# Bachelor in Chemical Engineering

# Operational Plan

# 2022-2026

*The vison of the program is "To be a leading and distinguished academic program locally and internationally in education and scientific research in chemical engineering and promoting the sustainable development of the Kingdom".*

Kingdom of Saudi Arabia
Ministry of Education
**King Khalid University**
**College of Engineering**

المملكة العربية السعودية
وزارة التعليم
**جامعة الملك خالد**
كلية الهندسة

College of Engineering

Building 15

King Khalid University

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# Purpose

The under graduate program aims to meet national (Saudi Universities) and international standards. This program is designed in accordance with vision and mission of King Khalid University and the Saudi vision 2030, to prepare engineers and researchers in advanced fields of Chemical Processing and Technology. The program aims to provide students with an advanced level of knowledge and ability to analyze, design, and implement various aspects of Chemical Engineering systems. Moreover, this program is designed to prepare researchers and practitioners of chemical processes and to be trained in the field of chemical and petrochemical technology. The program has wonderful leadership, faculty and faculty from diffierent parts of the world with diversified specialization in chemical engineering. The program is full accredited by ABET. This in turn would be to satisfy local and regional market needs, considering the national framework of qualifications, and requirements of the national and international accreditation such as NCAAA and ABET. The program also encourages scientific research in the various fields of chemical engineering. This document presents the operational plan to achieve the strategic objective.

# About College of Engineering

The Royal Decree Order No. (7 / B / 4096) was issued on 14/03/1420 H to establish the College of Engineering. The establishment of this college was decided to keep pace with the renaissance of the Kingdom in many areas as the engineering is a profession that employs science to serve the welfare of society as well as to follow the scientific progress and technology in the twenty-first century, to meet the engineering labour market needs in the southern and south-western regions of the kingdom. The college started its activities and functions on the academic year 1422/1423 H where 110 students were accepted in the first semester, they were distributed in the departments of Mechanical Engineering and Industrial Engineering.

Aware of the university to keep up with the prospects of scientific and technical development and the contribution of the university in filling manpower needs in the fields of engineering with highly qualified engineering staff. Aligning with the development plans of the Kingdom. It has been approved in 08/05/1426 H to create the departments of Electrical Engineering, Chemical Engineering, Civil, Industrial Engineering departments as well as the department of Architecture and Planning.

## College Vision

To be a pioneer in engineering education, innovative research and sustainable development of the community.

## College Mission

To achieve academic excellence by providing adequate teaching-learning resources, motivating scientific research, and bring forth qualified engineers to serve the community.

# Strategic Goals of College of Engineering

1. Academic excellence through development of curriculum at par with national and international standards.

2. Collaboration with colleges / universities for knowledge sharing and benchmarking.

3. Support innovative research to contribute to achieving the vision of King Khalid University.

4. Interaction with industries to produce trained and skilled graduates, solve real-life problems and obtain feedback for continuous improvement.

5. Contribute to the sustainable development of the community by continuing education, training and consultancy services.

6. To improve financial resources.

## Department Vision

To achieve excellence, recognition and leadership in education, research, training and consultancy in Chemical Engineering for fostering the development of the society.

## Department Mission

To bring out highly qualified, innovative, research capable and health, safety and environment conscious chemical engineers as well as to furnish an excellent academic and research environment for its staff to engaged in research, innovations, consulting and community services.

## Program Mission

Preparing graduates with excellent chemical engineering knowledge for empowering critical thinking, innovation, research, safety, and ethical values to serve industry and community.

| Program Objectives (PEOs) | Domains |
|---|---|
| Utilize the acquired knowledge to work successfully in the diversified sector of Chemical Engineering. | Engineering Knowledge |
| Make use of technical expertise, design and innovative skills to accomplish advanced studies and follow research work proficiently. | Design, Innovations and Creativity |
| Take advantage of various attributes achieved through the program to work effectively in the private, corporate or government sector or as an entrepreneur. | Attributes |
| Associate with profession and society and work with safety, ethical and environmental responsibilities. | Values |

