Kingdom of Saudi Arabia
Ministry of Higher Education
King Khalid University

المملكة العربية السعودية
وزارة التعليم العالى
جامعة الملك خالد

Operational Plan Report for the Program

BSc of Science in Industrial Engineering Program

Department of Industrial Engineering College of Engineering

(Academic Years: 2023-24)

King Khalid University

Kingdom of Saudi Arabia
Ministry of Higher Education
King Khalid University

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك خالد

Table of Contents

Kingdom of Saudi Arabia

Ministry of Higher Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم العالي

جامعة الملك خالد

About the Department

History

- The Industrial Engineering Department in College of Engineering offers a single major track program "Bachelor of Science in Industrial Engineering" is a branch of engineering which deals with the optimization of complex processes, systems or organizations. Program mainly works to eliminate waste of time, money, materials, man-hours, machine time, energy and other resources that do not generate value. The program duration is five years divided into ten levels (semesters). The first and second levels are considered as preparatory year program prior to core academics in the department. The program has been following the NCAAA standards and aspires to get ABET accreditation in the near future.

- The expansion of the department's programs has been influenced by the demands of the market and the university's capacity to meet those demands. The Industrial Engineering (IE) Department's professors and staff have made several changes to enhance the course as per market demand.

- Web Link: https://engineering.kku.edu.sa/en/content/939

Reasons for Establishing the Program

- Engineering has an impact on every facet of industrialization. Engineering has produced some of the greatest accomplishments of humankind, including the pyramids and modern technologies. It is a field that is expanding and continually revives itself to investigate and provide answers to new technical issues. Engineering progress is based on the application of knowledge from many different domains and is influenced by times of rapid illumination brought on by improvements in engineering technology. Strategic planning is crucial for any institution, but it is especially crucial for the college of engineering because of its dual role in fostering revolutionary technological advancements through scientific and applied discovery and in educating students who will significantly advance society in accordance with its needs. The strategic planning process in an academic setting is distinct, in part because the inputs and, in particular, the outputs of the academic endeavor and the value they provide are sometimes difficult to quantify. How can the value that a college of engineering graduate from King Khalid University adds to society be measured if they go on to inspire future generations of students as teachers? We have made an effort to incorporate intangibles, reducing the

Kingdom of Saudi Arabia
Ministry of Higher Education
King Khalid University

المملكة العربية السعودية
وزارة التعليم العالى
جامعة الملك خالد

importance that scientists and engineers have historically given to measurements and balancing it with a healthy regard for illusive but very real traits like collegiality, honesty, and leadership.

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Program Vision

Achieving leadership in the field of Industrial Engineering in the field of education, scientific research, and rendering community services in the Kingdom of Saudi Arabia.

Program Mission

Build within students a solid foundation in industrial engineering, expands the reasoning, communication, and problem-solving abilities, and prepare graduates who have the motivation and ability for lifelong growth in their professional careers and addresses the evolving needs of industry and society.

Weblink: https://engineering.kku.edu.sa/en/content/938

Program Goals

1. Apply principles of transformational leadership to negotiate, mentor, motivate, and lead others toward a shared and ethicalorganizational vision orgoal.
2. Apply knowledge of leadership, change, business models, organizational issues, and regulations to ensure organizational effectiveness, resulting in the improvement of emergency services.
3. Utilize the methods and resources of research, science, and technology to effectively manage emergency services.
4. Utilize appropriate communication strategies and methods to accomplish organizational goals and objectives.
5. Utilize appropriate assessment and planning skills to improve organization and community risk management for emergency services.

Program Objectives

Graduates of the IE program at King Khalid University should be able to:
1. Lead in providing innovative Industrial Engineering solutions that meet different market needs.
2. Address social and ethical issues in the Industrial Engineering field to ensure an economic and safe environment for everyone.
3. Demonstrate professional competencies such as excellent communication skills and productive teamwork.

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

4. Pursue further studies in the field of Industrial Engineering or similar disciplines and engage in life-long learning.

Program Educational Objectives

The Department of IE expects our graduates (in 2 to 6 years):

PEO1: To be able to analyze problems and create innovative industrial engineering designs considering functionality, cost-effectiveness, sustainability, safety, aesthetics, and satisfaction.

PEO2: To use modern technology and design tools, work individually and in a team effectively, and communicate ideas in written, oral, and graphical form clearly.

PEO3: To increase their personal knowledge and skills professionally and academically.

PEO4: To serve ethically as a team member or as a team leader to improve their communities.

