هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Fundamentals of Design in Industrial Engineering
Course Code:	INEN1301
Program:	Bachelor of Science in Industrial Engineering
Department:	Department of Industrial Engineering
College:	Faculty of Engineering
Institution:	University of Tabuk
Version:	2023
Last Revision Date:	30 October 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (5th Level/ 3th Year)					
4. Course general Description:					
This course is an introduction to engineering design, equipping students with fundamental concepts and skills essential for problem-solving and creative design in the engineering field. The course introduces students to the comprehensive engineering design cycle, covering diverse aspects such as literature surveys, problem formulation, customer needs analysis, and design methodologies. Students will have the opportunity to apply their knowledge and skills in hands-on design projects, fostering creativity, problem-solving, effective communication, and teamwork.					
5. Pre-requirements for this course (if any)**:**					
MATH1204, LANT1206					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
This course aims to cultivate a foundation in engineering design and equip students with the tools needed to tackle real-world engineering challenges.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	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**	45
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate an understanding of the main principles of the engineering design process.	**K1**	Lecture-based Learning. Project-Based Learning	Exams/ projects
2.0	**Skills**			
2.1	Formulate clear problem definitions, design goals, and design objectives for an engineering design	**S1**	Lectures and Project-Based Learning	Assignments / Exams/ Projects
2.2	Generate and evaluate conceptual design ideas	**S1**	Lectures and Project-Based Learning	Assignments / Quizzes / Exams
2.3	Apply mathematical methods for the comprehensive analysis of engineering designs.	**S1**	Project-based Learning	Assignments / Exams/ Projects
2.4	Design a system or process to meet	**S2**	Lectures and Project-Based Learning	Projects

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	specifications with engineering constraints			
2.5	Identify and evaluate realistic constraints that are applicable on the engineering system design.	**S4**	Project-Based Learning	Projects
2.6	Develop and refine oral and written communication skills	**S4**	Lectures and Project-based learning	Projects
3.0	**Values, autonomy, and responsibility**			
3.1	Function as a member of an engineering team.	**V2**	Project-Based Learning	Projects
3.2	Demonstrate an understanding of ethical and professional issues as well as engineering standards.	**V1**	Lecture and Project-Based Learning	Assignments/ Exams/Projects

C. Course Content

No	List of Topics	Contact Hours
1.	Engineering design process and formulation of design problems	3
2.	Problem identification and customer needs analysis	3
3.	Requirement setting and engineering design specifications	3
4.	Teams and teamwork, meeting management, professionalism	3
5.	Oral Presentations,	3
6.	technical writing: reports, proposals, lab report	3
7.	Project management, planning, Gantt charts, schedules	3
8.	Concept generation and evaluation,	3
9.	brainstorming, SCAMPER and pugh matrix	3
10.	System design: Functional decomposition and applications.	3
11.	System design: Functional decomposition (cont. applications, and coupling and cohesion)	3
12.	System design: Behavior models (Models, state diagram, flowchart)	3
13.	System design: Behavior models (Data flow diagram, entity relationship, unified modeling language)	3
14.	Ethical and Legal Issues, academic honesty, code of ethics	3
15.	Testing principles	3

Total	45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments and Quizzes	3,6,9,13	20%
2.	Project	4,8,15	50%
3.	Midterm Exam	9	10%
4.	Final Exam	17	20%

*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	Product Design and Development by Carl Ulrich, Stephen Eppinger
Supportive References	• Clive L. Dym, Patrick Little, Engineering Design: A Project-Based Introduction, 3rd Ed., John Wiley, 2008 • Kosky P. et al., " Exploring Engineering: An introduction for Freshmen to Engineering and to the Design Process", Elsevier Inc. 2006.
Electronic Materials	Course Page on Blackboard
Other Learning Materials	None

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classroom with 10 seats**
Technology equipment (projector, smart board, software)	**Data show, Blackboard Teaching-Learning Interface**
Other equipment (depending on the nature of the specialty)	**Reprographic facilities**

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students**	**Indirect through survey**

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Students assessment	• Students • Head of the department • Vice dean	Indirect, where students use survey and head of the department and vice dean review the grades excel sheets and meet with instructors and provide feedback when necessary
Quality of learning resources	Students	Indirect through survey
The extent to which CLOs have been achieved	Course Instructor	Direct through tests
Other	None	None

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Department of Industrial Engineering Council
REFERENCE NO.	INEN1405/Semester-1/1445 H
DATE	30/10/2023

Course Specification
(Bachelor)

Course Title:	Engineering Economy
Course Code:	INEN1302
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (2)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☐ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 5/Year 3)					
4. Course general Description:					
Introduction to the relationship between engineering economy and natural environment. Principles of engineering economy. Money time relationships, Simple and Compound interest rates, Single amounts and uniform series, Increasing and decreasing Arithmetic and Geometric gradient, Evaluation of alternatives for different useful life and study period. Cash flow diagram. Cost terminology and estimation techniques. Engineering economy techniques for Depreciation and Depletion models.					
5. Pre-requirements for this course (if any):					
MATH1205					
6. Co-requisites for this course (if any):					
7. Course Main Objective(s):					
1- Prepare students to know the relationship between the engineering economy and the limited resources in the natural environment **2-** Formulate and solve time value of money problem. Simple, compound interest, uniform, Arithmetic and geometric series					

3- Formulate and calculate the CFD
4- Prepare engineering students to know cost terminology and estimate capital cost by different models.
5- Prepare engineering students to know how to determine the depreciation and depletion models.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%
2	E-learning	NA	NA
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity		Contact Hours
1.	**Lectures**		30
2.	**Laboratory/Studio**	-	
3.	**Field**	-	
4.	**Tutorial**	-	
5.	**Others (specify)**	-	
Total			30

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate the fundamental	**K1**	**Lectures Power point and Tutorial**	**HW,**

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	relationship between environmental and engineering economy			QZs Exam
1.2				
...				
2.0	**Skills**			
2.1	Calculate different interest rates(simple compound, equal and uniform series, arithmetic gradient	S1	Lectures Power point and Tutorial	HW, QZs Exam
2.2	Analyze cash flow diagram and evaluate the different alternative	S1	Lectures Power point and Tutorial	HW, QZs Exam
2.3	Estimate costs by different techniques	S1	Lectures Power point and Tutorial	HW, QZs Exam
2.4	Calculate Depreciation and depletion models	S1	Lectures Power point and Tutorial	HW, QZs Exam
3.0	**Values, autonomy, and responsibility**			

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Engineering Economy and The Natural Environment	2
2.	Engineering and Engineering Economy	4
3.	Compound Interest and equivalence	2
4.	Time Value of Money simple, compound Uniform Series and Arithmetic gradient Series.	4
5	Cash Flow Analysis, Break even analysis	3
6	Nominal vs Effective interest formulas	4
7	Some Economic and Cost Concepts	4
8	Cost estimation techniques	3
9	Depreciation and depletion models	4
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm 1	6	20%
2.	Midterm 2	11	20%
3.	Class Work	weekly	20%
4	Final Exam	15	40%

*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	Blank, B., and Tarquin, A.," Basics of Engineering Economy"., McGraw-Hill. 2012
Supportive References	Gerald, J, Thuesen and W. J. Fabrycky" Engineering Economy, 9th Edition, Prentice Hall, 2001
Electronic Materials	Course materials will be given to the student in the class room
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Available**
Technology equipment (projector, smart board, software)	**Available**
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**4/2026**
DATE	**April 12, 2026**

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Operations Research 1
Course Code:	STAT1203
Program	Bachelor of Science in Statistics
Department:	Statistics
College:	Faculty of Science
Institution:	University of Tabuk
Version:	1
Last Revision Date:	20 September 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours (2 Theoretical + 1 Practical))					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (4th level/ Year Two)					
4. Course general Description:					
Introduction to the fundamental aspects of operations research, including: linear programming, simplex method, artificial variables, optimal analysis and transportation problems.					
5. Pre-requirements for this course (if any)**:**					
MATH1101					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
This course introduces students to the initial development of analytical methods to improve decision-making.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe the fundamental concepts of operations research models.	K1	Lectures Self-Learning Free discussion	Midterm exam Final exam Lab activities
1.2	Discuss the utilization of statistical packages in different applications of Operations Research.	K2		
2.0	**Skills**			
2.1	Calculate linear programming problems using the appropriate techniques	S1	Lectures Discussion Solve problems Group work	Midterm exam Final exam Lab activities Quizzes Lab final exam
2.2	Apply linear programming in different scientific domains and real-world models.	S3		
2.3	Interpret the results of optimal solutions for linear programming models.	S5		
2.4	Formulate suitable linear programming models.	S6		
3.0	**Values, autonomy, and responsibility**			
3.1	Collaborate effectively as an individual or in a team on issues related to operations research and	V2	Cooperative learning and teamwork Discussion Self-Learning	Assignments Oral presentation Lab activities

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	undertake lifelong learning. .			

