Degree /Course Title:
PhD in Complex Systems and Soft Material

Duration:
3 / 4 years

Location:
Dept. of Physics, Institute for Energy Technology, NORWAY

Overview:

The Physics Department utilizes neutron beams from the JEEP II research reactor in fundamental studies of the physical properties of solids, soft condensed matter and liquids. Its activities constitute a national laboratory for education and research. The department has broad collaboration with researchers in Norwegian universities and industry, and at several foreign research institutes.

Pre-Requisites:
Applicants must possess a BSc or BEng in any of the physical sciences or engineering disciplines.

Tuition Fees:

Contact details:
http://www.ife.no/english/

- Brinks,Hendrik,W-Principal Research Scientist
  E-Mail: hendrik.w.brinks@ife.no
- Lokseth,Tine, Admin. Project Coordinator
  E-Mail: trine.lokseth@ife.no

Graduate Degrees & Courses

Degree /Course Title:
PhD in Quantum Information Processing

Duration:
3 / 4 years

Location:
Norwegian University of Science and Technology, Department of Electronics and Telecommunications, Hoegskoleringen 5, NO-7491 Trondheim, NORWAY

Overview:

Quantum Computing: Focus on quantum cryptosystem that works over optical fiber, test technologies useful for practical applications of quantum cryptography, and study practical security of today's quantum cryptosystems.

Pre-Requisites:

Tuition Fees:

Contact details:

Associate Professor Astrid Dyrseth, *Astrid.Dyrseth@iet.ntnu.no*
Adjunct Professor Dag R. Hjelme, *Dag.R.Hjelme@optomed.no*, tel. +47 73540282

Graduate Degrees & Courses

Degree /Course Title:
PhD in Complex Systems and Soft Material

Duration:
3 / 4 years

Location:
Norwegian University of Science and Technology, Department of Physics,
Hoegskoleringen 5, NO-7491 Trondheim, NORWAY

Overview:

Within the program of Complex Systems and Soft Materials, focus on experimental equipment directed at the nano scale and the basics of soft nano science: Microscopy: Atomic Force Microscope(AFM), various scattering techniques for mapping out structures, Small Angle Neutron Scattering(SANS), Small Angle X-ray Scattering (SAXS), Static and Dynamic Light Scattering (SLS and DLS), Electrically induced birefringence(TEB) etc.

Pre-Requisites:
Applicants must possess a BSc or BEng in any of the physical sciences or engineering disciplines.

Tuition Fees:

Contact details:

Website: http://www.phys.ntnu.no/complex/

Direct telephone: +47 73593482

Fax: +47 73597710

E-mail: Jon.Fossum@phys.ntnu.no

Graduate Degrees & Courses

Degree /Course Title:
PhD in .Molecular Modelling in Nanotechnology

Duration:
3 / 4 years

Location:
Department of Chemistry, University of Bergen, Norway

Overview:

The NANOMAT program Molecular Modelling in Nanotechnology is funded by the Norwegian Research Council (NFR). The main objective of the program is to develop and apply novel molecular modelling tools in nanoscience and nanotechnology. One main goal is to develop molecular modelling tools to be used on a regular basis in the design of primarily carbon-based functional materials. Three subprojects are currently supported:

- Metal atoms in carbon nanostructures: application to catalysis
- Molecule-based magnets
- Non-linear optics of molecular materials

Pre-Requisites:

Tuition Fees:

Contact details:

- Knut J Borve, Professor, Dept. of Chemistry, University of Bergen,knut.borve@kj.uib.no
- Kenneth Rude, Professor ,Department of Chemistry, University of Tromsø, kenneth.ruud@chem.uit.no
- Per-Olof Åstrand, Coordinator, Department of Chemistry, NTNU, Trondheim per-olof.aastrand@chem.ntnu.no

Graduate Degrees & Courses

Degree /Course Title:
PhD in Complex Systems and Soft Material

Duration:
3 / 4 years

Location:
Dept. of Physics, University of Oslo, NORWAY

Overview:
The Complex Systems and Soft Materials Program is a collaborative effort between three research groups in Norway: The Complex Systems and Soft Materials Group at the University of Oslo, the Complex Systems and Soft Materials Group at the Norwegian University of Science and Technology (NTNU), and the Physics Department at the Institute for Energy Technology (IFE).

Focus is the physics of soft condensed matter and collective phenomena in mesoscopic and macroscopic systems.

Pre-Requisites:
Applicants must possess a BSc or BEng in any of the physical sciences or engineering disciplines.

Tuition Fees:

Contact details:

- Knut Jorgen Maloy, Professor of Physics, Condensed Matter
  E-Mail: maloy@fys.uio.no
- Eirik Grude Flekkoy, Professor of Physics, Condensed Matter
  E-Mail: flekkoy@fys.uio.no

Graduate Degrees & Courses

Degree /Course Title:
MSc. Degree in Engineering, specialization in textile engineering, food chemistry and biotechnology.

Duration:
5 years

Location:
Technical University of Lodź in Lodź

Overview:
The program contains basic subjects e.g. Mathematics, Physics, Computer Science, and technical ones required by the curriculum prescribed for Engineering in Textiles. In later semesters programme is divided into specializations, which means that a student may choose an area of his/her interest. Beside compulsory courses for specific specialization, a student takes also elective ones. During the last semester a student works on his/her final project or degree thesis. Also, there are different types of courses offered to gain scientific knowledge and practical experimental skills. Graduation takes place after complying with all the programme requirements established for a given type of studies by a Faculty Council, presenting the diploma thesis, and after passing the diploma examination. The final result of the studies is defined on the basis of the average grade of all the grades obtained in the course of studies, the grade for the diploma thesis and the grade for the diploma examination. Besides the international program, there is an exchange student program. The students can take studies at the Master program for one or two semesters as a part of the programmes in their home countries.

Pre-Requisites:
The requirements vary depending on if you are an exchange student or an international student who would like to complete an engineering programme in Poland at the Technical University of Łódź. Applications should be made as soon as possible: no later than 31 July for the autumn semester and 15 January for the spring semester. Also there is a full program. Application is made by using: the ECTS Student Application Form, the ECTS Learning Agreement, and the Transcript of Records (from home institution). At present it is possible to study in foreign languages at the International Faculty of Engineering.

Tuition Fees:
In principle, the full-time studies are free of charge only for Polish citizens. The part-time, evening, extra-mural programmes are usually fee-paying. The Technical University of Łódź offers a very limited number of scholarships for international students interested in programmes taught in Polish who cannot afford paying tuition fees.

Contact details:
Office of Foreign Studies, Biuro Kształcenia Zagranicznego MEN, ul. Smolna 40, 00-920 Warszawa
tel: (+48 22) 262823, 265324, 262387 fax: (+48 22) 262823

Graduate Degrees & Courses

Degree /Course Title:
MSc Eng. in Metallurgy and Materials Science

Duration:
5 years

Location:
AGH University of Science and Technology, Faculty of Metallurgy and Materials Science, Krakow

Overview:
The program offers specialization in Metallurgy or Material Science. Students who study Metallurgy learn how to make and process iron-based metallic materials, investigate on their properties and learn how to design technologies, devices and computer modelling of technological processes. Students who study Materials Science are educated as specialists in designing, making and applying special metallic materials for modern branches of industry such as electronics, cutting, combustion engines and tissue engineering. This course includes all groups of construction and common use materials, like metals, their alloys, ceramics, polymers, semiconductors, dielectrics, magnetic and composite materials, alloys with shape memory etc. There are 5 students scientific circles related to the courses. These are: Pig Iron and Steel Metallurgy, Physical Metallurgists, Power Engineers "Caloria", Metal Forming "Hefajstos" and "Hut-Inform". It is possible to follow PhD. studies in theory and technology of metallurgical and materials sciences disciplines.