Student Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Weblink: https://engineering.kku.edu.sa/en/content/942

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

King Khalid University Vision and Mission

University Vision

A globally leading university committed to human empowerment, regional development, and economic enhancement. Weblink:

https://www.kku.edu.sa/en/portfolio/7327

University Mission

An invigorating academic setting that fosters knowledge creation and application, champions research and innovation, emphasizes societal responsibility, and advances sustainable development by maximizing our potential and resources.

Weblink: https://www.kku.edu.sa/en/portfolio/7327

University Strategic Goals

- Enhance educational outcomes to meet the needs of labor market requirements an
- sustainable development.
- Advance research and innovation in response to societal and economic imperatives.
- Foster a culture of social responsibility and encourage volunteerism.
- Enhance the overall quality of academic life.
- Realize and maintain institutional excellence for students and staff.
- Diversify and nurture sustainable revenue streams.

Weblink: https://www.kku.edu.sa/en/portfolio/7327

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

The Committee and Responsibilities

Serial No.	Name	Title
1	Dr. Raafat Elshaer	Associate Professor
2	Dr. Mohamed Abdelfattah	Assistant Professor
3	Dr. Mohamed Rafik Qurashi	Professor
4	Dr. Abeer Khamees Mouldi	Assistant Professor
5	Dr. Imen Rashid Bouazzi	Assistant Professor
6	Dr. Mohamed Mokhtar	Assistant Professor

Committee Tasks

1. Develop an Operational Plan for the Bachelor of Science in Industrial Engineering Program

2. Monitor the Implementation of the Operational Plan

3. Prepare an Annual Report on the Progress of the Operational Plan's Implementation

Foundational Sources for the Operational Plan

1. The King Khalid University Strategic Plan

2. The College of Engineering Strategic Plan

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

3. The Annual Reports of Bachelor of Science in Inductrial Engineering Program

Setting the Plan's Objectives

The objectives outlined in this operational plan have been carefully crafted to align with the university's vision, mission, and strategic goals for the academic years 1444 and 1445 H. Detailed explanations of these objectives are presented in the following sections.

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Alignment Matrix Table between the Operational Plan Objectives for the Program and the University's Goal

UNIVERSITY GOALS	COLLEGE OF ENGINEERING STRATEGIC GOALS	PROGRAM GOALS	PROGRAM EDUCATIONAL OBJECTIVES	INITIATIVES	CONSISTENCY
Enhance educational outcomes to meet the needs of labor market requirements and sustainable development.	Academic excellence through development of curriculum at par with national and international standards.	Apply principles of transformational leader to negotiate, mentor, motivate, and lead others toward a shared and ethical organizational vision or goal.	To be able to analyze problems and create innovative industrial engineering designs considering functionality, cost-effectiveness, sustainability, safety, aesthetics, and satisfaction.	1. Revision and development of the program study plan (curriculum) every four years. 2. Updating the contents in each course to conform to the IE programs of international standards. 3. Developing the skills of the university staff members. 4. Provide support through alumni networks to create a resource base for professional development.	There is a complete consistency between strategic goal of the University, college, and the program goals.

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Realize and maintain institutional excellence for students and staff.	Academic excellence through development of curriculum at par with national and international standards.	Apply knowledge of leadership change, business models, organizational issues, and regulations to ensure organizational effectiveness, resulting in the improvement of emergency services.	To be able to analyze problems and create innovative industrial engineering designs considering functionality, cost-effectiveness, sustainability, safety, aesthetics, and satisfaction.	1. Developing the skills of the university staff members. 2. Conduct technical workshops and seminars on emerging technologies, such as IoT, renewable energy. 3. Provide support through alumni networks to create a resource base for professional development.	

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Enhance the overall quality of academic life.	Collaboration with other colleges/universities for knowledge sharing and benchmarking.	Utilize appropriate communication strategies and methods to accomplish organizational goals and objectives	To be able to analyze problems and create innovative industrial engineering designs considering functionality, cost-effectiveness, sustainability, safety, aesthetics, and satisfaction.	1. Participation of students in scientific research projects. 2. Students participate in national and other various examinations. 3. Professional Development of Students and Faculty.	There is a complete consistency between strategic goal of the University, college, and the program goals.
Enhance the overall quality of academic life.	Support innovative research to contribute in achieving the vision of the King Khalid University	Utilize the methods and resources of research science and technology to effectively manage emergency services.	To use modern technology and design tools, work individually and in a team effectively, and communicate ideas in written, oral, and graphical form clearly.	Participation of students in scientific research projects. 2. Students participate in national and other various examinations. 3. Professional Development of Students and Faculty.	

