The Master of Engineering/ Philosophy in Energy, Materials and Entrepreneurship.

Explore. Engineer. Lead

Webinar – MEME Information session

The 26th of July at 13h00 – GMT+1

MOHAMMED VI POLYTECHNIC UNIVERSITY | MSN Materials Science, Energy and Nano-engineering | ENUS The sustainable energy chair | OCP

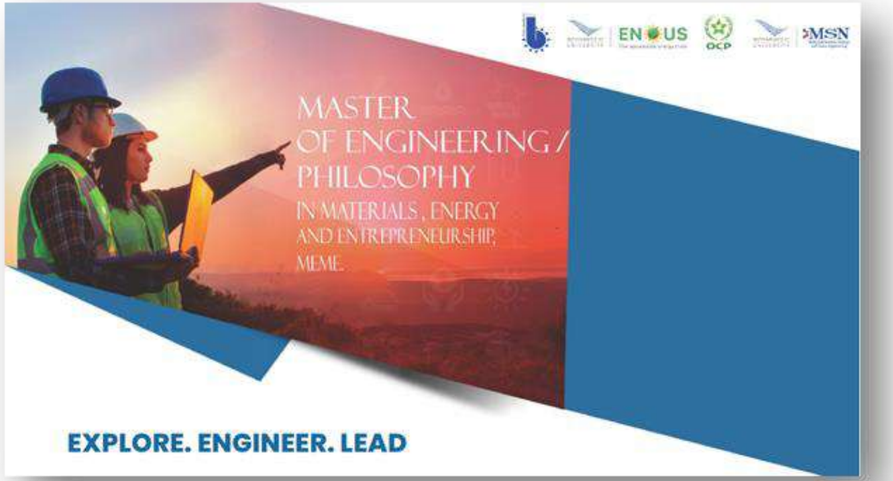
The Materials Science, Energy and Nano-engineering Department (MSN)

Education at MSN

Master of Engineering/Philosophy

- Masters
- Engineers

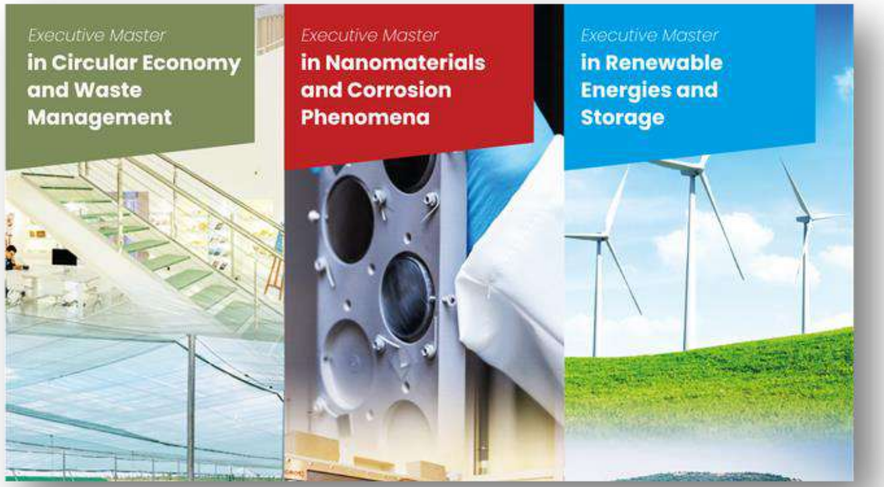
- Full time



Executive Education

- Confirmed professionals

- Part-time



Research AREA and activities

Energy Transition
Board: Coordinators + HoD

Battery materials:

LiB (LFP), SIB, Redox-flow batteries

Hydrogen Production & Utilization

Electrolysis, Fuel cell technology, memberanes, BoP

Gas Capture and Utilization

CO2, NOX

Solar Energy Materisl

Perovskites, CIGS…

Smart & Functional Materials
Board: Coordinators + HoD

Plasma & coating science

corrosion, surface functionalizatio n

Bio-Polymers and composites:

