Sana'a University
Faculty of Engineering
Mechatronics Engineering Department
Mechatronics Engineering Program

Course Specification of Industrial Statistics and Quality Control

I.Course Identification and General Information:

1.	Course Title:	Industrial Statistics and Quality Control.				
2.	Course Code & Number:	MT303.				
3.	Credit hours:	C.H.				TOTAL Cr. Hrs.
		Th.	Seminar	Pr.	Tu.	
		2	-	-	2	3
4.	Study Level/ Semester at which this Course is offered:	Fourth Year- First Semester.				
5.	Pre –Requisite (if any):	Applied Engineering Mathematics.				
6.	Co –Requisite (if any):	None.				
7.	Program (s) in which the Course is offered:	Mechatronics Engineering Program.				
8.	Language of Teaching the Course:	English Language.				
9.	Location of Teaching the Course:	Mechatronics Engineering Department.				
10.	Prepared by:	Dr. Abdulsalam Almekhlafy				
11.	Date of Approval:					

II.Course Description:

Statistics and Quality Control is the science that uses the collected data from the manufacturing products and employs statistical analysis to monitor the quality standard of the products. The students will learn: types of products' data, analysis of process and plant data using statistical methods, statistical quality control, statistical process control, acceptance sampling, six sigma and

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Dr. Abdulsalam Almekhlafy	Ass. Prof. Dr. Abdul-Malik Momin	Ass. Prof. Dr. Mohammad Algorafi	Prof. Dr. Mohammed AL-Bukhaiti	Ass. Prof. Dr. Huda Al-Emad

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related topics. Besides, students will learn how to realize customer's quality needs and implement monitoring and statistical methods to improve control.

III. Course Intended learning outcomes (CILOs) of the course		**Referenced PILOs**
a.1	Explain variation in a process or data, using frequency distribution, histogram, stem-and-leaf plot, box plot, and normal probability plot.	A1
a.2	Describe process defects using Binomial, Poisson, Normal, and Exponential distribution functions.	A2
b.1	Construct a frequency distribution, histogram, stem-and-leaf plot, box plot, and normal probability of data readings of a process.	B1
b.2	Formulate solutions to real industrial applications using 6 sigma, JIT, and Lean manufacturing concepts.	B3
c.1	Calculate process capability ratios (Cp, Cpk, and Cpkm) using appropriate computer tools.	C2
c.2	Implement control charts for variables data (x-bar and R charts) and attribute data (p, np, c, and u charts) using EXCEL, SPSS, and Minitab software.	C5
d.1	Judge effectively both orally and in written forms for topics related to statistics and quality control.	D2
d.2	Defend acquisition of new knowledge as a part of life- long learning strategy.	D5
d.3	Review technical reports of the statistical results of data obtained.	D6

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(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a.1 Explain variation in a process or data, using frequency distribution, histogram, stem-and-leaf plot, box plot, and normal probability plots.	• Active Lectures • Tutorials	• Written Assessment. • Short Essays.
a.2 Describe process defects using Binomial, Poisson, Normal, and Exponential distribution functions.	• Active Lectures. • Tutorials. • Case Studies	• Written Assessment. • Practical Assessment.

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b.1 Construct a frequency distribution, histogram, stem-and-leaf plot, box plot, and normal probability of data readings of a process.	• Group Learning and Problem-Based Learning • Independent Applications of Engineering Analysis. • Case Studies	• Practical Assessment. • Project Reports. • Laboratory Reports.
b.2 Formulate solutions to real industrial applications using 6 sigma, JIT, and Lean manufacturing concepts.	• Group Learning and Problem-Based Learning • Hands-on Laboratory Work. • Case Studies.	• Written Assessment. • Project Reports. • Case Studies.

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(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c.1 Calculate process capability ratios (Cp, Cpk, and Cpkm) using appropriate computer tools.	• Hands-on Laboratory work • Design Work and Projects	• Practical Assessment. • Laboratory Reports.
c.2 Implement control charts for variables data (x-bar and R charts) and attribute data (p, np, c, and u charts) using EXCEL, SPSS, and Minitab software.	• The Use of Communication and Information Technology. • Computer and Web-Based Learning.	• Simulations. • Laboratory Reports.

