



University of Tabuk
Faculty of Engineering

Mechanical Engineering Department
(Operation Plan)

Bachelor of Science in Mechanical Engineering
(2022-23)

Developed By: Quality Committee

August, 2022

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1. Introduction

The department of mechanical engineering undergraduate program, namely, the Bachelor of Science in Mechanical Engineering Program (BSc MEP). The program includes a study of 5 years duration after successful completing the program criteria and university requirements, a student is awarded degree certificate of Bachelor of Science in Mechanical Engineering. The program serves the goals of Saudi Vision 2030 by preparing graduates to fit in different job sectors that serve the Saudi Society. The program graduated its first cohort of 11 students in spring 2012-2013 and 3 students in summer 2012-2013. Most of the program graduates are already employed in various public and private sectors entities. The Mechanical Engineering Program is accredited by the Engineering Accreditation Commission of ABET.

The BSc MEP program has a mission and goals well aligned with the mission and goals of the Faculty of Engineering and the University of Tabuk. The following document presents an annual operational plan for the BSc MEP to achieve its goals through well-defined set of initiatives, which are measured by the performance indicators. This plan outlines specific strategies and actions to be taken to achieve the program goals, including industry-relevant education, research and innovation, social responsibility and community engagement, attractive learning environment, effective governance and management, and innovative financing and resource management. By implementing this plan, the program aims to provide a distinguished education, contribute to the knowledge economy, promote social responsibility, and ensure a stimulating learning environment for its students.

2. Development of the Operational Plan

This operational plan was developed by the quality committee of the department of Mechanical Engineering, approved by the department council. The operation plan for Bachelor of Science in Mechanical Engineering program helps allocating resources, establishing timelines, setting its goals, identifying the risks, and determining the necessary steps to achieve the goals through various initiatives. These initiatives are implemented and measured through various Key Performance Indicators (KPI), Institutional & programmatic, both to understand the achievements towards the mission to realize the long-term vision. The plan mainly focuses on improving the quality of education, research, and community engagement by developing an attractive educational environment, and effective administrative and organizational environment for a period of one year. Based on the measurement of the KPIs, changes in the program mission or goals, the changes in the and strategic plan of the Faculty of Engineering and the University of Tabuk, the operational plan is revised at the beginning of each academic year.

3. Vision of the University of Tabuk, Faculty of Engineering, and BSc MEP

3.1 University of Tabuk Vision

A university that is educationally and academically distinguished which cooperated in community service.

3.2 Faculty of Engineering Vision

A distinguished and pioneering college locally and internationally in the field of engineering education, innovative research, and building a knowledge society.

3.3 Department of Mechanical Engineering (BSc MEP) Vision

A distinguished and pioneering ME department locally and internationally in the field of Mechanical engineering education, innovative research, and building a knowledge society.

3.4 Alignment of the Visions

The following table gives the alignment of the visions by mapping the keywords of the University of Tabuk with the Faculty of Engineering and Mechanical Engineering Department (BSc MEP).

Keywords	University of Tabuk	Faculty of Engineering	Department of Mechanical Engineering
Institution	A university that is	A distinguished and	A distinguished and
Distinguished	educationally and	pioneering college locally	pioneering ME department
Education	academically	and internationally in the	locally and internationally in
Community	distinguished which	field of engineering	the field of Mechanical
	cooperated in	education , innovative	engineering education ,
	community service	research, and building a	innovative research, and
		knowledge society	building a knowledge society

4. Mission of the University of Tabuk, Faculty of Engineering, and BSc MEP

4.1 University of Tabuk Mission

To offer a distinguished university education that meets the needs of society and the job market through an attractive educational, administrative, and technical environment that supports research and innovation.

4.2 Faculty of Engineering Mission

To graduate qualified engineers in accordance with the International Academic Standards and prepare them to meet the changing needs of society. These graduates will be able to compete locally and

internationally. The Faculty of Engineering is committed to providing excellent education and pursuing relevant scientific research and partnership with industry and governmental societies.

4.3 Department (Program) of Mechanical Engineering (BSc MEP) Mission

To graduate qualified Mechanical engineers in accordance with the International Academic Standards and prepare them to meet the changing needs of society. These graduates will be able to compete locally and internationally. The Mechanical Engineering Department is committed to providing excellent education and pursuing relevant scientific research and partnership with industry and governmental societies.