Pre-Requisites:
Not available

Tuition Fees:
Not available

Contact details:
Dean's Office for students' affairs, al. Mickiewicza 30, 30-059 Kraków, paw. B-5, parter, pokoje 4, 9
phone: (4812) 617-25-50; 617-29-19; 617-38-71
phone/fax: (4812) 633-36-73
e-mail: kruczek@uci.agh.edu.pl
Web site: http://www.uci.agh.edu.pl/index_e.html

Graduate Degrees & Courses

Degree /Course Title:
Master's Ph.D. degrees in Biotechnology

Duration:
Not available

Location:
Faculty of Biotechnology, Jagiellonian University, Wroclaw

Overview:
Not available in English

Pre-Requisites:
Not available

Tuition Fees:
Not available

Contact details:
International Relations Office, Collegium Novum, room No. 8b ul. Goebia 24
PL-30072 Krakow, POLAND
E-mail: klimkiew@adm.uj.edu.pl
Phone: 011+48-12-422 10 33 ext. 1106
Fax: 011+48-12-422 17 57
Tel: +
Fax: +
Email:
Website:

Undergraduate Degrees & Courses

Degree / Course Title:
Bachelor Engineering degree in Textile Engineering

Duration:
4 years

Location:
Technical University of Lodź in Lodź

Overview:
The program contains basic subjects e.g. Mathematics, Physics, Computer Science, and technical ones required by the curriculum prescribed for the bachelor program. In later semesters programme is divided into specializations, which means that a student may choose an area of his/her interest. Beside compulsory courses for specific specialization, a student takes also elective ones. During the last semester a student works on his/her final project or degree thesis. Graduation takes place after complying with all the programme requirements established for a given type of studies by a Faculty Council, presenting the diploma thesis, and after passing the diploma examination. The final result of the studies is defined on the basis of the average grade of all the grades obtained in the course of studies, the grade for the diploma thesis and the grade for the diploma examination.

Pre-Requisites:
The requirements vary depending on if you are an exchange student or an international student who would like to complete an engineering programme in Poland at the Technical University of Łódź. Besides the international program, there is an exchange student program. The students can take studies at the Bachelor program for one or two semesters as a part of the programmes in their home countries. Applications should be made as soon as possible: no later than 31 July for the autumn semester and 15 January for the spring semester. At present it is possible to study in foreign languages at the International Faculty of Engineering.

Tuition Fees:
Not Available.In principle, the full-time studies are free of charge only for Polish citizens. The part-time, evening, extra-mural programmes are usually fee-paying. There is a very limited number of scholarships for international students interested in programmes taught in Polish who cannot afford paying tuition fees. Application is made by using: the ECTS Student Application Form, the ECTS Learning Agreement, and the Transcript of Records

Contact details:
Office of Foreign Studies, Biuro Kształcenia Zagranicznego MEN, ul. Smolna 40, 00-920 Warszawa
tel: (+48 22) 262823, 265324, 262387 fax: (+48 22) 262823

Undergraduate Degrees & Courses

Degree / Course Title:
BSc Eng in Metallurgy and Material Science.

Duration:
4 – 4.5 years

Location:
AGH University of Science and Technology, Faculty of Metallurgy and Materials Science, Krakow

Overview:
The educational goal is to enable students to gain their knowledge at the top level.For this purpose, the study program includes: intensified learning of foreign languages, offering the students a possibility of holding practical training abroad, individual tailoring of syllabuses, and continuous updating of the contents and methodology of the syllabuses (virtual education) as well as the care of teaching and social facilities.
The program comprises a group of basic subjects giving a general engineer's education, a group of general engineering subjects related to the future profession. The latter group deals with the science of metallic, ceramic and polymeric materials, the related materials science of making, processing and refining of steels and special alloys as well as of sintered materials and composites, environmental protection and modern methods of business management and organisation. The Faculty graduates are employed in the following branches of industry: metal production and processing, machine building, power engineering, chemical industry, in the production plants, research units, design centres or set up their own businesses.

Pre-Requisites:
Not available.

Tuition Fees:

Contact details:
Dean's Office for students' affairs, al. Mickiewicza 30, 30-059 Kraków, paw. B-5, parter, pokoje 4, 9
phone: (4812) 617-25-50; 617-29-19; 617-38-71
phone/fax: (4812) 633-36-73
e-mail: kruczek@uci.agh.edu.pl
Web site: http://www.uci.agh.edu.pl/index_e.html

Graduate Degrees & Courses

Degree / Course:
M.Sc. in Nanoscience and Nanotechnology

Duration:
4 years

Location:
Jožef Stefan International Postgraduate School (IPS), Ljubljana

Overview:
This new cross disciplinary program provides not only training across a wide range of sciences and technological disciplines, but also depth as emphasis is given to basic and applied research and students are expected to perform major original research projects as a part of their study program. Some emphasis will be also given to microeconomics, technology and innovation management, project management, and legal issues such as intelectual property and raising venture capital to enable the graduates to develop and commercialize products generated through nanotechnology research. Among the subjects are nanomaterials and nanochemistry, nanophysics (including physics of ultrathin layers, latteral nanostructures, physics of nanotubes, quantum dots and methods for analysis of nanostructures and nanomanipulation), structural and molecular biology, and nanobiotechnology.

Pre-Requisites:
Completed first degree (equivalent to 240 ECTS points)
Active knowledge of English
Grade above average
Candidates with practical experience will be particularly welcome.

Tuition Fees:
Tuition fee for 2004/2005 is **2 000 €.**

Contact details:
Contact Person: n.n., Tel. +386 1 4773100
Email: info@mps.si
Website: http://www.mps.si/ips/prog_nano.htm

Graduate Degrees & Courses

Degree / Course:
Ph.D. in Nanoscience and Nanotechnology

Duration:
4 years

Location:

Jožef Stefan International Postgraduate School (IPS), Ljubljana

Overview:
This new cross disciplinary program provides not only training across a wide range of sciences and technological disciplines, but also depth as emphasis is given to basic and applied research and students are expected to perform major original research projects as a part of their study program. Some emphasis will be also given to microeconomics, technology and innovation management, project management, and legal issues such as intelectual property and raising venture capital to enable the graduates to develop and commercialize products generated through nanotechnology research. Among the subjects are nanomaterials and nanochemistry, nanophysics (including physics of ultrathin layers, latteral nanostructures, physics of nanotubes, quantum dots and methods for analysis of nanostructures and nanomanipulation), structural and molecular biology, and nanobiotechnology.

Pre-Requisites:
Completed first degree (equivalent to 240 ECTS points)
Active knowledge of English
Grade above average
Candidates with practical experience will be particularly welcome.

Tuition Fees:
Tuition fee for 2004/2005 is **2 000 €.**

Contact details:
Contact Person: n.n., Tel. +386 1 4773100
Email: info@mps.si
Website: http://www.mps.si/ips/prog_nano.htm

Short Courses

Degree/course Title

New Nanostructured materials and Nanotechnology

Duration
Intensive, 30 hours

Location
Sevilla

Overview

This course address the development of new nanostructured materials and the processes based on nanotechnology. Nanostructured materials are characterised by at least one critical dimension of their building blocks being in the nanometer range. At the nanoscale new properties appear that allow the development of innovative devices or the improvement of the performance of existing devices.
The course aims to reveal which are the principles that rule those properties as well as to present the industrial developments that are likely to appear as result of the application of those principles. Given that the fields of nanotechnology are very broad and varied, a series of subjects have been selected including magnetic, optical and electrical properties of the nanomaterials, nanoparticles and their applications, heterostructured multilayers and nanocomposites. Additionally, the emerging applications of nanotechnology are illustrated by the latest developments in photovoltaic cells or in nanocomposites for aeronautics.