Fertilizer, cellulose extraction and utilization biofuel technologies

Functional polymers

energy storage, photocatalysis, anti-corrosion coatings, biomedical applications and sensing applications

Metallurgy

New steel alloys

Circular Materials
Board: Coordinators + HoD

Sustainable materials & recycling

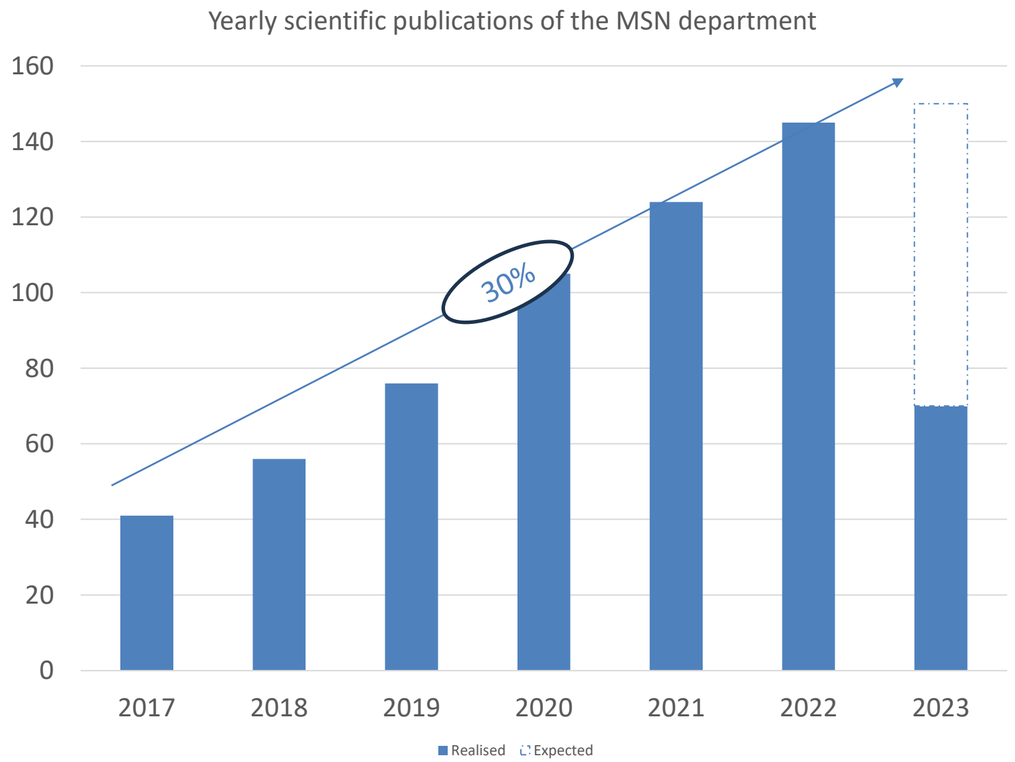
Geopolymers Ecological cement

Extraction & purification technologies

P4, S8, Acid purification

Multiscale and process modelling of technological materials
Team: representative of each theme

Scientific Publications

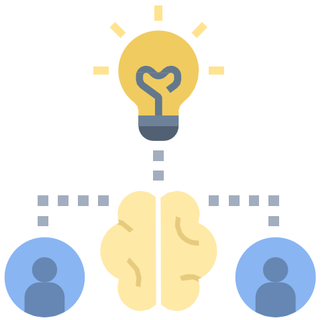


Publication Type	Publications	Citations
Journal article	540	4,086
Conference proceedings article	25	23
Chapter in book	23	46
Conference proceeding	10	12
Other	5	0
Book chapter abstract	5	0
Journal article review	5	0
Book	2	0
Book chapter review	2	0

→ A steady growth since 2017 with a CAGR of 30%

Industry bridge at MSN

Entrepreneurship Incubator



UM6P is your incubator

TOP coaches & trainers

Industrial partners

OCP

NNPC STAFF COOPERATIVE MULTIPURPOSE SOCIETY LTD.