C. Course Content

No	List of Topics	Contact Hours
1.	**What Is Operations Research?** ● Introduction ● Operations Research Models ● Solving the OR Model	4
2.	**What Is Operations Research?** ● Solving the OR Model	4
3.	**Construction of Linear Programming** ● Two-Variable LP Model ● Graphical LP Solution	4
4.	**Construction of Linear Programming** ● Solution of a Maximization Model	4
5.	**Construction of Linear Programming** ● Solution of a Minimization Model	4
6.	**The Simplex Method** ● Model in Equation Form ● Transition from Graphical to Algebraic Solution	4
7.	**The Simplex Method** ● The Simplex Method	4
8.	**Artificial Variable** ● M-Method	4
9.	**Artificial Variable** ● Two-Phase Method	4
10.	**Special Cases in the Simplex Method** ● Degeneracy ● Alternative Optima	4
11.	**Special Cases in the Simplex Method** ● Unbounded Solution ● Infeasible Solution	4
12.	**Duality and Post-Optimal Analysis** ● Definition of the Dual Problem	4
13.	**Duality and Post-Optimal Analysis** ● Primal–Dual Relationships	4
14.	**Transportation Model and Its Variants** ● The Transportation Algorithm	4
15.	**Transportation Model and Its Variants**	4

	• The Transportation Algorithm	
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Oral Presentation	During trimester	5%
2.	Assignments (2)	4th ,10th week	5%
3.	Quizzes	5th week	5%
4.	Midterm Exam	6th week	20%
5.	Lab activities	During trimester	15%
6.	Lab final exam	16th week	10%
7.	Final exam	At the end of semester	40%

*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	Hillier F. S. and G. Lieberman. Introduction to Operations Research, 11th ed., McGraw Hill, 2021.
Supportive References	Hamdy A. Taha. Operations research an introduction, 10th ed., Pearson Education Limited, 2017.
Electronic Materials	
Other Learning Materials	Anderson, D.R., Sweeney, D. J., Williams, T.A., and Martin, K. An Introduction to Management Science, Quantitative Approaches to Decision,; 14th edition,Cengage Learning 2015

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms Laboratories
Technology equipment (projector, smart board, software)	Projector Statistical Packages Software
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Faculty and Peer Reviewer	Indirect
Effectiveness of Students assessment	Students, Faculty and Peer Reviewer	Direct and Indirect
Quality of learning resources	Students, Faculty, Peer Reviewer and Program Leaders.	Indirect
The extent to which CLOs have been achieved	Students, Faculty and Program Leaders.	Direct and Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**DEPARTMENT COUNCIL**
REFERENCE NO.	**7**
DATE	**1445/05/01 - 2023/11/15**

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Engineering Statistics
Course Code:	STAT1351
Program	Bachelor of Science in Industrial Engineering
Department:	Statistics
College:	Faculty of Science
Institution:	University of Tabuk
Version:	1
Last Revision Date:	06 December 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 (2 lectures + 2 practical)					
2. Course type					
A.	☐ University	☐ College	☐ Department	☐ Track	☒ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (……./…..)					
4. Course general Description:					
This course focuses on the fundamental theories and concepts of bivariate probability distributions, inferential statistics including sampling distribution, point and interval estimation, Tests of hypotheses on mean and proportion on the single population and means on two and more than two populations along with inference in simple linear regression and introduction to multiple linear regression.					
5. Pre-requirements for this course (if any)**:**					
STAT١٢٥٣					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
The main purpose of this course introduces student to the basic concepts of joint probability distributions, statistical inference concerning techniques and tools used in estimation theory and hypothesis testing, as well as inference statistics in simple and multiple regression analysis.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe the fundamental theories and concepts of bivariate distributions, inferential statistics, and regression analysis	K1	Lectures Lab lectures Peer Learning	Midterm exam Lab activities Final exam Lab final exam
1.2	Recognize the basic concepts of applications and simulation in R programming.	K2		
2.0	**Skills**			
2.1	Calculate different measures and probabilities for bivariate distributions, point and confidence interval for population mean and proportion.	S1	Lectures Lab lectures Peer Learning Discussion Solve problems Group work	Assignments Midterm exam Lab activities Final exam Lab final exam
2.2	Apply the concepts of sampling distribution, Tests of hypotheses on mean and proportion for a single population and means of two and more than two populations.	S3		
2.3	Analyze the applications of bivariate distributions, inference statistics and linear regression analysis in real-life data sets using R.	S4		
	Formulate the relationship between variables using simple and multiple linear regression	S5		

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate self-reliance as a responsible citizen, adhere to academic ethics and maintain analytical integrity using the concepts of bivariate distributions, inference statistics and multiple linear regression.	V1	Cooperative learning and teamwork Discussion Self learning	Oral presentation Assignments Lab activities

C. Course Content

No	List of Topics	Contact Hours
1.	**Joint Probability Distributions:** Joint Probability Distributions Marginal Probability Distributions Application using R	4
2.	**Joint Probability Distributions:** Independence Covariance and Correlation Application using R	4
3.	**Sampling Distributions and Point Estimation of Parameters:** Point Estimation Sampling Distributions and the Central Limit Theorem Application and Simulation using R	4
4.	**Sampling Distributions and Point Estimation of Parameters:** General Concepts of Point Estimation (Unbiased Estimators, Variance of a Point Estimator, Standard Error, Mean Squared Error of an Estimator) Application and Simulation R	4
5.	**Confidence Interval on the Mean of a Normal Distribution, Variance Known** Application using R	4
6.	**Confidence Interval on the Mean of a Normal Distribution, Variance Unknown** Application using R	4
7.	**Large-Sample Confidence Interval for a Population Proportion** Application using R	4
8.	**Tests of Hypotheses for a Single Sample:** Hypothesis Testing Application using R	4
9.	**Tests of Hypotheses for a Single Sample:** Hypothesis Testing (Statistical Hypotheses, Tests of Statistical Hypotheses, One-Sided and Two-Sided Hypothesis, P-Values in Hypothesis Tests) Application using R	4
10.	**Tests of Hypotheses for a Single Sample:** Tests on the Mean of a Normal Distribution, Variance Known (Hypothesis Tests on the Mean, Type II Error and Choice of Sample Size) Tests on the Mean of a Normal Distribution, Variance Unknown Application using R	4
11.	**Tests of Hypotheses for a Single Sample:** Tests on a Population Proportion Application using R	4

12.	**Statistical Inference for Two Samples:** Inference on the Difference in Means of Two Normal Distributions, Variances Known Inference on the Difference in Means of Two Normal Distributions, Variances Unknown Application using R	4
13.	**The Analysis of Variance (ANOVA)** Application using R	4
14.	**Simple Linear Regression:** Properties of the Least Squares Estimators Hypothesis Tests in Simple Linear Regression Application and Simulation using R	4
15.	**Multiple Linear Regression Model** Least Squares Estimation of the Parameter Matrix Approach to Multiple Linear Regression Properties of the Least Squares Estimators Application and Simulation (Monte-Carlo) using R	4
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	5rd ,10th week	10%
2.	Midterm Exam	6th week	20%
3.	Oral presentation	During semester	5%
4.	Lab activities	During semester	15%
5.	Lab final exam	15th week	10%
6.	Final Exam	At the end of semester	40%

*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	Douglas C. Montgomery, George C. Runger (2020). Applied Statistics and Probability for Engineers, 9th ed., Wiley. Michael Akritas (2014). Probability & Statistics for Engineers and Scientists with R, Pearson.
Supportive References	Ronald E. Walpole, Raymond H. Myers, Sharon.L. Myers and Keying Ye (2016).Probability and Statistics for Engineers and Scientists, 9th ed., Prentice Hall Allan G. Bluman (2017). Elementary Statistics, Step by Step Approach, 10th edition, McGraw-Hill .
Electronic Materials	http://serc.carleton.edu/introgeo/teachingwdata/Stats.html

Other Learning Materials	Other learning material such as computer-based programs/CD, professional standards or regulations and software. - SPSS, Minitab , R and Excel

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms Laboratories
Technology equipment (projector, smart board, software)	Projector
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Faculty and Peer Reviewer	Indirect
Effectiveness of Students assessment	Students, Faculty and Peer Reviewer	Direct and Indirect
Quality of learning resources	Students, Faculty, Peer Reviewer and Program Leaders.	Indirect
The extent to which CLOs have been achieved	Students, Faculty and Program Leaders.	Direct and Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAMS AND PLANS COMMITTEE**
REFERENCE NO.	
DATE	

Course Specification
(Bachelor)

Course Title:	Industrial Information Analysis
Course Code:	INEN1303
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 hours					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 6TH , 3rd year)					
4. Course general Description:					
Analysis, design and implementation of industrial information systems with special focus given to manufacturing systems and environments; Information systems development life cycle, and information systems requirements determination; Database modeling and design; Structured analysis and functional architecture design; Object-oriented analysis and design; E-business and web-based database..					
5. Pre-requirements for this course (if any):					
STAT1351					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
1. Identify and apply fundamental concepts and requirements regarding Industrial Information Systems, including relevant relational databases, and query languages. **2. Use learned concepts to design and/or improve an industrial information system consisting of material, and/or information.** **3. Show the ability to effectively engage in a teamwork project to redesign a basic Industrial Information System. [**					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%