Organizers
International University of Andalucía

Pre-Requisites
Undergraduate students and postgraduates in natural sciences are welcome

Tuition fees

Contact details
Phone**:** +34 954 46 22 99
Fax: +34 954 46 22 88
Calle Américo Vespucio, 2
Isla de la Cartuja 41092 Sevilla
E-mail: Cartuja@unia.es
Web: http://www.unia.es

Short Courses

Degree/course Title : Nanotechnology

Overview

Nanotechnology is a new discipline of the scientific and technological world that has attracted much interest from physicists, chemist, biologist and engineers from different backgrounds. Its objective is to study those systems whose relevant dimensions are in the nanometer range.At this moment, we witness one period of extraordinary growth in the nanotechnology field, with applications in many different sectors (IT, Communication, Chemicals, Environment, Agricultural, Food, Automotive, Energy, Defense, Aerospatial, etc) that are only the first steps on what has been called the Nanoechnology Revolution.

Duration
Intensive-4days

Location
Aranjuez, Madrid

Organizers
Summer University Rey Juan Carlos

Pre-Requisites
Undergraduate students and postgraduates in natural sciences are welcome

Tuition fees

Contact details
Phone**:** 916655060
Fax: 916147120
E-mail: info@urjc.es
Web: http://urjc.es

Graduate Degrees & Courses

Degree /Course Title:
Nanoscale Science and Technology - Master Programmes

Duration:
1.5 years

Location:
Chalmers University of Technology

Overview:
The 1.5 year Nanoscale Science and Technology Master's Programme consists of a backbone of compulsory courses (23cu) and an elective part (17cu). Through their choice of elective courses and masters thesis work (20cu) the students build their unique scientific profile related to micro/nanotechnology. Examples of scientific profiles are Nanoscale Device Physics, Nano/Microelectronics, Biological Physics & Nanobiotechnology, and Quantum Physics & Engineering. In addition to the extensive theoretical part related to the physics and fabrication of nano- and microfabrication all students within the programme gets hands-on experience of cleanroom processing work in the MC2 process laboratory. Coupling between research and education The Nanoscale Science and Technology Programme strongly benefits from the research activities within micro- and nanotechnology at the department of MC2. Through the coupling between research and education the students also have access to the state-of-the-art from the experts in the field.

Pre-Requisites:

Tuition Fees:

Contact details:
Dept of Microtechnology and Nanoscience
Chalmers University of Technology
SE-412 96 Göteborg
Visiting address: Kemivägen 9
Phone +46 (0)31-772 1000

Undergraduate Degrees & Courses

Degree / Course Title:
M.Sc. Program - "Engineering Nanoscience"

Duration:
4 and half years

Location:
Lund University

Overview:
Are you interested in diving into a different world where classical laws not hold anymore and quantum mechanics governs? Would you like to take an atomistic view in order to understand how things work? Do you like working in a truly interdisciplinary environment? What about developing new biomedical sensors by applying nanotechnology or connecting electronics to living cells? In that case: study Engineering Nanoscience at Lund University. This is a four and a half year program culminating with a Master of Science degree. Note: The first three years of the program are conducted in Swedish. The final year and a half will be conducted similar to a Master program and given mainly in English.

Pre-Requisites

Tuition fees

Contact details:
Nanometer Structure Consortium
c/o Mona Hammar
P.O. Box 118
S-221 00 Lund
Sweden
Tel: +46-46-222 76 77, Secretary
E-mail: Mona.Hammar@ftf.lth.se

Undergraduate Degrees & Courses

Degree / Course Title:
Undergraduate education

Duration:
2 years

Location:
Lund University

Overview:
The partners in the Nanometer Structure Consortium are engaged in undergraduate teaching in physics, chemistry and electronics. We give specialized courses e.g. in "Physics and Technology of Nanometer Structures", preparing students for graduate studies in our research as well as for careers outside the university in fields like nanoelectronics. Undergraduate courses on Master-level (year 3-5) form a focused program on "Physics and Design of Advanced Materials and Devices" with four different areas of specialization:
- Materials Science and Technology
- Fundamental Solid State Physics
- Quantum- and Bio-devices
- Semiconductor Devices and Circuits.

Pre-Requisites:

Tuition Fees:

Contact details:
Nanometer Structure Consortium
c/o Mona Hammar
P.O. Box 118
S-221 00 Lund
Sweden
+46-46-222 76 77, Secretary
E-mail: Mona.Hammar@ftf.lth.se

Graduate Degrees & Courses

Degree /Course Title:
MSc Nanotechnology

Duration:
2 years, follow up study

Location:
École d'ingénieurs de Genève, 4, rue de la Prairie, CH-1202 Genève, Suisse

Overview:
The course MSc in Nanotechnology offers to become a specialist in functionalization of surfaces.

Possibility of attending the education during employment over 3 years.

http://eig.unige.ch/~ids/index_en.htm

Pre-Requisites:
Admission conditions: HES diploma or similar

Tuition Fees:
N/A.

Contact details:
No contact name Tel: +41 22 3380400
Email: info@eig.unige.ch
Website: http://eig.unige.ch/~ids/index_en.htm

Undergraduate Degrees & Courses

Degree /Course Title:
BSc./MSc Mechanical Engineering, focus micro & nano systems

Duration:
3 years (4.5 years resp. for MSc, not available yet)

Location:
ETH Zurich, Switzerland (Swiss Federal Institute of Technology)

Overview:
The lectures in this course comprise Micro- and Nanosystems, micromechanical sensors and actuators, measuring in nanoscale, micro- and nanoparticles, thermodynamics in nanotechnology, nanofluidics, nanoscale engineering.

http://www.mavt.ethz.ch/education/bachelor/fokus/microundnano.pdf

Pre-Requisites:
Applicants have to apply in written form, it will then be decided.

Tuition Fees:
Per semester sFr. 580

Plus different charges for examinations etc.

Contact details:
ETH Zürich, Zulassungsstelle, ETH Zentrum, CH-8092 Zürich
Rita Lindegger, Tel. +41 1 632 56 53
Email: rita.lindegger@rektorat.ethz.ch
Website: http://www.rektorat.ethz.ch/ueber_uns/organisation/rektoratskanzlei

Undergraduate Degrees & Courses

Degree /Course Title:
BSc./MSc Natural sciences with focus on nanotechnology

Duration:
3 years (4.5 years for MSc)

Location:
University Basel, Switzerland

Overview:
This a general course in natural sciences combining Physics, Biology and Chemistry with Nanotechnology. All courses are held in German.

Pre-Requisites:
Applicants have to have at least G.C.E. More information on
http://www.zuv.unibas.ch/studierende/pdf/Zulassung_Laenderliste.pdf

Tuition Fees:
Per semester sFr.600

Plus different charges for examinations etc.

Contact details:
University Basel, Studiensekretariat, Postfach Petersplatz 1, CH-4003 Basel
No contact person, Tel. +41 61 267 30 23
Email: admission@unibas.ch
Website: http://www.zuv.unibas.ch/studierende/sek_kontakt.html

Undergraduate Degrees & Courses

Degree /Course Title:
BSc/MSc in Micro and Nanotechnology

Duration:
3 years BSc / 1.5 years MSc

Location:
University of Neuchâtel Rue A.-L. Breguet 2, CH-2000 Neuchatel

Overview:
The Faculty of Science of the University of Neuchâtel is introducing a new MSc in Micro and Nanotechnology. The program encompasses a large number of topics ranging from microtechnology to nanoscience. It is organized by the Institute of Microtechnology.

