

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS



**INNOVATIVE
LEARNING
METHODS**

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**A BETTER
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**ENABLING
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FACTS & FIGURES

History and Campus

- Established in **1963**
- Located in **Dhahran, Saudi Arabia**
- **10,000+** undergraduate and graduate students
- Influential alum base in top **leadership positions** such as Cabinet Ministers, CEOs, etc.

Faculty and Students

- **12:1** overall student-to-faculty ratio
- Attracts **top 1%** of high school graduates in the Kingdom
- **57 nationalities** represented among faculty and staff

Academics and Research

- Over **150** active academic programs
- **20** interdisciplinary research centers
- **163rd** place on the QS World University Rankings 2022
- All Engineering subjects in the **top 100** for 2022
- Ranked **4th** among universities in US granted patents in 2019

Future-oriented Degrees

- AI and machine learning
- Hydrogen mobility
- Smart and sustainable cities
- Data analytics
- Robotics and autonomous systems
- Internet of Things
- Quantum computing
- Biotechnology

Message from the President



How do you grow an economy? How do you contribute to global science and technology? How do you ensure that research is for the good of society? All of these questions are what KFUPM is about.

Our strategy is to develop the local economy from a single-sector focused to a diversified knowledge-based economy that benefits from the creation of new sectors, which are supported and nourished by competent individuals that are developed and sharpened right here, at KFUPM. Our approach is to engage companies and other academic institutions on a global scale, and to push forward finding solutions to grand challenges that face the world. Our strategy is to ensure research is not only of the highest caliber but that its ultimate objective is to improve the human condition and have a substantial societal benefit.

At KFUPM, we are undergoing a massive transformation. All our academic programs were overhauled to be based on a digital foundation, with 37 new undergraduate subspecialties (concentrations), 35 new industry-linked master's degrees, 20 new interdisciplinary research centers, multi-disciplinary activities is the norm at all levels, flipped classrooms instead of conventional academic delivery, introduction of females at all categories of studies, etc. We are moving fast, very fast; to be not only the premier academic institution in the Middle East, but one of the most renowned universities globally.

In this booklet, we explain who we are and what we are becoming. I hope you enjoy it and I also hope to see you soon as a student, faculty, researcher, or staff at this fine global University.

Dr. Muhammad Al-Saggaf
President, King Fahd University of Petroleum & Minerals

OUR PHILOSOPHY

KFUPM's overarching philosophy is to advance knowledge that can be applied for the good of humanity. We strive to help economies transition from conventional models into ones that are more diversified, inclusive, knowledge-led and digitally enabled as we move forward.

Achieving our goals is supported by three key concepts

DIGITAL FOUNDATION: All of our programs incorporate a strong digital foundation. The AI+X platform ensures students graduate with a foundation in AI and entrepreneurship on which they can build expertise in their chosen field of study.

INTERDISCIPLINARY ACADEMICS AND RESEARCH: We believe that meaningful discoveries occur at the intersection of disciplines. This is why we have created 20 new interdisciplinary research centers to maximize collaboration and enhance our academic impact in the Kingdom and beyond.

UNLOCKING TALENT: KFUPM is committed to fostering the Kingdom's talent, opening undergraduate programs to females for the first time in 2021 and continuously supporting the University's faculty to reach their full potential. In addition, our student body includes over 50 nationalities across both undergraduate and graduate programs.

GUIDING PRINCIPLES

Build

national capacity for tomorrow's digital economy

Engage

in a truly inclusive community

Create

knowledge at the intersection of disciplines



AI is at the heart of what KFUPM does. We strive to integrate AI into the University's processes, systems and facilities, simultaneously educating our students and arming them for the future.

ENABLING THE NEW ECONOMY



TRANSFORMING OUR FOCUS AREAS

KFUPM has a long-standing history of developing capable talent and producing cutting-edge research that supports Saudi Arabia in becoming a global leader in the Oil & Gas industry. Building on this past success, the University has renewed its role in line with national and global trends to support a reimagined economic landscape that meets the expectations of the evolving labor market and enables new sectors of the economy to develop.

Over the past two years, the University expanded its academic and research offering into new sectors in which it obtains a competitive edge and relevant expertise. The goal of this expansion is to graduate qualified students for relevant job sectors, and develop research that enables new job opportunities.

“
You no longer learn for jobs,
you learn to create jobs.
”

DEVELOPING OUR PROGRAMS

Through this transformation, KFUPM is facilitating the nation's growth into a diversified knowledge-based economy and is positioning the Kingdom as strong competitor in the new global digital economy.

Committed to its mission of expanding into new globally relevant sectors, the University has extended its portfolio with more than 70 new academic programs, of which, more than 40 programs are being launched for the first time in Saudi Arabia.

EXPANDING INTO SECTORS OF THE FUTURE



Energy and Minerals



Chemicals and Materials



Environment and Sustainability



Design and Built Environment



Manufacturing



Aerospace and Defense



Digital Economy



Biotechnology



Mobility and Logistics



Financial Technology

EXPANDED PROGRAMS



Engineering Disciplines at KFUPM, QS World University Rankings, 2020-23

	Rank 2020	Position Improvement	Rank 2023
PETROLEUM ENGINEERING	10	↑ 6	4
MINERAL & MINING ENGINEERING	25	↑ 16	9
CHEMICAL ENGINEERING	84	↑ 38	46
CIVIL & STRUCTURAL ENGINEERING	113	↑ 65	48
MECHANICAL & AERONAUTICAL ENGINEERING	134	↑ 77	57
ELECTRICAL & ELECTRONICS ENGINEERING	130	↑ 70	60
ENGINEERING & TECHNOLOGY	136	↑ 73	63
OVERALL RANK	200	↑ 20	180

Transformation

KFUPM is always on the lookout for future trends, for which it develops aligned programs to make difficult goals achievable and graduates a well-skilled student base. In line with global trends, KFUPM has undergone a major transformation that reflects the transition towards a digitally enabled world economy.

