Course Specification

(Postgraduate Programs)

Course Title:	**Project Management and Control**
Course Code:	**EMEN511**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 1, 1ST Year)					
4. Course General Description:					
The purpose of this course is defining project scope, developing project plans, managing project execution, validating project performance, and ensuring project control. Additional topics covered include decision making, project finance, project portfolio selection, and risk management.					
5. Pre-requirements for this course (if any)**:**					
None					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
1.To develop an understanding of the application of project planning concepts and techniques. 2. To demonstrate the importance of project monitoring and control and the need to adapt and revise the project plan due to changing circumstances. 3. To ensure that students understand and can apply appropriate techniques to plan, monitor and control work packages, projects and programmes. 4. To develop understanding in the use of project performance management and use of Key Performance Indicators. 5. To develop understanding of and ability to use a range of investment appraisal techniques.					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid ● Traditional classroom ● E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Understand advanced concept of project management and control	PLO(K1)	Problem based Learning	Exam Assignments
2.0	**Skills**			
2.1	Apply the key project planning concepts and techniques, applying these			

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	methods effectively to create detailed project plans that consider scope, resources, and timelines.	PLO(S2)	Problem based Learning	Exam & Assignments
2.2	Employ the practical applications of standard project management methodologies, particularly Waterfall and Agile, and to be able to decide when and how to implement each approach based on project requirements.	PLO(S2)	Problem based Learning	Exam & Assignments
2.3	"Conduct advanced techniques to plan, monitor, and control work packages, individual projects, and broader programs, ensuring effective governance and delivery within agreed parameters.	PLO(S3)	Rubrics based Learning	Mini Project & Assignments
	"Evaluate real-life problems in project management using software/simulation while considering sustainability, economy, environment, politics, health and	PLO(S6)	Rubrics based Learning	Mini Project & Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	safety, and societal constraints.			
3.0	**Values, autonomy, and responsibility**			
3.1	Conduct research about real life cases in project management in and apply the project management techniques	PLO(V2)	Rubrics based Learning	Mini Project & Assignments

C. Course Content:

No	List of Topics	Contact Hours
1.	Traditional Project Management / Waterfall	3
2.	Project Scope Management	3
3.	Project Schedule Management	6
4.	Project Cost Management	6
5.	Project Quality Management	3
6.	Project Resource Management	3
7.	Agile Project Management	3
8.	Project Risk Management	6
9.	Project Procurement Management	3
10.	Project Stakeholder Management	3
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Project Management: Processes, Methodologies, and Economics, 3/E Avraham Shtub, Moshe Rosenwein ISBN-10: 0134478665 • ISBN-13: 9780134478661 ©2017
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27-2-2025

Course Specification

(Postgraduate Programs)

Course Title:	**Statistical Methods in Engineering**
Course Code:	**EMEN512**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

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A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 1, 1ST Year)					
4. Course General Description:					
The application of statistical techniques and concepts to maximize the amount and quality of information resulting from experiments. After a brief introductory summary of fundamental concepts in probability and statistics, topics considered will include probability distributions, sampling distributions, estimation and confidence intervals for parameters of statistical distributions, hypothesis testing, design and analysis of variance for single and multiple-factor experiments, regression analysis, estimation and confidence intervals for parameters of non-statistical models, and statistical quality control.					
5. Pre-requirements for this course (if any)**:**					
None					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
To equip students with advanced statistical tools for data analysis, process improvement, and informed decision-making in engineering contexts					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom	0	0%

No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1				
2.0	**Skills**			
2.1	Apply fundamental concepts of probability and statistics to analyze engineering problems.	PLO(S1)	Problem-Based Learning	Midterm & Final, and assignments
2.2	Design experiments and apply statistical quality control methods to improve	PLO(S3)	Rubrics-Based Learning	Mini project & Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	engineering processes.			
2.3	Apply advanced software or simulators to solve problems of engineering management, considering the capabilities and limitations of available digital tools and their relevance to professional practice	PLO(S5)	Rubrics-Based Learning	Mini project & Assignments
3.0	**Values, autonomy, and responsibility**			
3.1	Recognize the ethical responsibilities involved in data collection, analysis, and reporting in engineering contexts.	PLO(V1)	Rubrics-Based Learning	Mini project & Assignments
3.2	Collaborate with team to collect, analyze, and interpret engineering data, demonstrating autonomy, and responsibility	PLO(V2)	Project-Based Learning	Mini project and assignment
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Fundamental concepts in statistics and probability	3
2.	Probability distribution	3

3.	Sampling method and sampling distribution	6
4.	Discrete and continuous probability	6
5.	Hypothesis testing	3
6.	Design and analysis of different variance for single factor experiment	3
7.	Design and analysis of different variance for multiple factors experiments	3
8.	Regression correlation analysis	6
9.	Estimation and confidence interval	3
10.	Statistical quality control	3
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Statistical Methods for Engineers and Scientists, by Robert M. Bethea, ISBN : 0367401827
Supportive References	Statistical Quality Design and Control: Contemporary Concepts and Methods, 2/E ISBN-10: 0130413445 | ISBN-13: 9780130413444
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface

Items	Resources
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title:	**Engineering Management**
Course Code:	**EMEN513**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 1, 1ST Year)					
4. Course General Description:					
The purpose of this course is to learn the fundamentals of management in the engineering and technology fields and concentrate to the function of manager within the industrial/engineering environment. This course consists of two parts, the first part explain the general functions of engineering management to direct the role of engineer in enterprise to become not only engineers who work at shop floor or factory, but he could obtain higher level of managerial responsibility. The second part aimed to giving students a general background of the cost accounting, financial accounting, and marketing management for engineers..					
5. Pre-requirements for this course (if any):					
None					
6. Pre-requirements for this course (if any):					
None					
7. Course Main Objective(s):					
Introduce the management discipline in engineering field					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom	0	0%

No	Mode of Instruction	Contact Hours	Percentage
	● E-learning		
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Apply fundamental principles of management to manage the organizations in real-world scenarios.	PLO(K1)	Problem based learning	Midterm & Final Exam and assignments
2.0	Skills			
2.1	Assess risk and cost estimation models to support strategic planning and resource allocation.	PLO(S1)	Problem based learning	Midterm & Final Exam and assignments
2.2	Evaluate the skills, abilities, and tools required for securing and succeeding in	PLO(S4)	***Project-Based Learning***	***Mini project and assignment***

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	management-track roles across various industries.			
...	Apply knowledge and skills using appropriate learning strategies for continuous personal and professional development in engineering management.	PLO(S6)	***Project-Based Learning***	***Mini project and assignment***
3.0	**Values, autonomy, and responsibility**			
3.1	Acquire new knowledge in contemporary organizational challenges and synthesize appropriate management techniques to improve decision-making and operational efficiency.	PLO (V2)	***Project-Based Learning***	***Mini project and assignment***

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Management Challenges for Engineers	3
2.	The Functions of Engineering Management (Planning, Organizing, Leading, and Controlling)	12
3.	Cost accounting for engineering managers	6
4.	Financial Accounting and Management for Engineering Managers	9
5.	Marketing management for engineering managers	9

Total	39

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	"Engineering Management: meeting the Global Challenges, 2nd edition". ,Author: C. M. Chang,, Publisher: CRC Press, 2016, ISBN 978-1-4987-3009-9
Supportive References	Managing Engineering and Technology, 7/E By Lucy C. Morse, William L. Schell, Daniel L. Babcock ISBN-10: 0134875656 • ISBN-13: 9780134875651 ©2020
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching		
Effectiveness of teaching	Students	Direct

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2055

Course Specification

(Postgraduate Programs)

Course Title:	**Quality Engineering**
Course Code:	**EMEN521**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 2, 1st Year)					
4. Course General Description:					
Evaluation of QE. Quality Dimensions. TQM as a competitive advantage. Business Process Re-engineering (BPR). Juran's Trilogy (Planning, Control, and Improvement). Six Sigma Methodology. Process Variations. Quality Costs. Quality indices. Tools for TQM. Taguchi concept. Quality Circles, Quality Function Deployment. Benchmarking. Quality Systems. Statistical process control. Acceptance sampling..					
5. Pre-requirements for this course (if any)**:**					
EMEN512 Statistical Methods in Engineering					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The goal of the Six Sigma Methodology. Process Variations. Quality Costs. Quality indices					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom • E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate autonomy in acquiring and applying new quality engineering knowledge and tools using appropriate lifelong learning strategies.	PLO (K1)	Problem based learning	Midterm & Final Exam and assignments
2.0	**Skills**			
2.1	Estimate process variations using statistical tools	PLO (S1)	Problem based learning	Midterm & Final Exam and assignments
2.2	Apply Juran's Trilogy and Six Sigma methodology to assess and improve quality planning, control, and process	PLO (S1)	Problem based learning	Midterm & Final Exam and assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	performance in real-world contexts.			
2.3	Analyze key quality dimensions and evaluate the strategic role of TQM in enhancing organizational competitiveness.	PLO (S2)	Problem based learning	Midterm & Final Exam and assignments
2.4	Communicate the quality related problem and their solutions to a range of audiences through various means.	PLO (S4)	***Project-Based Learning***	***Mini project and assignment***
	Design effective quality management systems integrating concepts such as Statistical Process Control (SPC), acceptance sampling, and cost-of-quality models.	PLO (S5)	***Project-Based Learning***	***Mini project and assignment***
...	Apply advanced quality tools and techniques in diverse operational settings.	PLO (S6)	***Project-Based Learning***	***Mini project and assignment***
3.0	**Values, autonomy, and responsibility**			
3.1				
3.2				
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Evaluation of QE. Quality Dimensions	3

2.	TQM as a competitive advantage. Business Process Reengineering (BPR)	3
3.	Juran's Trilogy (Planning, Control and Improvement). Six Sigma Methodology	6
4.	Process Variations. Quality Costs. Quality indices	6
5.	Tools for TQM. Taguchi concept	3
6.	Quality Circles, Quality Function Deployment	3
7.	Benchmarking. Quality Systems	6
8.	Statistical process control	6
9.	Acceptance sampling	3
10.		
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	AMITAVA MITRA, "FUNDAMENTALS OF QUALITY CONTROL AND IMPROVEMENT" Fourth Edition, ISBN 978-1-118-70514-8
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface

Items	Resources
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Decision Making**
Course Code:	**EMEN522**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 2, 1st Year)					
4. Course General Description:					
This course deals with some analytical methods to solve decision problems that involve certainties and uncertainties, opposing objective and limited or excessive information, key topics include structuring decision, expected opportunity loss, expected value of imperfect information, utility curves, decision trees and risk analysis..					
5. Pre-requirements for this course (if any):					
None					
6. Pre-requirements for this course (if any):					
None					
7. Course Main Objective(s):					
The objective is to provide a logical process and analytical techniques for fact-based decision making for the most challenging systems problems.					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom • E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Understanding advanced decision-making methods related to engineering management domain	PLO(K1)	Problems based learning	Exam Assignments
1.2	Apply the concepts learned in this class (expected value, value of information, risk aversion, and tradeoffs between attributes) to identify good decisions and strategies	PLO(K1)	Problems based learning	Exam Assignments
1.3	Understand the frame decisions and model preferences under risk	PLO(K1)	Problems based learning	Exam Assignments
2.0	**Skills**			

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.1	Apply fuzzy logic to model the uncertainty in decision making	PLO(S2)	Problems based learning	Exam Assignments
2.2	Apply advanced software or simulators for decision making, considering the capabilities and limitations of available digital tools and their relevance to professional practice.	PLO(S5)	Rubrics based learning	Assignments & Mini Project
2.3	Evaluate real-life problems in engineering management using software/simulation while considering sustainability, economy, environment, politics, health and safety, and societal constraints	PLO(6)	Rubrics based learning	Assignments & Mini Project
3.0	**Values, autonomy, and responsibility**			
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Overview of modeling techniques and methods used in decision analysis	6
2.	Utility models, decision trees, and Bayesian models	6
3.	Psychological components of decision making	6

4.	Elicitation techniques for model building	6
5.	Decision trade off in the presence of uncertainty	6
6.	Applications of real-world engineering management decision	9
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Foundations of Decision Analysis, Ronald A. Howard, Stanford University, Ali E. Abbas, University of Southern California
Supportive References	Decision Making, Models and Algorithms: A First Course, Saul I. Gass
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Engineering Economics & Cost Analysis**
Course Code:	**EMEN523**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 2, 1st Year)					
4. Course General Description:					
This course first emphasizes on the introduction to economics and systematic evaluation of the costs and benefits associated with proposed technical projects. Then student will study the concepts of the time value of money and the methods of discounted cash flow. Students will able to make decisions regarding money as capital within a technological or engineering environment, value Engineering, cash flow, replacement and maintenance analysis and depreciation.					
5. Pre-requirements for this course (if any)**:**					
EMEN513 Engineering Management					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
To learn about the basics of economics and cost analysis related to engineering so as to take economically sound decisions					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom • E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate deep understanding of the impact of taxes on engineering projects	PLO(K1)	Problems based learning	Exam Assignments
2.0	**Skills**			
2.1	Formulate strategies to locate, evaluate, and apply of Money-time relationships and equivalence, represent a decision problem graphically and mathematically analyze money-time relationships for decision making problems	PLO(S1)	Problems based learning	Exam Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	Justify cost-benefit analysis for an engineering project	PLO(S2)	Problems based learning	Exam Assignments
2.3	Evaluate project alternatives to determine specific economic parameters of a project	PLO(S2)	Problems based learning	Exam Assignments
2.4	Evaluate real-life problems in engineering economics using software/simulation while considering sustainability, economy, environment, politics, health and safety, and societal constraints	PLO(S6)	Rubrics based learning	Mini Project & Assignments
3.0	**Values, autonomy, and responsibility**			
3.1	Acquire and apply new knowledge in engineering economics and cost analysis within engineering contexts	PLO(V3)	Rubrics based learning	Mini Project & Assignments

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Economics	6
2.	Value Engineering	9
3.	Cash Flow	6
4.	Replacement and Maintenance Analysis	9

5.	Depreciation	9
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Panneer Selvam, R, “Engineering Economics”, Prentice Hall of India Ltd, New Delhi, 2001.
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Logistic and Supply Chain Management**
Course Code:	**EMEN531**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 3, 2nd Year)					
4. Course General Description:					
This class covers advanced topics in Logistics and Supply Chain Management. Models for designing, planning, and operating supply chain logistic networks will be presented. Topics covered include supply chain network design, planning and managing inventories, transportation planning, and the role of information technology.					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The goal of the logistic and supply chain management course is to prepare and improve engineers in the domain of supply chain and for logistic engineering within the private and local government sectors.					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom • E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe the supply chain decision phases and explain their role in supply chain performance.	PLO(K1)	Problem based learning	Exam and Assignments
2.0	**Skills**			
2.1	Analyse the different views of supply chain and their application	PLO(S1)	Problem based learning	Exam and Assignments
2.2	Design the supply chain network under certainty and uncertainty	PLO(S2)	Problem based learning	Exam and Assignments
2.3	Develop integrated supply chain solutions that align process views, decision phases, and network configurations to business strategy	PLO(S2)	Problem based learning	Exam and Assignments
2.4	Evaluate the alignment between competitive		***Project Based Learning***	***Mini project and assignment***

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	strategy and supply chain strategy to achieve strategic fit.	PLO(S6)		
2.3	Assess the influence of supply chain drivers on overall supply chain performance.	PLO(S6)	***Project Based Learning***	***Mini project and assignment***
3.0	**Values, autonomy, and responsibility**			
3.1	Communicate the logistics management problem and their solutions to supply chain partners.	PLO(V2)	***Project Based Learning***	***Mini project and assignment***

