College	College of Engineering
Department	Mechanical Engineering Department
Program	Master of Science in Mechanical Engineering
Program level (Higher Diploma-Master's-PhD)	Master's
Program URL	https://engineering.kku.edu.sa/en/node/271
Program plan	Thesis Option

Level	Course Code	Course Title	Required or Elective	Pre-Requisite	Credit Hours	Theory	Lab	Type of requirements (Institution, College, or Program)
Level 1	7101-ME-3	Advanced Numerical Methods in Engineering	Required	NA	3	3		Program
	7102-ME-3	Advanced Applied Mechanics	Required	NA	3	3		Program
	7103-ME-3	Properties of Advanced Materials	Required	NA	3	3		Program
Level 2	7106-ME-3	Advanced Heat Transfer	Required	NA	3	3		Program
	71XX-ME-3	Elective-1 (List-1)	Elective	NA	3	3		Program
	71XX-ME-3	Elective-2 (List-2)	Elective	NA	3	3		Program
Level 3	71XX-ME-3	Elective-3 (List-3)	Elective	NA	3	3		Program
	71XX-ME-3	Elective – 4 (list 4)	Required	NA	3	3		Program
						3		
Level 4	71XX-ME-3	Elective 5 (list 4)	Elective	NA	3	3		Program
	7185-ME-3	Project	Elective	NA	3	3		Program

Non-Thesis Option

Level	Course Code	Course Title	Required or Elective	Pre-Requisite	Credit Hours	Theory	Lab	Type of requirements (Institution, College, or Program)
Level 1	7101-ME-3	Advanced Numerical Methods in Engineering	Required	NA	3	3		Program
	7102-ME-3	Advanced Applied Mechanics	Required	NA	3	3		Program
	7103-ME-3	Properties of Advanced Materials	Required	NA	3	3		Program
Level 2	7106-ME-3	Advanced Heat Transfer	Required	NA	3	3		Program
	71XX-ME-3	Elective-1 (List-1)	Elective	NA	3	3		Program
	71XX-ME-3	Elective-2 (List-2)	Elective	NA	3	3		Program
Level 3	71XX-ME-3	Elective-3 (List-3)	Elective	NA	3	3		Program
	71XX-ME-3	Elective – 4 (list 4)	Required	NA	3	3		Program
						3		
Level 4	71XX-ME-3	Elective 5 (list 4)	Elective	NA	3	3		Program
	7185-ME-3	Project	Elective	NA	3	3		Program

* Include additional levels (for three semesters option or if needed.
** Add a table for the courses of each track (if any)

Elective Courses

List	Course Code	Course Title	Required or Elective	Pre-Requisite	Credit Hours
List-1	7105-ME-3	Computational Fluid Dynamics	Elective	NA	3
	7104-ME-3	Finite Elements Method	Elective	NA	3
	7107-ME-3	Advanced Thermodynamics	Elective	NA	3
	7108-ME-3	Advanced Combustion	Elective	NA	3
	7109-ME-3	Renewable Energy	Elective	NA	3
	7110-ME-3	Advanced Mechanical Vibrations	Elective	NA	3
List-2	7111-ME-3	Material characterization and testing	Elective	NA	3
	7112-ME-3	Fatigue and Failure Analysis	Elective	NA	3
	7113-ME-3	Nanotechnology	Elective	NA	3
	7114-ME-3	Compressible flow	Elective	NA	3
	7115-ME-3	Materials Selection	Elective	NA	3
	7116-ME-3	Heat Treatment of Metals and alloys	Elective	NA	3
List-3	7117-ME-3	Design of Composite Materials	Elective	NA	3
	7118-ME-3	Analysis of Mechanical Systems	Elective	NA	3
	7119-ME-3	Solar Energy	Elective	NA	3
	7120-ME-3	Advanced Fluid Mechanics	Elective	NA	3
	7121-ME-3	Convective heat transfer	Elective	NA	3

	7122-ME-3	Manufacturing System Design	Elective	NA	3
List-4	7123-ME-3	Tribology	Elective	NA	3
	7124-ME-3	Feedback Control Design and Analysis	Elective	NA	3
	7125-ME-3	Energy Efficiency	Elective	NA	3
	7126-ME-3	Desalination	Elective	NA	3
	7127-ME-3	Nuclear Energy	Elective	NA	3
	7128-ME-3	Principles of Management for Engineers	Elective	NA	3
	7129-ME-3	Robotics and Automation	Elective	NA	3
	7130-ME-3	Artificial Intelligence & Machine Learning	Elective	NA	3
	7131-ME-3	Special topics	Elective	NA	3
	7132-ME-3	Advanced Manufacturing Science	Elective	NA	3
	CE-7601-3	Environmental Impact and Risk Assessment	Elective	NA	3
	7202-EE-3	Power System Operation and Control	Elective	NA	3