No	Mode of Instruction	Contact Hours	Percentage
2	E-learning	NA	NA
3	Hybrid • Traditional classroom • E-learning	NA	NA
4	Distance learning	NA	NA
		NA	NA
		NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	60
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Recognize engineering science appropriate for industrial engineering	PLO(K3)	Lectures	Exam Quiz
…				
2.0	**Skills**			
2.1	Identify and apply fundamental concepts and requirements regarding Industrial Information Systems, including relevant relational databases, and query languages.	PLO(S1)	Lectures	Exam Quiz

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	Use learned concepts to design and/or improve an industrial information system consisting of material, and/or information.	PLO(S2)	Lectures	Exam Quiz
…				
3.0	Values, autonomy, and responsibility			
3.1	Show the ability to effectively engage in a teamwork project to redesign a basic Industrial Information System..	PLO(V2)	Project	Presentation
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to IS development (1 week)	6
2.	2. Database modeling and design (4 weeks)	6
3.	3. Structured analysis and functional architecture design (3 weeks)	6
4.	4. Informational architecture and logical design (1 week)	6
5.	5. Object-oriented analysis and design (UML)* (4 weeks)	6
6.	6. E-business and web-enabled database* (1 week)	6
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work	3 - 9	20%
2.	Midterm (Written)	7	25%
3.	Mini Project	11	15%
4	Final Exam (Written)	15	40 %

*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	Modern Systems Analysis and Design. Jeffrey Hoffer, Joey Goerge & Joseph Valacich. Pearson. Eighth Edition. 2023. ISBN 13: 978-0-13-420492-5.

Supportive References	NA
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	Laptop / Computer, Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

Course Specification
(Bachelor)

Course Title:	Occupational Safety and Health Engineering
Course Code:	INEN1304
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 hours					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 6TH , 3rd year)					
4. Course general Description:					
This course is intended to provide students with basic knowledge of safety Engineering. The course starts with a description of the importance of safety in Engineering and an explanation of the key concepts related to safety. The course then covers the Occupational Safety and Health Act (OSHA) and record keeping and reporting. The course further focuses on identifying recordable injuries and illness cases based on the OSHA decision chart. The course also provides knowledge of hazard recognition and control strategies. Finally, the course covers selected topics such as machine safeguarding, personal protective equipment, fire protection and system safety.					
5. Pre-requirements for this course (if any):					
CHEM1101					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
● **Enable students to understand and explain safety, accident, and related terminologies and to develop accident preventive strategies based on the acquired knowledge.** ● **Recognize the importance and requirements of the Safety and Health Act (OSHA).** ● **Differentiate recordable and non-recordable injuries and disease cases.** ● **Recognize various types of hazards in workplaces and develop control strategies for their elimination and/or reduction.**					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning	NA	NA
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA
		NA	NA
		NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Define and explain safety, accident and related concepts.	K1	Lectures	Exam Quiz
1.2	Explain Occupational Safety and Health Act (OSHA) and discuss different types of OSHA citations.	K1		
2.0	**Skills**			
2.1	Identify purposes of record keeping and reporting, and recognize recordable injuries and illness cases.	S6	Lectures	Exam Quiz

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	Identify and propose control strategies for a variety of hazards	S6	Lectures	Exam Quiz
…				
3.0	Values, autonomy, and responsibility			
3.1	Recognize the importance of safety In professional practice	V1	Project	Presentation
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1	Importance of safety and health	4
2	Accidents and related concepts	4
3	Accident Investigation	2
4	Occupational Safety and Health Act	6
5	Record Keeping and Reporting	4
6	Hazards and Their Control	6
7	Personal Protective Equipment	4
8	Fire Protection and Prevention	5
9	Machine Safeguarding	6
10	System Safety	4
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work	3 - 9	20%
2.	Midterm (Written)	7	25%
3.	Mini Project	11	15%
4	Final Exam (Written)	15	40 %

*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	Roger, Brauer, (2016), Safety and Health for Engineers, John Wiley & Sons, Inc.
Supportive References	The Basic of Occupational Safety (2019), David. Goetsch, Third Edition, Pearson
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	Projector, Computer, Blackboard, Academic system
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

Course Specification
(Bachelor)

Course Title:	Manufacturing Materials
Course Code:	INEN1305
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours (2 C + 1 L))					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 6TH , 3RD year)					
4. Course general Description:					
This course Introduction and classification of materials, modern material needs. Mechanical behaviors and testing of materials, atomic structure, atomic bonding in solids. The structure of crystalline. Carbon-iron phase diagrams; Mechanical properties of metals, Heat treatment. Fundamentals of different types of traditional processes. Non-conventional machining processes. Computer Numerical Control (CNC) machines.					
5. Pre-requirements for this course (if any):					
MCEN1325					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
Fundamentals of metal casting, metal forming, metal welding, Traditional machining processes, Threads and gears cutting, Nonconventional machining, and Computer Numerical Control (CNC) machine tools					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	E-learning	NA	NA
3	Hybrid • Traditional classroom • E-learning	NA	NA
4	Distance learning	NA	NA

No	Mode of Instruction	Contact Hours	Percentage

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	40
2.	**Laboratory/Studio**	20
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate knowledge of and materials properties	PLO(K1)	Lectures	Exam Quiz
1.2	Demonstrate knowledge of traditional and Non-Traditional manufacturing processes	PLO(K1)	Lectures	Exam Quiz
1.3	Demonstrate knowledge of Computer Numerical Control (CNC) machines	PLO(K1)	Lectures	Exam Quiz
2.0	**Skills**			
2.1	Conduct practice of material properties and manufacturing processes	PLO(S3)	Lab.	Experiments Reports
2.2				
…				
3.0	Values, autonomy, and responsibility			
3.1				

C. Course Content

No	List of Topics	Contact Hours

1.	**Topic (1):** Introduction to materials classification, Mechanical behaviors and testing of materials, Heat treatment	12
2.	**Topic (2):** Primary Processes (Casting, Forming and Welding)	12
4.	**Topic (3):** Traditional machining processes	12
5.	**Topic (4):** Non-Traditional machining processes & CNC	24
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work	3 - 9	20%
2.	Midterm 1	5	15%
3.	Midterm 2	9	15%
4.	Lab (Practice)	3 - 9	20%
5.	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	Serope Kalpakjian, "Manufacturing Engineering and Technology", Sixth Edition, Prentice Hall, 2010 Shackelford & Muralidhara: Introduction to Materials Science for Engineers, Sixth Edition 2007, Pearson Education.
Supportive References	Kestoor Praveen (2010) "Non-Traditional machining" (5rd edition), Published by SIGGI Publishing, India
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom, Laboratory
Technology equipment (projector, smart board, software)	Laptop / Computer, Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

Course Specification
(Bachelor)

Course Title:	Work Study
Course Code:	INEN1306
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 6 / Year 3)					
4. Course general Description:					
This course introduces methods design & work measurement. Process analysis for workflow and Service Operation Standardization. Work measurement Predetermined motion-time systems. Work sampling and Direct time study. All topics will be covered with case study using real problem analysis.					
5. Pre-requirements for this course (if any):					
STAT1351					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
To develop the knowledge for student about the optimizing the productivity. To study, evaluation and develop different methods of doing to increase productivity and as well as workflow.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100
2	E-learning	NA	NA

No	Mode of Instruction	Contact Hours	Percentage
3	Hybrid • Traditional classroom • E-learning	NA	NA
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Explain fundamental concepts of methods engineering and operations analysis	PLO(K1)	Lectures Discussion	Quiz+ Exam
1.2	Demonstrate understanding of the fundamental concepts of work study	PLO(K1)	Lectures Discussion	Quiz+ Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.0	**Skills**			
2.1	Analyze measures such as labor productivity, cycle time, production rate, cost, and workflow in work systems	PLO(S1)	Lectures	Exam
2.2	Use methods engineering techniques to analyze, improve, and design work systems	PLO(S3)	Lectures	Exam
	Analyze complex problems using methods of engineering in workplace	PLO(S6)	Lectures Lab	Quiz+ Exam
3.0	**Values, autonomy, and responsibility**			
3.1	NA			
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Historical background and introduction to Work Study	4
2.	Manual work and worker machine systems	5
3.	Manual Assembly Lines	4

4.	Process recording and analysis (flow process chart, process mapping and man-machine activity charts)	6
5.	Techniques for Operations Analysis: Case study	6
6.	Work sampling and its techniques	4
7.	Design Implementation	4
8.	Motion Study and time study methods	6
9.	Introduction to work measurement	6
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work	3-10	20%
2.	Midterm Exam 1	7	15%
3.	Midterm Exam 2	12	15%
4.	Lab (Practice)	3- 10	20%
	Final Exam (Written)	15	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	Work Systems and the Methods, Measurement, and Management of Work by Mikell P. Groover, ISBN 0-13-140650-7. ©2007 Pearson Education, Inc., Upper Saddle River, NJ.
Supportive References	Freivalds, and Niebel, (2013). Niebel's Methods, Standards and Work Design, 13th edition , McGrawHill. Mayers, and Stewart, (2001) . Motion and Time Study for Lean Manufacturing, third edition , Prentice hall.

