

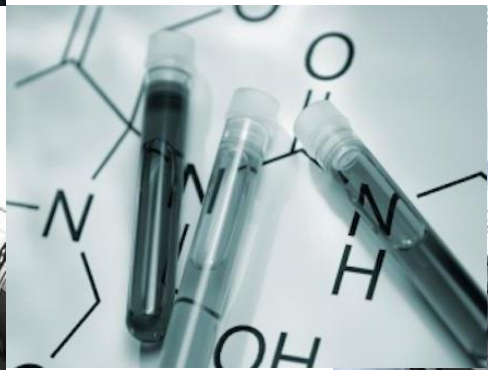
"To meet the international standards  
as a source of excellence in  
engineering learning and center of  
research in the university"



# Industrial Engineering Department

Handbook

King Khalid University, Abha, Kingdom of Saudi Arabia





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**Phone: +966559045754**

## **DEPARTMENT OF INDUSTRIAL ENGINEERING**



## **Industrial Engineering Program Description**

Kingdom of Saudi Arabia has been blessed by vast natural resources and these resources have been utilized for the progress of the country and welfare of its people. The proper utilization of these natural resources led to the opening of Industrial Engineering Department under College of Engineering (COE) at King Khalid University (KKU). The authorized body i.e. MoHE (private institutions and Council of Higher Education for public institutions) has approved the program. The Industrial Engineering Department was established in year 2007 at the Gregar main campus of King Khalid University with the objective of graduating students having expertise in all the aspects of Industrial Engineering (<http://industrial.engineering.kku.edu.sa/en/content/275>).

## **Industrial Engineering Program Vision**

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

## **Industrial Engineering Program Mission**

Build within students a solid foundation in industrial engineering, expands the reasoning, communication and problem solving abilities of students, 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

## Program Educational Objectives (PEOs)

- **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.

# Department of Industrial Engineering

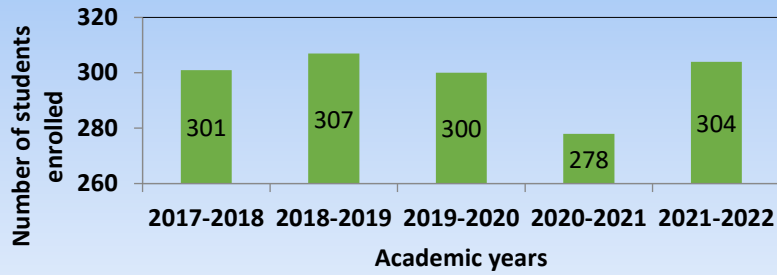
Level 1			
Course Code	Course Title	Credit Hours	Pre-requisite
011-ENG-6	Intensive English Program I	6	None
107-CHEM-4	General Chemistry	4	None
119-MATH-3	Calculus I	3	None
111-ISLAM-2	Islamic Cultrure (1)	2	None
201-ARAB-2	Language Skills	2	None
Total Credits Hrs		17	
Level 3			
Course Code	Course Title	Credit Hours	Pre-requisite
231-INE-3	Probability with Applications	3	129-PHYS-4
261-INE-2	Introduction to Industrial Engineering	2	None
229-MATH-3	Calculus III	3	219-MATH-3
219-PHYS-4	Physics II	4	129-PHYS-4
113-ISLAM-2	Islamic Cultrure (3)	2	None
111-GE-3	Engineering Drawing	3	None
Total Credits Hrs		17	
Level 5			
Course Code	Course Title	Credit Hours	Pre-requisite
361-INE-2	Applied Statistics in Industrial Engineering	2	232-INE-3
329-MATH-3	Linear Algebra	3	None
311-INE-2	Engineering Economy	2	None
313-MEC-2	Dynamics	2	None
211-MEC-3	Material Science	3	129-PHYS-4, 107-CHEM-4
221-GE-2	Creativity and Innovation	2	
301-ENG-2	Technical Report Writing	2	012-ENG-6
Total Credits Hrs		16	
Level 7			
Course Code	Course Title	Credit Hours	Pre-requisite
431-INE-2	Work Design and Measurement	2	232-INE-3
420-INE-2	Management Information Systems	2	None
451-INE-3	Production planning and control	3	231-INE-3
461-INE-3	Human Factor Engineering	3	None
411-INE-2	Professional Ethics and Practice	2	None
202-ARAB-2	Arab Writing	2	None
451-INE-2	Reliability and Maintenance Planning	2	None
Total Credits Hrs		16	
Level 9			
Course Code	Course Title	Credit Hours	Pre-requisite
521-INE-3	Operation Research II	3	321-INE-3
5XX-GE-3	Elective II	3	None
541-INE-3	Supply Chain Modeling	3	None
xxx	Free Elective II	2	None
554-INE-2	Senior Design I	2	Pass 125 credit hours
511-GE-2	Entrepreneurship and Venture Engineering	2	None
566-INE-3	Facilities Planning, Design and Engineering	3	321-INE-3
Total Credits Hrs		18	