Pre-Requisites:
Pre-requisites for the Bachelor: High school diploma. Lectures are given in French.
Pre-requisites for the Master: university graduates in science or engineering (Bsc, BEng). Lectures are given in English.

Tuition Fees:
SFr 1,500 / year

Contact details:
Joelle Banjac, Tel. +41 32 718 3200
Email: info.micronano@unine.ch
Website: http://www.unine.ch/imt/top_imt/imt-cact/gate_e.htm

Graduate Degrees & Courses

Degree /Course Title:
Master of Science in Materials Science and Engineering (with nanotechnology courses)

Duration:
2 years

Location:
Faculty of Engineering, KOÇ University 34450 Sariyer, Istanbul Turkey

Overview:
These programs are two-year programs with thesis and the medium of instruction is English. Research areas of interest are:

Nano-structured materials

Photonic & Laser materials

Polymeric materials & composites

Processing & device applications.

Pre-Requisites:
Applicants must have (for Ph.D. applicants), B.S./B.A. degrees preferably in engineering or in math, physics or statistics.

Tuition Fees:
Full tuition: $12,500/year

Different stipends

Contact details:
Ece Ucoluk
Faculty of Engineering, Eng 137, KOÇ University Rumeli Feneri Yolu
34450 Sariyer, Istanbul Turkey
Email: gradeng@ku.edu.tr
Web: http://eng.ku.edu.tr/grad/application.html

Graduate Degrees & Courses

Degree /Course Title:
MSc. in Micro- and Nanotechnology Enterprise Degree

Duration:
10 months

Location:
Dept. of Materials Science, Cambridge University, Cambridge CB2 3QZ, UK

Overview:
This international programme will bring together outstanding individuals from all over the world who intend to pursue a career at the interface of technology and business.
This programme has been developed by the Nanoscience Centre at the University of Cambridge in association with the Judge Institute of Management at the University of Cambridge. The programme is part of a suite funded by the Professional Practice Programme of the Cambridge-MIT Institute (CMI).
The pages on the left give you information about the course structure and contents and details of the application procedure.

Pre-Requisites:
All applications for admission to this Master's programme should initially be made through the Board of Graduate Studies from whom an application package, including application forms and Graduate Studies Prospectus, can be obtained via http://www.admin.cam.ac.uk/offices/gradstud/. Completed application forms should be sent to: The Board of Graduate Studies, University of Cambridge, 4 Mill Lane, Cambridge, CB2 1RZ. There is no formal deadline for applications but they should reach us as soon as possible to avoid delaying the process. The Graduate Studies Prospectus contains information about the various funding schemes for which you might be eligible.

Tuition Fees:
A number of bursaries are likely to be available for this course. For UK students these will pay full fees and maintenance for the programme. For European Union Students, the bursary would cover University and College fees. For further information please email nanoenterprise@msm.cam.ac.uk

Contact details:
Contact Person: Dr. Rosie Ward
Master's Programme in Micro- and Nanotechnology Enterprise
Department of Materials Science
Pembroke Street, Cambridge CB2 3QZ, UK
Email: nanoenterprise@msm.cam.ac.uk
Website: http://www.msm.cam.ac.uk/nanoenterprise/index.html

Graduate Degrees & Courses

Degree /Course Title:
MSc. In Nanomaterials

Duration: One-year of full time studies.

Location:
Chemistry Department, Imperial College, London, SW7 2AZ

Overview:
The MS degree is based around a year long interdisciplinary project of original research supported by taught courses in all major areas of nanomaterials science. The programme is available only as a full-time one-year course and successful completion leads to the MS degree.
Highlights of the degree include:

- Taught courses in all major areas of nanomaterials science
- The Nanotechnology Foresight Lectures
- State-of-the-art research project in nanomaterials
- Attendance at a fully funded nanomaterials conference (NanoTech 2005, USA)
- Extensive training in transferable skills

Pre-Requisites:
The MS in Nanomaterials is specifically designed to enable physicists, chemists, biologists, materials scientists and engineers to bridge these gaps and to make a successful transition to fully interdisciplinary working environments. The course does not assume any previous knowledge of nanomaterials, but candidates should have obtained or expect a 1st or a good 2.1 in a relevant undergraduate degree subject. A commitment to a career in nanotechnology is part of the selection process.

Tuition Fees:
There are up to 12 fully funded EPSRC studentships available for UK and EU students. The funding covers your tuition fees of £3,000, around £11,000 bursary for living expenses, and additional costs you may incur while on overseas visits. The cost of tuition for industry-sponsored, self-funded, and non EU students is ~£17,500. Each application will be considered on an individual basis.

Contact details:
Contact Person: Val Viney
Email: v.viney@imperial.ac.uk
Website: http://www.ch.ic.ac.uk/nanomaterials/
Download applications available on website.
Return applications to: Ms Doris Pappoe, Chemistry Department, Imperial College, London, SW7 2AZ

Graduate Degrees & Courses

Degree / Course Title:
MSc in Nanotechnology.

Duration:
4 years

Location:
University of Leeds, UK

Overview:
The course content is designed to equip graduates for employment in the new and emerging science-based industries, this course will also give you the skills needed to start up individual business enterprises. Throughout the course emphasis is placed on developing practical and experimental skills. Due to the breadth of science required in the field there is a need to master the basis of a wide range of science subjects (chemistry, physics, maths, materials science, electronic engineering and biochemistry) and also to develop an in-depth understanding of nanotechnology and its potential applications. The Masters course includes modules on semiconductor technologies, magnetic materials, nanostructured materials, nanoparticles, structured films, electronic and photonic devices. In addition, the Masters course includes an extended research project.

Pre-Requisites:
We require the equivalent score to three B grades at A level (including science) plus an A or AS level in physics or mathematics. Equivalent UK or overseas qualifications are also welcome.

Tuition Fees:
In 2003-2004 the annual fee for full time LEA assessed undergraduate students who satisfy the residential requirements for home fees will be £1125. The rates for privately financed undergraduate students may vary from department to department.
Further details of fees and charges are available from Mrs. D K Stocks, Accounts Receivable, University of Leeds, Leeds LS2 9JT
tel.; 0113 3436055, email: d.k.stocks@adm.leeds.ac.uk

Contact details:
You can obtain an application by contacting UCAS directly at:
UCAS, Rosehill, New Barn Lane, Cheltenham, Gloucestershire GL52 3LZ.
(If you are from outside the United Kingdom, you should send a payment of £5 sterling made payable to UCAS to cover the cost of postage and packing.)
Contact Person: None given.
Email: app.req@ucas.ac.uk
Tel: +44 (0) 870 1122200
Website: http://www.ucas.ac.uk or http://www.leeds.ac.uk/

Graduate Degrees & Courses

Degree / Course Title:
Msc in Microsystems and Nanotechnology

Duration:
1year

Location:
Cranfield University, Cranfield, Beds., MK43 0AL

Overview:

Detailed training in the materials and technologies used in the new fields of:

• Microsystems – the integration of micromechanical sensing and actuation capabilities withsemiconductor devices
• Nanotechnology – the manipulation of matter at the sub-100nm level to achieve specific technological aims, eg molecular manipulation and self-assembly.

Pre-Requisites:
1st or 2nd class UK honours degree, or equivalent, in a scientific or engineering discipline. HNC/HND with considerable industrial experience may be considered.