Electronic Materials	Lecture notes are uploaded via blackboard
Other Learning Materials	Links for YouTube videos

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom and a lab for 25 to 30 students
Technology equipment (projector, smart board, software)	Multimedia Teaching Aid (Projector) • Blackboard Teaching-Learning Interface • Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Purdue Pegboard Minnesota Manual Dexterity Test equipment

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	PROGRAM AND STUDY AND PLAN COMMITTEE
REFERENCE NO.	4/2026
DATE	April 12, 2026

Course Specification
(Bachelor)

Course Title:	Engineering Project Management
Course Code:	INEN1307
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours)					
2. Course type					
A.	☐ University	☒ College	☐ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (6level/3rd Year)					
4. Course general Description:					
This course provides an appreciation for the role Engineering Management and importance that project management has in delivering complex engineering projects on time, within budget, within performance specifications, and satisfying the customer. It provides a review of the fundamental content of the knowledge areas and process groups included in the PMI's Project Management and Body of Knowledge. The course covers both traditional and modern (Agile) project management phases. In addition, this course strength the ability of how they apply to the general stages of a product development project with a look at some basic techniques and tools, such as Microsoft Project and Visio.					
5. Pre-requirements for this course (if any)**:**					
INEN1302					
6. Co-requisites for this course (if any)**:**					
NA					
7. Course Main Objective(s):					
1. Develop an appreciation for the role and importance of “good” project management in delivering complex engineering projects on time, within budget, and within performance specifications. 2. Attain a basic understanding of some Project Management tools and techniques and how to apply them.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		NA
3	Hybrid • Traditional classroom • E-learning		NA
4	Distance learning		NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	An ability to demonstrate knowledge of concepts of Industrial engineering, engineering management and science	PLO(K1)	Lecture/Problem Based Learning	Direct Via Exams
2.0	**Skills**			
2.1	Demonstrate a Strategic Framework to Project Management	PLO (S1)	Lecture/Problem Based Learning	Direct Via Exams
2.2	An ability to demonstrate and apply the modern style of PM by utilizing the agile techniques in PM	PLO (S5)	Lecture/Problem Based Learning	Direct Via Exams
2.4	Demonstrate the role of scrum master in PM	PLO (S5)	Lecture/Problem Based Learning	Direct Via Exams
3.0	**Values, autonomy, and responsibility**			

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.1	Show ethical principles and commitment to professional code of conduct in the project management	PLO (V1)	Discussion,	Direct via Mini Project & Class Work

C. Course Content

No	List of Topics	Contact Hours
1.	Fundamental of Engineering Management	5
2.	Project Management Framework	5
3.	The Framework of Project in Project Management	10
4.	The Framework of Profile in Project Management	10
5.	The Framework of Operation in Project Management	5
6.	Project Management Office PMO	5
7.	Traditional Vs Modern Procedure in PM	5

Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam (Written)	8	25%
2.	Class Work	Weekly	20%
3.	Mini Project	13	15 %
...	Final Exam (Written)	15	40%

*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 Project Management Body of Knowledge (PMBOK 6th Edition)**
Supportive References	None
Electronic Materials	Lecture notes are posted on Blackboard
Other Learning Materials	Computer-based programs

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom for 12 students maximum
Technology equipment (projector, smart board, software)	Multimedia Teaching Aid (Projector) • Laptop / Computer • Blackboard • Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect through survey
Effectiveness of Students assessment	• Students • Head of the department • Vice dean	Indirect, where students use survey and head of the department and vice dean review the grades excel sheets and meet with instructors and provide feedback when necessary
Quality of learning resources	Students	Indirect via survey
The extent to which CLOs have been achieved	Peer Reviewer	Direct via Exams
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	PROGRAM AND STUDY PLAN COMMITTEE
REFERENCE NO.	11/2024
DATE	November 11, 2024

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification
(Bachelor)

Course Title:	Production Planning and Inventory Control
Course Code:	INEN1402
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 6th / Year 3)					
4. Course general Description:					
The objective of this course is to provide students with an introduction to production planning and Inventory control. Topics will cover forecasting models productivity, inventory control (EOQ, EPQ, and EOQ with Price Breaks), material requirement planning, manufacturing resource planning, aggregate planning, basic factory dynamics, performance analysis in production Little's Law, time workforce planning, pull planning framework and waste reduction techniques.					
5. Pre-requirements for this course (if any):					
STAT1203					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
To develop the knowledge for student with introduction to production planning and control and evaluate the optimum production strategy within different constraints.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning	NA	NA
3	Hybrid • Traditional classroom • E-learning	NA	NA

No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate understanding of the fundamental concepts of production planning and inventory control	PLO(K1)	Lectures	Quiz+ Exam
1.2	Explain fundamental concepts of forecasting methods	PLO(K1)	Lectures	Quiz+ Exam
2.0	**Skills**			
2.1	Ability use different qualitative and quantitative techniques to forecast future quantities	PLO(S1)	Lectures	Quiz+ Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate ability to work individually and communicate effectively with a teamwork and emphasize skills in professional conduct	PLO(V2)	Project	Presentation
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Production Planning and Capacity management	4
2.	Forecasting and Forecasting Models	4
3.	Productivity in Production	5
4.	Inventory Management and its models (ABC analysis, EOQ, POQ and quantity discount models)	6
5.	Operational metrices and performances analysis in Production	5
6.	Aggregate Production Planning, Production scheduling and its types	5
7.	Material Requirements Planning (MRP)	6
8.	Project Management (PERT/CPM, project crashing)	6
9.	Push and Pull production (CONWIP, Kanban)	5
Total		**45**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework, Quizzes (Written)	3 - 10	20%
2.	Midterm Exam (Written)	5-7	25%
3.	Mini Project	11-16	15%
4.	Final Exam (Written)	16	40%

*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	Factory Physics by Wallace J. Hopp and Mark L. Spearman, Waveland Press Inc; 3rd edition.
Supportive References	David D. Bedworth and James E. Baily., Integrated Production Control Systems, 2nd Edition, New York 10158, ISBN 0-471-85781
Electronic Materials	Lecture notes are uploaded via blackboard
Other Learning Materials	Computer-based programs

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom if 30 students
Technology equipment (projector, smart board, software)	Multimedia Teaching Aid (Projector) • Laptop / Computer • Blackboard • Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	QM IN Windows

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY AND PLAN COMMITTEE**
REFERENCE NO.	**4/2026**
DATE	**April 12, 2026**

Course Specification
(Bachelor)

Course Title:	Industrial Quality Control
Course Code:	INEN1405
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours (3 L + 0 P))					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 7TH , 4TH year)					
4. Course general Description:					
This course evaluates aspects of production to ensure that products meet specifications. Statistical quality control, which used to determine process capability and to detect process changes, involves the design and use of different types of control charts. Sampling inspection, which is use to separate good lots from poor lots, covers the design of sampling plans. Quality cost and introduction to six sigma.					
5. Pre-requirements for this course (if any):					
STAT1351					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
1. Demonstrate the knowledge of quality improvement, tools of quality control 2. Design control charts for variables, attributes, and process capabilities. 3. Design lot-by-lot acceptance sampling by attributes. 4. Demonstrate the knowledge of quality cost 5. Demonstrate the knowledge of six sigma					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100

No	Mode of Instruction	Contact Hours	Percentage
2	E-learning	NA	NA
3	Hybrid • Traditional classroom • E-learning	NA	NA
4	Distance learning	NA	NA
		NA	NA
		NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	An ability to demonstrate knowledge of statistical quality control concepts and tools	K1	Lectures Classwork Discussion	Traditional Quiz+ Exam Homework
1.2	Demonstrate knowledge of the quality costs analysis	K1	Lectures Classwork Discussion	Traditional Quiz+ Exam Homework
1.3	Demonstrate knowledge of the six sigma	K1	Lectures	Traditional Quiz+ Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			Classwork Discussion	Homework
2.0	**Skills**			
2.1	Analyze control charts for variables and attributes and process capabilities	S1	Lectures Classwork Discussion	Exams and project
2.2	Calculate Lot by lot acceptance sampling by attributes	S1	Lectures Classwork Discussion	Exams
...				
3.0	Values, autonomy, and responsibility			
3.1				
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to quality concepts, quality dimensions, and quality improvement	5
2.	History of Quality	3
3.	Basic process quality analysis techniques, seven tools of quality control, and data analytics for quality improvement	5
4.	Control charts for variables	5
5.	Control charts for attributes	5
6	Process and performance capability analysis	5
7.	Acceptance sampling: lot-by-lot acceptance sampling by attributes	5
8.	Cost of Quality	5
9.	Improvement methodologies: Six Sigma, Total Quality Management, Lean Engineering, and data analytics applications	7
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Work	Weekly	20%
2.	Midterm exam	8	25%
3.	Mini project	13	15%
4.	Final Exam (Written)	16	40%
...	Total		**100%**