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d.1 Judge effectively both orally and in written forms for topics related to statistics and quality control.	• Hands-on Laboratory Work. • Group Learning.	• Project Reports. • Presentations.
d.2 Defend acquisition of new knowledge as a part of life- long learning strategy.	• The Use of Communication and Information Technology • Directed Self-Study	• Project Reports. • Laboratory Reports. • Presentations.
d.3 Review technical reports of the statistical results of data obtained.	• Design Work and Projects.	• Laboratory Reports Presentations.

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IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	Contact Hours
1.	Introduction to Quality, Quality Control and Improvement.	a1, a2	• Meaning of Quality, Quality Control and Quality Improvement • Brief History of Quality Control and Improvement • Statistical Methods of Quality Control and Improvement • Other Aspects of Quality	1	2
2.	Modeling Process Quality.	a1, a2	• Describing Variation • Important Discrete Distributions • Important Continuous Distributions	1	2
3.	Inferences about Process Quality.	a1, a2	• Statistics and Sampling Distributions • Point Estimation of Process Parameters • Statistical Inference for Two Samples • Statistical Inference for more than Two Populations	2	4

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4.	Methods and Philosophy of Statistical Process Control.	a1, a2	• Introduction to statistical process control • Chance and Assignable Causes of Quality • Statistical Basis of the Control Chart • The Rest of the "Magnificent Seven" • Implementing SPC • An Application of SPC	2	4
5.	Control Charts for Variables**.**	a2, b1, b2, c2	• Introduction • Control Charts for x and R • Control Charts for x and S • The Shewhart Control Chart for Individual Measurements • Summary of Procedures for x, R, and S Charts • Applications of Variables Control Charts	1	2
6.	Mid Term Exam.	a1, a2, b1, b2, c1,c2.	• The first 5 chapters.	1	2
7.	Control Charts for Attributes.	a2, b1, b2, c2	• Introduction • Control Charts for Fraction Nonconforming	1	2

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			• Control Charts for Nonconformities (Defects) • Choice between Attributes and Variables Control Charts • Guidelines for Implementing Control Charts		
8.	Process and Measurement System Capability Analysis.	b2, c1, c2	• Introduction • Process Capability Analysis Using a Histogram or a Probability Plot • Process Capability Ratios • Process Capability Analysis Using a Control Chart • Process Capability Analysis Using Designed Experiments • Gage and Measurement System Capability Studies • Setting specification Limits on Discrete Components	2	4
9.	Acceptance Sampling.	a1, a2	• Lot-by-Lot Acceptance Sampling for Attributes	2	4

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			• Acceptance Sampling Problem • Single-Sampling Plans for Attributes • Double, Multiple, and Sequential Sampling • Military Standard 105E (ANSI/ASQC Z1.4, ISO 2859)		
10.	Six Sigma.	b2	• DMAIC • Application of Six Sigma tools to minimize production variability • Taguchi Loss Function	1	2
11.	Lean Production and Quality.	a1, a2, b2	• The Birth of Lean Production • The Lean Production System • Stability • Just-In-Time	1	2
12.	Final Exam.	a1, a2, b1, b2, c1,c2.	• All the chapters.	1	2
Number of Weeks /and Units Per Semester				**16**	**32**

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B - Tutorial Aspect:

Order	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes
1.	• Statistical Methods of Q. C. and Improvement • Important Discrete Distributions • Important Continuous Distributions	2	4	a1, a2
2.	• Statistics and Sampling Distributions • Point Estimation of Process Parameters • Statistical Inference for Two Samples • Statistical Inference for more than two populations	2	4	a1, a2, b1
3.	• Statistical process control • Chance and assignable causes of quality • Statistical basis of the control chart, The rest of the "Magnificent Seven" • Implementing SPC, An Application of SPC	2	4	a1, a2, b1, b2
4.	• Control Charts of Variables • Control Charts for x and R • Control Charts for x and S • The Shewhart Control Chart for Individual Measurement.	1	2	a2, b1, b2
5.	• Applications of variables control charts • Control Charts for attributes	1	2	a2, b1, b2, c2
6.	• Control charts for fraction Nonconforming • Control charts for nonconformities (defects)	1	2	a2, b1, b2, c2

