

Mohammed VI Polytechnic University

Mohammed VI Polytechnic University (UM6P) is a leading institution committed to nurturing talent and developing innovative solutions to address both Africa's challenges and global issues. Through a blend of applied research, practical training, and collaboration with industry leaders, UM6P equips its students with the skills needed to shape a sustainable future for the continent.

UM6P's learning environment fosters innovation through hands-on experimentation, peer-to-peer collaboration, and a problem-solving approach. The university emphasizes applied research to develop real-world solutions and encourages entrepreneurship, innovation, and sustainable development to support Africa's economic and social growth.

Organized into four academic hubs—Science and Technology, Business and Management, Humanities, and Health Sciences—UM6P creates synergies between research, industry, and education. This integration ensures that students are prepared to address current and emerging challenges while receiving personalized support to secure their first job.

With more than 7,200 students, including 995 doctoral candidates, and a diverse community representing 33 nationalities, UM6P provides a global experience enriched by 300 faculty researchers and international partnerships. Its presence extends beyond Morocco, with campuses in Benguerir, Rabat, and Laayoune, as well as international offices in Paris and Canada.

Choosing UM6P means joining a collaborative ecosystem dedicated to forming the next generation of African leaders committed to sustainable and inclusive development.

Science and Technology Cluster at Mohammed VI Polytechnic University

The Science and Technology Cluster at UM6P is designed to drive innovation, applied research, and technological advancements across multiple fields. This cluster serves as a cornerstone of the university's mission to address Africa's most pressing challenges, fostering solutions in energy, infrastructure, environment, and industry through cutting-edge education and experimentation.

With access to state-of-the-art facilities, including digital twin platforms, living labs, and advanced research centers, students engage in real-world problem-solving from the start of their academic journey. These environments promote hands-on learning through simulations, projects, and collaborative research, enabling students to experiment with and develop emerging technologies.

The cluster offers programs across key domains, including engineering, applied sciences, data science, materials technology, and environmental sustainability. The programs emphasize an interdisciplinary approach, blending fields such as artificial intelligence, robotics, renewable energy, and resource management. Through this model, students are equipped to tackle global challenges with innovative thinking and technical expertise.

Partnerships with major industry players provide students with access to internships, projects, and mentorship from industry experts. This combination of applied research and industry collaboration ensures that graduates are ready to excel in high-demand sectors like industrial automation, digital manufacturing, renewable energy, and advanced materials. Furthermore,

the cluster's global network and research-driven curricula open doors to graduate studies and professional opportunities worldwide.

School of Applied Sciences & Engineering (SASE)

The School of Applied Sciences and Engineering (SASE) at UM6P is dedicated to addressing the challenges of Morocco and Africa through innovative education. SASE cultivates leaders equipped with scientific, technological, and human skills to transform global challenges into opportunities for sustainable growth and innovation.

SASE emphasizes interdisciplinarity and innovation, creating an ecosystem where science, engineering, and entrepreneurship converge. This approach empowers students to develop integrated solutions for complex societal needs, ranging from industrial modernization to climate resilience and sustainable resource management.

With access to cutting-edge infrastructure, including living labs, digital platforms, and advanced research equipment, students engage in hands-on, experiential learning. This immersive environment enables them to apply theoretical knowledge to real-world challenges, fostering creativity and technical mastery.

The school leverages strategic partnerships with leading academic and industrial institutions, both nationally and internationally, offering students invaluable exposure to global expertise and industry practices. These collaborations enhance opportunities for internships, joint projects, and mentorship from experts.

SASE also maintains a global vision with a local impact, ensuring that research and innovation contribute directly to the sustainable development of African economies. Its programs balance technical knowledge, transversal skills, and soft skills to prepare students for leadership roles. In addition, entrepreneurship is at the core of the school's mission, with dedicated programs, incubators, and FabLabs supporting business creation and innovation.

Rooted in UM6P's mission to promote sustainability, the school is committed to developing solutions that address Africa's economic, environmental, and social challenges. Through this approach, SASE empowers its students to become innovators and leaders shaping the future of the continent.

Undergraduate Program in Applied Sciences and Engineering

UM6P's undergraduate program in Applied Sciences and Engineering offers a comprehensive curriculum designed to address the evolving needs of industries and global challenges. The program features five Bachelor of Science (B.Sc.) degrees, each focusing on key areas critical to innovation, sustainability, and technological advancement. Our program is structured over 4 years and consist of at least 126 credits (up to 153), aligning with international academic standards. Each program balances core courses, specialization courses, and practical experiences to provide a comprehensive education.