*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	Montgomery DC (2012) Introduction to Statistical Quality Control, 7th Ed., John Wiley & Sons.
Supportive References	Dale H. Besterfield (2013) Quality Control, 3rd Ed., 2013, Prentice Hall.
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	Laptop / Computer, Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)

Assessment Areas/Issues	Assessor	Assessment Methods
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**4/2026**
DATE	**April 12, 2026**

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification
(Bachelor)

Course Title:	Agile Project Management
Course Code:	INEN1403
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 Hours)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (7 level/4th Year)					
4. Course general Description:					
This course provides an appreciation for the role and importance that project management has in delivering complex engineering projects on time, within budget, within performance specifications, and satisfying the customer. It provides a review of the fundamental content of the knowledge areas and process groups included in the PMI's Project Management and Body of Knowledge. The course covers both traditional and modern (Agile) project management phases. In addition, this course strength the ability of how they apply to the general stages of a product development project with a look at some basic techniques and tools, such as Microsoft Project and Visio. Additional, the students will perform a real life project related to industrial engineering topic					
5. Pre-requirements for this course (if any):					
INEN1307					
6. Co-requisites for this course (if any):					
NA					

7. Course Main Objective(s):
1. Develop an appreciation for the role and importance of “good” project management in delivering complex engineering projects on time, within budget, and within performance specifications. 2. Attain a basic understanding of some Project Management tools and techniques and how to apply them. 3.involving the students with real life applications and how to manage the project as PM using technical software application such as MS project and Visio.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		NA
3	Hybrid ● Traditional classroom ● E-learning		NA
4	Distance learning		NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA

Total	45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	An ability to demonstrate knowledge of concepts of Industrial engineering, engineering management and science	PLO(K1)	Lectures Assignments Discussion	Quiz+ Exam
2.0	**Skills**			
2.1	Demonstrate a Strategic Framework to Project Management	PLO (S3)	Lectures Assignments Discussion	Quiz+ Exam
2.2	An ability to demonstrate the role of people in PM	PLO (S3)	Lectures Assignments Discussion	Quiz+ Exam
2.3	An ability to demonstrate and apply the modern style of PM by utilizing the agile techniques in PM	PLO (S6)	Lectures Assignments Discussion	Quiz+ Exam
2.4	Demonstrate the role of scrum master in PM	PLO (S6)	Lectures Assignments Discussion	Quiz+ Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility**			
3.1	Show ethical principles and commitment to professional code of conduct in the project management	PLO (V3)	Discussion	Mini Project & Class Work
3.2	Demonstrate the significance of working individual and team work in PM within modern PM Style	PLO(V3)	Discussion	MiniProject & Class Work

C. Course Content

No	List of Topics	Contact Hours
1.	Project Management Framework	2
2.	Project Scope / Schedule Management	3
3.	The Framework of Project – Profile – Operation in Project Management	9
4.	Project Management Office PMO	6
5.	Traditional Vs Modern Procedure in PM	6
6.	People In PM – Agile	6
7.	Process in PM – Agile	6
8.	Business Environment – Agile	7

Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam (Written)	8	25%
2.	Class Work	Weekly	20%
3.	Mini Project	13	15 %
...	Final Exam (Written)	15	40%

*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 Project Management Body of Knowledge (PMBOK 6th Edition)**
Supportive References	None
Electronic Materials	Lecture notes are posted on Blackboard
Other Learning Materials	Computer-based programs

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom for 12 students
Technology equipment (projector, smart board, software)	Multimedia Teaching Aid (Projector) • Laptop / Computer • Blackboard • Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY AND PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Operations Research 2
Course Code:	STAT1310
Program	Bachelor of Science in Statistics
Department:	Statistics
College:	Faculty of Science
Institution:	University of Tabuk
Version:	1
Last Revision Date:	20 September 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 hours (2 Theoretical + 1 Practical)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐Required		☒ Elective		
3. Level/year at which this course is offered:(Level / Year Three)					
4. Course general Description:					
Introduction to sensitivity analysis, network models, decision analysis, queuing theory and nonlinear programming.					
5. Pre-requirements for this course (if any):					
STAT1203					
6. Co-requisites for this course (if any):					
None					
7. Course Main Objective(s):					
This course aims to continue students' journey in advanced analytical methods to improve decision-making.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100 %
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe the fundamental concepts of linear programming	K1	Lectures Lab Lectures	Midterm exam Final exam Lab activities
1.2	Recognize the utilization of statistical packages in different applications of operation research models.	K2		
2.0	**Skills**			
2.1	Solve the linear programing problems using the appropriate Operations Research techniques	S1	Lectures Lab lectures Discussion Solve problems Group work	Assignments Midterm exam Lab activities Quizzes Final exam Lab final exam
2.2	Apply network, dynamic and integer programing models in real life problems.	S3		
2.3	Analyze linear programming problems using WINQSB package	S4		
2.4	Communicate comprehensive Operations Research methods ideas, both orally and in writing.	S7		
3.0	**Values, autonomy, and responsibility**			
3.1	Collaborate effectively as an individual or in a team on issues related to operation research models and undertake lifelong learning.	V2	Cooperative learning and Teamwork Discussion Self-Learning	Assignments Oral presentation Lab activities

C. Course Content

No	List of Topics	Contact Hours
1.	**Review of Simplex Method**	4
2.	**Sensitivity Analysis** **Changes affecting feasibility & optimality** • Graphical Sensitivity Analysis	4
3.	**Changes affecting feasibility** • Changes in the right-hand side • Addition of new constraint • Application with WinQSB	4
4.	**Changes affecting optimality** • Objective function • Application with WinQSB	4
5.	**Changes affecting optimality** • Addition of new variable • Application with WinQSB	4
6.	**Network Models** • Scope and Definition of Network Models • Minimal Spanning Tree Algorithm	4
7.	**Network Models** • Shortest-Route Problem • Application with WinQSB	4
8.	**Network Models** • Maximal Flow Model • Application with WinQSB	4
9.	**Network Models** • CPM and PERT • Application with WinQSB	4
10.	**Integer Programming:** • Illustrative applications • Application with WinQSB	4
11.	**Integer Programming:** • Integer Programming Algorithms • Application with WinQSB	4
12.	**Travelling Salesperson Problem (TSP):** • Mathematical Model • Exact TSP Algorithms • Application with WinQSB	4
13.	**Dynamic Programming (DP):** • Recursive Nature of Dynamic Programming • Forward and Backward Recursion Methods • Application with WinQSB	4
14.	**Selected Dynamic Programming Applications:** • Knapsack/ Cargo-Load Model	4

	• Application with WinQSB	
15.	**Selected Dynamic Programming Applications:** • Workforce size Model • Investment Model • Application with WinQSB	4
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Oral Presentation	During trimester	5%
2.	Assignments (2)	4th ,10th week	5%
3.	Quizzes	5th week	5%
4.	Midterm Exam	6th week	20%
5.	Lab activities	During trimester	15%
6.	Lab final exam	16th week	10%
7.	Final exam	At the end of semester	40%

*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	Handy A. Taha (2017). *Operations research an introduction*, 10 ed., Pearson Education Limited
Supportive References	Hillier F. S. and G. Lieberman (2021). *Introduction to Operations Research*, 11th ed., McGraw Hill.
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms Laboratories
Technology equipment	Projector Statistical Packages Software

Items	Resources
(projector, smart board, software)	
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Faculty and Peer Reviewer	Indirect
Effectiveness of Students assessment	Students, Faculty and Peer Reviewer	Direct and Indirect
Quality of learning resources	Students, Faculty, Peer Reviewer and Program Leaders.	Indirect
The extent to which CLOs have been achieved	Students, Faculty and Program Leaders.	Direct and Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**DEPARTMENT COUNCIL**
REFERENCE NO.	**7**
DATE	**1445/05/01 - 2023/11/15**

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد
NCAAA

2024
TP-153

Course Specification
(Bachelor)

Course Title:	Work Environment and Human Factors
Course Code:	INEN1401
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 4 hours (3L+1P))					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 7TH , 4th year)					
4. Course general Description:					
This course covers many human factors topics that enable the student to understand the principles and applications of ergonomics and human factors, and the relevance of ergonomics and human factors in the practice of engineering. Students will learn how to recognizing, identifying and understand human error and their causes, and Specify designs that avoid occupation related injuries., apply human factors engineering concepts in both evaluation of existing systems and design of new systems. Students will also learn how to Identify the basic human sensory, cognitive, and physical capabilities and limitations with respect to human-machine system performance. All topics will be covered with case study using lab experiments.					
5. Pre-requirements for this course (if any):					
INEN1306					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					

1. Understand the principles and applications of ergonomics and human factors, and the relevance of ergonomics and human factors in the practice of engineering.