4.4 Alignment of the Missions

The following table gives the alignment of the missions by mapping the keywords of the University of Tabuk with the Faculty of Engineering and BSc MEP.

Keywords	University of Tabuk	Faculty of Engineering	Department of Mechanical Engineering
Needs of society	To offer a distinguished university education that meets the needs of society and the job market through an attractive educational,	To graduate qualified engineers in accordance with the International Academic Standards and prepare them to meet the changing needs of society . These graduates will be able to compete locally and internationally. The Faculty of Engineering is committed to providing excellent education and pursuing relevant scientific	To graduate qualified Mechanical engineers in accordance with the International Academic Standards and prepare them to meet the changing needs of society . These graduates will be able to compete locally and internationally. The Mechanical Engineering Department is committed to providing excellent education and pursuing relevant scientific
Excellent education	administrative, and technical environment that supports research and innovation.	research and partnership with industry and governmental societies.	research and partnership with industry and governmental societies.
Research			

5. Goals of the University, College, and Program

5.1 University Goals

UG1: To provide a distinguished university education that meets the needs of the labor market.

UG2: To support innovative research to contribute to building a knowledge economy.

UG3: To promote social responsibility and community partnership.

UG4: Sustainability of infrastructure and technology for an attractive educational environment.

UG5: Effective governance and management.

UG6: Diversify innovative financing sources and achieve expenditure efficiency.

5.2 Faculty of Engineering Goals

CG1: To deliver distinguished academic education that meets the needs of the labor market.

CG2: Providing creative research to contribute to building the knowledge economy of society.

CG3: Effective contribution to sustainable development and community service.

CG4: Offer a stimulating and attractive learning environment.

CG5: Develop an effective administrative and organizational environment in the college.

CG6: Providing innovative financing sources.

5.3 BSc MEP Goals

PG1: To deliver distinguished academic education that meets the needs of the labor market.

PG2: Providing creative research to contribute to building the knowledge economy.

PG3: Effective contribution to sustainable development and community service.

PG4: Offer a stimulating and attractive educational environment.

PG5: Develop an effective administrative and organizational environment in the ME department.

5.4 Alignment of Goals

The following table gives the alignment of the goals of the University of Tabuk with the Faculty of Engineering and BSc MEP.

BSc MEP Goals	Faculty of Engineering Goals	University of Tabuk Goals
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	CG1	CG2	CG3	CG4	CG5	CG6	UG1	UG2	UG3	UG4	UG5	UG6
PG1	✓						✓					
PG2		✓				✓		✓				✓
PG3			✓	✓					✓			
PG4				✓						✓		
PG5					✓						✓	

6. The Operational Plan of the Program

6.1 Program Goal 1

PG1: To deliver distinguished academic education that meets the needs of the labor market.

Initiatives	Activities	KPI	Target	Responsibility	Implementation Period
1. Develop the Curriculum Plan and the Learning Outcomes to meet the need of the job market	1. Involvement of the stakeholders (Alumni and Employers) in the development of curriculum and learning outcomes	PG1.1 Evaluation of the Program Curriculum and Learning outcomes by the stakeholders Survey 1 (Q16-Q24)	4/5	Curriculum Committee & Quality Committee	Annual
2. Encouraging students to prepare and participate in professional	1. Students' performance in the professional and/or national examinations.	PG1.2 Percentage of students or graduates who were	75%	Course Instructors	Annual

and/or national examinations		successful in the professional and / or national examinations, or their score average and median (if any) (KPI-P-06)			
3. Improving the employability of graduates	1. Graduates' employability and enrolment in postgraduate programs	PG1.3 Percentage of graduates from the program who within a year of graduation were: a. employed b. enrolled in postgraduate programs during the first year of their graduation to the total number of graduates in the same year (KPI-P-07)	Joint Target of a+b 50%	Training Unit	Annual

	2. Professional Trainings to improve the communication skills and proficiency of students	PG1.4 Employers' evaluation of the program graduate's proficiency (KPI-P-09)	3.75/5	Course Instructors / Training Unit	Annual
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6.2 Program Goal 2

PG2: Providing creative research to contribute to building the knowledge economy.