| College Goals | Program Objectives (PEOs) | | | |
|---|---|---|---|---|
| | Utilize the acquired knowledge to work successfully in the diversified sector of Chemical Engineering. (Engineering Knowledge) | Make use of technical expertise, design and innovative skills to accomplish advanced studies and follow research work proficiently. | Take advantage of various attributes achieved through the program to work effectively in the private, corporate or government sector or as an entrepreneur. | Associate with profession and society and work with safety, ethical and environmental responsibilities. |
| Academic excellence through development of curriculum at par with national and international standards. | ■ | | | |
| Collaboration with colleges / universities for knowledge sharing and benchmarking. | ■ | | | |
| Support innovative research to contribute to achieving the vision of King Khalid University | | ■ | ■ | ■ |
| Interaction with industries to produce trained and skilled graduates, solve real-life problems and obtain feedback for continuous improvement. | ■ | ■ | | |
| Contribute to the sustainable development of the community by continuing education, training and consultancy services | | | ■ | ■ |
| To improve in financial resources | | | ■ | |

## Program Objective 1
Utilize the acquired knowledge to work successfully in the diversified sector of Chemical Engineering.

| Program Objective 1 | Utilize the acquired knowledge to work successfully in the diversified sector of Chemical Engineering. | Responsibility for Implementation: Department Council |
|---|---|---|
| Expected Risks | Very poor faculty retention, Less number of student admission, non-availability of senior faculty | |
| Risk Management Plan | Motivate the faculty members by providing facilities and promotions Educated the importance of the masters program during the event such as international/national conference, workshops and trainings Publish the advertisement in an appropriate manner (Newspaper, online and consulting agents) with good compensation. | |

**Program Objective 1:** Utilize the acquired knowledge to work successfully in the diversified sector of Chemical Engineering.

| KPI # | Key Performance Indicators | NCAAA Reference KPI | Responsibility For Measurement | Measurement Level | Target Benchmark | Actual Benchmark | Measurement Method/ Frequency | Responsibility of the Review |
|---|---|---|---|---|---|---|---|---|
| 1.1 | Students overall evaluation on the quality of their learning experiences at the institution | KPI-P-01 | Program quality coordinator | College & Program | 4.25 | | survey /Annual | Head of Development & Quality Unit |
| 1.2 | Students overall rating on the quality of their courses | KPI-P-02 | Program quality coordinator | Program | 4 | | survey /Annual | Head of Development & Quality Unit |
| 1.3 | Percentage of students entering programs who successfully complete in minimum time | KPI- P-3 | Program quality coordinator | College & Program | 80% | | Data Analysis /Annual | Head of Development & Quality Unit |
| 1.4 | Portion of teaching staff leaving the institution in the past year for reasons other than age | -NA- | Head of Statistical Unit | College & Program | 5% | | Data Analysis /Annual | Vice Dean for Development and Quality |
| 1.5 | Satisfaction of alumni with services | -NA- | Program Quality Coordinator | College | 4 | | Survey/Annual | Head of Development & Quality |

## Program Objective 2

Make use of technical expertise, design and innovative skills to accomplish advanced studies and follow research work proficiently.

| Program Objective 2 | Make use of technical expertise, design and innovative skills to accomplish advanced studies and follow research work proficiently. | Responsibility for Implementation:Department Council |
|---|---|---|
| Expected Risks | No Class room, No Labs and No Library facility | |
| Risk Management Plan | Seek the university to raise fund to build the class rooms and Labs and library facility | |

**Program Objective 2:** Make use of technical expertise, design and innovative skills to accomplish advanced studies and follow research work proficiently.

| KPI # | Key Performance Indicators | NCAAA Reference KPI | Responsibility For Measurement | Measurement Level | Target Bench mark | Actual Benchmark | Measurement Method/ Frequency | Responsibility of the Review |
|---|---|---|---|---|---|---|---|---|
| 2.1 | Number of national and international collaborative research projects | -NA- | Director of Research Center | College | 4 | | Data Analysis / Annual | Dean of College of Engineering |
| 2.2 | Number of refereed publication in the previous year per full time equivalent member of teaching staff | KPI-P-10 | Director of Research Center | College & Program | 2 | | Data Analysis / Annual | Vice Dean for Development & Quality |
| 2.3 | Number of citations in refereed journal in the previous year per full time equivalent teaching staff | KPI-P-11 | Director of Research Center | College & Program | 90 | | Data Analysis / Annual | Vice Dean for Development & Quality |