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Logistics & Transportation	3
2.	Customer service	3
3.	The role of SCM in the economy and organization, SCM information systems	6
4.	Inventory management	3
5.	Managing material flow and handling	3
6.	Transportation	3
7.	Warehousing	3
8.	Computerization and packaging issues	3
9.	Purchasing global logistic	3
10.	Organizing for effective SCM and Method to control SCM performance and Implementing SCM strategy	9
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Logistics Engineering & Management, 6/E Benjamin S. Blanchard, Virginia Polytechnic Institute and State University ISBN-10: 0131429159 • ISBN-13: 9780131429154
Supportive References	Supply Chain Management: Strategy, Planning, and Operation, 7th edition, Sunil Chopra Published by Pearson (January 3rd 2018) - Copyright © 2019 7th edition
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Engineering Management Project (I)**
Course Code:	**EMEN532**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 3, 2nd Year)					
4. Course General Description:					
This foundational course focuses on the initiation and planning phases of an engineering management project, aiming to develop and apply management skills... In this first part, the emphasis is on problem definition, project establishment, comprehensive literature review, planning for field data collection and outlining expected results.					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The objective of this course is to equip students with the foundational knowledge and skills necessary to initiate, define, and thoroughly plan an engineering management project.					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	0	0
2	E-learning	0	0%
3	Hybrid • Traditional classroom • E-learning	0	0%

No	Mode of Instruction	Contact Hours	Percentage
4	Others: Regular Meetings	39	100%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	0
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others: Supervised Project Work and Consultation**	39
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe basic management ideas and how they help to choose and understand real problems for a research project.	PLO(K1)	Project-based Learning	Project Proposal + Report + Oral Presentation, Rubric-Based Assessment
2.0	**Skills**			
2.1	Analyze a management problem and suggest research questions and clear goals.	PLO(S1)	Project-based Learning	Project Proposal + Report, Rubric-Based Assessment
2.2	Plan a method to study possible new solutions for engineering problems that affect society.	PLO(S2)	Project-based Learning	Project Proposal + Report, Rubric-Based Assessment
2.3	Choose proper research steps and explain how to collect the right data.	PLO(S3)	Project-based Learning	Project Proposal + Report, Rubric-Based Assessment

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.4	Present the research idea, background, and planned method clearly to others.	PLO(S4)	Project-based Learning	Project Proposal + Report + Oral Presentation, Rubric-Based Assessment
2.5	Plan how to use digital tools or software for project planning or early steps.	PLO(S5)	Project-based Learning	Project Proposal + Report, Rubric-Based Assessment
2.6	Point out social, environmental, or safety issues that could affect the project idea.	PLO(S6)	Project-based Learning	Project Proposal + Report, Rubric-Based Assessment
3.0	**Values, autonomy, and responsibility**			
3.1	Understand the need to follow rules and ethics during the early planning stages.	PLO(V1)	Project-based Learning	Report, Rubric-Based Assessment
3.2	Work with others to define the project idea and plan how to do it.	PLO(V2)	Project-based Learning	Rubric-Based Assessment
3.3	Look for new knowledge to support the project idea and design.	PLO(V3)	Project-based Learning	Project Proposal + Report, Rubric-Based Assessment

C. Course Content:

No	List of Topics	Contact Hours
1.	Project Definition and Scope Management	5
2.	Literature Review	5
3.	Research Methodology and Data Collection Planning	6
4.	Project Planning Tools and Techniques	5
5.	Proposal Writing and Presentation	5
6.	Progress Report Writing for Project I	4
7.	Ethical Considerations in Research	4
8.	Introduction to Data Collection Methods	5
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Committee Evaluation Marks	16	60%
2.	Supervisor Evaluation Marks	16	40%
3.			
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Law, Ethics, and Professionalism**
Course Code:	**EMEN541**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 4, 2nd Year)					
4. Course General Description:					
This course is designed to introduce law for engineers and engineering professionalism and ethics. Topics covered in law for engineers include patents, trade secrets, trademarks, copyrights, product liability, contracts, employment relations and other legal matters important to engineers. Topics covered in engineering professionalism include concepts, theory, and practice of engineering ethics. The relationship between ethics and engineering and applying classical moral theory and decision making to engineering issues faced in professional careers. Studying and understanding professional ethics is as much a part of your development as an engineer. Learn to share ideas and concepts although you may not always agree.					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
1. Recognize law, engineering professionalism and ethics for engineers 2. Recognize law for engineers in patents, trade secrets, trademarks, copyrights, product liability, contracts, employment relations and other legal matters important to engineers. 3. understand basic concepts, theory, and practice of professionalism and engineering ethic , or be able to manage the relationship between ethics and					

engineering and apply classical moral theory and decision making to engineering issues faced in professional careers
4. Establish basic knowledge about professional ethics as a part of development as an engineer.

