OPERATIONAL PLAN

INDUSTRIAL ENGINEERING

Master of Science in Safety and Fire Protection Engineering

Purpose

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 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.

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. Theestablishment 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, Industrial Engineering departments as well as the department of Architecture and Planning.

College Vision
To meet the international standards as a source of excellence in engineering learning and center of research in theuniversity

College Mission

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

Strategic Goals of College

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 obtainfeedback for continuous improvement.

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

6. Improvement in financial resources.

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 the enhance the course as per marketdemand.

Vision:

Achieving leadership in the field of Fire and Safety Engineering in the field of education, scientific research, and rendering community

Mission:

Build within students a solid foundation in Fire and Safety 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

Goals

1. Apply principles of transformational leadership to negotiate, mentor, motivate, and lead others toward a shared and ethicalorganizational vision or goal.
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.

College Goals	IE Goals				
	Apply principles of transformational leader to negotiate, mentor, motivate, and lead otherstoward a shared and ethical organizational vision or goal.	Apply knowledge of leadership change, business models, organizational issues, and regulations to ensure organizational effectiveness, resulting in the improvement ofemergency services	Utilize the methods and resources of researchscience and technology to effectively manage emergency services	Utilize appropriate communication strategies and methods to accomplishorganizational goals and objectives	Utilize appropriate assessment and planningskills to improve organization and community risk management for emergency services
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 thevision of King Khalid University.		√	√	√	
Interaction with industries toproduce trained and skilled graduates solve real-life problems and obtain feedback for continuous improvement.	√		√		√
Contribute to the sustainabledevelopment of the community by continuing education, training andconsultancy services.		√	√		√
Improvement in financialresources.		√		√	√

College Goals	Program Goals			
	Provide a solid foundation in safety and fire protection	Enhance communication and problem-solving abilities	Prepare graduates who have the motivation and ability for lifelong growth, and	Develop professional careers and addresses the evolving needs of industry and society.
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 KingKhalid 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.		√		
Improvement in financial resources.				√

Strategic Goal No. 1	Apply principles of transformational leadership to negotiate, mentor, motivate, and lead others toward a shared and ethical organizational vision or goal.	Responsibility for Implementation: Department Council
Description of Goals	In order to promote graduate employability through authentic assessment activities that are in line with industry practices, standards, and methodologies, this strategic aim relates to producing trained and skilled graduates. The main goal is to close the gaps in understanding between the viewpoints of students, graduates, employers, and higher education staff in order to approach the whole experience of higher education for increased employability. The student believes that encouraging and supporting extracurricular and co-curricular activities, as well as the development of technical and transferrable skills through work experience, internships, and placements, as well as other employability tactics, will improve graduates' employability. By providing sufficient teaching-learning tools and a supportive academic atmosphere, this strategic aim also contributes to the advancement of academic achievement. The improvement of the academic system is the main goal. Careful development of the will be a part of it. In order to provide tracks within the PG program and correspond with community needs and industry requirements, the curriculum will be carefully developed to meet the standards of top national and international institutions. It is important to use independent reviewers' and stakeholders' opinions to enhance the curriculum. The curriculum should include the NQF-specified student learning outcomes along with a clearly defined procedure for measuring, evaluating, and improving them. This objective will entail obtaining accreditation and satisfying the academic requirements of national and international organizations. In order to do this, it is crucial to hire top-notch teachers and staff, have a high faculty to student ratio, and inspire both faculty and students to pursue professional growth.	
Expected Risks	The possibility of a large number of faculty members quitting at once; the lack of senior staff with specialized knowledge for postgraduate programs; and the poor performance of students in self-financing (students pay tuition) programs	
Risk Management Plan	Development of cutting-edge facilities for postgraduate programs on par with the best national standards; Proper advertisement and information dissemination for recruitment of senior faculty members at the levels of Associate Professor and Professor; Proposal and persuasion for additional financial support from the University encouraging students to enroll at abroad colleges Create a faculty database to facilitate speedy hiring	