MAGHREB STEEL

INNOV

Academic / Industrial Collaborations, Nationally and internationally

- Internships with Industry
- More than 40 students carry out their internships abroad

Career Opportunities at MSN

Junior Research positions

PhD positions
~20/Yr

Senior research positions
Postdocs, Research fellows

Faculty positions

MOHAMMED VI POLYTECHNIC UNIVERSITY

MSN Materials Science, Energy and Nano-engineering

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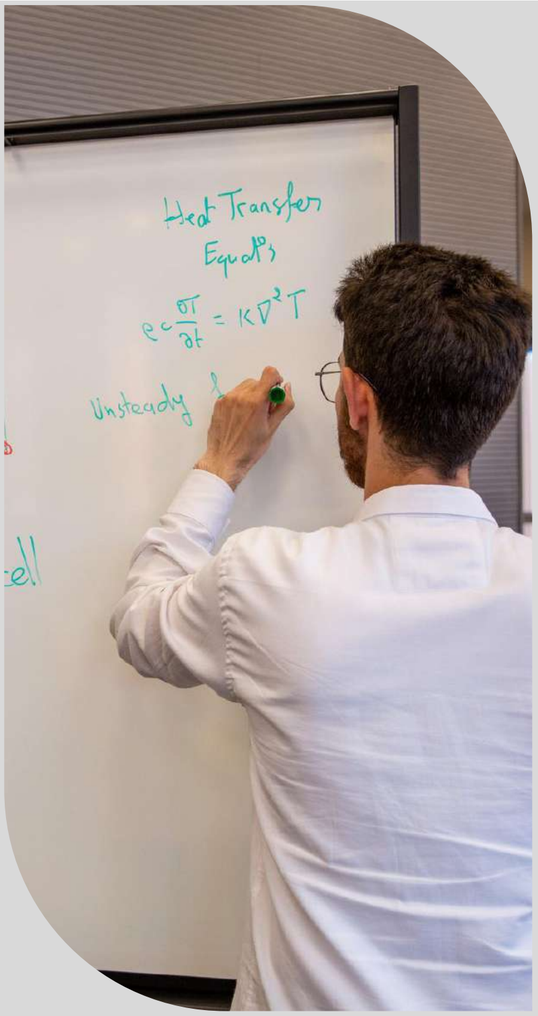


Master of Engineering/Philosophy in Energy, Materials, and Entrepreneurship, MEME.

EXPLORE. ENGINEER. LEAD

UM6P, the perspective

Mohammed VI Polytechnic University, UM6P, is an institution dedicated to research, cutting-edge education and innovation to support the development of Morocco and the African continent. UM6P seeks a position at the forefront of science, technology and entrepreneurship. It is a platform for experimentation and a pool of opportunities. It endeavors to unveil the potential of Moroccan youth and African students.

MSN, where science and market meet

The Materials Science and Nano-engineering Department (MSN) is a research, education and innovation entity within UM6P. It hosts more than 20 Professors and permanent researchers, and some 58 PhD students. The department runs several Master and Executive Master programs in Materials and Energy, and conducts research in :

- Energy Transition
- Surface Technologies and Metallurgy
- Polymers and Composites
- Sustainable Materials and Recycling

Researchers all share state of the art laboratories and mutual spaces to encourage interdisciplinarity and innovation.

Make your path choice

Become a leader in the materials and energy revolution by cultivating knowledge of modern materials and experiencing key areas of business, including innovation and entrepreneurship. The MEME's multi-disciplinary curriculum, state of the art laboratories and platforms, and world class faculty, will incubate your creativity and open new venues for your future.