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid ● Traditional classroom ● E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Estimate Principles of law for engineers in patents, trade	PLO(K1)	Problem Based Learning	Exam Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	secrets, trademarks, copyrights, product liability, contracts,			
1.2	Apply Advance knowledge about the Principles of law for engineers in patents, trade secrets, trademarks, copyrights, product liability, contracts,	PLO(K1)	Problem Based Learning	Exam Assignments
1.3	Advance knowledge of the implications of legal instruments on the engineering business and the implications of non-compliance	PLO(K1)	Problem Based Learning	Exam Assignments
2.0	**Skills**			
2.1	Develop an advance knowledge about professional ethics as a part of development as an engineer.	PLO(S2)	Problem Based Learning	Exam Assignments
2.2	Employe effective decision making and problem-solving techniques in different scenarios	PLO(S2)	Problem Based Learning	Exam Assignments
2.3	Ability to define the relationship between ethics and engineering and apply classical moral theory and decision making to engineering issues faced in professional	PLO(S3)	Rubrics Based Learning	Mini Project & Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.4	Evaluate engineering management problems considering sustainability, economy, environment, politics, health and safety, and societal factors, with adherence to legal, ethical, and professional standards.	PLO(S6)	Rubrics Based Learning	Mini Project & Assignments
3.0	**Values, autonomy, and responsibility**			
3.1	An ability to recognize ethical and professional responsibilities in engineering	PLO(V1)	Rubrics Based Learning	Mini Project & Assignments

C. Course Content:

No	List of Topics	Contact Hours
1.	law for engineers	3
2.	engineering professionalism and ethics	6
3.	patents, trade secrets, trademarks, copyrights	6
4.	product liability, contracts, employment relations and other legal matters important to engineers.	6
5.	concepts, theory, and practice of engineering ethic	3
6.	relationship between ethics and engineering	3
7.	classical moral theory and decision making	6
8.	professional ethics as a part of engineer development	6
9.		
10.		
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Law for Professional Engineers: Canadian and Global Insights, Fifth Edition, by Donald Marston
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Engineering Management Project (II)**
Course Code:	**EMEN542**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 4, 2nd Year)					
4. Course General Description:					
This course is the second and final part of the Engineering Management Project. It focuses on carrying out the approved project plan and completing the remaining steps. Students will collect and analyze data, explain their findings, and draw clear conclusions. They will also prepare a full written report and formally present their work. This course allows students to apply their management knowledge and show the skills they have gained during the program.					
5. Pre-requirements for this course (if any)**:**					
EMEN532 Engineering Management Project (I)					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The objective of this course is to help students complete their project plan, analyze data, and present clear conclusions. They will write a full project report and give a professional presentation. The course also strengthens skills in problem-solving, critical thinking, and communication.					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	0	0
2	E-learning	0	0%
3	Hybrid • Traditional classroom	0	0%

No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Others: Regular Meetings	39	100%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	0
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify): supervised project work**	39
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
	Use engineering management knowledge and research methods to carry out and complete a research project.	PLO(K1)	Project Based Learning	Final Report + Oral Presentation, Rubric-Based Assessment
2.0	**Skills**			
2.1	Follow the research steps and analyze information collected to answer the research questions.	PLO(S1)	Project Based Learning	Final Report, Rubric-Based Assessment
2.2	Discuss and improve the solution based on what was found during the research, considering real limits and challenges.	PLO(S2)	Project Based Learning	Final Report, Rubric-Based Assessment
2.3	Explain and discuss the data collected and what it shows about the research problem.	PLO(S3)	Project Based Learning	Final Report, Rubric-Based Assessment

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.4	Write and present the final project and its results in a professional and clear way.	PLO(S4)	Project Based Learning	Final Report + Oral Presentation, Rubric-Based Assessment
2.5	Use digital tools or software to analyze results and help in reporting the project work.	PLO(S5)	Project Based Learning	Final Report, Rubric-Based Assessment
2.6	Give solutions that consider sustainability issues and explain why they are suitable.	PLO(S6)	Project Based Learning	Final Report, Rubric-Based Assessment
3.0	**Values, autonomy, and responsibility**			
3.1	Respect ethical and professional rules while doing and reporting the project.	PLO(V1)	Project Based Learning	Final Report, Rubric-Based Assessment
3.2	Lead or work well in a team to finish the project and present the results.	PLO(V2)	Project Based Learning	Rubric-Based Assessment
3.3	Find new ways to learn and solve problems during the project work.	PLO(V3)	Project Based Learning	Final Report, Rubric-Based Assessment

C. Course Content:

No	List of Topics	Contact Hours
1.	Project Execution and Data Collection	6
2.	Data Analysis Techniques	6
3.	Interpreting and Discussing Findings	5
4.	Writing the Final Project Report	6
5.	Preparing Visuals and Presentation Slides	4
6.	Oral Defense Preparation and Practice	4
7.	Reflecting on Teamwork and Learning	4
8.	Sustainability and Ethical Considerations	4
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Committee Evaluation Marks	16	60%
2.	Supervisor Evaluation Marks	16	40%
3.			
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	Sustainable Design Engineering
Course Code:	EMEN551
Program:	Master of Engineering Management
Department:	Industrial Engineering
College:	Faculty of Engineering
Institution:	University of Tabuk
Version:	2
Last Revision Date:	27 February 2025

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (2nd Year)					
This course covers the principles and methods for sustainable design from the foundation of sustainability through application of tools and practices today and the direction of "greening" in the future.					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
Provide sustainable design concepts and practical methods, sustainability in Engineering. Introduces sustainability concepts and explains the application of sustainable methods to the engineering design process					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid ● Traditional classroom ● E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Explain sustainability principles relevant to global issues.	PLO(K1)	Problem based learning	Exams Assignments
2.0	**Skills**			
2.1	Apply research skills to analyse sustainability problems.	PLO(S1)	Problem based learning	Exam Assignments
2.2	Synthesize evidence-based research to address complex sustainability challenges.	PLO(S2)	Problem based learning	Exams Assignments
	Propose solutions for Sustainable Design Engineering Problem by applying to real life cases using			