Strategic Goal No. 1:		Apply principles of transformational leadership to negotiate, mentor, motivate, and lead otherstoward a shared and ethical organizational vision or goal.						
Sl. No	KPI No.	Key Performance Indicators	NCAAA Ref. KPI	Responsibility For Measurement	Target Benchmark	Actual Benchmark	Measurement Method / Frequency	Responsibility of the Review
1	1.0	Employers' evaluation of the program graduates' competency	KPI-PG-06	Program Quality Coordinators	4.3	4	University experience survey / Annual	Chairman and Quality Unit
2	1.1	Students' evaluation of the quality of the courses.	KPI-PG-02	Program Quality Coordinators	4.5	4.2	Data Analysis / Annual	Chairman and Quality Unit
3	1.2	Ratio of students to teaching staff	KPI-PG-08	Statistical Unit	2:1	1:1	Survey / Annual	Chairman and Quality Unit
4	1.3	Proportion of teaching staff leavingthe program	KPI-PG-05	Recruitmen tUnit	0%	0%	Data Analysis / Annual	Chairman and Quality Unit
5	1.4	Satisfaction of beneficiaries with thelearning resources	KPI-PG-07	Program Quality Coordinators	4.3	4	Data Analysis / Annual	Chairman and Quality Unit
6	1.5	Stakeholder evaluation of library services adequacy and diversity of learning resources	KPI-PG-01	Program Quality Coordinators	4.5	4.2	Data Analysis / Annual	Chairman and Quality Unit
7	1.6	Average number of students in theclass	NA	Registrar	20	12	Data Analysis / Annual	Chairman and Quality Unit
8	1.7	Percentage of students entering programs who successfully completefirst year	NA	Registrar	100%	100%	Data Analysis / Annual	Chairman and Quality Unit
9	1.8	Ratio of students to administrativestaff	NA	Statistical Unit	5:1	4:2	Data Analysis / Annual	Chairman and Quality Unit
10	1.9	Proportion of students with nationality other than Saudi Arabia	NA	Registrar	20%	0%	Data Analysis / Annual	Chairman and Quality Unit

Strategic Goal No. 2	Apply knowledge of leadership, change, business models, organizational issues, and regulations to ensure organizational effectiveness, resulting in the improvement of emergency services.	Responsibility for Implementation: Department Council
Description of Goals	In order to promote graduate employability through authentic assessment activities that are in line with industry practices, standards, and methodologies, this strategic aim relates to producing trained and skilled graduates. The main goal is to close the gaps in understanding between the viewpoints of students, graduates, employers, and higher education staff in order to approach the whole experience of higher education for increased employability. The student believes that fostering/supporting extracurricular and co-curricular activities and the development of technical and transferrable skills through job experience, internships, and other opportunities would increase graduates' employability. This strategic objective relates to assessing how well the community's requirements are being met while ensuring that sufficient resources are available. It aims to make a positive difference in the stakeholders' quality of life A sustainable community resembles a biological system in which components from the economic, environmental, and social spheres are interrelated and mutually supportive of one another. To do this, arrangements must be made for potentially important services including enhanced infrastructure, knowledge-based services, environmental technologies, improved management, continuous education, and need-based trainings. The adoption of methods to improve performance and reach the required level of satisfaction in the areas of teaching-learning, administrative support and facilities, research, and community services can be aided by collaboration and benchmarking processes.	
Expected Risks	- Quickly expanding industries Limited public and private investment in infrastructure and services; - Proposal and plea for more financial support from the university; - Unsatisfactory responses from the chosen peer universities; and - Increased use of information technologies	
Risk Management Plan	- Improved consulting services; ongoing consulting services that benefit the business community; - long-term training programs with a technical relevance emphasis. - Environmentally friendly product creation, manufacturing, services, and technology - Personnel who are committed to their tasks, whether they are teaching or not, regardless of whether they are teaching or not	

		Strategic Goal No. 2:			Apply knowledge of leadership, change, business models, organizational issues, and regulations toensure organizational effectiveness, resulting in the improvement of emergency services			