In addition to scientific and technical knowledge, the curriculum emphasizes soft skills development, such as leadership, communication, and problem-solving, as well as foreign

languages to support global mobility and collaboration. These elements prepare students to tackle real-world challenges and adapt to complex professional environments.

Common Core

Spanning the first three semesters, our Common Core provides a solid foundation in mathematics, physics, programming, and engineering fundamentals, along with soft skills. It equips students with essential analytical and problem-solving skills to tackle complex challenges.

Through project-based learning and collaborative work, students gain practical experience while building teamwork and leadership abilities. By the end of this phase, they are ready to select a major and specialization aligned with their goals.

- Mechanical Engineering
- Electrical Engineering
- Chemical & Material Engineering
- Environmental Engineering
- Applied Mathematics & Business

In the 4th and last year, Students may choose one of the following options:

- Industry Immersion Year
- Research Immersion Year
- Exchange Program / Double Degree
- 1st Year of UM6P Master

Build Your Path to Success at School of Applied Sciences and Engineering

- **Mechanical Engineering:** The B.Sc. in Mechanical Engineering equips students with the expertise to design, optimize, and manage advanced mechanical systems for a wide range of industries. This program emphasizes smart technologies, automation, and renewable solutions, preparing graduates to lead innovation in the modern industrial landscape.

Concentrations: Robotics & Automation, Digital Manufacturing Systems, Renewable Energy Systems.

- **Electrical Engineering:** The B.Sc. in Electrical Engineering prepares students to design and manage intelligent systems and infrastructures that power the digital economy. The program blends electronics, data science, and energy systems to create solutions for tomorrow's technological challenges.

Concentrations: AI & Data Systems, Energy Systems & Integration, Digital Twin & Automation.

- **Chemical & Material Engineering:** The B.Sc. in Chemical & Material Engineering provides students with the skills to develop sustainable chemical processes, innovative materials, and synthetic fuels. The program emphasizes industrial sustainability, catalysis, and advanced materials technology.

Concentrations: Industrial Process Chemistry, Catalysis & Synthetic Fuels, Advanced Materials.

- **Environmental Engineering:** The B.Sc. in Environmental Engineering trains students to develop solutions that address environmental challenges, including water management, climate change, and sustainable agriculture. The program promotes eco-innovation and responsible resource management.

Concentrations: Water Resource Management, Climate & Sustainability, Agricultural Systems.

- **Applied Mathematics & Business:** The B.Sc. in Applied Mathematics & Business combines advanced mathematical methods with business strategy to address complex challenges in finance, economics, and operations. This program equips students with the analytical and decision-making skills needed in today's data-driven world.

Concentrations: Financial Engineering, Public Financial Management, Business Economics, Social & Political Analysis, Operations Management.

Your Future Starts Here at School of Applied Sciences and Engineering

Our program combines applied sciences, cutting-edge technologies, and business strategy to equip students with the tools to address the complex challenges of tomorrow's world. Through a comprehensive, interdisciplinary education, graduates develop technical, analytical, and managerial expertise, preparing them for both high-impact careers and advanced studies. Through strategic partnerships with global academic and industrial institutions, the program ensures students access a wide range of career paths and advanced academic opportunities. This dual emphasis on professional preparation and academic excellence positions graduates for success in shaping the future of innovation and sustainability.

Career Opportunities at School of Applied Sciences and Engineering

The program trains graduates for key roles across various strategic sectors, thanks to practical experience and close partnerships with industry leaders. Below are some of the potential career paths:

- **Mining and Extraction:** Fleet management specialists, robotic maintenance engineers, digital twin architects, and experts in energy optimization.
- **Manufacturing and Industry 4.0:** Engineers in smart equipment control, quality analysts, digital twin architects for industrial systems, and specialists in applied artificial intelligence.
- **Resource and Environmental Management:** Water resource analysts, desalination and energy storage engineers, and experts in green technologies and sustainable solutions.

- Smart Agriculture: Precision agriculture specialists, innovation lab managers, and experts in soil regeneration and sustainable farming practices.
- Innovative Technologies and Materials: Battery materials scientists, engineers in catalysis and synthetic fuels, and experts in carbon capture and photovoltaic technologies.
- Finance and Risk Management: Quantitative analysts, risk managers, financial modeling consultants, and experts in economic system optimization.
- Strategy and Consulting: Strategy and digital transformation consultants, logistics analysts, and managers of complex projects.
- Data Analysis and Artificial Intelligence: Data analysts, data scientists, AI specialists, and predictive analytics experts.