2. recognizing, identifying and understanding human error and their causes, and Specify designs that avoid occupation related injuries.

3. Explain and apply human factors engineering concepts in both evaluation of existing systems and design of new systems.

4. Identify the basic human sensory, cognitive, and physical capabilities and limitations with respect to human-machine system performance.

5. Define and apply the principles of work design, work environment design to minimize workload and stresses.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	100%
2	E-learning		
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	30
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA

Total	75

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	An ability to recognize the importance of Ergonomics & safety, Ergonomics domains, Classification of ergonomics problems and History of the field and objectives.	PLO(K1)	Lectures	Exam Quiz
1.2	An ability to Understand of the fundamental concepts of human factors	PLO(K1)		
…				
2.0	**Skills**			
2.1	An ability to Determine Engineering Anthropometry and Workspace Design (Body Size)	PLO(S1)	Lectures Lab	Exams Quizzes Reports
…	An ability to specify designs that avoid occupation-related injuries, apply human factors engineering concepts in both the evaluation of existing systems and the design of new systems	PLO(S1)		
3.0	Values, autonomy, and responsibility			
3.1				
…				

C. Course Content

No	List of Topics	Contact Hours
1.	**Foundational Ergonomics:** Introduction & background, Ergonomics defined, Ergonomics & safety, Ergonomics domains, Classification of ergonomics problems and History of the field and objectives.	6
2.	**Senses of the Human Body:** Introduction and background, Sensory Functions: vision, visual fatigue, Audition, How do we hear?, **Environmental Factors in Ergonomics:** Visual factors light levels, illumination, noise levels, measuring noise levels. Thermal conditions: temperature & humidity, controlling the thermal conditions. Vibration & the Human Body	8
3.	**Engineering Anthropometry and Workspace Design (Body Size)**: Introduction, human variability, statistical analysis, anthropometric data, structural and functional data, use anthropometric data in design, general principles for workspace design.	8
4.	**Design of Workplaces:** Workplace Design Analysis, Principles of Arrangement, General Process for Workplace Design, General Principles of Workplace Design, Designing to Fit the Moving Body, Designing For The Standing Operator, Designing for the Sitting Operator, Elements of an Ergonomic Chair **Hand Tools Design:** Designing for Hand Use, Hand Tool Design, Power Hand Tools, Work place evaluation tools- Rapid Upper Limb Assessment Tool.	8
5.	**Biomechanics of Work:** The musculoskeletal system, Bones and connective tissues, muscles, biomechanical model, single-segment planner static model, NIOSH lifting guide.	8
6	**Heavy Work and Evaluating Physical Workloads and Lifting:** Energy consumption during heavy work, energy efficiency of heavy work, effects of heavy work and heat, evaluation of physical workload, VO2max. material handling, classification of manual material handling (task characteristics, material characteristics, work practice characteristics & worker characteristics), general ergonomics roles for lifting of loads. **Fatigue:** muscular fatigue, mental fatigue and shift work related fatigue, general fatigue and measuring fatigue.	8
7	**Light and Moderate Work** (all chapters)	6
8	**Workload and Stress:** Stress at work & leisure, Eliminating stressors at work, Effect of stress, Measurement of stress, Mental workload, Physical Workload, Monotony & Boredom and Borg's Scales.	8
9	**Muscular Work**: Muscular Contractile System, Mechanism of Contraction (Sliding Filament Model), Method to Stimulate and Control the Mechanism of Contraction, Energy That Drives Contraction. **Innervations of the Muscular System:** Efferent Nerves, Sensory Nerves. Reflexes, Energy Transformation Process for Muscle Activity, Types of Muscular Work, Muscular Fatigue.	6
10	**Information Input and Processing**: Information input and processing, Text, Graphics, Symbols, and Codes, Visual displays, Auditory displays, Perception, Attention: Sustain attention, selective attention, focused attention, divided attention. Stimuli responses. Mental Workload Measurement:	9

	Measures of Primary and Secondary Task Performance, Physiological Measures, Psychophysical Assessment, Subjective Workload Assessment (NASA Task Load Index). **Controls & Displays**: Controls, Guidelines for Control Layout and Design, Types of Controls, Displays, Types of Displays, Guidance on Color Coding in Displays, Summary.	
Total		75

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes, project (Written)	3 - 9	20%
2.	Midterm (Written)	5 , 9	30%
3.	Lab	3 - 9	20%
4.	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	Human Factors in Engineering and Design, by Sanders, 4th ed, McGraw-Hill,
Supportive References	Introduction to Human Factors Engineering by Christopher D. Wickens (2003). Human Factors Engineering and Ergonomics, Second Edition By Stephen J. Guastello (2014).
Electronic Materials	https://www.hfes.org/
Other Learning Materials	Lecture notes are posted on Blackboard

2. Required Facilities and equipment

Items	Resources
facilities	Classroom, Laboratory

Items	Resources
(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
Technology equipment (projector, smart board, software)	Laptop / Computer, Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

Course Specification
(Bachelor)

Course Title:	Automation and Integrated Manufacturing
Course Code:	INEN1406
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours (2 C + 1 L))					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 7TH , 4th year)					
4. Course general Description:					
This course deals with components and characteristics of industrial processes, automated process development, integration of components, process automation using PLCs, Robotics in industrial automation. Introduction to Computer Integrated Manufacturing (CIM) systems, Single Station Manufacturing Cells, Group Technology and Cellular Manufacturing, Manual Assembly Lines, Automated Assembly Lines, Product Design and CAD/CAM in production systems, Process Planning and Concurrent Engineering.					
5. Pre-requirements for this course (if any):					
INEN1305					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
Introduction to PLC, TIA software and Ladder diagram, Series switching in ladder diagram, Parallel switching in ladder diagram, Combined switching in ladder diagram, Latching Connections and their application in industry, Robotic arm					

applications, Computer Integrated Manufacturing (CIM) applications using software package

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100
2	E-learning		
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.1	Recognize engineering science appropriate for automation and Integrated manufacturing	PLO(K1)	Lectures	Exam Quiz
1.2				
...				
2.0	**Skills**			
2.1	Create, select and apply appropriate techniques, resources, and modern engineering and computing tools for automation and Integrated manufacturing	PLO(S1)	Lectures Lab	Exams Quizzes Reports
...				
3.0	Values, autonomy, and responsibility			
3.1	Assess the use of information and communications technology	PLO(V3)		Quizzes Reports
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Components and characteristics of industrial processes	6
2.	Automation Process using PLCs	12
3.	Robotics in industrial automation	6
4.	Introduction to Computer Integrated Manufacturing systems	6

5.	Cellular Manufacturing	6
6	Assembly Lines in production systems	3
7.	Process Planning and Concurrent Engineering	6
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes, project (Written)	3 - 9	20%
2.	Midterm (Written)	5 , 9	30%
3.	Lab	3 - 9	20%
4.	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	Stamatios Menesis & George Nikolako , "An Introduction to Industrial Automation", CRC press, Taylor & Francis Group, 2018
Supportive References	P Radhakrishnan, S Subramanyan, & V Raju "CAD/CAM/CIM", NEW AGE INTERNATIONAL (P) LIMITED, PUBLISHERS 4835/24, Ansari Road, Daryaganj, New Delhi – 110002, ISBN (13) : 978-81-224-2711-0
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom, Laboratory
Technology equipment (projector, smart board, software)	Laptop / Computer, Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY AND PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

Course Specification
(Bachelor)

Course Title:	Analytical Decision Making
Course Code:	INEN1404
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 hours (3 L +0 P = 3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: Level 8th , 4th year					
4. Course general Description:					
In a rapidly changing, complex environment, successful enterprises make mission-critical choices using decision-support systems, which apply analytical methods to massive organizational data sets to evaluate options, give insight to likely outcomes, and make recommendations of the "best" decisions to pursue. Course topics include 1) framing and understanding decision-making needs and processes to define, evaluate, and identify appropriate strategic, operational, or execution-level decisions; 2) identifying, collecting, and managing large-scale data needed for decision support; and 3) employing decision-support software in areas such as optimization and data mining.					
5. Pre-requirements for this course (if any):					
STAT1310 INEN1303					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					

1. Data driven decision making.
2. Dealing and work with data bases and the appropriate approaches to clean, analyze and extract information from them.
3. Predictive analytics
4. Introducing machine learning and pattern recognitions
5. Business intelligence and data driven strategic decision making

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning	NA	NA
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate knowledge of fundamental concepts Making Decisions and its various Applications	PLO(K1)	Lectures Assignments Discussion	Quiz+ Exam
1.2				
...				
2.0	**Skills**			
2.1	The ability to analyze data using appropriate approach	PLO(S2)	Assignments Discussion reports/assignments	Class activities and Projects
2.2	Understand different types of algorithms and their uses	PLO(S4)		
	The Ability to utilize state-of-the-art software to visualize and communicate	PLO(S5)		
...				
3.0	**Values, autonomy, and responsibility**			
3.1	The ability to work along with classmates in groups to reach the desired goal	PLO(V1)	Lectures	Class activities
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction	4
2.	Decisions and importance of data	5
3.	Intro to data mining	9
4.	Learning Excel and Tableau for visualization	9
5.	Creativity in Data Visualization and Visual Communication	9
6.	Introduction to Data Analysis using R software.	9

Total	

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam (Written)	7	25%
2.	Mini Projects	3,5,7,9	15%
3.	Class work (Written)	1-15	20%
4.	Final Exam (Written)	15	40%
...			