Our transformation highlights include:

- Enabling female enrollment and research opportunities
- Integrating a digital foundation in all undergraduate programs
- Creating 37 new concentration programs and 35 master's programs in line with future demands
- Major restructuring of colleges to enable interdisciplinary collaborations, and introduce new programs
- Establishing 20 new interdisciplinary research centers
- Enabling an entrepreneurial spirit through relevant competitions

Materials Science and Engineering Programs

Our Materials Science and Engineering master's and bachelor's programs aspire to drive change to humanity. Students undertake projects to design novel materials that achieve sustainable utilization with minimal waste and degradation.



INTERDISCIPLINARY APPROACH

We believe that knowledge is created at the intersection of disciplines. Thus, a very strong focus of the University is to encourage our faculty and students to adopt an interdisciplinary approach to their academic and research activities. All of our new undergraduate and graduate programs, and our research, are interdisciplinary in nature, planning, development, and execution. To emphasize this, KFUPM recently reorganized its colleges and departments based on theme, rather than discipline. For example, the physics of flight is aligned with the engineering of flight within the Aerospace Engineering program.

Degree Awarding Colleges

College of Engineering and Physics <ul style="list-style-type: none"> ● Aerospace Engineering ● Control & Instrumentation Engineering ● Electrical Engineering ● Mechanical Engineering ● Physics 	College of Design and Built Environment <ul style="list-style-type: none"> ● Architectural Engineering ● Architecture ● City & Regional Planning ● Civil & Environmental Engineering ● Construction Engineering & Management
College of Petroleum Engineering & Geosciences <ul style="list-style-type: none"> ● Geosciences ● Petroleum Engineering 	College of Chemicals and Materials <ul style="list-style-type: none"> ● Chemical Engineering ● Chemistry ● Bioengineering ● Material Sciences & Engineering
College of Computing and Mathematics <ul style="list-style-type: none"> ● Computer Engineering ● Information & Computer Science ● Industrial & Systems Engineering ● Mathematics 	KFUPM Business School <ul style="list-style-type: none"> ● Information Systems & Operations Management ● Global Studies ● Accounting & Finance ● Management & Marketing

Bioengineering Programs

The Bioengineering master's and bachelor's programs prepare students to become experts in the rapidly growing field of bioengineering, which applies engineering tools to the principles of biology in the disciplines of biomedical, biotechnology, biometrics and biochemical engineering.

INNOVATIVE LEARNING METHODS

At KFUPM we strive for teaching excellence, and want to better equip our students with the multiple skills required for an active workplace. This means using innovative teaching methods that prioritize research, discussion and debate in order to maximize knowledge retention.

DIGITAL FOUNDATION

The world is evolving quickly, spurred by trends such as the rapid migration to digital disciplines of the Fourth Industrial Revolution. In fact, graduates of conventional disciplines from conventional educational environments will find it difficult to compete in the new labor market. Everyone must be fluent in the digital language of tomorrow and have an understanding of other disciplines. This is why KFUPM overhauled its undergraduate curricula to be based on a new foundation called the AI+X platform, which means students first master the skills of artificial intelligence (AI) and other technologies before building expertise in their chosen discipline.

Moreover, KFUPM views the word “digital” in its expanded form, which includes entrepreneurship. To this end, numerous courses – including advanced python programming, data science and big data analysis, AI and machine learning, business and entrepreneurship, and career planning – were injected into all curricula to form an essential foundation for graduates. Not only do graduates learn the digital language of tomorrow, but because these courses are taken by students of multiple majors, they also learn the language of each other’s disciplines, which is essential going forward.

The AI+X platform prepares students with

- 1 The language of tomorrow’s workplace, which will be heavily based on AI.
- 2 The language of interdisciplinary cooperation, as all new courses instruct students of different majors together.

All undergraduate degrees across all subject areas include the following foundational modules



Career planning



Data science and big data analysis



AI and machine learning



Business and entrepreneurship

KFUPM’s initiative alone will satisfy **50%** of the Kingdom’s goal to have **20,000** entrants to the job market adequately skilled in AI by **2030**, according to the National Center for Artificial Intelligence.

Maximum-engagement methods include



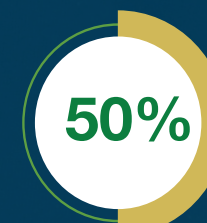
Knowledge Retention

Traditional Learning

Lecturing



Discussion



Maximum-engagement Learning

Practice by doing



Teaching others



280+ KFUPM faculty and staff trained in these methods so far

SPECIALIZED KNOWLEDGE: CX

Specialization is a global trend that will take on greater importance going forward. Companies and individuals find that their impact on society increases substantially with specialization. Nowadays, petrochemical companies cannot survive on commodity chemicals alone, and many telecom companies have moved from simple services into finance technology. Similarly, students need to have a degree of specialization before graduation so they can significantly reduce the time it takes for them to become productive in the workplace.

Therefore, KFUPM launched a suite of 37 new specialties called Undergraduate Concentrations (CX) in topics that are in increasingly high demand, including artificial intelligence and machine learning, cybersecurity and blockchain, drone design and computational analytics. The success of the program has been overwhelming, and several companies have sponsored CX students to ensure access to their talent once they graduate.