Get ready for a world class PhD	Launch your startup	Propel your career with a multi-disciplinary program

Overview of the MEME program

This Ms Eng/Phil degree is a full-time, one-year program that includes formal teaching in English, advanced practical works, and individual R&D projects. This program is based on 3 main blocks containing:

- FoundationModules
- Research IntroductionModules
- Industry Engineeringand Research Projects

Students with an Engineering background will recieve a Master of Engineering degree.
Students with a Master of Science background will recieve a Master of Phylosophy degree

Format:
Full TIme

Starting Date:
October 2023

Tiution and Fees:
100.000 Dh

Language:
English

Scholarship:
Admitted candidates can apply for scholarships (up to 100%) & living stipend

Duration:
1 year

Location:
Benguerir

Stipend:
Yes

Admited candidates will benefit from campus room and board, medical insurance and health center services, access to UM6P research and education facilities and events

MEME program architecture

Foundation modules

- Communication in Science
- Complexity
- Entrepreneurship
- Industrial Economics
- Human Augmentation

October 2023

Research introduction modules

- Materials characterization
- Energy transition
- Sustainable materials and recycling
- Materials of the future
- Metallurgy and surface technology

Industry engineering and research projects

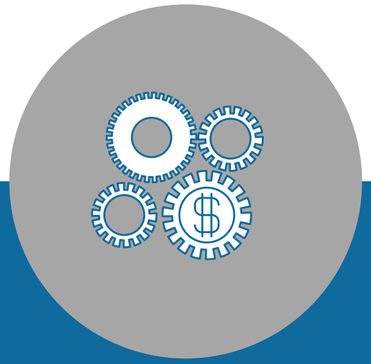
September 2024

Program closure

MEME Foundation Modules

Entrepreneurship

- Managing materials innovations
- New ventures in materials and energy I
- New ventures in materials and energy II



Industrial economics

- Business mapping and corporate governance
- Project management
- Accounting and financial management
- Marketing

Communication in science

- Research methodologies
- Scientific communication
- English for professionals
- Scientific writing
- Negotiation

Human augmentation

- Human augmentation
- Management and innovation
- Complexity
- Problem framing, solving, and technical validation
- Collective intelligence & critical thinking

MEME RESEARCH
Introduction Modules

Materials characterization

- Discovery of facilities available at the MSN laboratories
- HSQE in laboratories
- Lab training on each specific equipment
- Technical review on each technique and associated scientific background
- Selection and complementary of applied techniques

Energy Transition

- Renewable energy production, utilization and related issues
- Advanced storage technologies (Metal-ion Batteries ; supercapacitors ; redox flow batteries; etc.)
- Hydrogen production, storage and utilization
- Energy transition planning and implementation
- Gas capture and utilization strategies

Materials of the future

- Polymers from bio-sources
- New alloys
- Advanced composite materials
- Bio-plastics
- Structure–property relationships of key Materials

Metallurgy and surface technology

- Coatings for transport
- Coatings for energy
- Current challenges in Metallurgy
- Current energy challenges in Steelmaking processes

Sustainable materials and recycling

- Designing a circular system in industrial and energy fields
- Circular processes and chemical-environmental plants
- Circular flow of resources
- Sustainable energy systems & circular economy
- Materials valorization

Industry engineering and research projects

•Industry engineering and research projects start in the first semester and run throughout the year.

•The participants will lead a project and manage itfrom conceptualization until the realization of a proof-of-concept.

•Supervision of the projects' advancement and quality is ensured by the MEME professors throughout the year

•The project is a collaboration with either an industry partner or one of the research groups at UM6P.

Teaching Approach (1/2)

Ideate

Solved Problems

Experts will expose their research methodology to solve a case study

Design

Problem Solving

Apply R&D principles to design and refine unique solutions for a proposed case study

Discover

Learning

Basic notions and key trends on each involved topic

Explore

R&D as a driver

Explore emerging technologies applied to solved current technological issues in R&D

Experiment

Experimental

Conduct experimental work in Labs to solve proposed case studies

Teaching Approach

Apply to Deliver

This specialization phase is directly associated with the professional project selected by each student.