*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	Delen, D. (2020). Predictive Analytics: Data Mining, Machine Learning and Data Science for Practitioners. Upper Saddle River, NJ, USA: FT Press.
Supportive References	Jamsa, K. (2020). Introduction to Data Mining and Analytics. Jones & Bartlett Learning.
Electronic Materials	Lecture notes are posted on Blackboard.
Other Learning Materials	Computer-based programs

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	A classroom for students and a lab room equipped with PC's to accommodate all students in different sessions to use computer software would be provided.
Technology equipment (projector, smart board, software)	Multimedia Teaching Aid (Projector) • Laptop / Computer • Blackboard • Academia (Registration, Attendance, and Communication System)

Items	Resources
Other equipment (depending on the nature of the specialty)	NA

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد
NCAAA

2024
TP-153

Course Specification
(Bachelor)

Course Title:	Budget and Financial Analysis
Course Code:	INEN1407
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 hours					
3 hours					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 8TH , 4th year)					
4. Course general Description:					
Concepts, principles, and techniques of making decisions about acquiring and retiring capital goods by industry and government. Topics include the time value of money, basic economic decision models, the effect of taxation and depreciation on financial decisions, capital allocation, the Importance of cost analysis in engineering, cost-volume-profit analysis, measuring relevant costs and revenues, cost assignment, and activity-based costing. Cost evaluation of engineering alternatives. Case studies.					
5. Pre-requirements for this course (if any):					
INEN1307					
6. Co-requisites for this course (if any):					
• TI BAII Plus calculator "Homework and exams are structured assuming you have this calculator or a calculator with similar capabilities" • Excel "VBA" adds on					
7. Course Main Objective(s):					
1. Understanding the concepts, principles, and techniques of making decisions about acquiring and retiring capital goods in both industry and government settings. 2. Gaining proficiency in economic decision models, including the time value of money. 3. Learning the impact of taxation and depreciation on financial decisions. 4. Developing skills in capital allocation and the importance of cost analysis in engineering. 5. Mastering cost-volume-profit analysis, relevant cost and revenue measurement, cost assignment, and activity-based costing.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100
2	E-learning	NA	NA
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	An ability to demonstrate knowledge of concepts of Industrial engineering and science	PLO(K1)	Lectures	Exam Quiz

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
...				
2.0	**Skills**			
2.1	An ability to identify, formulate, and solve complex engineering problems by applying principles of Industrial engineering, science, and mathematics.	PLO(S1)	Lectures	Exam Quiz
2.2	Create, select, adapt and apply appropriate techniques, resources and modern engineering and IT tools to solve complex engineering problems with understanding of the limitations …	PLO(S5)	Lectures	Exam Quiz
...				
3.0	Values, autonomy, and responsibility			
3.1	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	PLO(V1)	Project	Presentation
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to basic concepts.	4
2.	Further exploration of foundational principles.	4
3.	Advanced topics in economic decision models.	7

4.	The time value of money, Factors affecting Time Value of Money.	6
5.	Taxation and depreciation affect financial decisions, types of interest.	4
6.	Capital allocation strategies.	5
7	Cost analysis in engineering.	4
8	Cost-volume-profit analysis.	5
9	Replacement, retention and project feasibility decisions. Replacement, retention and project feasibility under risk and uncertainty.	6
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class work, (Written)	3 - 9	20%
2.	Midterm (Written)	7	25%
3.	Mini Project	11	15%
4	Final Exam (Written)	13	40 %

*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	Principles of Engineering Economic Analysis, White, Case, Pratt.
Supportive References	Engineering Economic Analysis, Newnan, D.G.,12th
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	Laptop / Computer, Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY AND PLAN COMMITTEE**
REFERENCE NO.	**4/2026**
DATE	**April 12, 2026**

Course Specification
(Bachelor)

Course Title:	Industrial System Simulation
Course Code:	INEN1408
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 (2L + 1P))					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: 8 level (4 year)					
4. Course general Description:					
Basic principles for building simulation models, Introduction to probability distributions, Simulation systems and software, Random numbers generators and varieties, Data analysis, Simulation models in service and industrial systems, Queuing systems, Queuing systems design and analysis, Steady state equations, performance measures, and service rates, Simulation and analysis techniques.					
5. Pre-requirements for this course (if any):					
INEN1303					
6. Co-requisites for this course (if any):					
7. Course Main Objective(s):					
The course aims to apply computer simulation to industrial systems. Areas covered include industrial system structure, system analysis, system model construction, data collection, and computer simulation using Arena software. The application of simulation statistics and reports should be used to facilitate the layout of the manufacturing system to improve productivity.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	E-learning		
3	Hybrid ● Traditional classroom ● E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe engineering principles, mathematics, computer simulations, design, manufacturing engineering, system	PLO(K1)	Lectures	Quiz+ Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	engineering and management.			
1.2				
...				
2.0	**Skills**			
2.1	Explain engineering problems, analyze, formulate and then design solutions for complex systems of people, technology and information.	PLO(S1)	Lectures	Quiz+ Exam
2.2	Create, select and apply appropriate techniques, resources, and modern engineering and computing tools.	PLO(S5)	Lectures	Quiz+ Exam
2.3	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.	PLO(S3)	Lab	Quiz+ Exam Lab
3.0	**Values, autonomy, and responsibility**			
3.1	Demonstrate ability to work individually and communicate effectively with a teamwork and emphasize skills in professional conduct	PLO(V2)	Project	Presentation

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Overview of Simulation and Fundamental Simulation Concepts	8
2.	Manual Simulations	7
3.	A Guided Tour through Arena	9
4	Modeling Basic Operations and Inputs using Arena	9
5	Modeling Detailed Operations using Arena	9
6	Modeling process records and counter in Arena	9
7	Input and output analyzer	9
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Midterm 1**	**5**	**15%**
2.	**Midterm 2**	**12**	**15%**
3.	**Class Work**	**weekly**	**20%**
4.	**Lab**	**3-10**	**20%**
5.	**Final**	**15**	**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	Simulation with Arena, W. David Kelton, Randall P. Sadowski, and David T. Sturrock, 3rd Ed., 2004, McGraw-Hill
Supportive References	**Videos**
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom and a lab for 25 to 30 students
Technology equipment (projector, smart board, software)	Multimedia Teaching Aid (Projector) • Blackboard Teaching-Learning Interface • Academia (Registration, Attendance, and Communication System) Arena software
Other equipment (depending on the nature of the specialty)	NA

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**

Course Specification
(Bachelor)

Course Title:	Facilities Planning and Material Handling
Course Code:	INEN1410
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 9TH , 5TH year)					
4. Course general Description:					
This course deals with the principles, concepts and methods of plant layout and materials handling for the optimum design of a facility. The topics include information requirements for facility design, conventional and newer quantitative techniques for analyzing material flow, facilities location, space determination, computerized plant layout techniques, the unit load concept, and material handling equipment selection and automatic storage and retrieval systems. A project involves facilities design for the manufacture and assembly of a mechanical device.					
5. Pre-requirements for this course (if any):					
INEN1402					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					

1. Understanding the principles, concepts and methods of plant layout and materials handling for the optimum design of a facility.
2. Applying conventional and newer quantitative techniques for analyzing material flow, facilities location, space determination, computerized plant layout techniques, the unit load concept.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100
2	E-learning		
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA
		NA	NA
		NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		45

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe engineering principles, mathematics, computer simulations, design, manufacturing engineering, system engineering and management.	PLO(K1)	Lectures	Exam Quiz
1.2				
...				
2.0	**Skills**			
2.1	Explain engineering problems, analyze, formulate and then design solutions for complex systems of people, technology and information.	PLO(S1)	Lectures	Exam Quiz
2.2	Create, select and apply appropriate techniques, resources, and modern engineering and computing tools.	PLO(S2)	Lectures	Exam Quiz
...				
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate ability to work individually and communicate effectively with a teamwork and emphasize skills in professional conduct	PLO(V2)	Project	Presentation
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Facilities Planning and design	6
2.	Product, process, and Schedule Design	6
3.	Flow systems, activity relationships, facility sizing, and space requirements	6
4.	Personnel Requirements	6
5.	Storage systems layout, material handling systems, and equipment selection	6
6.	Facility location, facility layout planning models	7
7.	Facility design algorithms	8
	Total	45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class work (Written)	3 - 9	20%
2.	Midterm (Written)	7	25%
3.	Final Exam (Written)	13	40%
4.	Mini Project		15%

*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	Tompkins, White et al.(2010) Facilities Planning (4th edition), John Wiley, New Jersey, 2010, ISBN 0-471-41389-5