CX + MX → Rhodes Scholarship Success



Muhammad Al-Ghadeer, 24, is a double major in Physics and Electrical Engineering at KFUPM who has completed both the CX and MX programs. He received the Rhodes International Scholarship in 2021.

CX: Four in Focus

1. Drone Design and Application

This concentration focuses on the design and building of fixed-wing and multi-rotor drones at several levels of autonomy, from remote-controlled to human-supervised and fully autonomous. Topics include the physics of flight, fuselage and rotor design, and drone dynamics.

2. Hydrogen Mobility

This concentration covers all components of the hydrogen supply chain network, from production to use as a clean fuel for transportation. This includes hydrogen generation using solar- or wind-powered water electrolysis, biomass gasification, natural gas steam reforming and heavy oil residue catalytic partial oxidation.

3. Smart and Sustainable Buildings

This concentration covers topics that stem from the use of smart and responsive building materials and devices, intelligent automation (AI, IoT, etc.), innovative renewable energy applications, and efficient building systems. Students are introduced to the principles of smart and sustainable buildings communication, automation technology, and processes to control and connect these systems and occupants to their building environment.

4. Robotics and Autonomous Systems

This concentration encompasses subjects related to mechatronics, robotics and UAVs (drones). Students develop the skills required to understand, design and implement smart systems and robots to solve engineering problems. Topics include the fundamentals of autonomous systems including sensing, reasoning and acting, in addition to robotics-specific topics such as power sources, machine vision and environmental navigation.

PROFESSIONAL MASTERY: MX

Let's face it: advanced academic degrees such as MSc and PhD are critical for the future of humanity but alone they do not move the economies of today and tomorrow by themselves. For economies to advance and transform, a cadre of competent professionals must be trained in the disciplines of the future. For this reason, KFUPM created a suite of 35 one-year, full-time, non-thesis master's programs called MX.

The programs offered include renewable energy, supply chain management, artificial intelligence, and visual computing, each of which enables professionals to start new ventures or excel with their employers. In addition to conventional MSc and PhD programs, KFUPM's continuous innovation of non-thesis, truly interdisciplinary programs will support the economies of tomorrow with professionals that have the expertise needed to transform the current way of working.



KFUPM'S Top Ranked Master Programs, QS World University Rankings 2022

134	Master of Business Administration
70	Executive Master of Business Administration
17	Master of Supply Chain Management



The Hybrid Immersive Visual Education (HIVE) is a modern and flexible teaching format available at KFUPM for selected MX programs. Students registered in these programs have the freedom to attend weekday classes either virtually or in-person. To ensure a wholesome educational experience, all students attend in-person classes four weekends per semester.

COMMITTING TO SUSTAINABLE DEVELOPMENT GOALS



One of KFUPM's primary missions is to create significant and long-lasting impacts that benefit all of humanity. The University has always been a major player in shaping a better future for society, whether it be in academics, research, projects or volunteer

work. To underscore these efforts, KFUPM has strongly aligned itself with the UN Sustainable Development Goals (SDGs) and is committed to funding research collaboration that delivers meaningful progress across multiple goals.



SDG 5 – Gender Equality

KFUPM is committed to gender equality, with all students learning on the same campus in a co-educational fashion. Two years ago, post-graduate programs were opened to both males and females on a meritocratic basis, and a special focus was placed on attracting females to undergraduate engineering courses. Added attention is also paid to fast-tracking female employees into leadership positions.



SDG 6 – Clean Water and Sanitation

The Interdisciplinary Center for Membranes and Water Security is an important research hub for membrane technologies used in many industrial sectors across the Kingdom, particularly in water desalination and wastewater treatment. The center is also focused on developing effective techniques for purification and desalination to support global water security efforts.



SDG 14 – Life Below Water

The Applied Research Center for Environment and Marine Studies has nearly 50 years of experience in research and consultation on environment and water. It has the latest technologies and facilities to study marine environments, allowing it to carry out environmental impact assessments, safeguard marine biodiversity and ecology, and investigate and address toxicity levels.

- More than **330 projects** have been completed in the center
- Currently engaged in **46 active projects** in Saudi waters in the Arabian Gulf and the Red Sea





CAMPUS LIFE

KFUPM is located at the heart of Dhahran, Saudi Arabia, and is strategically next door to Saudi Aramco the largest oil and gas company worldwide. Our campus, which is distinguished by its unique architecture and ample green space, is designed to provide a vibrant living and academic experience to our community. The University promotes wellbeing through a range of facilities, such as the historic library, sports venues, recreational halls, on-site healthcare, and around the clock security.

To ensure a well-rounded educational experience, we offer a wide-range of services, such as:

- Student Clubs
- On-Campus Events
- Research Experiences
- Conferences
- International Visits
- Recreational Areas
- Fitness Centers
- Private Beach
- Quality Dining
- Retail Outlets
- Accommodation
- Campus Transportation
- Medical Center

A BETTER APPROACH TO RESEARCH



As part of its transformation, KFUPM has overhauled its research enterprise by establishing 20 interdisciplinary research centers to foster a more connected academic culture.

These changes ensure that all faculty are affiliated with at least one research center, base funding for research is increased, and research is aligned with national and global development goals.