Tuition Fees:

Contact details:
Angela Stonton
T: +44 (0)1234 754086
EMail: msn_courses@cranfield.ac.uk
Web: http://www.cranfield.ac.uk/prospectus/course.cfm?id=77

Graduate Degrees & Courses

Degree / Course Title:
MSc in Advanced BioMedical Engineering

Duration:
1year

Location:
Dept. of Engineering, University of Warwick

Overview:
The School of Engineering enjoys an international reputation in research covering a wide range of disciplines including biomedical applications of Engineering. This course is suitable for students from an engineering or physical sciences background or in certain cases to graduates of the life sciences or medicine.

The MSc in Advanced BioMedical Engineering will enable students to develop in a new and expanding research area. Sensor development, instrumentation and physiological modelling are having major impacts on professions allied to medicine, and those in healthcare industries will need to have better understanding to benefit from them.

The course is made up of 6 core modules (including research methods) one optional module, and a project. The project is a piece of original research or innovative design giving excellent preparation for industrial or clinical R+D, or a PhD. It is either a team or an individual project undertaken over a fifteen week period.

Pre-Requisites:
1st or 2nd class UK honours degree, or equivalent, in a scientific or engineering discipline.

Tuition Fees:
Course fees apply, however some funding is available
http://www2.warwick.ac.uk/fac/sci/eng/pg/funding/

Contact details:
Dr Mike Chappell mjc@eng.warwick.ac.uk (0)24 765 24309
Charlotte Hetherington cdh@eng.warwick.ac.uk (0)24 765 23118
Postgraduate Admissions Secretary,
Ph: 0247652 2046
E Mail: pgadmissions@eng.warwick.ac.uk

Graduate Degrees & Courses

Degree / Course Title:
MSc in Optoelectronics and Quantum Information Processing

Duration:
1year

Location:
School of Informatics, University of Wales, Bangor

Overview:

Optoelectronics research is directed at advancing design and system applications of semiconductor optoelectronic and organic electro-optic devices including laser diodes and optical waveguides. Quantum Information Processing includes work on Quantum computing.

Pre-Requisites:
1st or 2nd class UK honours degree, or equivalent, in a scientific or engineering discipline.

Tuition Fees:

Contact details: Prof K Alan Shore,
Ph: 01248 382618
E Mail: alan@informatics.bangor.ac.uk

Graduate Degrees & Courses

Degree / Course Title:
PhD in Quantum Computing

Duration:
3 years

Location:
Centre for Quantum Computation, University of Oxford

Overview:
The discovery that quantum physics allows fundamentally new modes of information processing has required the existing theories of computation, information and cryptography to be superseded by their quantum generalisations. The Centre for Quantum Computation conducts theoretical and experimental research into all aspects of quantum information processing, and into the implications of the quantum theory of computation for physics itself.

Pre-Requisites:
First or second class Honours degree or equivalent in Physics, Chemistry, Materials Science, Electronic Engineering or a related discipline.

Tuition Fees:

Contact details:

- Jonathan A. Jones, OCMS, New Chemistry Laboratory, South Parks Road, Oxford OX1 3QT, UK. E-mail: jones@bioch.ox.ac.uk
- **Dik Bouwmeester,** Email: dik.bouwmeester@qubit.org,Office (room 311): +44 (0) 1865 282205

Graduate Degrees & Courses

Degree / Course Title:
PhD in various disciplines.

Duration:
3 years

Location:
London Centre for Nanotechnology, University College London

Overview:
Some of the Centre's scientific focus areas:

Fabrication Research: The Centre will house various leading fabrication tools and associated research programmes
Theory and Modeling: The length scale of systems that can be accurately simulated is the same as the scale on which symptoms can be imaged and fabricated .
Experiments on Chips and Tips: Complete scientific experiments as a process embedded on a chip and operating to atomic precision.
Novel electronics: The principal emphasis of the Centre's device work will be on the use of novel materials to engineer Nanoscale electronic, optoelectronic and electro-mechanical devices for applications in electronics and sensing
Nanobiology: The development of chemical and biological sensors, and the ability to examine biological processes at a scale below that of visible light, will yield new real-time diagnosis and therapeutic regimes

Tuition Fees:

Contact details:

- Prof G Aeppli, Department of Physics & Astronomy, University College London, E Mail: lcn-director@ucl.ac.uk
- Abid Khan, UCL Business, Email: abid.khan@ucl.ac.uk

Graduate Degrees & Courses

Degree / Course Title:
PhD in Nanophysics and Nanotechnology

Duration:
3 years

Location:
Royal Holloway College, University of London, Egham TW20 0EX

Overview:
The Nanophysics and Nanotechnology group, focus on the fabrication and measurement of nanostructures; this experience is matched by processing (e-beam lithography, clean rooms) and low temperature measurement facilities.
The group have developed techniques to *reliably* fabricate small feature sizes in increasingly complex materials (principally metals, but also semiconductors) in order to explore quantum effects at submicron length scales. These quantum phenomena are of interest in their own right, but could also have application in the electronic and optical devices of the future, which may exploit the wavefunction and spin of the electron.

Pre-Requisites:
First or second class Honours degree or equivalent in Physics, Chemistry, Materials Science, Electronic Engineering or a related discipline.

Tuition Fees:

Contact details:
Dr Vladimir Antonov, Department of Physics
Email: V.Antonov@rhul.ac.uk, physics@rhul.ac.uk
Web: http://www.rhul.ac.uk/Physics/Nanophysics/index.htm

Graduate Degrees & Courses

Degree /Course Title:
MSc. in Micro- and Nanotechnology Enterprise Degree

Duration:
10 months

Location:
Dept. of Materials Science, Cambridge University, Cambridge CB2 3QZ, UK

Overview:
This international programme will bring together outstanding individuals from all over the world who intend to pursue a career at the interface of technology and business.
This programme has been developed by the Nanoscience Centre at the University of Cambridge in association with the Judge Institute of Management at the University of Cambridge. The programme is part of a suite funded by the Professional Practice Programme of the Cambridge-MIT Institute (CMI).

Pre-Requisites:
All applications for admission to this Master's programme should initially be made through the Board of Graduate Studies from whom an application package, including application forms and Graduate Studies Prospectus, can be obtained via http://www.admin.cam.ac.uk/offices/gradstud/. Completed application forms should be sent to: The Board of Graduate Studies, University of Cambridge, 4 Mill Lane, Cambridge, CB2 1RZ. There is no formal deadline for applications but they should be sent as soon as possible to avoid delaying the process. The Graduate Studies Prospectus contains information about the various funding schemes.

Tuition Fees:
A number of bursaries are likely to be available for this course. For UK students these will pay full fees and maintenance for the programme. For European Union Students, the bursary would cover University and College fees. For further information please email nanoenterprise@msm.cam.ac.uk

Contact details:
Contact Person: Dr. Rosie Ward
Master's Programme in Micro- and Nanotechnology Enterprise
Department of Materials Science
Pembroke Street, Cambridge CB2 3QZ, UK
Email: nanoenterprise@msm.cam.ac.uk
Website: http://www.msm.cam.ac.uk/nanoenterprise/index.html

Graduate Degrees & Courses

Degree /Course Title:
MSc. Electronics and Electrical Engineering

Duration:
12 months

Location:
Department of Electronics and Electrical Engineering, University of Glasgow

Overview:
The courses they cover a broad spectrum of specialist topics having immediate application to industrial problems, from electrical supply through systems control to high speed electronics. The modules normally on offer (depending on demand and staff availability) are in the following areas:

Micro-and Nano-Technology, Computer Communications, Digital Signa Processing Systems, Electric Energy Systems, Modelling and Control of Dynamic Systems, Optical Data Transmission, Sensing and Signal Processing.

Pre-Requisites:
Normally an honours degree in an appropriate subject is required, but this may not be necessary if a relevant industrial experience can be shown or can satisfy the course management committee of the student's ability to study the modules successfully.