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

				in professional organizations.	
Advance research and innovation in response to societal and economic imperatives.	Interaction with industries to produce trained and skilled graduates, solve real-life problems and obtain feedback for continuous improvement	Utilize the methods and resources of research science and technology to effectively manage emergency services.	To serve ethically as a team member or as a team leader to improve their communities.	1. Improving the students' academic performance through feedback analysis. 2. Encourage faculty to apply for local research projects funded by public and private entities. 3. Motivate faculty to get membership in professional organizations. 4. Awards and Recognition 5. Public Outreach Initiatives	
Advance research and innovation in response to societal and economic imperatives.	Contribute to the sustainable development of the community by continuing education, training and consultancy services.	Utilize appropriate assessment and planning skills to improve organization and community risk management for emergency services	To serve ethically as a team member or as a team leader to improve their communities.	1. Increasing the number of research-based graduation projects. 2. Introducing industry-relevant graduation projects. 3. Professional Development of Students and Faculty.	
Diversify and nurture sustainable revenue streams.	To improve financial resources	Apply knowledge of leadership change, business models, organizational issues, and regulations to ensure organizational effectiveness Support innovative research	To increase their personal knowledge and skills professionally and academically.	1. Projects for solving industrial/community issues. 2. Increasing the number of field trip to recognize the industrial issues. 3. Encourage faculty to apply for local research projects funded by public and private entities.	

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

		contribute achieving the vision of the King Khalid University		4. Advisory Committees 5.Community Service	
Foster a culture of social responsibility and encourage volunteerism.	Contribute to the sustainable development of the community by continuing education, training and consultancy services.	Utilize appropriate assessment and planning skills to improve organization and community risk management for emergency services	To serve ethically as a team member or as a team leader to improve their communities.	1. Emphasizing graduation 2. Projects for solving industrial/community issues. 3. Increasing the number of field trip to recognize the industrial issues.	

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Operational Plan-report of the Program

1- Establish themselves in productive and successful careers in Industrial Engineering or related area and function effectively in interdisciplinary teams involving design and/or support of engineering activities.									
Initiatives	**Activities/Procedures**	**Responsible Party**	**Implementation Timeline**	**KPI**	**Targeted**		**Achieved goals**		
					44	**45**	**Target**	**Actual**	**%**
Revision and development of the program study plan (curriculum) in every four years.	Update course contents and study plan	Curriculum and Planning and Program Curriculum Committee	By end of 1445	Number of updating courses		✓	100%	100%	100%
Updating the contents in each course to conform to the BSc in IE programs of international standards.	Benchmarking with national and international programs	Curriculum and Planning and Program Curriculum Committee	By end of 1445	Number of updating courses		✓	100%	100%	100%

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Conduct technical workshops and seminars on emerging technologies, such as data analysis, data mining, IoT, and machine learning in industrial engineering.	Technical Training to the Students	Training Unit for Program	By end of 1445	Number of training programs	✓	✓	80%	70%	88%
Provide support through alumni networks to create a resource base for professional development.	Update course contents and study plan	Curriculum and Planning and Program Curriculum Committee	By end of 1445	Alumni feedback by integrating all alumnis through social media		✓	75%	65%	86%
Developing the skills of the university staff members.	Workshop/training for students	Training Unit	By end of 1445	Number of participants	✓	✓	60%	55%	92%

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

2. Pursue advanced studies and scientific research and engage in lifelong learning in Industrial and allied fields.									
Initiatives	**Activities/Procedures**	**Responsible party**	**Implementation timeline**	**KPI**	**Targeted**		**Achieved goals**		
					44	**45**	**Target**	**Actual**	**%**
Improving the students' academic performance through feedback analysis.	Conduct workshop	Training Unit	By end of 1445	Number of participants	✓	✓	70%	68%	97%
	Project Exhibition	Graduation Project committee	By end of 1445	Number of participants	✓	✓	100%	100%	100%
Encourage faculty to apply for local research projects funded by public and private entities.	Workshop on scientific writing skills	Vice Dean of higher studies and scientific research	By end of 1445	Number of workshops	✓	✓	1	1	100%
Create opportunities for students and researchers to publish their work in journals, conference proceedings, or institutional repositories.	Conference and Symposium Opportunities for students	Vice Dean of higher studies and scientific research	By end of 1445	Number of cases	✓	✓	3	2	67%