Interdisciplinary Research Centers

Interdisciplinary Research Centers (IRCs)	Applied Research Centers (ARCs)
<ul style="list-style-type: none"> Advanced Materials Membranes & Water Intelligent Manufacturing & Robotics Smart Mobility & Logistics Intelligent Secure Systems Integrative Petroleum Research Hydrogen & Energy Storage Renewable Energy & Power Systems Refining & Advanced Chemicals Communication Systems & Sensing Finance & Digital Economy Construction & Building Materials Aviation & Space Exploration 	<ul style="list-style-type: none"> Environment & Marine Studies Strategic Studies & Planning Metrology, Standards, & Testing
	Joint Research Centers (JRCs)
	<ul style="list-style-type: none"> SDAIA Center for Artificial Intelligence KACST Center for Energy Efficiency KACARE Center for Energy Research
	Research Consortia
	<ul style="list-style-type: none"> KFUPM Consortium for a Sustainable Future

Research to Value

What is the value of research? KFUPM strongly believes that the objective of research should be to improve the human condition and amplify impact on society. This is why the University emphasizes research that has practical applications to positively shape the market. Research activities are also conducted in a way that all faculty at the University can collaborate in an interdisciplinary manner.

A suite of 20 new interdisciplinary and joint research centers have therefore been established, all built on thematic rather than disciplinary foundations. What does that mean? We do not have a research center for Chemical Engineering, but rather an Interdisciplinary Research Center for Advanced Materials that draws from chemical, mechanical, electrical, computer and civil engineering, in addition to physics, mathematics, chemistry, computer science and other disciplines. In fact, every research center at the University spans at least six different disciplines, gathering a variety of expertise to tackle the challenges of tomorrow.

RESEARCH IN FOCUS



KFUPM CONSORTIUM FOR A SUSTAINABLE FUTURE

Research consortia at KFUPM represent an exciting and critical part of the overall transformation of the University's research enterprise, which has been thoroughly revamped to ensure alignment with national and global priorities; activation of truly interdisciplinary research across campus; significantly expanded scale of research activities; strong links to the global research community; and, a strong focus on tangible economic and societal outcomes. As such, research consortia will be a powerful gateway connecting the KFUPM research enterprise, the research community worldwide, and ultimately the market.

CONSORTIUM APPROACH AND RESEARCH AGENDA

As our inaugural research consortium, the KFUPM Consortium for a Sustainable Future adopts a futuristic, materials-based approach to create and scale up a wide

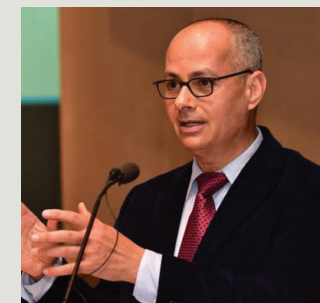
range of innovative solutions essential for a sustainable future. Motivated by the realization that the discovery and development of new materials played a significant role in much of humanity's technological advancement, next generation materials hold significant potential for innovative solutions needed for current grand challenges facing societies in energy, environment, sustainability, and health.

The Consortium also adopts a novel and exciting approach to its research programs. The concept of "The Air Economy" is one such proposed program, where a new class of materials dubbed as Digital Materials—discovered and synthesized through the use of artificial intelligence, big data, and robotics, and integrated into innovative machines—can extract tremendous value from air, the most ubiquitous and accessible resource on the planet. Whether it is harvesting water from air, capturing CO₂ from air and converting it to other valuable materials or fuels, or ridding the air from harmful contaminants, such digital materials and machines have the potential to open doors for unimaginable sustainable possibilities.

MEET PROFESSOR OMAR YAGHI

Professor Omar Yaghi is one of the most notable, cited and influential chemists in the world.

Professor Yaghi, who is leading the KFUPM Consortium for a Sustainable Future, brings a tremendous track record of accomplishments and recognitions through his illustrious career. A member of the US National Academy of Sciences, he has also received more than 40 global honors and awards for his scientific accomplishments. With an h-index of 182, and around 210,000+ total citations, professor Yaghi's pioneering work on the discovery and development of metal-organic framework materials (MOFs) and other new classes of materials have opened a completely new horizon for research and discovery with huge potential for scientific and engineering advancements across many fields and applications.



RESEARCH: FOUR IN FOCUS

Interdisciplinary Research Center for Intelligent Secure Systems

This center focuses on security: both physical security and cybersecurity. It works to achieve the goals of the National Transformation Program related to improving the safety of individuals and the country. The center leverages artificial intelligence (AI) for cybersecurity and secure financial operations, as well as utilizes blockchain, Internet of Things (IoT) devices and other technologies.

Interdisciplinary Research Center for Finance & Digital Economy

This center is the first true integrated research platform to enhance KFUPM's research in these areas by accelerating productivity. The center focuses on local and global priorities in the finance sphere, and engages with industry to provide viable solutions for a thriving digital economy.

Interdisciplinary Research Center for Advanced Materials

This center represents an important disruption to traditional industries and a fantastic opportunity for localizing manufacturing in the Kingdom. The center aims to develop materials for industry, turn waste into useful materials, study new materials and develop non-fuel uses for hydrocarbons.