Opportunities for Further Studies after a degree at School of Applied Sciences and Engineering

The program also provides a strong foundation for students who wish to continue their education in graduate programs, including:

- Master's Degrees in areas such as artificial intelligence, resource management, and advanced materials.
- Engineering Schools, thanks to the program's robust foundation in applied sciences and mathematics.
- International Research or Higher Education Programs, offering further specialization and expertise development.

Key Competencies for Your Success at School of Applied Sciences and Engineering

This program equips graduates with essential skills and values to excel in a rapidly changing world. These competencies are structured around four core dimensions to ensure a well-rounded, future-ready leadership profile.

- Lead Self: Develop self-awareness, critical thinking, and a mindset of continuous growth to navigate challenges and succeed in a dynamic global environment.
- Lead Others: Strengthen your ability to collaborate, communicate, and lead diverse teams effectively in complex social and organizational environments.
- Lead Business: Make strategic decisions that balance progress, sustainability, and global responsibility by mastering problem-solving and leadership in business environments.
- Lead with Technology: Harness technological innovation by mastering digital tools and developing a forward-thinking, tech-savvy mindset.

Key Advantages of the Program at School of Applied Sciences and Engineering

Our program provides a unique learning experience, combining innovative teaching methods, industry immersion, and global exposure to prepare students for impactful careers and lifelong success.

- **Innovative Pedagogies:** We use modern, learner-centered methods that foster autonomy and active engagement. Students are encouraged to apply their knowledge in real-world scenarios through: Problem-based and Project-based Learning, Flipped Classrooms, Simulation and Virtual Reality, Collaborative Learning.
- **Hybrid and Flexible Learning:** Students can tailor their learning experience through: In-person courses, online modules, and work-based learning for maximum flexibility and a curriculum that adapts to individual goals, balancing theory, practice, and professional immersion.
- **Professional Immersion:** Students benefit from strong industry partnerships with global leaders like OCP, offering real-world internships and applied projects, opportunities for gap years to gain industry experience and develop practical skills.
- **State-of-the-Art Infrastructure:** The program offers access to world-class facilities like Living labs, digital twin platforms, and advanced research centers that enable real-time experimentation.
- **Professional Certifications:** Students can earn industry-recognized certifications in collaboration with renowned organizations across various industries, providing them with a competitive advantage in the job market. These certifications validate specialized skills in high-demand areas such as automation, data science, cloud computing, and chemical processes.
- **Expert Faculty:** Learn from a distinguished faculty of professors and researchers with experience at prestigious global institutions.
- **International Experience:** Our program provides global exposure through: Collaborations with partner institutions worldwide, offering exchange programs, joint research, and multicultural learning experiences. Access to international mobility opportunities that broaden students' academic and professional perspectives.

Wicked Problems for a Better World

At UM6P, we believe education goes beyond the acquisition of knowledge. It is about using that knowledge to solve some of the world's most pressing and interconnected challenges. Our Wicked Problems (WiP) framework is designed to immerse students in transformative, interdisciplinary projects, empowering them to become leaders of change through critical thinking, innovation, and collaboration.

Through this framework, UM6P provides students with a transformative educational experience, empowering them to become change-makers capable of tackling global challenges and shaping a better world.

Core Principles at School of Applied Sciences and Engineering

- **Systems Thinking:** Students learn to analyze and address complex, interconnected systems whether economic, environmental, or technological.

- Mathematics as a Universal Tool: Mathematical frameworks serve as a foundational language to model, analyze, and solve intricate challenges.
- Interdisciplinary Integration: Solutions require collaboration across multiple fields, including engineering, social sciences, and environmental studies.
- Sustainability and Ethics: The framework emphasizes socially equitable, environmentally sustainable, and ethically sound approaches to problem-solving.
- Action-Oriented Learning: Students engage in hands-on projects, simulations, and real-world prototyping to test and refine their solutions.]

Framework Highlights at School of Applied Sciences and Engineering

- Each WiP initiative bridges multiple domains, including technology, social sciences, and environmental studies, promoting cross-disciplinary collaboration to tackle complex problems.
- Students cultivate adaptive communication, structured problem-solving, and leadership skills, preparing them for uncertain and dynamic global challenges.
- Local and Global Impact: The framework focuses on key issues relevant to Morocco and Africa, such as water scarcity, climate resilience, and sustainable urban planning.

Structure

Duration: 4 years.

Integrated use of AI tools, digital twins, and automation to enhance the problem-solving process.