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	• Choice between attributes and variables control charts			
7.	• Process and measurement system capability analysis • Process capability (Cp) analysis using a histogram or a probability plot • Process capability ratios • Cp analysis using a control chart	2	4	a2, b1, b2, c1, c2
8.	• Cp analysis using designed experiments • Gage and measurement system capability studies • Setting specification limits on discrete components • Estimating the natural tolerances limits of a process • Acceptance Sampling problem	1	2	a2, b2, c1, c2
9.	• Single-Sampling Plans for Attributes • Double, Multiple, and Sequential Sampling • Military Standard 105E (ANSI/ASQC Z1.4, ISO 2859) • DMAIC • Application of Six Sigma Tools to minimize variability • Design of Experiment	1	2	a1, a2, b2
10.	• Lean Production System • Stability • Just-In-Time	1	2	a1, a2, b2
Number of Weeks /and Units Per Semester		**14**	**28**	

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V.Teaching Strategies of the Course:

The teaching strategies of the course are as follows:

- Active Lectures (supported with discussions).
- Tutorials.
- Hands-on Laboratory Work.
- Independent Learning and Work.
- Group Learning and Problem-Based Learning.
- Independent Applications of Engineering Analysis.
- Computer and Web-Based Learning.
- Case Studies.
- The Use of Communication and Information Technology.
- Design Work and Projects.
- Directed Self-Study.

VI.Assessment Methods of the Course:

The assessment methods of the course are as follows:

- Short essays.
- Written Assessments.
- Simulations.
- Practical Assessment.
- Project Reports.
- Laboratory Reports.
- Case Studies.
- Presentations.

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VII. Assignments:

Order	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1.	**Use computer software for solving home-works.** H.W.1. Determine the mean mode, maiden, range, standard deviation of 50 pieces of measured data. Construct histograms and Stem-and-Leaf Plot	a1, a2, b1, c1, d1, d3	3rd	6
2.	H.W.2. Construct probabilities distribution models and normal distribution models.	a1, a2, b1, c1, d1, d2, d3	5th	6
3.	H.W.3. Construct control charts**.**	a1, a2, c2, d1, d3	7th	6
4.	H.W.4. Construct variable control charts**.**	a1, a2, c2, d1, d3	9th	6
5.	H.W.5. Construct attribute control charts**.**	a1, a2, c2, d1, d3	12th	6
Total				**30**

VIII. Schedule of Assessment Tasks for Students During the Semester:

Order	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1.	Assignments and Home-Works.	3, 5, 7, 9, 12	30	20%	a1, a2, b1, c1, c2, d1, d2, d3
2.	Quizzes.	6, 11	15	10%	a1, a2, b1, b2, c1, c2
3.	Mid-Term Exam.	8	15	10%	a1, a2, b1, b2

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4.	Final Exam.	16	90	60%	a1, a2, b1, b2
Total			**150**	**100%**	

IX. Learning Resources:

- Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

1- Required Textbook(s) (maximum two).

1. Montgomery, Douglas C., 2009, Introduction to Statistical Quality Control, 6th Ed., N.Y., John Wiley and Sons.
2. Amitava Mitra, 2008, Fundamentals of quality control and improvement, 3rd Ed., N.Y., John Wiley and Sons.

2- Essential References.

1. Vardeman, Strphen B, Jobe, J Marcus, 2016, Statistical method for quality assurance,N.Y., Springer Verlag.
2. William Navidi, 2011, Statistics for Engineers and Scientists, 3rd Ed., N.Y., McGraw-Hill.
3. George, M. L., 2002, Lean Six Sigma, N.Y., McGraw-Hill.

3- Electronic Materials and Web Sites *etc*.

1. A Guide to Simulation in MINITAB
   https://web.ma.utexas.edu/users/mks/358Ksp06/minitabsim.html
2. Journal of Quality Technology - Taylor & Francis
   https://www.tandfonline.com/loi/ujqt20
3. Industrial Quality Control, Journal of the American Society for Quality Control

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	http://www.speciation.net/Database/Journals/Industrial-Quality-Control-;i1161 4. MIT OpenCourseWare, Probability And Its Applications To Reliability, Quality Control, And Risk Assessment https://ocw.mit.edu/courses/nuclear-engineering/22-38-probability-and-its-applications-to-reliability-quality-control-and-risk-assessment-fall-2005/ 5. The National Programme on Technology Enhanced Learning (NPTEL), Six Sigma https://nptel.ac.in/courses/110/105/110105039/#