Level 2			
Course Code	Course Title	Credit Hours	Pre-requisite
012-ENG-6	Intensive English Program II	6	011-ENG-6
104-CMS-2	Computer Science	2	None
219-MATH-3	Calculus II	3	119-MATH-3
129-PHYS-4	Physics I	4	None
112-ISLAM-2	Islamic Cultrure (2)	2	None
Total Credits Hrs		17	
Level 4			
Course Code	Course Title	Credit Hours	Pre-requisite
200-INE-2	Data Input and Manipulation	2	None
232-INE-3	Basic Statistical Method	3	231-INE-3
211-GE-2	Learning Skills	2	None
212-MEC-2	Statics	2	129-PHYS-4
218-ELEC-3	Electrical Engineering I	3	129-PHYS-4, 119-MATH-3
221-MEC-3	Production Technology and Workshop	3	111-GE-3
Total Credits Hrs		15	
Level 6			
Course Code	Course Title	Credit Hours	Pre-requisite
331-INE-3	Simulation Analysis & Design	3	232-INE-3
319-MATH-3	Differential Equations	3	219-MATH-3
321-INE-3	Operation Research I	3	232-INE-3
xxx	Free Elective I	3	None
114-ISLAM-2	Islamic Culture (4)	2	None
32X-INE-2	Elective 1	2	None
Total Credits Hrs		17	
Level 8			
Course Code	Course Title	Credit Hours	Pre-requisite
432-INE-3	Quality Control	3	231-INE-3
437-INE-3	Regression and Forecasting	3	232-INE-3
411-INE-2	Engineering Management	2	None
452-INE-3	Supply Chain Planning and Design	3	321-INE-3
453-INE-2	Product Design & Development	2	None
419-MATH-3	Numerical Methods	3	319-MATH-3
Total Credits Hrs		16	
Level 10			
Course Code	Course Title	Credit Hours	Pre-requisite
5XX-GE-3	Elective III	3	None
5XX-GE-3	Elective IV	3	None
531-INE-2	Design & Analysis of Experiment	2	232-INE-3
551-INE-3	Computer Aided Design & Manufacturing	3	None
555-INE-2	Senior Design II	2	554-INE-3
564-INE-2	Safety & Environmental Engineering	2	232-INE-2
544-INE-3	Queueing Systems	3	None
Total Credits Hrs		18	