Program Curriculum of the first 2 years at School of Applied Sciences and Engineering

Year 1:

- Real Analysis, Linear Algebra, Probability
- Physics, Chemistry, Biology
- Introduction to Computing, Data-Structures with Python
- Principles of Engineering Systems
- Critical Thinking and Problem Solving
- Microeconomics, Macroeconomics
- Writing, Communication, Ethics
- Leadership, Follow-ship and Teamwork
- Masterpieces of Philosophy & Literature

Year 2

- Multivariate Calculus, Introduction to Optimization, Predictive Analytics, Mathematical Modeling, Statistics, Optimization & Decision Models
- Corporate Finance & Accounting
- Masterpieces of Art & Music
- Entrepreneurship & Managing Technological Innovation, Global Thoughts
- Major (Specialization):
- **Mechanical Engineering:** Introduction to Robotics and Automation, Energy Systems & Renewable Tech, Smart Manufacturing & Industry 4.0, Mechanical Systems Design
- **Electrical Engineering:** Introduction to Digital Systems, Foundations of Machine Learning, IoT for Industrial Applications, Energy Systems & Power Electronics
- **Chemical & Material Engineering:** Introduction to Industrial Process Chemistry, Materials Science and Engineering, Sustainable Process Design, Catalysis and Reaction Mechanisms
- **Environmental Engineering:** Introduction to Water Resource Management, Climate Change & Carbon Management, Environmental Monitoring and Sensing, Resilient Infrastructure Design
- **Applied Mathematics & Business:** Applied Optimization, Probability Models for Decision Making, Mathematical Economics, Fundamentals of Actuarial Mathematics

Program Curriculum of the third years at School of Applied Sciences and Engineering

Year 3:

- Stochastic Processes, Dynamical Systems with Applications, Simulation, Applied Machine Learning
- History of Science and Technology, Philosophy of Science and Technology
- Sociology of Work and Organizations, Sustainability & Corporate Social Responsibility, Industrial Organization Psychology, Negotiation and Conflict Resolution
- Major (Specialization):
- **Mechanical Engineering:** Advanced Robotics, Sustainable Manufacturing, Energy Conversion Systems, Predictive Maintenance Technologies, Digital Twin Systems, Advanced Mechatronics
- **Electrical Engineering:** Industrial AI and Deep Learning, Power Electronics for Renewable Energy, Embedded Systems Design, IoT and Sensor Networks, Control Systems Engineering, Digital Twin Applications
- **Chemical & Material Engineering :** Reaction Engineering, Advanced Materials for Energy, Process Safety and Risk Management, Industrial Waste Valorization, Catalysis and Green Chemistry, Hydrogen and Ammonia Synthesis.
- **Environmental Engineering :** Advanced Water Treatment, Climate Resilient Infrastructure, Carbon Capture and Utilization, Environmental Impact Modeling, Sustainable Agriculture Systems, Resource Management and Efficiency
- **Applied Mathematics & Business :** Game Theory, Financial Markets & Derivatives, Actuarial Mathematics, Advanced Financial Mathematics, Econometrics, Logistics & Supply Chain Management, Public Finance, Sociology of Digital Societies, Social & Political Sciences,

Program Curriculum of the last year at School of Applied Sciences and Engineering

Year 4:

- Capstone Project
- **Mechanical Engineering:** Advanced Robotics, Control Systems for Robotics, Perception and Machine Vision, Autonomous Systems Design, Smart Manufacturing & Industry 4.0, Additive Manufacturing and 3D Printing, Predictive Maintenance & Diagnostics, Simulation & Optimization Manufacturing, Energy Systems Design, Thermal Energy Systems, Renewable Energy Technologies, Sustainable Mechanical Systems
- **Electrical Engineering :** Advanced Machine Learning, Big Data Analytics, AI for Process Optimization, Computer Vision & Perception, Power Electronics for Renewable Energy, Smart Grid Systems, Energy Storage Systems, Electrification & Sustainable Energy, Digital Twin Design & Simulation, Industrial IoT & Connectivity, Control Systems Engineering, Predictive Maintenance with Digital Twins,
- **Chemical & Material Engineering:** Advanced Reaction Engineering, Process Simulation and Modeling, Industrial Byproduct Valorization, Process Safety and Risk Management, Catalysis Fundamentals, Synthetic Fuels and Energy Conversion, Hydrogen and Ammonia Synthesis, Catalyst Development and Characterization, Materials Science and Engineering, Materials for Energy Applications, Photovoltaics and Solar Materials, Nanomaterials and Nanotechnology
- **Environmental Engineering:** Advanced Water Treatment Systems, Hydrology and Reservoir Engineering, Integrated Water Resource Management, Climate-Resilient Water Systems, Climate Change Mitigation Strategies, Carbon Capture and Utilization, Life Cycle Assessment, Green Technology Innovation, Precision Agriculture Technologies, Sustainable Farming Practices, Agrochemical Development and Applications, Agroforestry and Soil Management
- **Applied Mathematics & Business:** Advanced Real Analysis, Complex Analysis, Partial Differential Equations, Optimal Control, Functional Analysis, Inverse Problems, Advanced Numerical Linear Algebra, Computational Bayesian Inference, Machine Learning for Signal & Image Processing, Deep Learning & Generative Models, Deep Reinforcement Learning, Stochastic Differential Equations, AI for Process Optimization, Data-Driven & Model Order Reduction