17

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Motivate faculty and students to get the membership in professional organizations.	IEOM association	IEOM	By end of 1445	Survey of students' satisfaction		✓	70%	60%	85%
	Research and professional development day	Vice Dean of higher studies and scientific research	By end of 1445	Survey of students' satisfaction		✓	70%	60%	85%

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

| | 3. Practice and inspire high technical standards and communicate their work and accomplishments to colleagues and the public. | | | | | | | | | |

Initiatives	Activities/Procedures	Responsible party	Implementation timeline	KPI	Targeted		Achieved goals		
					44	45	Target	Actual	%
Improving the students' academic performance through feedback analysis.	Student surveys	Academic development and quality committee	By end of 1445	Survey of degree of participants' satisfaction	✓	✓	100%	100%	100%
	Student Activities Closing Ceremony	Vice Dean of Educational and Development Affairs	By end of 1445	Percentage of students participated	✓	✓	80%	70%	88%
Motivate faculty to get the membership in professional organizations. Awards and Recognition	College of Engineering awards	CoE Deanship	By end of 1445	Number of workshops	✓	✓	2	2	100%

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

4. Contribute to community service through their technical expertise and skills while maintaining professional ethical conduct.									
					Targeted		**Achieved goals**		
Initiatives	**Activities/Procedures**	**Responsible party**	**Implementation timeline**	**KPI**	**44**	**45**	**Target**	**Actual**	**%**
Improving the students' academic performance through feedback analysis.	Survey Analysis and report	Quality Committee	By end of 1445	Survey of degree of participants' satisfaction	✓	✓	100%	100%	100%
Motivate faculty to get the membership in professional units	IOEM association	IEOM	By end of 1445	Percentage of students participated	✓	✓	60%	55%	92%
Encourage faculty to apply for local research projects funded by public and private entities/organizations	Give awareness to faculties about local research projects	Research Unit	By end of 1445	Number of events		✓	2	1	50%
Advisory Committees	Technical advising in planning and development of the program	Advisory committee	By end of 1445	Meetings	✓	✓	2 per year	2	100%
Community Service	Community Service	Community Service unit	By end of 1445	Meetings	✓	✓	80%	75%	94%

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

Actions and Achievements

Program Objectives	Achieved	Not Achieved	Percentage Achievement (%)	Time	Achieved Outcomes
1. Lead in providing innovative Industrial Engineering solutions that meet different market needs.	✓		93%	1445	• *Technical Training, Workshop/training for students to the students*: The outcomes show strong achievement, and the program is on track to meet its goals. Create strategies to boost participation, especially in areas with missed targets. • *Review and updating of new study plan*: Regularly review workshops and training to ensure they match student needs and industry trends. Set up ongoing feedback from students and alumni to improve future initiatives.
2. Address social and ethical issues in the Industrial Engineering field to ensure an economic and safe environment for everyone.	✓		75%	1445	• *Instructor-Student Meetings*: The initiative to improve academic performance through feedback analysis has been effective, and Instructor-Student Meetings could enhance it further. • *Workshop on scientific writing skills*: The project exhibition had full participation, showcasing the program's success in practical learning. Consider

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

					increasing scientific writing workshops to boost research output.
3. Demonstrate professional competencies such as excellent communication skills and productive teamwork.	✓		96%	1445	• *Student Activities Closing Ceremony*: A 100% student satisfaction rate shows the initiatives are effective. To boost participation in events like the Student Activities Closing Ceremony, consider using engaging promotions, incentives, or awards. • *Research Grant Workshops & College of Engineering awards*: The CoE's push for faculty involvement in research grants and professional organizations has had a positive impact. Explore more ways to recognize faculty and encourage further participation in professional organizations and recognition/encouragement for Publishing achievements.
4. Pursue further studies in the field of Industrial Engineering or similar disciplines and engage in life-long learning.	✓		76%	1445	• *Awareness to faculties about local research projects*: The achievement in research project awareness events suggests a need for better communication to inform faculty about opportunities and trends in research. • *Survey Analysis and report*: A high satisfaction rate shows the academic improvement initiatives are well-received. Develop campaigns to raise faculty awareness of local research projects through workshops and discussions.

Kingdom of Saudi Arabia

Ministry of Education

King Khalid University

المملكة العربية السعودية

وزارة التعليم

جامعة الملك خالد

					• *Community Service*: Strong community service participation reflects commitment to social responsibility. Explore more community service projects that engage faculty and students, emphasizing the real-world impact of their skills.

Department of Industrial Engineering
College of Engineering
King Khalid University

Approved: 2nd Council Meeting
Date: Sept 10, 2024