Tuition Fees:
Fees for full-time study:
Home and EU Undergraduates (self-financing): £1150
Home and EU Postgraduates (but see exceptions listed): £3010
http://www.gla.ac.uk/registry/students/matricandtuition/tuitionfees04_05.html

Contact details:
Dr M Hersh, Department of Electronics & Electrical Engineering, University of Glasgow
Rankine Building, Glasgow G12 8QQ.
Tel: +44 141 330 4906, Fax: +44 141 330 4907
Email: m.hersh@elec.gla.ac.uk
Web: http://www.elec.gla.ac.uk/msc

Graduate Degrees & Courses

Degree /Course Title:
MSc / Diploma in Materials Engineering

Duration:
12 months

Location:
Department of Mechanical and Chemical Engineering, Heriot-Watt University Edinburgh

Overview:
This new Postgraduate course provides the opportunity for graduate scientists and engineers to gain a broad understanding of fundamental and practical issues relating to materials science and engineering. Key technological areas covered include

- materials in micro- and nano-technology

- performance of materials for offshore service

- fibre characterisation and processing

Pre-Requisites:
Applicants must possess a BSc or BEng in any of the physical sciences or engineering disciplines.

Tuition Fees:
Fees for full-time study:
Home and EU Undergraduates (self-financing): £1150
Home and EU Postgraduates (but see exceptions listed): £3010
http://www.gla.ac.uk/registry/students/matricandtuition/tuitionfees04_05.html

Contact details:
Professor R L Reuben
Tel : +44 131 451 3615
Fax : +44 131 451 3129/ 3077
Email: Email: R.L.Reuben@hw.ac.uk
Web: http://www.hw.ac.uk/mecWWW/courses/materials.htm

Graduate Degrees & Courses

Degree /Course Title:
MSc Chemistry with Nanotechnology

Duration:
3 semesters

Location:
Department of Chemistry, University of Hull, Cottingham Road, Hull HU6 7RX, UK

Overview:
The first semester teaches to use key research tools such as on-line information retrieval to learn about the background and the planning behind the chosen research project. In addition, specialist knowledge of nanotechnology is developed through modules in 'Topics in Nanotechnology' and 'Advanced Topics in Nanotechnology'.

Semester three focuses on an advanced nanotechnology research project culminating in a Masters level thesis and an oral presentation of research successes.

Pre-Requisites:
A first or second class BSc honours degree, or equivalent, from a recognized academic institution is required for direct entry onto this one year programme.

An IELTS score of at least 6.0, a TOEFL score of at least 550 pr an equivalent English language qualification is required for non-English speaking students.

Tuition Fees:
Fees are payable at the standard UK rate of postgraduate science (£9250).
A number of bursaries of £1500 are available for overseas students.

Contact details:
Dr Steve Kelly,
Tel: +44 1482 465219
Fax: +44 1482 466410
Email: S.M.Kelly@hull.ac.uk
Web : http://www.hull.ac.uk/chemistry/taughtMSc.php?course=nanochem

Graduate Degrees & Courses

Degree /Course Title:
Biomedical Nanotechnology MSc

Duration:
12months

Location:
University of Newcastle upon Tyne, NE1 7RU

Overview:
This programme teaches the understanding, knowledge and skills base to be able to pursue a career in the pharmaceutical, biotechnology, biosciences and microsystems technologies industries. Gaining of core knowledge across the three disciplines of medicine, engineering and science, and gain an advanced knowledge and understanding of micro and nanotechnology, and its existing and potential biomedical applications.

Pre-Requisites:
At least a lower-second-class Honours degree, or overseas equivalent, in biotechnology, chemistry, electrical engineering, mechanical engineering, microbiology, physics, or a related discipline. Applicants whose first language is not English are required to hold IELTS 6.5, TOEFL 575 (paper-based) or 233 (computer-based), or equivalent.

Tuition Fees:
Fees per academic year 2004-05
UK/EU: full time £3,200
Overseas: full time £10,340
http://www.ncl.ac.uk/postgraduate/funding/

Contact details:
University of Newcastle upon Tyne, NE1 7RU
Institute for Nanoscale Science and Technology, UK
Telephone: +44 191 222 3500
E-mail: enquiries@inex.org.uk
Website: www.ncl.ac.uk/insat

Graduate Degrees & Courses

Degree /Course Title:
MSc in Advanced Materials

Duration:
1 year

Location:
Queen Mary, University of London

Overview:
This MSc allows students who have completed a degree in Materials or a related discipline to develop their knowledge to a deeper level and select an area of specialism via the research project:

Advanced Composites, Biomaterials and Biomechanics, Biosensors and Devices, Advanced Dental Materials, Materials Research Techniques, Total Quality Management, Advanced Materials, Finite element modeling, Multi-scale modeling.

Pre-Requisites:
Materials or related Science/Engineering degree at undergraduate level.

Tuition Fees:
Fees for 2004 entry are:

International Students - Full Time: £10,500; Part Time: £5,250

Home & EU Students - Full Time: £3,010; Part Time: £1,505

Contact details:
Professor Paul Hogg
Tel: +44 207 882 5161
Email: p.j.hogg@qmul.ac.uk
Website: http://www.qmw.ac.uk/postgrad/materials.shtml

Graduate Degrees & Courses

Degree /Course Title:
MSc Nanotechnology and Microsystems

Duration:
2 years part-time, block study/1 year full-time.

Location:
University of Teesside Middlesbrough Tees Valley TS1 3BA UK

Overview:
Areas of study include microfabrication, nanomaterials, microsystems, miniaturised diagnostics systems and biosystems. All of the modules on the course are tailored to suit both those from a science and those from an engineering background.

Pre-Requisites:
Applicants should normally have an honours degree, at least 2:2 in an appropriate related discipline, or corporate membership of a chartered institution, or an equivalent relevant qualification.

Tuition Fees:
Home/EU students - £3,400

Contact details:
General Enquiries and Prospectuses +44 1642 218121
Email : hotline@tees.ac.uk
Web : http://www.tees.ac.uk/sections/about/contacts_general.cfm

Graduate Degrees & Courses

Degree / Course Title:
MSc Nanoelectronics and Nanomechanics

Duration:
10 months

Location:
School of Electronic and Electrical Engineering, University of Leeds LS2 9JT

Overview:
Provisionally approved for delivery from October 2004. Full-time study entails a 10 month programme, split between Leeds and Sheffield campuses. In order to complete the full MSc programme, students must complete 8 lecture modules each valued 15M (Masters credits), and major project valued at 60M, giving a total of 180M credits

More details: http://www.ee.leeds.ac.uk/nanomsc/Nanoelec_modules.php

Pre-Requisites:
Candidates must have, or expect to gain before entry, at least a second class honours degree, or equivalent, in Physics, Chemistry, Materials Science, Electronic Engineering, or a related discipline.

Tuition Fees:
Ca. £3000
http://www.leeds.ac.uk/students/postgraduate_finance.htm

Contact details:
Ms Carol Walder
Tel:+44 113 343 2087
Fax:+44 113 343 2070
Email: c.a.walder@leeds.ac.uk
Web : http://www.ee.leeds.ac.uk/nanomsc/full_time.php

Graduate Degrees & Courses

Degree / Course Title:
MSc Nanoscale Science and Technology.

Duration:
10 months

Location:
School of Electronic and Electrical Engineering, University of Leeds LS2 9JT

Overview:
Full-time MSc study entails a 10 month programme, split between Leeds and Sheffield campuses. In order to complete the full MSc programme, students must complete 8 lecture modules each valued 15M (Masters credits), and a major project valued at 60M, giving a total of 180M credits.

