...the new deal for the nano world...

CHEMICAL NANOENGINEERING

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ERASMUS MUNDUS MASTER DEGREE

Aix*Marseille université
Socialement engagée

TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA

Wrocław University of Science and Technology

www.master-cne.eu

With the support of the Erasmus+ Programme of the European Union

European Commission

Partners

Aix-Marseille Université
Prof. Philippe Knauth
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University of Rome "Tor Vergata"
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Wroclaw University of Science and Technology
Prof. Piotr Rutkowski
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- 2 Year Master Programme within 3 Partner Universities
- International Master Thesis at Partner or Associated Partner Institutions (Universities or Industrial Companies)
- Intensive Training: Experimental Methods and Numerical Modeling
- Summer School Offered to All Students
- Complimentary Cultural and Historical Programme

Associated Industrial Partners:

- **IHP - Innovations for High Performance Microelectronics, Germany**
- **Nanores, Poland**
- **Prolabin, Italy**
- **Dracula Technologies, France**

Associated Partners:

- **The list of Associated Partners is open**

Chair of Inorganic Chemistry I,
Technical University Dresden,
Germany

Laboratory Charles Coulomb,
University of Montpellier,
France

Faculty of Sciences 2,
Lebanese University, EC2M Laboratory, Fanar,
Lebanon

Laboratory of Applied NanoSciences (COMATEC-LANS) HEIG-VD,
University of Applied Sciences Western Switzerland,
Switzerland

Research Department,
Turin Polytechnic University in Tashkent (TTPU),
Uzbekistan

Chemical Engineering Department,
University of Queensland,
Australia

University Carlos III
Madrid
Spain

Physics Department,
University of Missouri, Columbia,
USA

Department of Chemistry,
Northeastern University, Boston,
USA

T.I.M.E Association,
https://timeassociation.org/time-members/,
Technical Universities from **Europe (17 countries)**,

Faculty of Engineering,
Federal University of CEARA (UFC), Fortaleza,
Brazil

What is CNE?

The CNE programme is a joint master programme in Chemical Nano Engineering offered by three European universities:

- **Aix-Marseille Université** (France)
- **University of Rome "Tor Vergata"** (Italy)
- **Wroclaw University of Science and Technology** (Poland)

Chemistry for Nano-engineering is an innovative field of science and technology which is developing very fast. The 2016 Nobel Prize in Chemistry shows the importance of the research in this area. It has shown that engineering of the Nanomachines is not any more a science-fiction; it is just the beginning of a new engineering specialty where the Nano-systems can be numerically designed and chemically synthesized. These new technologies will create a large demand for specialists in this field.
Students attend courses at three universities in the Consortium. They spend the first semester at the Aix-Marseille University in France, the second semester at the Wroclaw University of Science and Technology and the third semester at the University of Rome "Tor Vergata". In the 4th semester the master's thesis is prepared at one of the partner universities, including many Associated Partners.

The aim of the master programme is to provide:

- A well-integrated language and intercultural experience
- Education in close relation to the research activities of the consortium members
- Education in Nano-science, technology and engineering, to enhance the innovation potential of the students in their future activities
- Preparation of the students for life-long learning in new places/different cultures and new education/work systems

At the end of the course, the student obtains the Master's Degree awarded by the three universities where he/she has studied.

Programme

• **Chemical Nano-Engineering Curriculum (120 ECTS)**

	Marseille Sem. 1 (Nano-chemistry)	Wrocław Sem. 2 (Nano-engineering)	Rome Sem. 3 (Nano-application)	Sem. 4
1	Nano-electrochemistry (3 ECTS)			
	Solid state chemistry and nano-materials (7 ECTS)	Structure and Crystallography of Solids (3 ECTS)	Characterization of nano-engineering systems (6 ECTS)	
	Organic chemistry of nano-materials (3 ECTS)		NMR of nanosystems (2 ECTS) (option A: Chemistry)	
2		Synthesis and Fabrication of Nano-engineering systems (3 ECTS)	Nanoscale synthesis methods (5 ECTS)	
		Fabrication of smart Polymers (3 ECTS)	Macromolecular and supramolecular chemistry (5ECTS)	
3		Engineering of Nano-machines (2 ECTS)	Structural and functional properties of biopolymers (3 ETCS) (option A: Chemistry)	
		Bio-photonics (2 ECTS) Biomaterials-biomedical devices (3 ECTS)	Nanoscale Energy technology, nano-sensors and micro-fluidics (5 ETCS)	Master Thesis
4	Basic Quantum Chemistry Modelling (3 ECTS)		Nano structural transformations and kinetics (2 ECTS) (option B: modeling)	
	Computational Modelling of Nano-Systems (7 ECTS)	Nanostructures in industrial and numerical applications (5 ECTS)	Probability and statistical methods for modelling engineers (3 ETCS) (option B: modeling)	
	Thermodynamics of Materials – Interactions and Surface Forces (3 ECTS)			
5	Nano-engineering seminar + projects (2 ECTS)	Nano-engineering seminar + projects (2 ECTS)	Nano-engineering seminar + projects (2 ECTS)	
6	Language English (2 ECTS)	Language English (2 ECTS)	Language English (2 ECTS)	
7		Economics and Management (5 ECTS)		

Erasmus Mundus Scholarships:

- **Up to 34 000 €** (EU/EEA students, including participation fee: 4 000 €/year)
- **Up to 47 000 €** (non-EU/EEA students, including participation fee: 8 000 €/year)

Why Chemical Nano-engineering?

Industry demand

There will be big demand for nano-engineers in any new technology.

International experience

The programme provides its students with the profound experience of working and studying in multiple countries in an international environment.

Innovation and R&D

The programme links studies with product and service development skills. The ability to innovate and develop new products and services is what has the most potential for creating new business.

Competitive Erasmus Mundus Scholarships

The generous Erasmus Mundus scholarships offered for the best students allow you to concentrate on your studies without financial difficulties.

Alumni networking

The alumni network helps to find the most interesting jobs in the world.

Application on-line:

Applications are open between November and February

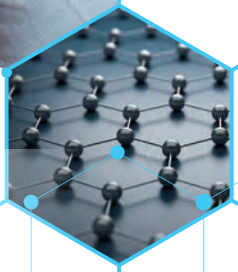
https://application.master-cne.eu/

List of Documents for Application

1. Application form (see website) containing your complete and up-dated curriculum vitae
2. Officially certified copies and translations into English of your diplomas
3. Certified English translation of transcripts of your academic grades
4. Motivation letter
5. Officially certified document of language test (copy of the TOEFL/IELTS score report, or equivalent) if you are not graduated from a University where English is the teaching language
6. Scanned copy of your passport or any other ID
7. Photograph
8. Two recommendation letters
9. Essay on nano-engineering (4 pages maximum)

Who should apply?

Students with a Bachelor or Equivalent Degree in Science or Engineering (Chemistry, Physics, Materials Science, and Chemical Engineering)



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CHEMICAL NANOENGINEERING

An Erasmus Mundus
Joint Master degree in
CHEMICAL NANO-ENGINEERING

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