Interdisciplinary Research Center for Intelligent Manufacturing & Robotics

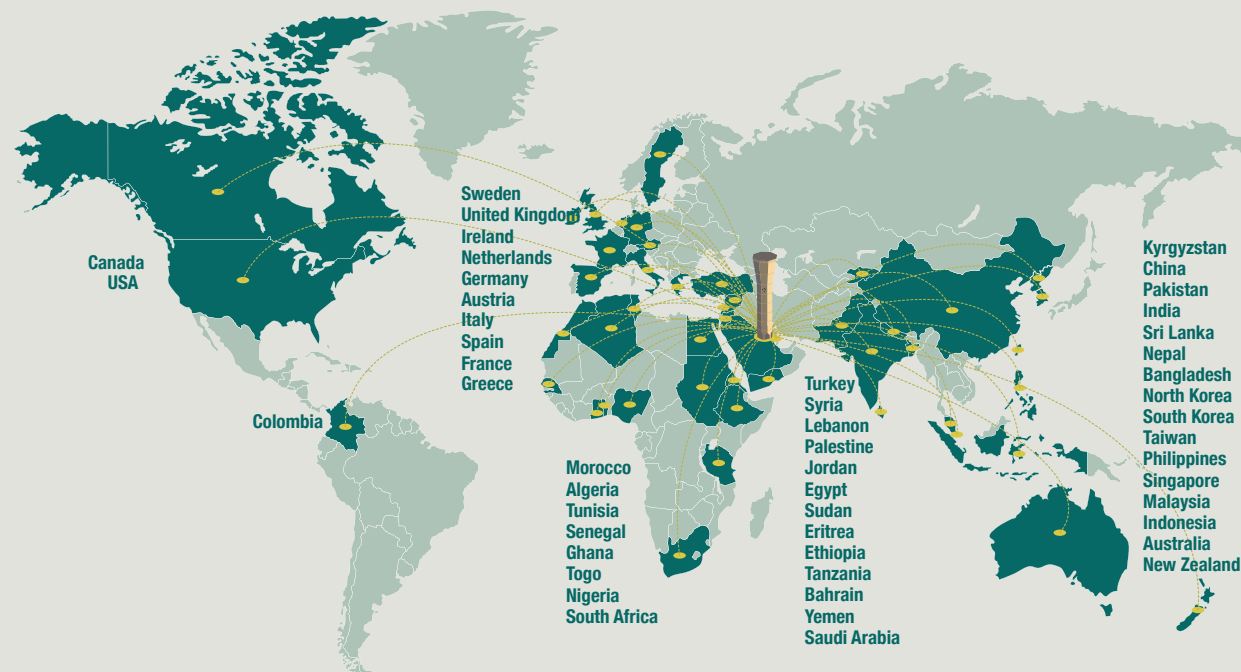
The function of this center is to expand the Kingdom's capabilities in the industrial sector by automating manufacturing, capitalizing on opportunities from the Fourth Industrial Revolution (4IR), and accelerating the implementation of primary and digital infrastructure projects. In addition, the rise of robotics in the industrial and service sectors is accelerating, and the Kingdom must keep pace.

OUR FACULTY

Our faculty always strive to continuously improve, and we are committed to promoting a productive and competitive mindset that helps our faculty thrive. Our goals include increasing the number of professors reaching full professor rank in 2022 by 20-30%, developing at least two more highly cited faculty members, and doubling the number of

female faculty members. We also aim to develop a strong Saudi faculty over the next decade by attracting 30 new graduate assistants and employing permanent Saudi lecturers. We believe all this makes KFUPM the fastest place to grow professionally in the Kingdom.

Our diverse faculty come from 50 countries around the globe



FACULTY AWARDS & GRANTS

To achieve our faculty development targets and to recognize excellence, the University has introduced multiple awards and sponsorships that come with prestige and a substantial financial incentive.

Awards

- President's Award for Highly Cited Researcher
- Distinguished University Professorship Award
- Research Excellence Award
- Applied Research Award
- Early Career Research Award
- Highly Cited Paper Award
- High Impact Paper Award

Grants

- Interdisciplinary Research Center Internal Grant
- Early Career Research Grant
- Grand Challenge Research Grant
- Proof-of-Concept Grant
- Dhahran Techno Valley Collaborative Grant
- International Summer Research Program (outbound)
- International Visiting Scholars Program (inbound)

Recent Recipients of the Distinguished University Professorship Award

							
Dr. Bekir Yilbas	Dr. Syed Zubair	Dr. Mohammad Gondal	Dr. Ali Asrof	Dr. Magdi Mahmoud	Dr. Mohamed Abido	Dr. Mohamed Habib	Dr. Michael Kaminski
Mechanical Engineering	Mechanical Engineering	Physics	Chemistry	Control and Instrumentation Engineering	Electrical Engineering	Mechanical Engineering	Geosciences

Recent Recipients of the President's Award for Highly Cited Researcher



Dr. Tawfik Saleh is a professor of Chemistry at KFUPM. He was recognized as a Highly Cited Researcher in the field of Chemistry from Web of Science due to his 340 publications that span books, chapters, and papers that have been cited more than 22,000 times. He is also a member of several scientific societies and has supervised many graduate students at the University.

Dr. Hafiz Muhammad Ali is an associate professor of Mechanical Engineering at KFUPM. His fields of research are thermal sciences and heat transfer. In 2021 he was recognized as a Highly Cited Researcher in the field of Engineering from Web of Science Clarivate. In 2020 and 2021 he made Stanford University's list of the world's top 2% researchers.



Female empowerment and academic excellence are major tenets of KFUPM's overarching philosophy – an attitude reflected in our faculty and staff composition.

Dr. Malak Baslyman was the first female faculty to be hired at KFUPM. She is currently an assistant professor in the Information and Computer Science Department, and an advisor to KFUPM's President. Through the latter role she was instrumental in opening bachelor's programs to female students. She earned a PhD degree in computer science from the University of Ottawa in 2018. Her research interests include context-driven software engineering, digital transformation frameworks and technologies, user experience optimization and health informatics.

STUDENT SPOTLIGHT

KFUPM attracts the top students in the Kingdom and has a highly competitive admission rate of 2%. One admission track only accepts students with SAT scores of 1350 and above, while another track accepts students who have won in international science and math olympiads. A major pillar of the University's transformation strategy is to boost female admissions by offering majors to women that are not widely available in the Kingdom. In addition to academic excellence, students can join the many clubs that exist at KFUPM.