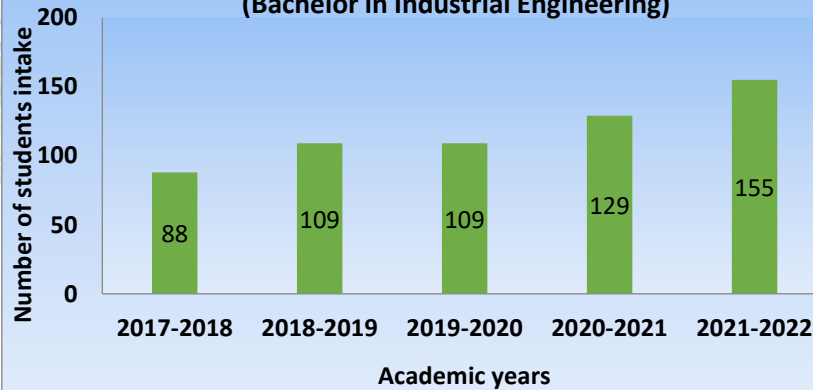
		Industrial Engineering Department										Undergraduated Curriculum Guide						
LEVEL/ SEMESTER		1st YEAR		2nd YEAR				3rd YEAR				4th Year				5th YEAR		
Credit Hrs	Contact Hrs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
No. Courses		17	24	17	25	17	22	15	20	16	18	16	18	16	19	16	19	
		4	4	4	4	4	4	5	4	1	1	2	2	18	22	18	23	
General Education	Inten Eng Prog I 011-ENG-6 6 12	Inten Eng Prog II 012-ENG-6 6 12						Technical Report Writing 301-ENG-2 2 2	Elective I 32X-GE-2 2 2									
	Islamic Culture (1) 111-ISLAM-2 2 2	Islamic Culture (2) 112-ISLAM-2 2 2	Islamic Culture (3) 113-ISLAM-2 2 2						Islamic Culture (4) 113-ISLAM-2 2 2									
	Language Skills 201-ARAB-2	Computer Science 104-COMP-2		Learning Skills 211-GE-2					Free Elective xxx		Arab Writing 202-ARAB-2				Free Elective xxx			
Math, Basic Sciences & Others Engineering	General Chemistry 107-CHEM-4 4 5	Physic I 129-PHYS-4 4 5	Physic II 219-PHYS-4 4 5	Statics 212-MEC-2 2 2	Dynamics 313-MEC-2 2 2													
	Calculus I 119-MATH-3 3 3	Calculus II 219-MATH-3 3 3	Calculus III 229-MATH-3 3 3	Electrical Eng 218-ELEC-3 3 4	Linear Algebra 329-MATH-3 3 3	Differential Equations 319-MATH-3 3 3												
Industrial Engineering Courses				Eng. Drawing 111-GE-3 3 6	Production Tech 221-MEC-3 3 5	Material Science 211-MEC-2 3 4	Creativity and Innovation 211-MEC-2 2 2											
			Probability & app 231-INE-3 3 4	Basic Stat method 232-INE-3 3 4				Simulation Analysis & Design 331-INE-3 3 4	Human Factors Eng 461-INE-2 3 4	Quality Control 432-INE-2 3 4								
			Into to Industrial Eng 261-INE-2 2 2	Data Input 200-INE-2 2 3	App Stat in Indus Eng 361-INE-2 2 3			Operation Research I 321-INE-3 3 4	Management Info Sys 420-INE-2 2 2	Regression and forecast 437-INE-2 3 4								
					Engineering Economy 311-INE-2 2 2				Work Design and Meas 431-INE-2 2 3	Engineering Management 411-INE-2 2 2								
									Production Planning 451-INE-2 3 4	Supply Chain Planning 452-INE-2 3 4								
									Professional Ethics 411-INE-2 2 2	Product Design 453-INE-2 2 2								
									Reliability 451-INE-2 2 2									

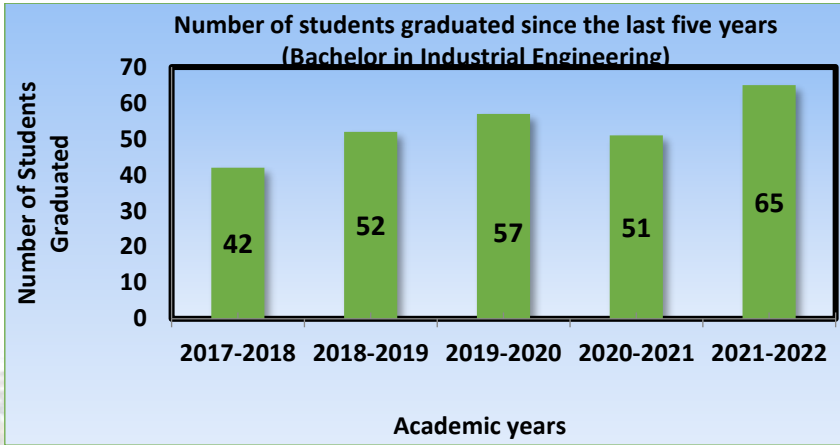
  General Education
   Math and Basic Science courses
   Other engineering Course
   Industrial Eng Courses
   Electives

**Number of students enrolled since the last five years  
Bachelor in Industrial Engineering**



**Number of students intake since the last five years  
(Bachelor in Industrial Engineering)**







## Industrial Engineering Laboratory

- Human Factors Laboratory
- Work Study Laboratory
- Metrology Laboratory
- Statistics Laboratory
- Simulation Laboratory
- Operations Research Laboratory
- CIM Laboratory