Sl. No	KPI No.	Key Performance Indicators	NCAAA Ref. KPI	Responsibility For Measurement	Target Benchmark	Actual Benchmark	Measurement Method / Frequency	Responsibility of the Review
11	2.0	Proportion of students of other colleges/ universities who take coursesin SFE program	NA	Registrar	30%	0%	Data Analysis / Annual	Vice Dean for Academic Affairs
12	2.1	Number of conferences, seminars andtraining programs	NA	Research Unit	10	13	Data Analysis / Annual	Vice Dean for Academic Affairs
13	2.2	Number of research or consultancy projects in SFE program in which faculty from other colleges/universitiesare involved	NA	Research Unit	6	11	Data Analysis / Annual	Vice Dean for Academic Affairs
14	2.3	Number of events (competitions, conferences etc.) participated by thestudents	NA	Chairman of the Program	5	1	Data Analysis / Annual	Chairman and Quality Unit
15	2.4	Percentage of publications of faculty members	KPI-PG-09	Community Service Unit	90%	85%	University experience survey / Annual	Chairman and Quality Unit
16	2.5	Proportion of faculty who reviewed research article and masters/PhD thesis	NA	Research Unit	90%	84%	Data Analysis / Annual	Chairman and Quality Unit
17	2.6	Faculty satisfaction related to the involvement in community service activities	NA	Community Service Unit	20%	10%	Data Analysis / Annual	Chairman and Quality Unit
18	2.7	Percentage of students participated incommunity services	NA	Community Service Unit	20%	0%	Data Analysis / Annual	Chairman and Quality Unit
19	2.8	Number of professional trainingprograms arranged by faculty	NA	Training & Alumni Unit	20%	14	Data Analysis / Annual	Chairman and Quality Unit

Strategic Goal No. 3	Utilize the methods and resources of research, science, and technology to effectively manage emergency services.	Responsibility for Implementation: Department Council
Description of Goals	This strategic objective establishes international-standard research chairs, centers of excellence, research groups, and labs to promote creative research in order to realize the KKU's vision. In order to increase the caliber of research, support researchers, bring in new research pioneers, and offer a proper research environment, including well-equipped labs, interdisciplinary and multidisciplinary teams, grants, and prizes. Along with promoting postgraduate studies, adopting creative ideas, and pursuing additional degrees or professional certification in Safety and Fire Engineering or a comparable sector, this aim also focuses on establishing collaboration with institutions and industry.	
Expected Risks	- Rejection of research project fund proposals, a low number of ISI publications, a failure to draw in research trailblazers, low faculty retention, and an excessive amount of teaching and administrative work are all contributing factors. - Application for external financing from businesses Proposal and persuasion for further financial	
Risk Management Plan	- Assistance from the university - Benefit from postgraduate enrollment, training, and consulting fees to finance research; provide competitive compensation for research innovators; - Create a database with a variety of faculty CVs; and use an express (quick) hiring process. - Support and supervision to obtain the postgraduate degrees (PhD) and seek professional certification in Safety and Fire Engineering - Payment for academics working additional hours. - Incentives and compensation for initiatives, administrative and research contributions.	

Strategic Goal No. 3:	Utilize the methods and resources of research, science, and technology to effectively manageemergency services.						

Sl. No	KPI No.	Key Performance Indicators	NCAAA Ref. KPI	Responsibility For Measurement	Target Benchmark	Actual Benchmark	Measurement Method / Frequency	Responsibility of the Review
20	3.0	Total number of funded projects obtained from KKU during the last academic year (PI only)	NA	Research Unit	12	12	Data Analysis / Annual	Vice Dean for Academic Affairs
21	3.1	Students overall evaluation on the qualityof their learning experiences at the institution	KPI-PG-03	Chairman of the Program	4.5	4.2	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairman
22	3.2	Total amount of funded projects in SAR obtained from outside KKU during the lastacademic year (PI only)	NA	Research Unit	3 Millions SAR	3.25 Millions Sar	Data Analysis / Annual	Vice Dean for Academic Affairs
23	3.3	Number of faculty awards for innovative ideas, remarkable activities and teachingexcellence	NA	Chairman of the Program	5	4	Data Analysis / Annual	Chairman and Quality Unit
24	3.4	Ratio of the number of the scientific articlespublished in ISI journal to the number of the overall articles published annually	NA	Research Unit	90%	97%	Data Analysis / Annual	Vice Dean for Academic Affairs
25	3.5	Number of research publications in Conferences (only first author from SFE program in the list of authors) during previous academic year	NA	Research Unit	5	4	Data Analysis / Annual	Vice Dean for Academic Affairs
26	3.6	Number of patents, innovative products,and awards of excellence	KPI-PG-13	Research U	6	4	Data Analysis / Annual	Vice Dean for Academic Affairs
27	3.7	Rate of published research per faculty member	KPI-PG-10	Research U	4:1	3:1	Data Analysis / Annual	Vice Dean for Academic Affairs
28	3.8	Citations rate in refereed journals per faculty member	KPI-PG-11	Research U	85%	74%	Data Analysis / Annual	Vice Dean for Academic Affairs