Advantages of Our Campus

Spanning over 100 hectares, the UM6P Rabat & Benguerir campuses offer modern, fully equipped infrastructure designed to meet the highest standards for teaching and research. Our students benefit from a stimulating environment that supports both academic success and personal development.

The campus provides everything needed for a well-rounded student life:

- Secure residences designed for comfort and community living.
- A sports complex covering 3 hectares, offering a wide range of athletic facilities to promote health and well-being.
- A library housing over 30,000 resources, including books, journals, and digital access to academic databases.

- Dining areas and social spaces where students can relax, connect, and exchange ideas.

To ensure students' well-being, we have a dedicated Health Center available to provide support and address medical needs.

UM6P is committed to fostering student initiatives through extracurricular projects that promote entrepreneurship, community engagement, cultural activities, and leadership development. These projects allow students to expand their horizons, apply their knowledge in real-world contexts, and build valuable networks.

Why Choose a Bachelor of Science?

In a world defined by rapid transformation and complex challenges, earning a Bachelor of Science (B.Sc.) places you at the forefront of innovation and global problem-solving. This degree equips you with the tools and mindset to create impactful solutions, excel in diverse industries, and shape a sustainable future.

- **Personalized Learning Path:** The program offers flexibility through a variety of majors and concentrations.
- **Interdisciplinary Education:** You will gain a well-rounded education that balances applied sciences, advanced technologies, and management principles.
- **Innovation and Impact:** Our program encourages you to push the boundaries of innovation.
- **Diverse Career Opportunities:** A Bachelor of Science opens doors to varied career paths across numerous industries, including technology, energy, manufacturing, finance, and more.
- **Global Exposure:** The program offers international collaborations with renowned academic and industry partners, providing opportunities for global learning experiences, research projects, and professional networking.
- **International Mobility and Double Degree Opportunities:** At UM6P, we offer students the chance to broaden their horizons through international mobility programs and double degree opportunities with prestigious partner institutions worldwide. The double degree program enables students to earn degrees from both UM6P and a partner university, enhancing their qualifications and employability on a global scale.
- **International Recognition:** Your B.Sc. degree is globally recognized, enhancing your credibility and employability with universities, employers, and professional organizations worldwide.

By choosing this Bachelor of Science program, you will join a vibrant, forward-thinking community committed to shaping the future through innovation and leadership.

Start your journey today – your future begins here.

Ready to Join Us at School of Applied Sciences and Engineering? Here's How!

Eligibility Requirements:

To apply, you must hold a scientific or technological high school diploma (Baccalauréat) or an equivalent qualification.

Required Documents:

- Two passport-sized photos
- Academic transcripts
- Copy of diplomas or graduation certificates
- Copy of your national identity card (C.I.N.) or passport

Selection Process:

- Application Review
- Online Assessments: Psychometric & SAT-like tests
- Online oral interview, followed by on-campus interviews

Admission Timeline:

May: Deadline for application submission

May: Start of psychometric testing

May: Start of Online SAT-style testing and interviews

July: On-campus interviews and completion of SAT and psychometric tests

July – August: Notification of admission results and submission of scholarship applications

August: Summer School for skills enhancement in mathematics and English

September – Early October: Start of academic courses

Tuition Fees at School of Applied Sciences and Engineering:

- Registration Fee: 5 000 MAD

- Annual Tuition: 75 000 MAD

Scholarships:

UM6P is committed to supporting students through an attractive scholarship program covering both tuition and living expenses. We encourage you to reach out for more information on available opportunities.

Apply Now!

You can submit your application online at um6p.ma/admissions or contact us by email at admission@um6p.ma. For any additional questions, feel free to reach out to our admissions team!

Important information of School of Applied Sciences and Engineering:

- Duration : 4 years
- Location : UM6P Rabat and UM6P Benguerir
- Language: English
- Diploma: Accredited Licence, and Bachelor UM6P Double Degree

Contact Information:

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