At this stage, students must be able to assess their skills level and their potential re-enforcement needs to deliver their projects. In which case, necessary complementary training will be provided, as deemed by the project's supervisor.

Specialized content will be then offered to students in order to carry out their own research project by following a mixed self-learning & learning by doing teaching approach.

Our Teaching Philosophy :

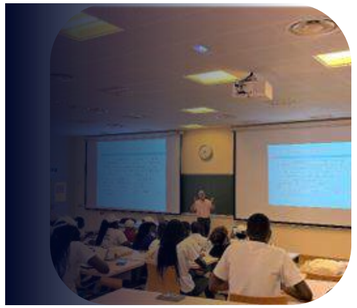
Learning By Doing by following a Research-led Teaching Approach

But not only ...

Teaching approach (2/2)

Sharing and networking

MEME students actively participate in events organized by the MSN Department



Admission criteria

This program is open for talented graduated or soon to graduate:

- **Engineer**
- **Science Master**
- **Young professionals seeking career acceleration/transition**

The candidates should demonstrate:

- **Leadership potential**
- **Sound technical foundations in energy, materials &/or entrepreneurship**
- **Ambitious career plan in research &/or industry**
- **Strong academic credentials**
- **Deep interest in materials and/or energy science and technology**
- **Passion for research and/or entrepreneurship**
- **Very good communication skills**

SELECTION PROCESS

The MEME Experience (1/2)

1

Excellence in education

Centered on future-oriented topics and industries, and supported by excellent multidisciplinary scientific research

2

Accomplished faculty

Made up of professors-researchers from UM6P and its extensive academic network, as well as operational staff

3

Support towards professional integration

Through applied projects, workshops and regular meetings with local companies

4

Learning by doing

UM6P's Laboratories and Fablabs; full-scale work platforms where students put their learning into practice

5

Development of cross-disciplinary skills

Growth modules, project management, communication, innovation, and entrepreneurship

6

Full integration

It can provide mentorship, exposure to cutting-edge research, networking opportunities, and access to resources that can help MSN students achieve their academic and professional goals

The MEME Experience (2/2)

Campus advantages

The campus offers recent and fully equipped infrastructures, fully adapted to the needs of teaching and research. It allows students to benefit from a living environment that is conducive to learning, community life and personal development: secure residences, a sports complex including 5,000m^2 of outdoor space, a library with 12,000 references, dining areas and places to relax that encourage exchanges. The health of our students and staff is paramount, and a health center is also available to meet your needs. The University encourages and supports students' associative projects, which concern entrepreneurship, civic engagement, cultural activities, etc.

Some of our faculty

Dr. Jones ALAMI
UM6P

Dr. Khalil AMINE
(Argonne National Laboratory)

Dr. Hubert GIRAULT
(EPFL)

Dr. Ismail AKALAY
(Sonasid)

Dr. Youssef IGUIDER
(Stanford Research Institute)

Dr. Mouad DAHBI
(UM6P)

Dr. Johan JACQUEMIN
(UM6P)

Dr. Youssef TAMRAOUI
(UM6P)

Dr. Mohammed MAKHA
(UM6P)

M. Ali El AMRANI
(Ibtiquar/UM6P)

Dr. Fouad GHAMOUSS
(UM6P)

Dr. Christian B.FISCHER
(Koblenz University/ UM6P)

Ismail Raqi
(LAB LANGUAGE / UM6P)

Dr. Heinz BUSCH
(NTTF Coatings GmbH/UM6P

Dr. Mounir EL ACHABY
(UM6P)

Salma HMADOCH
MEME Student
Cohort #1

Experience Sharing w/Salma



Ask us anything!

Type something...

Q&A

APPLICATION CLOSES ON September 15th

Are you intrigued by this unique program?Then take advantage of this once in a life time opportunity and join the MEME at UM6P!

www.msn.um6p.ma

Admission.msn@um6p.ma

Mohammed VI Polytechnic
University of Benguerir

THANK YOU