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	suitable software/simulator considering constraints of sustainability, economy, environment, politics, health and safety, and society	PLO(S3)	Project based learning	Mini Project & Assignments
3.3	Communicate sustainability concepts to specialist and non-specialist audiences.	PLO(S4)	Project based learning	Mini Project & Assignments
	Resolve sustainability dilemmas in professional and ethical contexts.	PLO(S6)	Project based learning	Mini Project & Assignments
3.0	**Values, autonomy, and responsibility**			
3.1	Lead multidisciplinary teams to manage sustainability engineering projects autonomously	PLO(V2)	Project based learning	Mini Project & Assignments
3.2	Evaluate institutional strategies for sustainable development through advanced learning strategies and propose solutions	PLO(V3)	Project based learning	Mini Project & Assignments
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Sustainability and Its Application Within Engineering Design	6

2.	The Tools of the Design Process and Management of Design	6
3.	Performance Prediction	6
4.	Design for Total Control	6
5.	Drivers of Sustainability in Design: Legislation and Perceptions of Consumers and Buyers	6
6.	Strategic Sustainable Design	6
7.	Predicting the Future	3
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Sustainability in Engineering Design, Anthony Johnson Andy Gibson, **ISBN:** 9780080993690
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface

Items	Resources
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Leadership and Strategic Management for Engineers**
Course Code:	**EMEN552**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (2nd Year)					
An overview of leadership and organization Leadership tools such as systems thinking, team decision making, communication across cultures, shared visions, and organizational change. In addition to recognizing ethics of leadership. Evaluating a firm's external environment using Porter Five Forces Model. Evaluating a firm's internal capabilities using the VRIO framework. Cost leadership versus product differentiation strategies. Competitive analysis; Strategic analysis and crafting strategy at the functional, business, corporate, and international levels; Designing the organizational structure; Designing operational policies and procedures and reward systems. Vertical integration and corporate diversification. Strategic alliances, mergers and acquisitions. Emphasis will be on real life examples and case studies to demonstrate the role of strategic management in organizations success and its profound effect on the growth and the profitability of both manufacturing and service systems..					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
Equip students with strategic thinking and leadership skills for managing engineering organizations.					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid ● Traditional classroom ● E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Estimate Resource and estimate the progress of performance of the project by using	PLO(K1)	Problem-Based Learning	Midterm & Final, and assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	available tools and techniques			
1.2	Understand and critically discuss the role of strategic management in engineering business.	PLO(K1)	Problem-Based Learning	Midterm & Final, and assignments
2.0	**Skills**			
2.1	Acquire powerful and practical insights into the various dimensions of engineering leadership	PLO(S2)	Problem-Based Learning	Midterm & Final, and assignments
2.2	Develop a creative management of project stakeholders and communication networks	PLO(S3)	*Project-Based Learning*	*Mini project and assignment*
2.3	Communicate the organizational process and practice with range of audiences using appropriate channel	PLO(S4)	*Project-Based Learning*	*Mini project and assignment*
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate an understanding of the importance in considering the economic, morals, integrity, technological and people side of managing strategy for an engineering business	PLO(V1)	*Project-Based Learning*	*Mini project and assignment*

C. Course Content:

No	List of Topics	Contact Hours
1.	An overview of leadership and ethics of leadership	3
2.	Leadership tools such as systems thinking, team decision making,	3
3.	communication across cultures, shared visions, and organizational change	6
4.	Evaluating a firm's external environment using Porter Five Forces Model. Evaluating a firm's internal capabilities using the VRIO framework	6
5.	Cost leadership versus product differentiation strategies	3
6.	Competitive analysis; Strategic analysis and crafting strategy at the functional, business, corporate, and international levels	6
7.	Designing the organizational structure	3
8.	Designing operational policies and procedures and reward systems	3
9.	Vertical integration and corporate diversification	3
10.	Strategic alliances, mergers and acquisitions	3
Total		39

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Strategic Management and Competitive Advantage: Concepts and Cases, 6/E, Jay B. Barney, William S. Hesterly, ISBN-10: 0134741145 • ISBN-13: 9780134741147 ©2019
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	Technologies for Industry 4.0
Course Code:	EMEN553
Program:	Master of Engineering Management
Department:	Industrial Engineering
College:	Faculty of Engineering
Institution:	University of Tabuk
Version:	2
Last Revision Date:	27 February 2025

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (2nd Year)					
Several technologies related to the fourth industrial revolution will be introduced. An introduction to core concepts, applications, and the potential of Industry 4.0, it's major systems and technologies and how new products and services will impact business and society. Topics covered include some of the industry 4.0 pillars such as Internet of Things (IOT), simulation, additive manufacturing, and RFID technologies.					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
Provide clear understanding of Industry 4.0. It will clarify concepts around the paradigm and give an overall view of the technologies involved					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid	0	0%

No	Mode of Instruction	Contact Hours	Percentage
	• Traditional classroom • E-learning		
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe the background of fourth industrial revolution and digital transformation in the contemporary world	PLO(K1)	Problem based learning	Midterm & Final Exam and assignments
1.2	Identify the core technologies under the industry 4.0 umbrella	PLO(K1)	Problem based learning	Midterm & Final Exam and assignments
2.0	**Skills**			