Farah Seyam
Bachelor of Mechanical Engineering Class of '26

During my first semester at KFUPM I experienced significant academic development and expanded the range of my creative skills. I am really looking forward to further advancement in my core study years and graduating as part of KFUPM's first female bachelor class.



Anas Alkhader
Bachelor of Mechanical Engineering Class of '21

I am grateful for my journey at KFUPM to get a bachelor's degree. I learned a great deal both in the classroom and across the KFUPM environment during the mechanical engineering program, and I hope to return for master's and PhD degrees.



Fatima Almustafa
Master of Polymer Science & Engineering Class of '21

During my one-year master's program in polymer science and engineering at KFUPM, I gained extensive knowledge that would have normally taken me several years to learn. By specializing in this field, the program allowed me to have a clear edge over others when applying for jobs.



Ammar Balhadad
Master of Business Administration Class of '21

Building on my background in engineering, the MBA program at KFUPM's Business School has reinforced my skills and ability to adapt to the rapid development of the business world. It has enhanced my strategic thinking and allowed me to turn challenges into opportunities.

LEVERAGING THE SUMMER SEASON

High School Research Program (HXPLORE)

HXPLORE is a program that targets high school students to submit their own research topic ideas, of which the top applicants are selected to work with KFUPM faculty on their research. This program offers an opportunity for students to actively engage with KFUPM faculty and provides young students with University-level research experience.

Samples of HXPLORE research from 2021



Addressing security vulnerability to end 51% attacks on cryptocurrencies



Analysis of electroencephalogram images using artificial intelligence to diagnose dementia



Smart nose to identify smells that may cause allergies to patients with a weak sense of smell



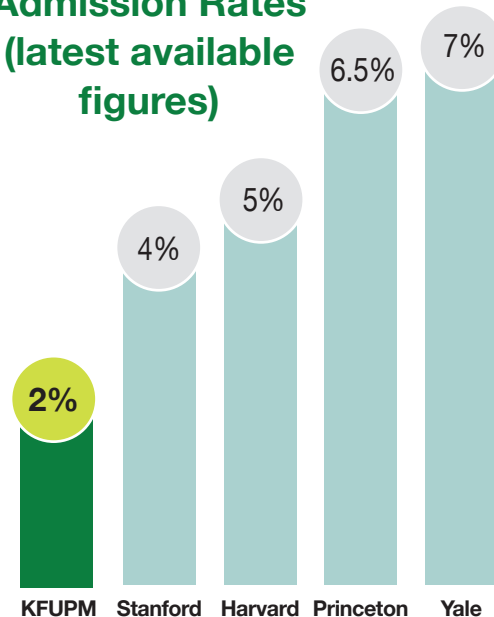
This has been one of the best summer experiences I have ever had. The time I spent in this program was extremely fruitful; I benefited from learning scientific sources and practical research experiences in the field in which I am working.

Suleiman Wahdan Al-Qadi
Research title: Predicting antibiotic resistance of bacteria in infections using machine-learning algorithms



10,000
undergraduate and graduate students

Admission Rates (latest available figures)



Source: Open Education Database

Summer Undergraduate Program (SURE)

During the summer of 2021 the University held its first Summer Undergraduate Research Experiences (SURE) program, which saw participation by more than 40 students. SURE was created to promote a culture of research early on in a student's undergraduate career, and provide an avenue for conducting that research.



The program was very useful and I really learned a lot in a limited time. I am looking forward to publishing my own paper and continuing to higher studies.

Mogahid Noureldin Farah
Research title: Smart design controls for lighting and daylighting in office buildings



Samples of SURE research from 2021

- Machine learning model for greenhouse gas emissions
- Using federated learning to improve AI models without sharing private data
- Design and synthesis strategies of fabricating thin film composite nanofiltration membranes

EXCHANGE PROGRAMS & INTERNATIONAL REACH



Global exchange is a pillar of scientific development and an important extension of interdisciplinary work. Without the influence of external ideas and global experience, the creation of meaningful knowledge will always remain limited by physical and mental boundaries. At the University, this exchange is a two-track process: not only do we want our students to benefit from global learning environments, we also want to welcome international students and faculty to Saudi Arabia. This process brings an international dimension to our campus, while also creating a group of KFUPM ambassadors who can relay the positive experiences they had here and share the different techniques and learning processes they encountered.

International students represent 10% of the student body at KFUPM



KNOWLEDGE SHARING & IDEAS EXCHANGE

KFUPM has various platforms to connect, listen and engage with external audiences, both locally and internationally. As remote learning surged during the COVID-19 pandemic, these platforms have taken on greater importance and are set to continue playing a key role in hosting academic discussions and disseminating ideas worldwide.