More information related to the laboratories: <http://industrial.engineering.kku.edu.sa/en/content/516>

## Faculty

The IE department has a process for hiring the excellent faculty, for continuous professional development and for facilitating the research work of faculty. The IE department comprises of faculty with high academic achievements and a rich experience of teaching in various countries of the globe. In addition to academic experience, the many faculties have experience in industry, consultancy and professional organizations. The IE faculty have also administrative experience at the college and the university levels. The department chair discharges his duties through the various academic committees formed of specialized faculties for different aspects of management of the program. The department chair reports to the Dean of the college. The Dean is the administrative position responsible for all aspects of the academic process in the college.

## Faculty Workload

The assigned workload of the faculty is as per the university current regulations and it is according to the academic rank of the faculty. Based on the rank and regulation, the teaching load assigned to the faculty without any extra remunerations are as given below.

Professor:	10 credit hours
Associate Professor:	12 credit hours
Assistant Professor:	14 credit hours
Lecturer:	16 credit hours

The faculty having the administrative responsibilities, in addition to academic, assigned lesser teaching load. The teaching load assigned is in line to support the faculty professional development, educational quality improvement activities and for facilitating their research work. The working hours assigned for Saudi faculty are 35 hours per week and for faculty on yearly contract, the working hours are 40 hours per week. The working hours meant for teaching, research, academic advising, laboratory supervision and any other tasks assigned to them.

## **Faculty Size**

Discuss the adequacy of the size of the faculty and describe the extent and quality of faculty involvement in interactions with students, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners including employers of students.

Currently, the department of IE has 04 Asst. Professors, 01 Associate Professor, 5 lecturers with M.Sc. degree and 2 with B.Sc. degree Teaching Assistants.

In addition to the above faculty, the teaching assistants are also appointed and some of them sent abroad for higher studies. The faculties of Industrial Engineering department possess from diverse background and nationalities i.e. Saudi Arabia, Egypt and India.

## **Professional Development**

Professional development has given prime importance to develop strong program in the department. The university budgetary provision supports the faculty's professional development activities. At department level, it starts with new joining faculty for his professional development. The head of the department starts with a short session with each new faculty member explaining what is required for the tenure process and giving information about sources and infrastructure as well as their other proposed activities. The head also assigns department coordinators to new faculty on their arrival for mentoring purpose.

The department faculty is encouraged to undertake research, attend conferences, workshops and professional development programs, organize national and international conferences and seminars, collaborate with experts in industry and academia, for consulting and professional practice, and where appropriate pursues higher studies. Faculty are also offered incentives to formulate research proposals in collaboration with other faculties to develop a research culture in the department. The department head collects yearly performance profiles of all faculties and discusses them with the Dean of the College for review and evaluation. The faculty are being awarded in recognition of their efforts in professional development and to develop interests, abilities, and achievements as both teachers and learners.

**Table: Faculty Details**

<b>Faculty Name</b>	<b>Designation</b>	<b>Academic Position</b>	<b>Email</b>	<b>ResearchGate Link</b>
Dr Ali Miuflih	Assistant Professor	Department chairman	asalmuflih@kku.edu.sa	<a href="https://www.researchgate.net/profile/Ali-Almuflih">https://www.researchgate.net/profile/Ali-Almuflih</a>
Dr. Saleh Y Al Ghamdi	Assistant Professor		syalghamdi@kku.edu.sa	<a href="https://www.researchgate.net/profile/Saleh_Alghamdi5">https://www.researchgate.net/profile/Saleh_Alghamdi5</a>
Dr. Mohamed A.A. Mansour	Associate Professor		momansor@kku.edu.sa	<a href="https://www.researchgate.net/profile/Mohamed_Mansour">https://www.researchgate.net/profile/Mohamed_Mansour</a>
Dr. Mohamed Rafik Noor Mohamed Qureshi	Associate Professor	Coordinator Timetable and Examination Committee	mrnoor@kku.edu.sa	<a href="https://www.researchgate.net/profile/M_N_Qureshi">https://www.researchgate.net/profile/M_N_Qureshi</a>
Dr Raafat Elshaer	Associate Professor	Curriculums and Plans Coordinator	relshaer@kku.edu.sa	<a href="https://www.researchgate.net/profile/RaafatElshaer">https://www.researchgate.net/profile/RaafatElshaer</a>
Dr. Shaik Dawood Abdul Khadar	Assistant Professor	Quality and Development coordinator	shdawood@kku.edu.sa	<a href="https://www.researchgate.net/profile/Shaik_Dawood_Abdul_Khadar">https://www.researchgate.net/profile/Shaik_Dawood_Abdul_Khadar</a>