A brief description about the program

The 30-credit Master of Science in Mechanical Engineering program aims to:

1. To educate the graduates to excel as professionals in the field of advanced mechanical engineering
2. To make the graduates know their commitment to lifelong learning, social responsibility, and professional and ethical responsibilities in implementing sustainable engineering solutions.
3. To groom the graduate to excel in critical thinking, scientific research, problem-solving, and effective communications
4. To provide graduates with a strong foundation in business and management aspects of advanced mechanical engineering projects.
5. To train the graduate to support community partners through projects, seminars, and workshops

Program advantages

A Master of Science in Mechanical Engineering (MSME) with **thesis and non-thesis options** provides tailored flexibility to align with career goals. The **thesis track** focuses on **research and innovation**, enabling students to conduct original projects under faculty mentorship, publish findings, and prepare for academia, R&D, or doctoral studies. The **non-thesis track** emphasizes **applied skills and industry readiness** through advanced coursework, capstone projects, or internships, ideal for professionals seeking rapid advancement in technical or managerial roles. Both paths enhance earning potential, technical expertise (e.g., robotics, sustainable design), and leadership credentials while offering networking opportunities with industry experts. The thesis option often includes funding opportunities, while the non-thesis route prioritizes practical experience and faster graduation, ensuring graduates adapt to evolving fields like smart manufacturing or energy systems.

Job opportunities

- Power Generation sector
- Manufacturing sector
- Transportation sector
- Water Desalination sector
- Education sector
- Research and development sector
- Renewable energy sector
- Environmental sector

Skills and Knowledge acquired

- Gain an In-depth and specialized body of knowledge and understanding covering theories, principles, and concepts in main areas of mechanical engineering, profession, or field of work
- Obtain critical knowledge and understanding of processes, materials, techniques, practices, conventions, and/or terminology relevant to mechanical engineering, profession, or field of work
- Attain advanced knowledge and understanding of recent developments in mechanical engineering, areas of practice, or professions

	- Achieve advanced knowledge and understanding a range of established and specialized research and/or inquiry techniques of in mechanical engineering, profession, or field of work - Apply specialized theories, principles, and concepts in advanced contexts in mechanical engineering, profession, or field of work - Solve problems in complex and advanced contexts in mechanical engineering, profession, or field of work - Critically assess, review, and reflect on key concepts, principles, and theories; and provide creative solutions to current issues and problems in complex and advanced contexts, in mechanical engineering, profession, or field of work - Conduct advanced research or professional projects using specialized research and enquiry methodologies in mechanical engineering, profession, or field of work - Use advanced and specialized processes, techniques, tools, instruments, and/or materials to deal with complex and advanced practical activities - Carry out complex and advanced practical tasks and procedures in specialized areas related to mechanical engineering, professional practice, or field of work - Communicate in various forms to disseminate knowledge, skills, research results, and innovations related to mechanical engineering or filed of work to specialist and non-specialist audiences - Process data and information quantitatively and/or qualitatively in complex and advanced contexts related to mechanical engineering, professional practice, or field of work - Select, use, and adapt advanced digital technological and ICT tools and applications to process and analyze a variety of data and information sets to support and advance leading research and/or projects related to mechanical engineering, professional practice, or field of work - Demonstrate integrity and professional and academic values when dealing with various issues - Initiate professional planning for learning and/or work, professional development, monitor learning and performance, and participate in academic and/or professional strategic decisions, with high autonomy - Effectively manage specialized tasks and activities in a discipline, work, or field of practice with high autonomy - Effectively collaborate and participate in research or professional projects or groups, undertake leadership roles, and take high responsibility of the work - Contribute to the fostering community quality life.
Program tracks (if available)	NA
Program language (Arabic/English)	English
Eligible Applicants	1. The applicant must have a bachelor's degree in engineering or science with a grade of at least "Good." 2. The applicant must have graduated from a technical college with a grade of at least "Very Good." 3. The applicant must have obtained a minimum score of 60 on the General Aptitude Test for University Students. External scholarship students are exempt from this requirement. 4. The applicant must have passed the approved standardized English language tests (Duolingo, STEP, TOEFL, IELTS) with a score of at least 60 on the STEP test or its equivalent. Applicants who hold a Bachelor's degree from a university in an English-speaking country (such as the USA, UK, Canada, or Australia) are exempt from this requirement. 5. The department reserves the right to stipulate or waive any other conditions.
Program Total cost	- Total Program Fees - Excluding Supplementary Courses 60000SAR - Total Program Fees - Including Supplementary Courses 75000SAR
Total program credit hours	30