X. Course Policies:	
1.	**Class Attendance:** The students should have more than 75 % of attendance according to rules and regulations of the Faculty.
2.	**Tardy:** The students should respect the timing of attending the lectures. They should attend within 10 minutes from starting of the lecture.
3.	**Exam Attendance/Punctuality:** The student should attend the exam on time. The punctuality should be implemented according to rules and regulations of the faculty for mid-term exam and final exam.
4.	**Assignments & Projects:**

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	The assignment is given to the students after each chapter, the student has to submit all the assignments for checking on time.
5.	**Cheating**: If any cheating occurred during the examination, the student is not allowed to continue and he has to face the examination committee for enquires.
6.	**Plagiarism**: The student will be terminated from the Faculty, if one student attend the exam on another behalf according to the policy, rules and regulations of the university.
7.	**Other policies:** • All the teaching materials should be kept out the examination hall. • The mobile phone is not allowed. • There should be a respect between the student and his teacher.

Reviewed By	Vice Dean for Academic Affairs and Post Graduate Studies: Dr. Tarek A. Barakat President of Quality Assurance Unit: Ass. Prof. Dr. Mohammed Algorafi Head of Mechatronics Engineering Department: Ass. Prof. Dr. Abdul-Malik Momin Dr. Hatem Al-Dois
	Deputy Rector for Academic Affairs Dr. Ibrahim AlMutaa Ass. Prof. Dr. Ahmed Mujahed Dr. Munaser Alsubri

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Faculty of Engineering
Mechatronics Engineering Department
Mechatronics Engineering Program

Course Plan of Industrial Statistics and Quality Control

I. Information about Faculty Member Responsible for the Course:

		Office Hours					
Name of Faculty Member	Dr. Abdulsalam Almekhlafy	**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
Location& Telephone No.	00967-771292117						
E-mail	drabdulsalam2@gmail.com						

II. Course Identification and General Information:

1.	Course Title:	Industrial Statistics and Quality Control.				
2.	Course Code & Number:	MT303.				
3.	Credit hours:	C.H.				TOTAL
		Th.	Seminar	Pr.	Tu.	
		2	-	-	2	3
4.	Study Level/ Semester at which this Course is offered:	Fourth Year- First Semester				
5.	Pre –Requisite (if any):	Applied Engineering Mathematics.				
6.	Co –Requisite (if any):	None.				
7.	Program (s) in which the Course is offered:	Mechatronics Engineering Program.				
8.	Language of Teaching the Course:	English Language.				
9.	System of Study:	Semesters.				
10.	Mode of Delivery:	Lectures and Tutorials.				
11.	Location of Teaching the Course:	Mechatronics Engineering Department.				

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III. Course Description:

Statistics and Quality Control is the science that uses the collected data from the manufacturing products and employs statistical analysis to monitor the quality standard of the products. The students will learn: types of products' data, analysis of process and plant data using statistical methods, statistical quality control, statistical process control, acceptance sampling, six sigma and related topics. Besides, students will learn how to realize customer's quality needs and implement monitoring and statistical methods to improve control.

IV. Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
a.1	Explain variation in a process or data, using frequency distribution, histogram, stem-and-leaf plot, box plot, and normal probability plot.	A1
a.2	Describe process defects using Binomial, Poisson, Normal, and Exponential distribution functions.	A2
b.1	Construct a frequency distribution, histogram, stem-and-leaf plot, box plot, and normal probability of data readings of a process.	B1
b.2	Formulate solutions to real industrial applications using 6 sigma, JIT, and Lean manufacturing concepts.	B3
c.1	Calculate process capability ratios (Cp, Cpk, and Cpkm) using appropriate computer tools.	C2
c.2	Implement control charts for variables data (x-bar and R charts) and attribute data (p, np, c, and u charts) using EXCEL, SPSS, and Minitab software.	C5

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d.1	Judge effectively both orally and in written forms for topics related to statistics and quality control.	D2
d.2	Defend acquisition of new knowledge as a part of life- long learning strategy.	D5
d.3	Review technical reports of the statistical results of data obtained.	D6