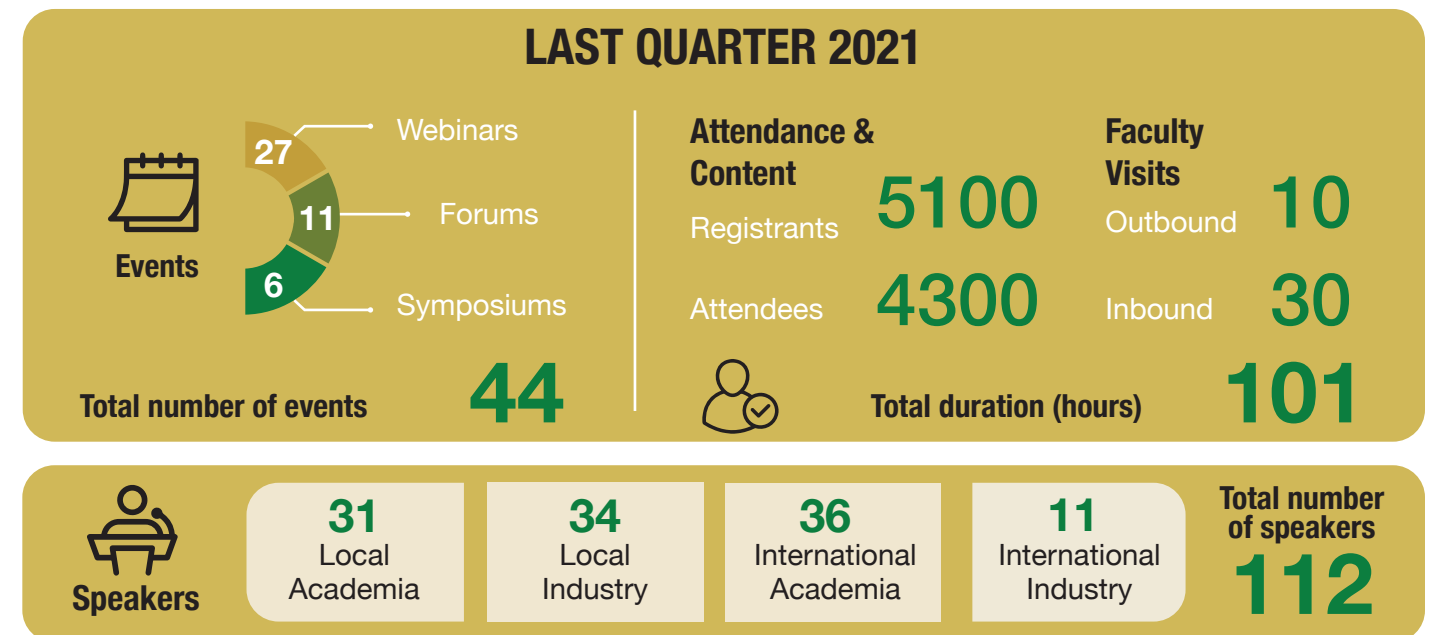


INTERNAL

KFUPM Rally is the University's consensus-building platform. Faculty, students and staff are encouraged to develop ideas that have a positive impact on the University, and debate them in the presence of peers and the University's leaders.

EXTERNAL

KIKX, KFUPM Institute for Knowledge Exchange, is a platform to connect with external entities – local and international – via conferences, seminars, and more. It aims to inform, inspire, and contribute to establishing KFUPM as a hub for academic knowledge dissemination.



ENABLING ENTREPRENEURS



KFUPM is committed to fostering a spirit of entrepreneurship and revitalizing its role in research. Two major drivers of this are the Dhahran Techno Valley Startup Challenge and the KFUPM Entrepreneurship Institute.

The Institute fosters an entrepreneurial mindset through education and research, and provides logistical and financial support to high-potential startups. Participants move through a program that is composed of four phases.

KFUPM Entrepreneurship Institute four-phase program

Campaign → Entrepreneurship bootcamp → Incubation period → Going to market

In figures: **4000+** Mentoring Sessions **2000+** Participants Trained **20+** Startups Launched

Startups incubated by KFUPM Entrepreneurship Institute include:

<p>Zeez Animation production company using local content and culture</p> <p>Dr.App Platform that connects healthcare providers</p> <p>Faheem An app to connect students with tutors</p> <p>Qosoor Wedding venue reservation app</p> <p>Experto On-demand technical support application</p> <p>Mobile Touch Develop mobile application and provide technical consultation to existing business</p> <p>Rivaln A platform for gaming enthusiasts</p>	<p>IR4LAB Chemical tracking system using block chain technology</p> <p>Noor Academy Educational website to help secondary school students after graduation</p> <p>MyCorr Engineering solutions for energy in buildings using automation and solar power</p> <p>Khout3d Air filters for industry; 3D printing materials; machine supplier</p> <p>BRAQ Ind. Inspection using drones with AI-powered sensors for navigation, object detection and classification</p> <p>WebCV Cloud-based CV editing and submission app for jobseekers and employers</p>	<p>Shasha Allows businesses to advertise out-of-home</p> <p>MEEM Allow business users to easily design new workflows or automate workflows</p> <p>Flexbox Logistics and fulfillment services for SMEs expand.</p> <p>Mahsool Electronic sales platform for date growers</p> <p>Skinnyduck Produces fortified food products by adding nutrients to improve health benefits</p> <p>EasyQ Queuing system</p> <p>Kanaf Manufacturer of face shields</p> <p>Cosine SaaS platform where merchants create their own webpages</p>	<p>Arabian International Robotics (AIR) Co Fire-fighting aerial system for high-rise buildings</p> <p>Innosoft A developer company to design websites and applications</p> <p>Wrsh Workshops and events management system</p> <p>ADRak AI Data analytics and data-driven business solutions</p> <p>Faseela Automating the palm tree care industry</p> <p>Conbo A quick dry mix concrete solution</p> <p>Wessam Ace Media Digital media agency providing photography, videography, etc.</p>
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INDUSTRY COLLABORATIONS



Partnership with Saudi Aramco

The relationship between KFUPM and Aramco goes back decades, as the oil giant was a founding member of the University in 1963. Aramco has strongly engaged with the University since then, benefiting from its research and academic programs, and attracting top talent among KFUPM graduates. We are proud to say that a large share of the company's engineers and top management – including the CEO and senior vice-presidents – are alums of KFUPM.