## Program Objective 3
Take advantage of various attributes achieved through the program to work effectively in the private, corporate or government sector or as an entrepreneur.

| Program Objective 3 | Take advantage of various attributes achieved through the program to work effectively in the private, corporate or government sector or as an entrepreneur. | Responsibility for Implementation: Department Council |
|---|---|---|
| Expected Risks | Non availability of research lab and facilities<br>Non availability experts senior faculty | |
| Risk Management Plan | Corresponding authority should be informed to maintenance and service from the company<br>Advertise the available facility to college/university websites to attract the people<br>Payment to be done to utilise the facility<br>Requirement the technical by advertising through online and new papers | |

| | **Program Objective 3:** Take advantage of various attributes achieved through the program to work effectively in the private, corporate or government sector or as an entrepreneur. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **KPI #** | **Key Performance Indicators** | **NCAAA Reference KPI** | **Responsibility For Measurement** | **Measurement Level** | **Target Benchmark** | **Actual Bench mark** | **Measurement Method/ Frequency** | **Responsibility of the Review** |
| 3.1 | Number of faculty awards for innovative ideas, remarkable activities and teaching excellence | -NA- | Director of Research Center | College | 3 | | Data Analysis / Annual | Dean of College of Engineering |
| 3.2 | Number of citations in refereed journal in the previous year per full time equivalent teaching staff | KPI-P-11 | Director of Research Center | College & Program | 100 | | Data Analysis / Annual | Vice Dean for Development & Quality |
| 3.3 | Portion of faculty members who reviewed research articles | -NA- | Program quality coordinators | Program | 10% | | Data Analysis / Annual | Head of Development & Quality |
| 3.4 | Number of joint research projects in collaboration with other colleges/universities | -NA- | Research Unit | College | 3 | | Survey/ Annual | Head of Development & Quality |

**Program Objective 4:**
Associate with profession and society and work with safety, ethical and environmental responsibilities.

| Program Objective 4 | Associate with profession and society and work with safety, ethical and environmental responsibilities. | Responsibility for Implementation:Department Council |
|---|---|---|
| Expected Risks | Non availability of research lab and facilities<br><br>Non availability experts senior faculty | |
| Risk Management Plan | Seek the university to raise fund to build the class rooms and Labs and library facility<br><br>Publish the advertisement in an appropriate manner (Newspaper, online and consulting agents) with good compensation. | |

| | **Program Objective 4:** Associate with profession and society and work with safety, ethical and environmental responsibilities. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **KPI #** | **Key Performance Indicators** | **NCAAA Reference KPI** | **Responsibility For Measurement** | **Measurement Level** | **Target Bench mark** | **Actual Benchm ark** | **Measurement Method / Frequency** | **Responsibility of the Review** |
| 4.1 | Number of professional training programs over and above the curriculum arranged by faculty | -NA- | Training & Alumni Unit | Program | 15 | 12 | Data Analysis/Annu al | Head of Training unit |
| 4.4 | Number of patent granted | -NA- | Research unit | College & Program | 01 | 01 | Data Analysis / Annual | Head of Research unit |
| 4.6 | Proportion of faculty members who have membership in professional organizations | -NA- | Program quality coordinators | Program | 2 | 1 | Data Analysis/ Annual | Head of Development & Quality |

# Improvement plan

- To improve the quality of the students understanding by conducting more workshop
- Advertise the program by conducting conference, workshop
- Motivating the faculty to make more patents
- Improve in getting international collaboration projects
- Arranging external independent review towards progress of the program
- Organizing events in COE-KKU and inviting delegates from other colleges and universities
- To initiate collaboration between industry and academia
- To encourage research projects solving real life problems related to the province of Asir and Contribute to the sustainable development
- Signing a memorandum of understanding with industries of better placements
- Development and updating the curriculum as per industry requirements
- Organizing field visits relevant to curriculum and contemporary issues.
- Increase the student involvement in community services
- Participate in socio-cultural and community events
- Seeking financial budget handling by the program
- Activating and developing the policies for investment projects

# Financial plan
The program is completely relay on the funding provided by the institute.