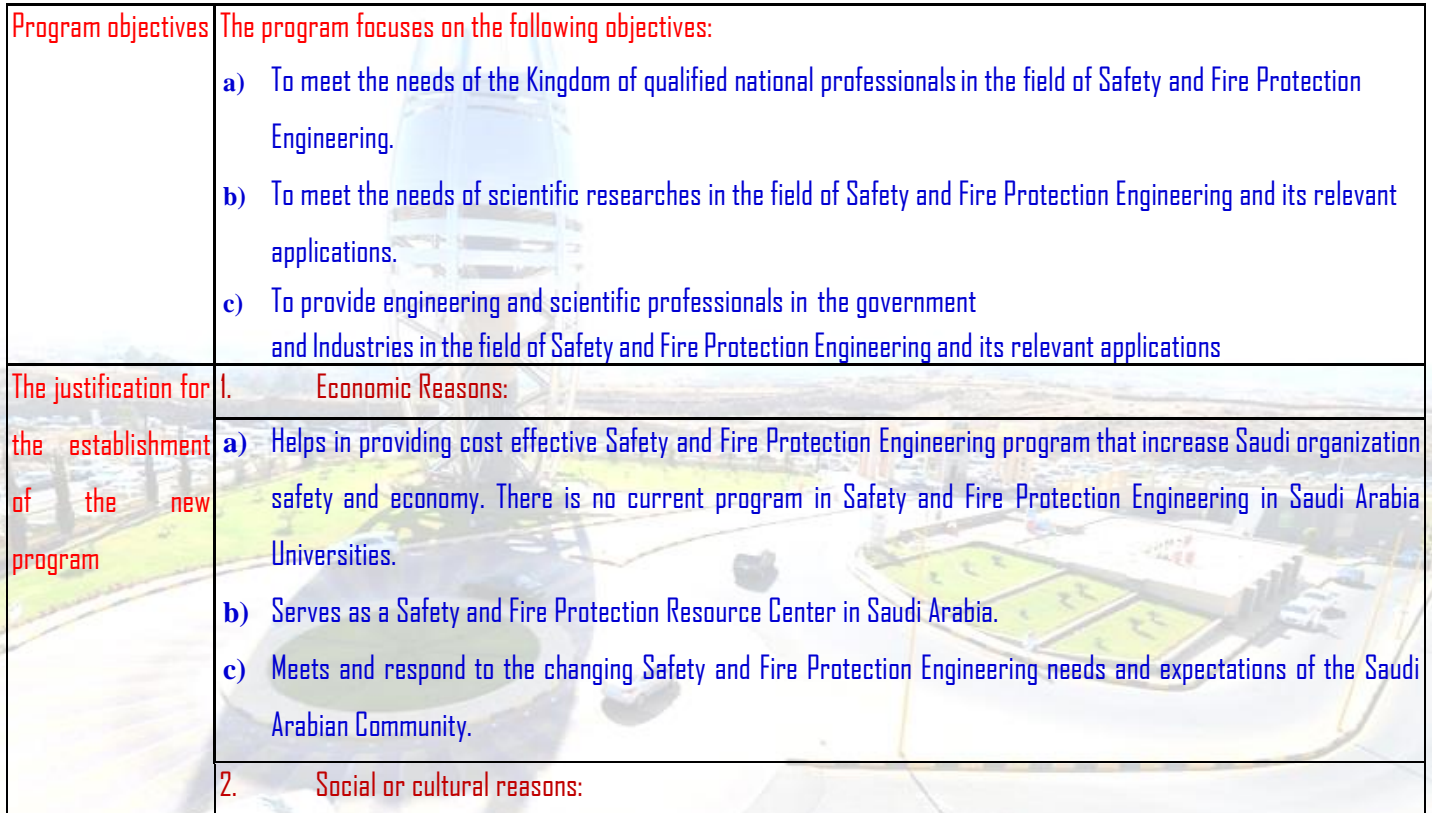
Faculty Name	Designation	Academic Position	Email	ResearchGate Link
Dr Huraish Almakaeel	Assistant Professor	Coordinator Academic Guidance and Student Affairs	halmakaeel@kku.edu.sa	<a href="https://www.researchgate.net/profile/Naif-Almakayeel">https://www.researchgate.net/profile/Naif-Almakayeel</a>
Dr Rahmath Ulla Baig	Assistant Professor		rbahmed@kku.edu.sa	<a href="https://www.researchgate.net/profile/Rahmath-Baig">https://www.researchgate.net/profile/Rahmath-Baig</a>
Dr. Mohammed Alqahtani	Assistant Professor		m.alqahtani@kku.edu.sa	<a href="https://www.researchgate.net/profile/Mohammed-Alqahtani-40?ev=hdr_xprf">https://www.researchgate.net/profile/Mohammed-Alqahtani-40?ev=hdr_xprf</a>
Dr. Mohammed Al Awadh	Assistant Professor		mohalawadh@kku.edu.sa	<a href="https://www.researchgate.net/profile/Mohammed-Al-Awadh">https://www.researchgate.net/profile/Mohammed-Al-Awadh</a>
Dr Mohamed Mukhtar Alam	Assistant Professor		mhoda@kku.edu.sa	<a href="https://www.researchgate.net/profile/mukhtar">https://www.researchgate.net/profile/mukhtar</a>
Dr Abdullah Al Fatais	Assistant Professor		alftas@kku.edu.sa	<a href="https://www.researchgate.net/profile/fatais">https://www.researchgate.net/profile/fatais</a>
Dr Abdullah Arishy	Assistant Professor		awaje@kku.edu.sa	<a href="https://www.researchgate.net/profile/arishy">https://www.researchgate.net/profile/arishy</a>