Initiatives	Activities	KPI	Target	Responsibility	Implementation Period
1. Encouraging faculty for joint research collaborations and publications	Encouraging faculty for research collaborations and publications	PG2.1 Percentage of full-time faculty members who published at least one research during the year to total faculty members in the program. (KPI-P-14)	80%	Research Unit	Annual
		PG2.2 Rate of	1	Research Unit	Annual

		published research per faculty member (KPI-P-15)			
2. Encouraging faculty to publicize their published research on open source research platforms	Encouraging faculty to publicize their published research platforms such as google scholar and ResearchGate	PG2.3 Citations rate in refereed journals per faculty member (KPI-P-16)	5	Research Unit	Annual
3. Encouraging faculty for submitting patent applications	Encouraging faculty for submitting patent applications	PG2.4 No. of patent proposal and applications submitted by the program in a calendar year	1	Research Unit	Annual
4. Encouraging faculty to apply for research projects and grants	Encouraging faculty to apply for research projects and grants	PG2.5 No. of research projects and grants applied by the program in a calendar year	2	Research Unit	Annual

6.3 Program Goal 3

PG3: Effective contribution to sustainable development and community service.

Initiatives	Activities	KPI	Target	Responsibility	Implementation Period
1. Sustainable development initiatives by saving paper, energy, and other resources	Encourage paperless communication in administrative work and teaching	PG3.1 No. of Awareness programs arranged for sustainable practices in a academic year	2	Department Council	Annual
2. Organize Community service programs organized by the program	Organize community service activities	PG3.2 No. of community service programs organized by the program	4	Community Service Unit/Committee	Annual

6.4 Program Goal 4

PG4: Offer a stimulating and attractive educational environment.

Initiatives	Activities	KPI	Target	Responsibility	Implementation Period
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1. Provide attractive and adequate learning environment, facilities and resources to the students	1. Students' Evaluation of quality of learning experience in the program	PG4.1 Average of overall rating of final year students for the quality of learning experience in the program on a five-point scale in an annual survey (KPI-P-02)	3.75/5	Department Council	Annual
	2. Students' evaluation of the quality of the courses	PG4.2 Average students overall rating for the quality of courses on a five-point scale in an annual survey. (KPI-P-03)	3.75/5	Department Council	Annual
	3. Average number of students in the class	PG4.3 Average number of students per class (in each teaching session/activity: lecture, small group, tutorial, laboratory or clinical session) (KPI-P-08)	25	Department Council	Annual

	4. Students' satisfaction with the offered services	PG4.4 Average of students' satisfaction rate with the various services offered by the program (restaurants, transportation, sports facilities, academic advising, ...) on a five-point scale in an annual survey. (KPI-P-10)	3.75/5	Department Council	Annual
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6.5 Program Goal 5

PG5: Develop an effective administrative and organizational environment in the ME department.

Initiatives	Activities	KPI	Target	Responsibility	Implementation Period
1. Efficient administration and governance	1. Students Completion Rate	PG5.1 Proportion of undergraduate students who completed the program in minimum time in each cohort. (KPI-P-04)	60%	Department Council	Annual
	2. First-year students retention rate	PG5.2 Percentage of first-year undergraduate	100%	Program Chair	Annual

		students who continue at the program the next year to the total number of first-year students in the same year. (KPI-P-05)			
	3. Ratio of students to teaching staff	PG5.3 Ratio of the total number of students to the total number of full-time and full-time equivalent teaching staff in the program. (KPI-P-11)	20:1	Program Chair	Annual
	4. Percentage of teaching staff distribution	PG5.4 Percentage of teaching staff with doctoral qualification. (KPI-P-12)	75%	Program Chair	Annual
	5. Proportion of teaching staff leaving the program	PG5.5 Proportion of teaching staff leaving the program annually for reasons other than age retirement to the total number of teaching staff. (KPI-P-13)	0	Program Chair	Annual

7. Summary of the Operational Plan Indicators

The following table gives the summary of the BSc MEP's operational plan (OP) KPIs, their alignment with the NCAAA program KPIs and to determine whether the KPIs are achieved or not.