More details: http://www.ee.leeds.ac.uk/nanomsc/modules.php

Pre-Requisites:
Candidates must have, or expect to gain before entry, at least a second class honours degree, or equivalent, in Physics, Chemistry, Materials Science, Electronic Engineering, or a related discipline.

Tuition Fees:
Ca. £3000
http://www.leeds.ac.uk/students/postgraduate_finance.htm

Contact details:
Ms Carol Walder
Tel:+44 113 343 2087
Fax:+44 113 343 2070
Email: c.a.walder@leeds.ac.uk
Web : http://www.ee.leeds.ac.uk/nanomsc/full_time.php

Graduate Degrees & Courses

Degree / Course Title:
MSc Nanoscale Science and Technology.

Duration:
10 months

Location:
The University of Sheffield, Sheffield S3 7RH

Overview:
There are eight modules, taken by all students:

Generic methodologies for nanotechnology,

Semiconductor nanotechnology,

Nanoscale magnetic materials and devices,

Processing and properties of inorganic nanomaterials

Self-assembling nanostructured molecular materials and devices,

Pre-Requisites:
First or second class Honours degree or equivalent in Physics, Chemistry, Materials Science, Electronic Engineering or a related discipline.

Tuition Fees:
Ca. £3000
http://www.shef.ac.uk/ssid/finance/fees2003.html

Contact details:
Dr T M Searle, Department of Physics and Astronomy,
Tel: +44 114 222 4289
Email: t.searle@sheffield.ac.uk
Web: http://www.shef.ac.uk/physics/research/brochure/masters.html

Graduate Degrees & Courses

Degree / Course Title:
Msc in Nanotechnology and Low Temperature Physics.

Duration:
1 year

Location:
Royal Holloway College, University of London, Egham TW20 7EX

Overview:
Courses include:
Introduction to Nanophysics and Quantum fluids
Nanophysics
Nanotechnology
Nuclear Magnetic Resonance
Low Temperature Techniques
Low-Dimensional Systems
Research Review
Scientific Skills
.

Pre-Requisites:
First or second class Honours degree or equivalent in Physics, Chemistry, Materials Science, Electronic Engineering or a related discipline.

Tuition Fees:
Ca. £3000

Contact details:
Dr Vladimir Antonov, Department of Physics,
Email: V.Antonov@rhul.ac.uk, physics@rhul.ac.uk
Web: http://www.ph.rhul.ac.uk/postgrad/MSc_Nano.html

Undergraduate Degrees & Courses

Degree / Course Title:
BSc Chemistry with Nanotechnology (with industrial experience)

Duration:
3 years

Location:
Department of Chemistry, University of Hull, Cottingham Road, Hull HU6 7RX, UK

Overview:
This degree provides excellent training in fundamental scientific principles, in practical, organizational and computing skills. It involves the design, development, characterization and application of smart and clean materials.

Pre-Requisites:

The entry requirements range between C (Chemistry) CC (240 points) to B (Chemistry) BB at A-level or equivalent, depending on the range of subjects offered, and the UCAS personal statements. Offers may vary in individual cases and circumstances. At least a grade C. A-level in one of Mathematics, Physics or Biology is preferred, but not essential. Points for AS subjects, some level 3 key skills, and A-level General Studies will be taken into account in the points total required. A S Mathematics is particularly important.

Tuition Fees:

Contact details:
Dr Steve Kelly,
Tel: +44 (0)1482 465219
Fax: +44 (0)1482 466410
Email: S.M.Kelly@hull.ac.uk

Undergraduate Degrees & Courses

Degree / Course Title:
BSc Physics with Nanotechnology

Duration:
3 years

Location:
University of Wales, Swansea, UK

Overview:
Course includes fundamental particles like quarks and leptons, anti-matter, the quantum world, superconductivity, semiconductors, lasers and nanotechnology.

Pre-Requisites:
Three A levels, including Physics and Mathematics. Typical offer: 260-280 tariff points. In certain circumstances, two A levels of sufficiently high grade may be accepted, or one or two AS levels may be substituted for the third subject. For Single Honours MPhys, and Joint Honours Physics and Mathematics, the requirements are typically 300-320 tariff points. Careful consideration is given to applicants with non-A level qualifications. All applicants are invited for an interview and offers of admission are made on an individual basis. Applicants with other qualifications and mature students receive individual consideration..

Tuition Fees:

Contact details:
Dr Chris Allton, Admissions Tutor
Tel: +44 (0)1792 602065
Email: physics@swansea.ac.uk
Department website: http://www.swansea.ac.uk/physics

Undergraduate Degrees & Courses

Degree / Course Title:
BSc Chemistry with Nanotechnology (with industrial experience)

Duration:
3 years

Location:
Department of Chemistry, University of Hull, Cottingham Road, Hull HU6 7RX, UK

Overview:
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Pre-Requisites:

The entry requirements range between C (Chemistry) CC (240 points) to B (Chemistry) BB at A-level or equivalent, depending on the range of subjects offered, and the UCAS personal statements. Offers may vary in individual cases and circumstances. At least a grade C. A-level in one of Mathematics, Physics or Biology is preferred, but not essential. Points for AS subjects, some level 3 key skills, and A-level General Studies will be taken into account in the points total required. A S Mathematics is particularly important.

Tuition Fees:

Contact details:
Dr Steve Kelly,
Tel: +44 (0)1482 465219
Fax: +44 (0)1482 466410
Email: S.M.Kelly@hull.ac.uk

For Single Honours MPhys, and Joint Honours Physics and Mathematics, the requirements are typically 300-320 tariff points.

Undergraduate Degrees & Courses

Degree / Course Title: (2 options)
1. A three-year course leading to an honors degree (BSc) in Nanotechnology.
2. As above with an additional fourth year leading to an MSc in Nanotechnology

Duration:
3 years

Location:
University of Leeds, UK

Overview:
The course content is designed to equip graduates for employment in the new and emerging science-based industries, this course will also give you the skills needed to start up individual business enterprises. Throughout the course emphasis is placed on developing practical and experimental skills. Due to the breadth of science required in the field there is a need to master the basis of a wide range of science subjects (chemistry, physics, maths, materials science, electronic engineering and biochemistry) and also to develop an in-depth understanding of nanotechnology and its potential applications.
The Masters course includes modules on semiconductor technologies, magnetic materials, nanostructured materials, nanoparticles, structured films, electronic and photonic devices. In addition, the Masters course includes an extended research project.

Pre-Requisites:
We require the equivalent score to three B grades at A level (including science) plus an A or AS level in physics or mathematics. Equivalent UK or overseas qualifications are also welcome.

Tuition Fees:
In 2003-2004 the annual fee for full time LEA assessed undergraduate students who satisfy the residential requirements for home fees will be £1125. The rates for privately financed undergraduate students may vary from department to department.
Further details of fees and charges are available from Mrs. D K Stocks, Accounts Receivable, University of Leeds, Leeds LS2 9JT
tel.; 0113 3436055, email: d.k.stocks@adm.leeds.ac.uk

Contact details:
You can obtain an application by contacting UCAS directly at:
UCAS, Rosehill, New Barn Lane, Cheltenham, Gloucestershire GL52 3LZ.
(If you are from outside the United Kingdom, you should send a payment of £5 sterling made payable to UCAS to cover the cost of postage and packing.)
Email: app.req@ucas.ac.uk **Tel:** +44 (0) 870 1122200
Website: http://www.ucas.ac.uk or http://www.leeds.ac.uk/

Undergraduate Degrees & Courses

Degree / Course Title:
Mechanical Engineering BEng/MEng

Duration:
3-4 years

Location:
University of Birmingham, Edgbaston Birmingham B15 2TT

Overview:
In the first year the work focuses on engineering theory with case studies and projects to design devices such as an internal combustion engine or a small vehicle.
The remaining years are organised into six integrated themes of study designed to develop learning progressively. One module from each theme in each remaining semester is studied. The themes are:
- Mechanical Power – engines, hydraulics and power plant
- Electro-Mechanics – strength of components, mechanism movement and control, micro-mechanical systems and nano-technology
http://www.undergraduate.bham.ac.uk/2004/programmes/mech.htm

Pre-Requisites:
For a detail list please see following weblink:
http://www.undergraduate.bham.ac.uk/2004/entrance.htm

Tuition Fees:
For undergraduate students ordinarily resident in the UK or European Union nationals living in the EU are as follows (at 2003-04 prices):
- tuition fee of up to £1,125, subject to an assessment of family income by the local education authority (LEA).