Strategic Goal No. 4	Utilize appropriate communication strategies and methods to accomplish organizational goals and objectives.	Responsibility for Implementation: Department Council
Description of Goals	In order to promote graduate employability and provide assessment activities that are in line with best practices, standards, and methodologies in the industry, this strategic aim relates to producing trained and skilled graduates. By encouraging/supporting extracurricular and co-curricular activities, as well as skill development (technical and transferable) through work experience, internships, and placements, as well as other employability strategies, the student learning outcomes defined by NQF believe they can improve graduate employability. To do this, the student must possess transferable abilities that are more crucial to employability than the specific area of study. The opinions of several stakeholders and reviewers should be given more weight in order to develop employable graduates with a variety of experiences and the capacity to tackle real-world problems. The opinions of the many stakeholders and reviewers should be given more weight in order to develop employable graduates with a range of experiences who can solve issues in real life and market their own identities, brands, and profiles. In order for graduates to fulfill the demands of businesses, lifelong learning should be promoted. Additionally, this objective also attempts to increase the caliber of research by motivating scholars, drawing in fresh talent, and creating a suitable atmosphere for research that includes well-equipped labs, interdisciplinary and multidisciplinary teams, funding, and prizes.	
Expected Risks	- Barriers to employment, such as gender, ethnicity, and socioeconomic status, that may supersede employability strategies; - Sudden changes in the skills that employers are looking for; - A lack of funding; a low number of ISI publications; and - A failure to draw in research trailblazers.	
Risk Management Plan	- Communication with companies and alumni to determine current requirements and expectations for graduates. - Extracurricular training and courses for students to get required marketable skills. Graduates' motivation and development of soft skills to handle problems. - Make a case for and persuade the university to provide more funding; - Submit an application for outside funding from businesses; - Receive benefits from enrollment in postgraduate studies, training, and consulting fees to support research; inspire and - Actively participate in professional and scientific activities.	

Strategic Goal No. 4:					Utilize appropriate communication strategies and methods to accomplish organizational goals andobjectives.				
Sl. No	KPI No.	Key Performance Indicators	NCAAA Ref. KPI	Responsibility For Measurement	Target Benchmark	Actual Benchmark	Measurement Method / Frequency	Responsibility of the Review
28	4.0	Students overall evaluation on the qualityof their learning experiences at the institution	KPI-PG-01	Chairman of the Program	4.5	4.2	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairman
29	4.1	Employers' evaluation of the program/institution graduates proficiency	KPI-PG-06	Chairman of the Program	4.3	4	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairman
30	4.2	Proportion of Master Thesis related to region relevant to Safety & Fire Engineering	NA	Chairman of theProgram	100%	100%	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairm an
31	4.3	Percentage of self-income of the SFEprogram through consultancy and sponsored projects	NA	Chairman of theProgram	20%	0%	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairm an
32	4.4	Number of research publications inConferences (student involve)	NA	Research Unit	20%	14%	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairman
33	4.5	Proportion of total operating funds (otherthan accommodation and student allowances) allocated to provision of student services	NA	Chairman of theProgram	30%	--	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairm an
34	4.6	Participation in conferences, seminars andtraining programs	NA	Chairman of theProgram	80%	75%	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairm an
35	4.7	Membership in professional and scientificsociety	NA	Chairman of theProgram	12	4	Data Analysis / Annual	Vice Dean for Academic Affairs/Chairm an

Analysis:

The Percentage of achieved indicators of the program operational plan objectives is almost 75% till the end of the academic year 2022-2023.

The program still has a big challenge to reach his objectives.

Priorities for improvements:

- A few program operational plan objectives' indicators have not yet been met.
- The percentage of student publications still falls short of the desired level.
- The program needs to make further improvements to the program's learning environment.
- The program should find ways to deal with students who dropped out during the first year;
- The program should attract international students from countries other than Saudi Arabia;
- The program should enhance the quality of the courses;
- The program should enhance the distribution of faculty members based on academic ranking to reach the target;
- The program should enhance the number of activities (competitions, conferences, etc.) in which students engage.
- The program should entice students from other colleges and universities to enroll in the program.
- The curriculum should include more pupils in volunteer work in the community.