OP KPI#	KPI	Aligned NCAAA KPI	Achieved	Not Achieved
PG1.1	Evaluation of the Program Curriculum and Learning outcomes by the stakeholders Survey	Additional KPI		
PG1.2	Percentage of students or graduates who were successful in the professional and / or national examinations, or their score average and median (if any) (KPI-P-06)	(KPI-P-06)		
PG1.3	Percentage of graduates from the program who within a year of graduation were: a. employed b. enrolled in postgraduate programs during the first year of their graduation to the total number of graduates in the same year (KPI-P-07)	(KPI-P-07)		
PG1.4	Employers' evaluation of the program graduate's proficiency (KPI-P-09)	(KPI-P-09)		
PG2.1	Percentage of full-time faculty members who published at least one research during the year to total faculty members in the program. (KPI-P-14)	(KPI-P-14)		
PG2.2	Rate of published research per faculty member (KPI-P-15)	(KPI-P-15)		
PG2.3	Citations rate in refereed journals per faculty member (KPI-P-16)	(KPI-P-16)		
PG2.4	No. of patent proposal and applications submitted by the program in a calendar year	Additional KPI		
PG2.5	No. of research projects and grants applied by the program in a calendar year	Additional KPI		
PG3.1	No. of Awareness programs arranged for sustainable practices in a academic year	Additional KPI		
PG3.2	No. of community service programs organized by the program	Additional KPI		
PG4.1	Average of overall rating of final year students for the quality of learning experience in the program on a five-point scale in an annual survey (KPI-P-02)	(KPI-P-02)		

PG4.2	Average students overall rating for the quality of courses on a five-point scale in an annual survey. (KPI-P-03)	(KPI-P-03)		
PG4.3	Average number of students per class (in each teaching session/activity: lecture, small group, tutorial, laboratory or clinical session) (KPI-P-08)	(KPI-P-08)		
PG4.4	Average of students' satisfaction rate with the various services offered by the program (restaurants, transportation, sports facilities, academic advising, ...) on a five-point scale in an annual survey. (KPI-P-10)	(KPI-P-10)		
PG5.1	Proportion of undergraduate students who completed the program in minimum time in each cohort. (KPI-P-04)	(KPI-P-04)		
PG5.2	Percentage of first-year undergraduate students who continue at the program the next year to the total number of first-year students in the same year. (KPI-P-05)	(KPI-P-05)		
PG5.3	Ratio of the total number of students to the total number of full-time and full-time equivalent teaching staff in the program. (KPI-P-11)	(KPI-P-11)		
PG5.4	Percentage of teaching staff with doctoral qualification. (KPI-P-12)	(KPI-P-12)		
PG5.5	Proportion of teaching staff leaving the program annually for reasons other than age retirement to the total number of teaching staff. (KPI-P-13)	(KPI-P-13)		

8. Analysis of the Operational Plan Indicators

The BSc MEP measures the progress towards the achievement of its goals by measuring 20 KPIs, to accomplish its mission. Among the operational plan 20 KPIs, 15 KPIs are aligned to the National Center for Academic Accreditation and Evaluation (NCAAA) / Education and Training Evaluation Commission (ETEC) mandatory KPIs for accreditation of academic programs. The program annually measures the KPIs and records the result in the Annual Program Report (APR). The program has developed 5 additional KPIs to measure the progress towards achieving its goals. For the quality assessment of educational excellence, research productivity, and community engagement, both direct and indirect measurements are done. The

measured KPIs are analyzed and the strengths of the program, and priorities of improvement are identified for continuous improvement in the next academic year. The actions to implement the recommendations are identified and an action plan for improvement is prepared.

9. Action Plan for Improvement

The BSc MEP identifies the actions to be taken to improve in the subsequent year in the following table.

One Year Action Plan for Improvement				
Source: Analysis of Operational Plan KPIs				
Action	Responsibility	Time frame		Notes
		Start	Complete	
1.				
2.				
3.				
4.				
5.				

The action plan for improvement is added to the program development plan in the APR.

10. Follow-up Plan to Monitor the Progress of Action Plan

The BSc MEP follows up the implementation of the action plan and the effectiveness of the actions by a follow-up plan given in the following table.

Follow-up Plan to monitor the Progress towards Actions Taken					
Reference: Action Plan for Improvement Based on the Analysis of Operational Plan KPIs					
Actions to Be reviewed	Responsibility Follow-up	to	Time frame		Notes
			Start	Complete	
1.					
2.					
3.					
4.					
5.					

The follow-up is done by the department council in its meetings under the guidance of the program chair. The resources required for the implementation of the action plan for improvement are provided and hence the Quality Loop is closed to achieving the program goals and mission and progress towards continuous improvement.

11. Approval of the Operational Plan

	Prepared by	Approved by
	Academic Accreditation & Development and Quality Committee	Department Council (Mechanical Engineering)
Date:	31.08.2022	
Reference No.:	Nil	