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1.	Introduction to Quality, Quality Control and Improvement.	• Meaning of Quality, Quality Control and Quality Improvement • Brief History of Quality Control and Improvement • Statistical Methods of Quality Control and Improvement • Other Aspects of Quality Control and Improvement	1	2
2.	Modeling Process Quality.	• Describing Variation • Important Discrete Distributions • Important Continuous Distributions	2	2
3.	Inferences about Process Quality.	• Statistics and Sampling Distributions • Point Estimation of Process Parameters	3,4	4

		• Statistical Inference for Two Samples • Statistical Inference for more than Two Populations		
4.	Methods and Philosophy of Statistical Process Control.	• Introduction to statistical process control • Chance and Assignable Causes of Quality • Statistical Basis of the Control Chart • The Rest of the "Magnificent Seven" • Implementing SPC • An Application of SPC	5,6	4
5.	Control Charts for Variables.	• Introduction • Control Charts for x and R • Control Charts for x and S • The Shewhart Control Chart for Individual Measurements • Summary of Procedures for x, R, and S Charts • Applications of Variables Control Charts	7	2
6.	Mid Term Exam.	• The first 5 chapters.	8	2
7.	Control Charts for Attributes.	• Introduction • Control Charts for Fraction Nonconforming • Control Charts for Nonconformities (Defects)	9	2

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		• Choice between Attributes and Variables Control Charts • Guidelines for Implementing Control Charts		
8.	Process and Measurement System Capability Analysis.	• Introduction • Process Capability Analysis Using a Histogram or a Probability Plot • Process Capability Ratios • Process Capability Analysis Using a Control Chart • Process Capability Analysis Using Designed Experiments • Gage and Measurement System Capability Studies • Setting specification Limits on Discrete Components	10,11	4
9.	Acceptance Sampling.	• Lot-by-Lot Acceptance Sampling for Attributes • Acceptance Sampling Problem • Single-Sampling Plans for Attributes • Double, Multiple, and Sequential Sampling • Military Standard 105E (ANSI/ASQC Z1.4, ISO 2859)	12,13	4
10.	Six Sigma.	• DMAIC • Application of Six Sigma tools to minimize production variability	14	2

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		• Taguchi Loss Function		
11.	Lean Production and Quality.	• The Birth of Lean Production • The Lean Production System • Stability • Just-In-Time	15	2
12.	Final Exam.	• All the chapters.	16	2
Number of Weeks /and Units Per Semester			**16**	**32**

B - Tutorial Aspect:

Order	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes
1.	• Statistical Methods of Q. C. and Improvement • Important Discrete Distributions • Important Continuous Distributions	1,2	4	a1, a2
2.	• Statistics and Sampling Distributions • Point Estimation of Process Parameters • Statistical Inference for Two Samples • Statistical Inference for more than two populations	3,4	4	a1, a2, b1
3.	• Statistical process control • Chance and assignable causes of quality • Statistical basis of the control chart, The rest of the "Magnificent Seven"	5,6	4	a1, a2, b1, b2

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	• Implementing SPC, An Application of SPC			
4.	• Control Charts of Variables • Control Charts for x and R • Control Charts for x and S • The Shewhart Control Chart for Individual Measurement.	7	2	a2, b1, b2
5.	• Applications of variables control charts • Control Charts for attributes	8	2	a2, b1, b2, c2
6.	• Control charts for fraction Nonconforming • Control charts for nonconformities (defects) • Choice between attributes and variables control charts	9	2	a2, b1, b2, c2
7.	• Process and measurement system capability analysis • Process capability (Cp) analysis using a histogram or a probability plot • Process capability ratios • Cp analysis using a control chart	10,11	4	a2, b1, b2, c1, c2
8.	• Cp analysis using designed experiments • Gage and measurement system capability studies • Setting specification limits on discrete components • Estimating the natural tolerances limits of a process • Acceptance Sampling problem	12	2	a2, b2, c1, c2
9.	• Single-Sampling Plans for Attributes • Double, Multiple, and Sequential Sampling	13	2	a1, a2, b2

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	• Military Standard 105E (ANSI/ASQC Z1.4, ISO 2859) • DMAIC • Application of Six Sigma Tools to minimize variability • Design of Experiment			
10.	• Lean Production System • Stability • Just-In-Time	14	2	a1, a2, b2
Number of Weeks /and Units Per Semester		**14**	**28**	

VI. Teaching Strategies of the Course:

The teaching strategies of the course are as follows:

- Active Lectures (supported with discussions).
- Tutorials.
- Hands-on Laboratory Work.
- Independent Learning and Work.
- Group Learning and Problem-Based Learning.
- Independent Applications of Engineering Analysis.
- Computer and Web-Based Learning.
- Case Studies.
- Design Work and Projects.
- Directed Self-Study.