Faculty Name	Designation	Academic Position	Email	ResearchGate Link
Dr Sandos Al-Qarni	Assistant Professor		soqarni@kku.edu.sa	
Dr Sahar Ahmed Idris	Assistant Professor		<a href="mailto:smohammedali@kku.edu.sa">smohammedali@kku.edu.sa</a>	<a href="http://repository.susth.edu/handle/123456789/">http://repository.susth.edu/handle/123456789/</a>
Dr Imen Rashid Bouazzi	Assistant Professor		izaigy@kku.edu.sa	<a href="https://www.researchgate.net/profile/Imen-Bouazzi">https://www.researchgate.net/profile/Imen-Bouazzi</a>
Dr. Abir Mouldi	Assistant Professor		amouldi@kku.edu.sa	<a href="https://www.researchgate.net/profile/Abir-Mouldi-2">https://www.researchgate.net/profile/Abir-Mouldi-2</a>

## MSc in Safety and Fire Protection Engineering

<b>Program Goal</b>	The overall program goal is to provide the highest quality of academically well-trained competent safety practitioners for business and industries as well as government and municipalities in Saudi Arabia and globally.
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<b>Program objectives</b>	<p>The program focuses on the following objectives:</p> <ul style="list-style-type: none"><li>a) To meet the needs of the Kingdom of qualified national professionals in the field of Safety and Fire Protection Engineering.</li><li>b) To meet the needs of scientific researches in the field of Safety and Fire Protection Engineering and its relevant applications.</li><li>c) To provide engineering and scientific professionals in the government and Industries in the field of Safety and Fire Protection Engineering and its relevant applications</li></ul>
<b>The justification for the establishment of the new program</b>	<p>1. <b>Economic Reasons:</b></p> <ul style="list-style-type: none"><li>a) Helps in providing cost effective Safety and Fire Protection Engineering program that increase Saudi organization safety and economy. There is no current program in Safety and Fire Protection Engineering in Saudi Arabia Universities.</li><li>b) Serves as a Safety and Fire Protection Resource Center in Saudi Arabia.</li><li>c) Meets and respond to the changing Safety and Fire Protection Engineering needs and expectations of the Saudi Arabian Community.</li></ul> <p>2. <b>Social or cultural reasons:</b></p>

- a) Promotes the safe and serene environment of Safety and Fire protection related practices in Saudi industries and organizations.
- b) Responds to Saudi social and cultural development by introducing sociology and environment, and other relevant subjects in the new curriculum.