The following Recommendations should be made:

- The program should increase the number of professional training programs organized by faculty;
- The program should increase its self-income through consulting and sponsored projects;
- The program should encourage students to present their research at conferences;
- The program should increase the number of faculty members and students who are members of professional and scientific societies.

Actions:

- The SFPE program will increase student participation in research projects and encourage them to publish their findings.
- The program will enhance learning services within the program (provide more software).
- The program will enhance course quality by incorporating student-centered teaching strategies and discussing the possibility of adding new courses to the plan andcurriculum.
- The program will identify solutions to the students who have dropped out of the program during the first year, especially for the students who have dropped out ofthe program due to financial burdens.
- The program will find solutions for students who have dropped out during the first year, especially for those who did so due to financial difficulties.
- The program will draw international students with nationalities other than Saudi Arabia and discuss offering scholarships
- The program will entice students from other colleges and universities to take courses.

Action Plan for Improvement, Achievement -work flow

Planned Actions	Responsibility of Action	Planned Completion Date	Level of Completion		If Not Completed	
			Completed	Not Completed	Reasons	**Proposed Actions**
1. **Continuous Monitoring of student assessments using rubrics is performed to ensure that the planned range of domains of student learning outcomes is taken fully in account**	All course coordinators	20th June 2022	Yes			**ongoing process for every semester**
2. **Regular online monitoring of performance and results of assessments of students**	All course coordinators	20th June 2022	Yes			**Regularly done**
3. **Well-planned training for new faculty members related to rubric assessment and analysis**	Quality committee	20th May 2022	Yes			**planned during every new faculty join**

4. **Following up students for attending all classes and increasing their awareness within classes.**	Quality committee	20[th]April 2022	Yes			**It is planned from next semester**
5.**Monitoring of implementation of actions of previous course report on the new course report for each course**	Quality coordinator	20[th]April 2022	Yes			**implemented systematically every semester**
6. **Help to improve the level of students skills in using the simulation tools related to design**	All faculty members teaching design courses	20[th]April 2022	Yes			**provided software training**
7. **Focus more on research and publish in ISI journals**	Research committee	05/05/220 22	Yes			**continuous process**
8.**Updating Lab devices and maintenance**	Chairman of IE Department	05/05/202 2	Yes			**Given request to university**
9. **Enhancing community services**	Chairman of the Training committee	05/05/2022	Yes			**organized regularly by faculty in charge**
10. **Improve the faculty to students ratio**	Chairman of the Department.	05/06/2022	Yes			**No action taken so far since adequate**
11. **Improve The number of students per section**	Chairman of the Department.	05/05/2022	Yes			**Monitored by faculty in their courses**
12. **Purchase licensed copies for different application software.**	Chairman, purchase committee	05/05/2022	Yes			**given request to university**
13. **Agreement with one or more appropriate Saudi universities to systematize benchmarking for KPIs**	Dr. Saeed Al-Qadhi, Vice dean, Graduate studies and research,	18/05/2022	Yes			**Applied**
14. **Implementation of action plans resulting from student learning outcomes assessments at both the course and program levels**	Curriculum committee	18/05/2022	yes			**continuous evaluations in every semesters**

15. Review and revise the curriculum to address English communication skills more comprehensively at all levels, including in lower level courses.	Curriculum committee	12/12/2022	Yes			**Provided lectures for improving English skills**
16. Revise the matrix of program objectives and PLOs and the matrix of program objectives and courses to more realistically focus on the main objectives addressed by each PLO and course.	Curriculum committee	20/09/2022	Yes			**to be carried out by committee**
20. Organizing summer training program and monitoring of students activities	All faculty members teaching	19/09/2022	Yes			**Planned during this summer**
21. purchase of major equipment, (b) timely replacement of small equipment, and (c) recruitment of qualified lab technicians/engineers	**Chairman of IE Department**	02/08/2022	Yes			given request to university

Note: the KPIs of the strategic goals will be continuously every year till 2023. The duration of actions is one year. The responsibilities of measurements and review are as indicated in the above tables

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