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VII. Assignments:

Order	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1.	**Use computer software for solving home-works.** H.W.1. Determine the mean mode, maiden, range, standard deviation of 50 pieces of measured data. Construct histograms and Stem-and-Leaf Plot	a1, a2, b1, c1, d1, d3	3rd	6
2.	H.W.2. Construct probabilities distribution models and normal distribution models.	a1, a2, b1, c1, d1, d2, d3	5th	6
3.	H.W.3. Construct control charts**.**	a1, a2, c2, d1, d3	7th	6
4.	H.W.4. Construct variable control charts**.**	a1, a2, c2, d1, d3	9th	6
5.	H.W.5. Construct attribute control charts**.**	a1, a2, c2, d1, d3	12th	6
Total				**30**

VIII. Schedule of Assessment Tasks for Students During the Semester:

Order	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1.	Assignments and Home-Works.	3, 5, 7, 9, 12	30	20%	a1, a2, b1, c1, c2, d1, d2, d3
2.	Quizzes.	6, 11	15	10%	a1, a2, b1, b2, c1, c2

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3.	Mid-Term Exam.	8	15	10%	a1, a2, b1, b2
4.	Final Exam.	16	90	60%	a1, a2, b1, b2
Total			**150**	**100%**	

IX. Learning Resources:

- Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

1- Required Textbook(s) (maximum two).

1. Montgomery, Douglas C., 2009, Introduction to Statistical Quality Control, 6th Ed., N.Y., John Wiley and Sons.
2. Amitava Mitra, 2008, Fundamentals of quality control and improvement, 3rd Ed., N.Y., John Wiley and Sons.

2- Essential References.

1. Vardeman, Strphen B, Jobe, J Marcus, 2016, Statistical method for quality assurance,N.Y., Springer Verlag.
2. William Navidi, 2011, Statistics for Engineers and Scientists, 3rd Ed., N.Y., McGraw-Hill.
3. George, M. L., 2002, Lean Six Sigma, N.Y., McGraw-Hill.

3- Electronic Materials and Web Sites *etc*.

1. A Guide to Simulation in MINITAB
   https://web.ma.utexas.edu/users/mks/358Ksp06/minitabsim.html
2. Journal of Quality Technology - Taylor & Francis
   https://www.tandfonline.com/loi/ujqt20
3. Industrial Quality Control, Journal of the American Society for Quality Control
   http://www.speciation.net/Database/Journals/Industrial-Quality-Control-;i1161

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	4. MIT Open Courseware, Probability And Its Applications To Reliability, Quality Control, And Risk Assessment https://ocw.mit.edu/courses/nuclear-engineering/22-38-probability-and-its-applications-to-reliability-quality-control-and-risk-assessment-fall-2005/ 5. The National Programme on Technology Enhanced Learning (NPTEL), Six Sigma https://nptel.ac.in/courses/110/105/110105039/#

X. Course Policies:

1.	**Class Attendance:** The students should have more than 75 % of attendance according to rules and regulations of the Faculty.
2.	**Tardy:** The students should respect the timing of attending the lectures. They should attend within 10 minutes from starting of the lecture.
3.	**Exam Attendance/Punctuality:** The student should attend the exam on time. The punctuality should be implemented according to rules and regulations of the faculty for mid-term exam and final exam.
4.	**Assignments & Projects:** The assignment is given to the students after each chapter, the student has to submit all the assignments for checking on time.

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5.	**Cheating**: If any cheating occurred during the examination, the student is not allowed to continue and he has to face the examination committee for enquires.
6.	**Plagiarism**: The student will be terminated from the Faculty, if one student attend the exam on another behalf according to the policy, rules and regulations of the university.
7.	**Other policies:** • All the teaching materials should be kept out the examination hall. • The mobile phone is not allowed. • There should be a respect between the student and his teacher.

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