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.1	Assess the practical applications of Industry 4.0 technologies across various industrial sectors.	PLO(S6)	***Project-Based Learning***	***Mini project and assignment***
2.2	Evaluate strategies for implementing digital transformation and synthesize approaches for integrating Industry 4.0 in organizational settings.	PLO(S6)	***Project-Based Learning***	***Mini project and assignment***
…	Analyze the emerging challenges of Industry 4.0 related to social, economic and environmental	PLO(S6)	***Project-Based Learning***	***Mini project and assignment***
3.0	**Values, autonomy, and responsibility**			
3.1	Propose solutions for adoption of digital technologies problem by applying to real life cases using suitable software/tools	PLO(V3)	***Project-Based Learning***	***Mini project and assignment***

C. Course Content:

No	List of Topics	Contact Hours
1.	Digital Era, Fourth Industrial revolution	3
2.	Transform to ward industry 4.0	6
3.	A smart factory	6
4.	The Pillars of Industry 4.0, including IOT, simulation, additive manufacturing, RFID technologies	12
5.	Implementing the pillars	3
6.	Challenges in implementing Industry 4.0	3
7.	Skills of workforce needed in the future	3
8.	How new products and services will impact business and society	3
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Industry 4.0 for SMEs Challenges, Opportunities and Requirements Dominik T. Matt, Vladimír Modrák, Helmut Zsifkovits
Supportive References	Handbook of Research on Integrating Industry 4.0 in Business and Manufacturing Isak Karabegovi, Ahmed Kovaevi, Lejla Banjanovi-Mehmedovi, Predrag Dai
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	**Design Thinking and Innovation**
Course Code:	**EMEN554**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (2nd Year)					
4. Course general Description:					
In this course, we provide an overview of design thinking and work with a model containing four key questions and several tools to help you understand design thinking as a problem-solving approach. We also look at several stories from different organizations that used design thinking to uncover compelling solutions.					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
• The nature of human creativity and innovation, • How creativity and design thinking help business to solve complex problems, • The process and tools of design thinking, • Different creativity and design processes and how it can be used to generate better ideas,					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom	0	0%

No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Evaluate the feasibility, sustainability, and strategic value of innovative ideas in the context of organizational and engineering systems.	PLO(K1)	Problem-Based Learning	Midterm & Final, and assignments
2.0	**Skills**			
2.1	Formulate complex and advanced engineering management problems using design thinking and	PLO(S1)	Problem-Based Learning	Midterm & Final, and assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	innovation methodologies.			
2.2	Design innovative engineering solutions that address specified user needs by applying design thinking principles	PLO(S2)	Problem-Based Learning	Midterm & Final, and assignments
2.3	Evaluate sustainability, economic, environmental, and societal factors that influence the development and implementation of innovative solutions to complex engineering problems.	PLO(S6)	*Project-Based Learning*	*Mini project and assignment*
…				
3.0	Values, autonomy, and responsibility			
3.1	Conduct innovative and human-centered solutions that address societal, cultural, economic, environmental, and technical needs.	PLO(V1)	*Project-Based Learning*	*Mini project and assignment*
3.2	Work effectively in interdisciplinary teams to manage and execute innovative projects with a high level of autonomy and responsibility.	PLO(V2)	*Project-Based Learning*	*Mini project and assignment*
…				

C. Course Content:

No	List of Topics	Contact Hours
1.	Design Thinking as Mindset, Process, and Toolbox	9
2.	Design Thinking and Corporate Entrepreneurship	6
3.	Design Thinking in Research Projects	9
4.	Industrial Design Thinking	9
5.	Designing from the Future	6
Total		39

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Walter Brenner, "Falk Uebernickel Editors Design Thinking for Innovation" Research and Practice, ISBN 978-3-319-26098-3
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom

Items	Resources
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	Engineering Risk Management
Course Code:	EMEN555
Program:	Master of Engineering Management
Department:	Industrial Engineering
College:	Faculty of Engineering
Institution:	University of Tabuk
Version:	2
Last Revision Date:	27 February 2025

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (2nd Year)					
Risks and risk management in organizations. Principles of risk theory. Ruin models. Credibility premiums and experience rating. Operations research techniques in insurance and reinsurance decision making. Concept of risk management from the strategic and tactical levels relevant theory and methodology and applications. Risk involved decision-making techniques, development of state-of-the-art tools and strategies for risk management.					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The objective of a risk management course is to equip individuals with the knowledge and skills to identify, assess, and mitigate potential risks in various environments, such as projects, organizations, or specific industries. This includes developing strategies to minimize negative impacts and maximize opportunities					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%

No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid ● Traditional classroom ● E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Identify information sources and risks for engineering projects.	PLO(K1)	Problem based learning	Exams Assignments
2.0	**Skills**			
2.1	Implement risk management techniques for compliance in sustainable operation	PLO(S2)	Problem based learning	Exams Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	Investigate the critical elements of risk management within the engineering industry setting	PLO(S3)	Project based learning	Mini Project & Assignments
2.3	Apply advanced engineering reliability and digital engineering techniques for maintaining the sustainability of critical infrastructures	PLO(S6)	Project based learning	Mini Project & Assignments
2.4	Propose solutions for risk management Problem by applying to real life cases using suitable software/simulator considering constraints of sustainability, economy, environment, politics, health and safety, and society	PLO(S6)	Project based learning	Mini Project & Assignments
3.0	**Values, autonomy, and responsibility**			
3.1				
3.2				
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Nature of risk and its definition	3
2.	Introduction to risk management	6
3.	Risk vs. uncertainty	3