Contact details:
Admissions Tutor: Dr Fred Smith, Admissions Co-ordinator: Mrs Sharon Green
Tel: +44 121 414 4230 Fax: +44 121 414 3688
Web : http://www.eng.bham.ac.uk/mechanical/ug/contact.htm#contact
Email: Mfg.Mech.Admissions@bham.ac.uk

Undergraduate Degrees & Courses

Degree / Course Title:
BSc (Hons) Nanotechnology

Duration:
4 years

Location:
University of Abertay Dundee, UK

Overview:
This course is proposed to commence in September 2005, and is subject to approval.

The nanotechnology course concentrates on the underpinning sciences of chemistry, physics and biology- the areas in which the graduates must be competent to be able to contribute to the multi-disciplinary teams being formed to work at the leading edge of developments.

Pre-Requisites:
Applications from mature students are assessed on the same criteria used for school leavers e.g. SQA Highers or GCE A Levels, where relevant school leaving qualifications exist. For those without standard entry qualifications, consideration is given to experience gained as well as professional qualifications and other forms of learning that could provide evidence of ability to benefit from a particular course.

Tuition Fees:
Scottish and EU undergraduate students benefit from the Scottish government's decision that the Students Awards Agency for Scotland will pay the undergraduate tuition fees (£1,150 for 2004/5) provided that they are not repeating a period of study.
The tuition fee of £1,150 for academic year 2004/5 is payable by students from England, Wales and Northern Ireland. Applications can however be made to the Local Education Authority or Library Board to have the fee paid in whole or in part. More details can be found here: http://www.abertay.ac.uk/Applicants/Fees/NOverseas.cfm

Contact details:
No contact person.
Tel.+44 1382 308046/308991
Email: sro@abertay.ac.uk
Web : http://www.abertay.ac.uk/Courses/CDetails.cfm?RID=2&CID=323

Undergraduate Degrees & Courses

Degree / Course Title:
MChem Chemistry with Nanotechnology

Duration:
4 years

Location:
University of Liverpool, UK

Overview:
The course follows the same rich and varied core of the MChem, introduction to Physics and Material Science, which is necessary to understand nanotechnology. The last year focuses on nanotechnology comprising courses taught by staff from other departments such as Materials Science, Physics and the Biological Sciences.

Pre-Requisites:
A Levels; Scottish Highers; Irish Leaving Certificate ; BTEC National Diploma/Certificate; Access

Tuition Fees:
£1150 for 2004/2005 (http://www.liv.ac.uk/study/undergraduate/fees_and_financing.htm).

Contact details:
Ms Samantha Dunn
Tel: +44 151 794 3526
e-mail: ucas@ch.liv.ac.uk
Web: http://www.liv.ac.uk/study/undergraduate/courses/F1F3.htm

Undergraduate Degrees & Courses

Degree / Course Title: (2 options)
1. Physics with Nanoscience & Technology BSc,
2. Additional fourth year leading to MSc in Physics with Nanoscience

Duration:
3 or 4 years

Location:
University of Leicester, UK

Overview:
Research in the Department includes the study of nano-materials, self-assembly, quantum dots and low-dimensional materials.

Pre-Requisites:
A Levels, GCSE. More info on
http://www.le.ac.uk/admissions/ugprospectus05/courses/physics_astron.pdf

Tuition Fees:
For Home/EU undergraduate students entering the year 2004 the fees are £1,150 per annum.

Contact details:
Lucy Byrne
Tel: +44 116 252 5281
Email: admissions@le.ac.uk
Web: http://www.le.ac.uk/admissions/aocont.html

Undergraduate Degrees & Courses

Degree /Course Title:
BSc/MSc. Physics/Technological Physics (with Nanophysics)

Duration:
4-5 years

Location:
University of Paisley, Paisley, Scotland, UK, PA1 2BE

Overview:
The Physics course is designed to help developing professional skills and expertise necessary to pursue a career in any area of Physics, from academic research to industrial applications. In addition to core modules of Physics and Mathematics, one can choose to study other subjects. Throughout the course, laboratory, computing, workshop and project programmes will enhance the familiarity with the principles and techniques of experimental physics, which underpin lectures covering the theoretical aspects.

Year 4 offers Nanophysics as a course.

Pre-Requisites:
Different requirements,

Applicants with Advanced Highers in Physics and Mathematics may be considered for direct entry into Year 2.

A Level DD, or BBC @ AS Level, including Mathematics and Physics. Applicants with three relevant A Level passes may be considered for Year 2 entry. FE: Year 3HND in Physics, Applied Sciences or a related subject. Admission at levels below Year 3 is to BSc Physics. Admission to MSci is then dependent on performance in Year 3 of the Physics course. Contact Admissions Officer http://www.paisley.ac.uk/courses/ug-courseinfo.asp?courseid=516

Tuition Fees:
Students from UK and EU Member States
Band 2 (lab-based courses): £3010 (full-time) *, £1505 (part-time) *

Contact details:
University Direct
Tel: 0800 027 1000
Email: uni-direct@paisley.ac.uk
Web: http://www.paisley.ac.uk/postgraduate/applications.asp

Undergraduate Degrees & Courses

Degree / Course Title:
BSc. in Nanoscience & Nanotechnology

Duration:
3 years

Location:
University of Sussex, Falmer, Brighton BN1 9RH, UK

Overview:
The degree is a partnership between the Chemistry, Physics and Biochemistry subject groups at Sussex, featuring research active staff in the Centre for Nanoscience and Nanotechnology. It provides graduates with an understanding of, and respect for, each of these disciplines (and their practitioners) and equips them with the tools to confront the atomic limit to current technologies that they will inevitably have to face during their careers.

Pre-Requisites:
Broad background of learning, in whichever way it was acquired.

http://www.sussex.ac.uk/Units/publications/ugrad2005/1-6-2.html

Tuition Fees:
£1,150 per year, UK/EU citizens.

Overseas Students up to £11,000

Contact details:
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Email : m.i.heggie@sussex.ac.uk
Tel : +44 1273 678402

Short Courses

Degree /Course Title:
Nanotechnology I & II.. A Master's Level Continuing Professional Development Course

Duration:
8-12 November 2004, 28 February - 3 March, 2005 for part two.

Location:
Cranfield University, Cranfield, Beds., MK43 0AL

Overview:
Aim: To generate an understanding of the potential and limitations of scanning probe microscopy and a fundamental understanding of nanotechnology.

Objectives:

On completion of the course, the delegate should have:

A knowledge of how a scanning probe microscope works, its potential and limitations. An understanding of the range of SPM techniques currently available and their use in imaging and surface characterisation

A knowledge of the relationship between SPM techniques and nanotechnology

Pre-Requisites:
N/A

Tuition Fees:
Each £995 [incudes tuition, course notes, lunches and beverages]

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http://www.cranfield.ac.uk/sims/materials/cpd/msn/scanning.htm