### 3. Technological developments

- a) Responds to the quick development in Safety Engineering Technology in general.
- b) Responds to the new development in Engineering education, teaching and learning and assessment methods and technology.
- c) Meets the students' needs for learning advanced software in the field of safety and fire protection engineering in research & professional development.

#### Study Plan Structure:

Program Structure		No. of Courses	Credit Hours	Percentage
Course	Required	7	21	50%
	Elective	6	18	43%
Graduation Project (if any)		NA	0	00%
Thesis(if any)		1	3	7%
Field Experience(if any)		NA	0	00%
Total		14	42	100%

## Program Courses:

Level	Course Code	Course Title	Pre-requisite(s)	Credit hours				Level	Course Code	Course Title
				Theory	Lab	Tutorial	Total			
Level (I)	751INE-3	Industrial safety laws	None	3	0	0	3	3	Department	Compulsory
	721INE-2	Advanced Engineering Statistics	None	2	0	0	2	2	Department	Compulsory
	752INE-1	Research Methods in Safety and Fire Protection Engineering	None	1	0	0	1	1	Department	Compulsory
	7** INE-3	Elective (I)	None	3	0	0	3	3	Department	Elective
Level (II)	781INE-3	Fundamental Thermal Science	None	3	0	0	3	3	Department	Compulsory
	771INE-3	Safety Methods	None	3	0	0	3	3	Department	Compulsory
	782INE-3	Advanced Fire Dynamics	None	3	0	0	3	3	Department	Compulsory
	7**INE-3	Elective (II)	None	3	0	0	3	3	Department	Elective
Level (III)	783INE-3	Fire Modeling	None	3	0	0	3	3	Department	Compulsory
	722INE-3	Hazardous Waste Operations and Emergency Response	None	3	0	0	3	3	Department	Compulsory
	7**INE-3	Elective (III)	None	3	0	0	3	3	Department	Elective
	7**INE-3	Elective (IV)	None	3	0	0	3	3	Department	Elective
	799INE-0	Research Project	None	0	0	0	0	0	Department	Compulsory
Level (IV)	7**INE-3	Elective (V)	None	3	0	0	3	3	Department	Elective
	7**INE-3	Elective (VI)	None	3	0	0	3	3	Department	Elective
	799INE-3	Research Project	799INE-0	3	0	0	3	3	Department	Compulsory

## Electives

Elective (1)	761INE-3	Work Equipment Hazards and Risk Control	None	3	0	0	3	3	Department	Elective
	762INE-3	Human Behavior in Fire	None	3	0	0	3	3	Department	Elective
	763INE-3	Workplace Hazards and Risk Control	None	3	0	0	3	3	Department	Elective
Elective (2)	764INE-3	Quantitative Environmental Risk Assessment	None	3	0	0	3	3	Department	Elective
	765INE-3	Toxicology for Engineers	None	3	0	0	3	3	Department	Elective
	773INE-3	Product Liability Control	None	3	0	0	3	3	Department	Elective
Elective (3)	784INE-3	Fire Protection Structure and Protection	782INE-3	3	0	0	3	3	Department	Elective
	785INE-3	Fire Protection Engineering	771INE-3	3	0	0	3	3	Department	Elective
	774INE-3	Electrical Safety	None	3	0	0	3	3	Department	Elective
	786INE-3	Fire Safety	None	3	0	0	3	3	Department	Elective
	787INE-3	Smoke Management and Special Hazards	782INE-3	3	0	0	3	3	Department	Elective
Elective (4)	788INE-3	Advanced Fire Behavior	781INE-3	3	0	0	3	3	Department	Elective
	775INE-3	Fire Investigation Analysis	None	3	0	0	3	3	Department	Elective
	789INE-3	Fire Engineering	762INE-3	3	0	0	3	3	Department	Elective
Elective (5)	776INE-3	Industrial Safety	None	3	0	0	3	3	Department	Elective
	766INE-3	Safety in Facility and Product Design	None	3	0	0	3	3	Department	Elective
	777INE-3	Safety and Security	None	3	0	0	3	3	Department	Elective
	767INE-3	Physical and Psychological Safety	None	3	0	0	3	3	Department	Elective
Elective (6)	778INE-3	Chemical and Biological Hazards Control	None	3	0	0	3	3	Department	Elective
	768INE-3	Transport Hazards and Risk Control	None	3	0	0	3	3	Department	Elective