4.	Benefits of risk management	3
5.	Risk analysis and management & risk efficiency	3
6.	Role of risk management in engineering	3
7.	Decision making in risk management	3
8.	The risk management strategy	3
9.	The process of managing risks	6
10.	Risk Management Response and Mitigation	6
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Risk Management for Engineering Projects: Procedures, Methods and Tools, by Nolberto Munier
Supportive References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	

Course Specification

(Postgraduate Programs)

Course Title	**Lean Systems**
Course Code:	**EMEN556**
Program:	**Master of Engineering Management**
Department:	**Industrial Engineering**
College:	**Faculty of Engineering**
Institution:	**University of Tabuk**
Version:	**2**
Last Revision Date:	**27 February 2025**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (2nd Year)					
Course aims to introduce lean systems as a process to eliminate waste and to create values, improving productivity, and increasing the bottom line while maintaining quality and customer satisfaction. It has been found to be effective across many industries, businesses, healthcare, and other organizations. Topics include concept of lean system thinking and lean engineering..					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
To focus on different techniques of Lean implementation					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid ● Traditional classroom ● E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Analyze the application of lean tools to improve customer value and eliminate waste.	PLO(K1)	Problem-Based Learning	Midterm & Final, and assignments
2.0	**Skills**			
2.1	Apply lean techniques to solve complex engineering management problems.	PLO(S1)	Problem-Based Learning	Midterm & Final, and assignments
2.2	Design projects using advanced lean practices.	PLO(S2)	Problem-Based Learning	Midterm & Final, and assignments
2.3	Apply advanced software or simulation to solve problems in quality management in contemporary business setting	PLO(S5)	*Project-Based Learning*	*Mini project and assignment*

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
3.0	Values, autonomy, and responsibility			
3.1	Lead multidisciplinary teams to implement lean systems.	PLO(V2)	*Project-Based Learning*	*Mini project and assignment*
3.2	Integrate new lean knowledge using appropriate learning strategies.	PLO(V3)	*Project-Based Learning*	*Mini project and assignment*
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to lean management and lean elements	3
2.	Lean tools and techniques	9
3.	Lean System	9
4.	Lean management and implementation	9
5.	Productivity Improvement	9
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Lean Six Sigma, by Donna C. S. Summers ISBN-10: 0135125103 • ISBN-13: 9780135125106 ©2011

Supportive References	Quality, 6/E, by Donna C. S. Summers, ISBN-10: 013441327X • ISBN-13: 9780134413273 ©2018
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025

Course Specification

(Postgraduate Programs)

Course Title	Special Topics in Engineering Management
Course Code:	EMEN557
Program:	Master of Engineering Management
Department:	Industrial Engineering
College:	Faculty of Engineering
Institution:	University of Tabuk
Version:	2
Last Revision Date:	27 February 2025

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (2nd Year)					
5. Pre-requirements for this course (if any):					
6. Pre-requirements for this course (if any):					
None					
7. Course Main Objective(s):					
Course aims to introduce OSHA is to save lives, prevent injuries, and protect the health of America's workers. OSHA was established "to assure as far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources. To assure America's workers have safe and healthful working conditions free from unlawful retaliation					

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	39	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom • E-learning	0	0%

No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning	0	0%

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	39
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)……**	0
	Total	39

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1				
2.0	**Skills**			
2.1	Apply advanced engineering knowledge to solve occupational safety and health problems.	PLO(S1)	Problem Based Learning	Exam Assignments
2.2	Design safety and health systems or procedures to meet specified needs.	PLO(S2)	Problem Based Learning	Exam Assignments
3.3	Conduct experimentation and analyses using specialized methodologies for	PLO(S3)	Project Based Learning	Mini Project & Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	health data to draw scientific conclusions			
3.0	**Values, autonomy, and responsibility**			
3.1	Evaluate the ethical and societal impact of health-related technical solutions.	PLO(V1)	Project Based Learning	Mini Project & Assignments
3.2	Lead multidisciplinary teams to establish and manage safety plans..	PLO(V2)	Project Based Learning	Mini Project & Assignments
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Safety	3
2.	Fire Protection and Safety Requirement	6
3.	Introduction to OSHA	6
4.	Fire Complaint with OSHA	6
5.	Different types of OSHA inspection	6
6.	Fire Hazard and Risks	6
7.	OSHA 1910 standards	6
Total		**39**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work, Project (Written)	3 - 9	40%
2.	Midterm (Written)	7	30%
3.	Final Exam (Written)	16	30%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	*The Occupational Environment Its Evaluation and Control*. 2nd Ed. Dinardi, Salvatore. Fairfax, VA: American Industrial Hygiene Association, 2003
References	
Electronic Materials	
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (Projector, smart board, software)	Data show, Blackboard Teaching-Learning Interface
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of students assessment	Department	Indirect
Quality of learning resources	Department	Indirect
The extent to which CLOs have been achieved	Faculty	Indirect
Other	None	None

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	
DATE	27/2/2025