The symbiotic relationship between KFUPM and Aramco continues to this day, and extends through multiple facets of the two organizations. There is alignment at the highest levels, support for undergraduate and graduate programs, and collaboration in critical areas of applied research that allows Aramco to tackle challenges related to the discovery, production and utilization of hydrocarbons, as well as environmental stewardship. KFUPM considers Aramco its premiere partner in many endeavors, and this relationship is a major attraction for faculty and students to join the University.

Dhahran Techno Valley was established to help drive the development of a knowledge-based economy in the Eastern Province. It brings together the expertise of many different stakeholders, including:



Appendix

Colleges and Departments

College of Chemicals and Materials

- Department of Chemistry
- Department of Chemical Engineering
- Department of Materials Science and Engineering
- Department of Bioengineering

College of Computing and Mathematics

- Department of Information and Computer Science
- Department of Computer Engineering
- Department of Industrial and Systems Engineering
- Department of Mathematics

College of Design and Built Environment

- Department of Architecture
- Department of Architectural Engineering
- Department of City and Regional Planning
- Department of Civil and Environmental Engineering
- Department of Construction Engineering and Management

College of Engineering and Physics

- Department of Mechanical Engineering
- Department of Aerospace Engineering
- Department of Electrical Engineering
- Department of Control and Instrumentation Engineering
- Department of Physics

College of Petroleum Engineering and Geosciences

- Department of Petroleum Engineering
- Department of Geosciences

KFUPM Business School

- Department of Accounting and Finance
- Department of Management and Marketing
- Department of Information Systems and Operations Management
- Department of Global Studies

College of General Studies

- Department of Islamic and Arabic Studies
- Department of English Language
- Department of Physical Education
- Preparatory Year Program

PhD Programs

1. Chemical Engineering
2. Chemistry
3. Civil Engineering
4. Computer Engineering
5. Computer Science
6. Electrical Engineering
7. Geology
8. Geophysics
9. Industrial and Systems Engineering
10. Mathematics
11. Mechanical Engineering
12. Petroleum Engineering
13. Physics

14. Systems and Control Engineering

MS Programs

1. Aerospace Engineering
2. Applied Statistics
3. Architectural Engineering
4. Architecture
5. Bioengineering
6. Chemical Engineering
7. Chemistry
8. City and Regional Planning
9. Civil Engineering
10. Computer Engineering
11. Computer Networks
12. Computer Science
13. Construction Engineering and Management
14. Electrical Engineering
15. Engineering Management
16. Environmental Science
17. Geology
18. Geophysics
19. Industrial and Systems Engineering
20. Information Assurance and Security
21. Life Sciences
22. Materials Science and Engineering
23. Mathematics
24. Mechanical Engineering
25. Petroleum Engineering
26. Physics
27. Security and Information Assurance
28. Software Engineering
29. Systems and Control Engineering
30. Telecommunications Engineering

MX Programs

1. Artificial Intelligence
2. Bioengineering
3. Business Administration
4. Business Analytics
5. Computational Analytics
6. Computational Material and Modeling
7. Computer Networks
8. Cybersecurity
9. Data Science and Analytics
10. Environmental Science and Engineering
11. Facilities Management
12. Flow Assurance
13. High-Performance and Cloud Computing
14. Human Resource Management
15. Industrial Catalysis
16. Intelligent Hydrocarbon Fields
17. Intelligent Process Control
18. Intelligent Transportation Engineering
19. Internet of Things and Embedded Systems
20. Maintenance and Reliability
21. Material Science and Engineering
22. Non-Profit Management
23. Nuclear Engineering
24. Petrochemical Engineering
25. Polymer Science and Engineering

26. Project Management
27. Quantitative Finance
28. Quantum Computing
29. Reservoir Characterization
30. Robotics and Autonomous Intelligent Systems
31. Smart and Sustainable Cities
32. Sustainable and Environmental Management
33. Supply Chain Management
34. Sustainable and Renewable Energy
35. Unconventional Hydrocarbon Resources
36. Unmanned Aircraft Systems
37. Visual Computing
38. Water Treatment and Desalination
39. Wireless Communication Networks

Executive Programs

1. Executive Master of Business Administration
2. Sustainable and Renewable Energy

CX Programs

1. Artificial Intelligence and Machine Learning
2. Automated Construction Management
3. Bioelectronics and Sensors
4. Building and Construction Safety
5. Business Analytics
6. Climate Change Adaption
7. Cloud Computing
8. Communications Systems
9. Computational Analytics
10. Computational Materials and Modeling
11. Computer Networks
12. Corrosion and Materials Degradation
13. Cybersecurity and Blockchain
14. Data Science and Analytics
15. Decision Analytics
16. Drone Design and Application
17. Electronic Defense Systems
18. Energy Efficiency
19. Enhanced Oil Recovery
20. Human Resources Management
21. Hydrogen Mobility
22. Intelligent Energy Systems Management
23. Internet of Things
24. Islamic Finance
25. Laser and Microwave Sensing
26. Materials Engineering
27. Non-Metallic Materials
28. Nuclear Power Engineering
29. Polymer Science and Technology
30. Process Safety
31. Quantum Information and Computing
32. Refining and Petrochemicals
33. Renewable Energy and Energy Storage
34. Robotics and Autonomous Systems
35. Smart and Sustainable Buildings
36. Supply Chain Management
37. Thermal Systems
38. Traffic Engineering
39. Unconventional Hydrocarbon Resources
40. Waste Management

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