Supportive References	Fred E. Meyers and Mathew Stephens (2013) Manufacturing Facilities Design and Material Handling (5rd edition), Pearson Prentice Hall, New Jersey, 2013, ISBN 0-13-112535-4
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	Laptop / Computer, Academia (Registration, Attendance, and Communication System)
Other equipment (depending on the nature of the specialty)	Calculators

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of Students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exams and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY AND PLAN COMMITTEE**
REFERENCE NO.	
DATE	**April 12, 2026**

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification
(Bachelor)

Course Title:	Logistics and Supply Chain
Course Code:	INEN 1411
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2026
Last Revision Date:	12 April 2026

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 4 hours (3 L +1 P = 4)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 2/year 5)					
4. Course general Description:					
Supply chain management and logistics is unique and, to some degree, represents a paradox because it is concerned with one of the oldest and most newly discovered business activities. Supply chain system activities – communication, inventory management, warehousing, transportation, facility location, and production - have been performed since the start of commercial activity. Visualizing any product that could reach a customer without logistical support is difficult. Yet it is only over the decade that firms have started focusing on logistics and supply chain management as a source of competitive advantage. Logistics and supply chain management today represents a great challenge and a tremendous opportunity for most firms. Another term that has appeared in the business jargon recently is the demand chain. From our perspective, we will use the phrases logistics management, supply chain management, and demand chain management interchangeably					
5. Pre-requirements for this course (if any):					
INEN1404 , STAT1310					
6. Co-requisites for this course (if any):					
None					
7. Course Main Objective(s):					
1. Demonstrate understanding of the impact of supply chain management on enterprise efficiency 2. Understand various business functions, processes, and supply chain terminology 3. Appreciate various supply chain viewpoints 4. Master concepts and mathematical models behind various supply chain software 5. Understand competing supply chain operations and reference models 6. Understand broader trends in the area of supply chain management					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	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**	45
2.	**Laboratory/Studio**	30
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		75

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate the impact of supply chain management on enterprise efficiency	SO(8)-PLO(K1)		Exam
2.0	**Skills**			
2.1	Understand various business functions, processes, and supply chain terminology	SO(2)-PLO(S2)	Lectures	Exam Quiz
2.2	Understand competing supply chain operations and reference models	SO(6)-PLO(S3)	Lectures	Exam Quiz Project
3.0	**Values, autonomy, and responsibility**			
3.1	Understand broader trends around supply chain management	SO(5)-PLO(V3)		**Project**

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Logistics and supply chain	9
2.	Building a Strategic Framework to Analyze Supply Chains	6
3.	Introduction to Customer service and Marketing	3

4.	Global Supply Chain Management in DEC	10
5.	Designing the Supply Chain Network	10
6.	Making supply meet demand in an uncertain world	10
7.	Introduction to Warehousing and Inventory	3
8.	Planning and Managing Inventories in a Supply Chain	3
9.	Introduction to Freight Transport	9
10.	Managing supply chain inventory: pitfalls and opportunities	6
11.	Sustainability and Supply Chains	6
Total		**75**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm 1(Written)	8	30%
2.	Project	**14**	**40%**
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	Supply Chain Management: Strategy, Planning, and Operation, by Sunil Chopra. 8th edition, Published by Pearson (2025)
Supportive References	
Electronic Materials	Lecture notes posted on Blackboard.
Other Learning Materials	None

2. Required Facilities and equipment

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	Indirect through survey
Effectiveness of Students' assessment	● Students ● Head of the department ● Vice dean	Indirect, where students use survey and head of the department and vice dean review the grades excel sheets and meet with instructors and provide feedback when necessary
Quality of learning resources	Students	Indirect through survey
The extent to which CLOs have been achieved	Course Instructor	Direct through tests
Other	None	None

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	PROGRAM AND STUDY PLAN COMMITTEE
REFERENCE NO.	4/2026
DATE	April 12, 2026

Course Specification
(Bachelor)

Course Title:	Training
Course Code:	INEN1495
Program:	Bachelor of Science in Industrial Engineering
Department:	Industrial Engineering
College:	Engineering
Institution:	Tabuk University
Version:	2024
Last Revision Date:	November 11, 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (level 10 / Fifth year)					
4. Course general Description:					
Choosing the topic, establishing the project, literature review, preparing for/or preliminary conducting the experiments, collecting the field data and developing the mathematical/ computer model if applicable, writing the first two chapters along with any preliminary findings					
5. Pre-requirements for this course (if any)**:**					
Department Approval					
6. Co-requisites for this course (if any)**:**					
NA					
7. Course Main Objective(s):					
1-1. Analyze a project statement, brief, or proposal to identify the real problem and the most relevant needs and realistic constraints. **2. Identify potential customers, their needs, and their operational constraints.** **3. Collect an effective literature survey and be able to contrast and critique related work and review** **4. Integrate previous knowledge from mathematics, basic sciences, engineering fundamentals and discipline related courses to address the problem.**					

5. Discuss all applicable realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

6. Define design objectives, design constraints, measures of design viability, and the evaluation criteria of the final project, and reformulate the problem based on collected data.

7. Generate possible solutions; compare alternatives, and select one alternative based on evaluation criteria and feasibility analysis.

8. Plan an effective design strategy and a project work plan, using standard project planning techniques, to ensure project completion on time and within budget.

9.Demonstrate Knowledge of contemporary issues

10. Demonstrate his ability to work independently and as part of a team with colleagues and advisors utilizing good work dynamics.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	NA	NA
2	E-learning	60	100%
3	Hybrid ● Traditional classroom ● E-learning	NA	NA
4	Distance learning	NA	NA

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	NA
2.	**Laboratory/Studio**	NA
3.	**Field**	60
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		60

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Practicing how to identify current engineering problems in the industry/community and how to formulate the problem in the form of "An Essential Question"	PLO(K1)	E-learning	Presentation
1.2	Practicing collecting scientific, engineering and market data on a particular problem	PLO(K1)	E-learning	Rubric Report
1.3	Practicing team work and synergy with other students and with the advisors and the program coordinator	PLO(K1)	E-learning	Rubric Report
1.4	Practicing proper technical writing and oral presentation skills	PLO(K1)	E-learning	Rubric Report
1.5	Establishing contacts with the industry/community	PLO(K1)	E-learning	Rubric Report
1.6	Theoretical and practical design concepts of industrial engineering systems.	PLO(K1)	E-learning	Rubric Report
2.0				
2.1	Identify and formulate engineering problems in the area of industrial Engineering	PLO(S4)	E-learning	Rubric Report
2.2	Applying the engineering knowledge and skills earned throughout the program	PLO(S3)	E-learning	Rubric Report
3.0	**Values, autonomy, and responsibility**			
3.1	Conduct enough literature review in the project domain	PLO(V1)	E-learning	Rubric Report

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.2	Ability to design a system, component or process with defined constraints	PLO(V2)	E-learning	Rubric Report
...	Ability to solve engineering problems and implement designed solutions	PLO(V3)	E-learning	Presentation Rubric Report

C. Course Content

No	List of Topics	Contact Hours
1.	**Topic(1)**: Design Methodology, Synthesis, Creativity and Conceptualization	4
2.	**Topic(2)**: Project Management and Scheduling	8
3.	**Topic(3)**: Problem Definition	12
4.	**Topic(4)**: Team Work Skills	8
5.	**Topic(5)**: Communication Skills; Written, graphical and Oral	8
6.	**Topic(6)**: Use of standards and design codes	8
7.	**Topic(7)**: Ethics in Engineering	4
8.	**Topic(8)**: Laws of Land related to Engineers	8
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Weekly log sheet**	**Every week**	**20%**
2.	**Employer evaluation**	**Every 2 weeks**	**20%**
3.	**Presentation**	**17**	**30%**
4.	**Final report**	**17**	**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	• Purchasing and Supply Chain Management 6th Edition by Robert M. Monczka (Author), Robert B. Handfield (Author), Larry C. Giunipero (Author), James L. Patterson (Author); 6th Edition Cengage Learning; (January 1, 2015). ISBN: 1285869680. • Logistics & Supply Chain Management by Martin Christopher, FT Press; 5 edition (March 7, 2016). ISBN: 1292083794. • Operations and Supply Chain Management, 10th edition. By: Roberts S. Russell, Bernard W. Taylar; ISBN: 978-1-119-57764 5 October 2019

Supportive References	NA
Electronic Materials	NA
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	IE Labs
Technology equipment (projector, smart board, software)	NA
Other equipment (depending on the nature of the specialty)	NA

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (online survey by Admission and Registration Deanship)
Effectiveness of students assessment	Peer Reviewer	Direct (Result Analysis)
Quality of learning resources	Students	Indirect (online survey by Quality Committee)
The extent to which CLOs have been achieved	Faculty	Direct (Exam and Excel sheet)
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**PROGRAM AND STUDY PLAN COMMITTEE**
REFERENCE NO.	**11/2024**
DATE	**November 11, 2024**