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COURSE PLAN

Course code and title	**STA4C04-Statistical Inference and Quality Control**		
Class	BSc Mathematics	**Semester**	IV
Regulation	2019	**Academic year**	2023-2024
Course prerequisites	Knowledge of basic probability, statistics, calculus, and linear algebra, typically covered in an introductory course on Probability and Statistics.		
Course objectives	• To develop a deep understanding of point estimation methods and their theoretical properties such as unbiasedness, consistency, efficiency, and sufficiency		
	• To equip students with the ability to apply classical and modern techniques for parameter estimation and hypothesis testing in real-world statistical problems.		
	• To enable students to analyze and implement both parametric and non-parametric statistical methods, as well as quality control tools, for data-driven decision-making and process improvement.		

COURSE OUTCOMES

At the end of the course the student would be able to...

CO1	**Explain the core concepts of estimation theory, including unbiasedness, consistency, efficiency, and sufficiency, and how they relate to point estimation.**
CO2	**Apply maximum likelihood and moment estimation methods to estimate parameters of probability distributions and evaluate their efficiency using Cramer-Rao inequality**
CO3	**Analyze various hypothesis testing procedures, such as the Neyman-Pearson Lemma and large sample tests and interpret the outcomes of these tests in practical scenarios**
CO4	**Evaluate non-parametric testing methods like the Mann-Whitney U test, Kruskal-Wallis test, and Median test for different types of data where parametric assumptions are violated.**
CO5	**Design and implement quality control charts (X-bar, R-chart, p-chart) to monitor and improve the quality of manufacturing processes, identifying causes of variation and suggesting corrective actions**

MAPPING OF PROGRAM OUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	✓		✓		✓			✓		
CO2	✓		✓	✓	✓			✓		
CO3	✓		✓		✓	✓		✓		
CO4	✓		✓		✓	✓		✓		

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CO5	✓	✓	✓	✓	✓	✓	✓	✓		

PO1	Knowledge Acquisition	**PO6**	Ethics & Social Responsibility
PO2	Communication & Leadership	**PO7**	Research, Innovation & Entrepreneurship
PO3	Professional Skills	**PO8**	Lifelong Learning
PO4	Digital Intelligence	**PO9**	Global Perspective
PO5	Scientific awareness & Critical Thinking	**PO10**	Democratic Co-existence

PROGRAM SPECIFIC OUTCOMES

PSO1	Apply statistical estimation and hypothesis testing methods to solve real-world problems in engineering, science, and industry.
PSO2	Use data-driven tools and quality control techniques to monitor, analyze, and enhance process performance.
PSO3	**Demonstrate proficiency in statistical software and digital tools for data analysis, modeling, and decision-making in applied research.**

MAPPING OF COURSE OUTCOMES TO PROGRAM EDUCATIONAL OUTCOMES

PROGRAM EDUCATIONAL OUTCOMES	**COURSE OUTCOMES**				
	CO1	**CO2**	**CO3**	**CO4**	**CO5**
PEO1 Development of leadership qualities			✓	✓	✓
PEO2 Advanced analytical and computational Techniques	✓	✓	✓	✓	✓
PEO3 Mathematical modelling and problem solving	✓	✓	✓	✓	✓

References

TEXT BOOKS:

1. Rohatgi V. K. and Saleh, A.K. Md. E. (2009): An Introduction to Probability and Statistics. 2nd Edn. (Reprint) John Wiley and Sons
2. Gupta, S.P. Statistical Methods. Sultan Chand and Sons: New Delhi.

REFERENCES:

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No of lecture hours	Planned Date	Topics to be covered		Reference/ Teaching aids and methods	Actual date	Weekly review
	MODULE I -ESTIMATION THEORY					
1	04/01/2024	Introduction to Estimation Theory		T/WB	4-1-24	
2	05/01/2024	Parametric Space – Definition and Examples		T/WB	5-1-24	
3	08/01/2024	Sample Space and Sampling Distributions		T/WB	8-1-24	
4	08/01/2024	Point Estimation – Basics and Purpose		T/WB	〃 〃	
5	09/01/2024	Desirable Properties of Estimators – Overview		T/WB	9-1-24	
6	11/01/2024	Unbiasedness – Concept and Examples		T/WB	11-1-24	
7	12/01/2024	Consistency – Definition and Practical Insight		T/WB	12-1-24	
8	15/01/2024	Efficiency – Understanding Relative Efficiency		T/WB	15-1-24	
9	15/01/2024	Sufficiency – Neyman Factorization Theorem		T/WB	〃 〃	
10	16/01/2024	Completeness – Concept and Illustrations		T/WB/PPT	16-1-24	
11	18/01/2024	Relationship Among Estimator Properties		T/WB	18-1-24	
12	19/01/2024	Minimum Variance Unbiased Estimator (MVUE) – Concept		T/WB	19-1-24	
13	22/01/2024	Cramer-Rao Inequality – Definition and Significance		T/WB	22-1-24	
14	22/01/2024	Minimum Variance Bound (MVB) Estimators – Concept		T/WB/PPT	〃 〃	
15	23/01/2024	Introduction to Estimation Methods		T/WB	23-1-24	
16	25/01/2024	Method of Moments – Procedure		T/WB	〃 〃	
17	29/01/2024	Method of Moments – Solved Problems		T/WB	25-1-24	
18	29/01/2024	Maximum Likelihood Estimation (MLE) – Concept and Formula		T/WB/PPT	〃 〃	
19	30/01/2024	MLE – Step-by-step Procedure		T/WB	〃 〃	
20	01/02/2024	MLE – Solved Examples (Normal, Binomial, etc.)		T/WB	1-2-24	
21	02/02/2024	Properties of MLEs – (Without Proof)		T/WB	2-2-24	
22	05/02/2024	Least Squares Estimation – Basic Concepts		T/WB/PPT	〃 〃	
23	05/02/2024	Minimum Variance Estimation – Concept		T/WB/PPT	05-2-24	
24	06/02/2024	Interval Estimation – Introduction to Confidence Intervals		T/WB/PPT	〃 〃	
25	08/02/2024	CI for Mean (Normal Distribution) – Known σ		T/WB	06-2-24	

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26	09/02/2024	CI for Variance (Normal Distribution)		T/WB	08-2-24	
27	12/02/2024	CI for Binomial Proportion		T/WB	〃 〃	
28	12/02/2024	CI for Population Correlation Coefficient		T/WB	09-2-24	
29	13/02/2024	Interpretation and Application of Confidence Intervals		T/WB/PPT	〃 〃	
30	15/02/2024	Summary, Concept Integration, and Review		T/WB	15-02-24	

Planned hours	Actual hours	Date	Sign of Faculty	Review by HoD	Review by Principal
30	30	15/2/24			

	MODULE II – Testing of Hypothesis					
31	16/02/2024	Introduction to Hypothesis Testing		T/WB	16-2-24	
32	19/02/2024	Null and Alternative Hypotheses		T/WB	19-2-24	
33	19/02/2024	Simple and Composite Hypotheses		T/WB/PPT	〃 〃	
34	20/02/2024	Level of Significance – Concept and Application		T/WB	20-2-24	
35	22/02/2024	Type I and Type II Errors – Explanation and Examples		T/WB	22-2-24	
36	23/02/2024	Power of a Test – Concept and Importance		T/WB	23-2-24	
37	26/02/2024	p-values – Interpretation and Use in Testing		T/WB	26-2-24	
38	26/02/2024	Critical Region and Test Statistics		T/WB	〃 〃	
39	27/02/2024	Most Powerful Tests – Introduction		T/WB	27-2-24	
40	29/02/2024	Neyman-Pearson Lemma – Concept (Without Proof)		T/WB	29-2-24	
41	01/03/2024	Uniformly Most Powerful (UMP) Tests – Meaning and Examples		T/WB	〃 〃	
42	04/03/2024	Large Sample Tests – Introduction and Assumptions		T/WB/PPT	〃 〃	
43	05/03/2024	Z-test for Equality of Two Means, Z-test for Single Proportion,		T/WB	〃 〃	
44	07/03/2024	Z-test for Equality of Two Proportions		T/WB	29-2-24	
45	11/03/2024	Practice Problems – Large Sample Tests		T/WB	〃 〃	
46	11/03/2024	t-test for a Single Mean – Concept and Conditions		T/WB/PPT	〃 〃	
47	12/03/2024	Unpaired t-test – Theory and Procedure		T/WB	〃 〃	
48	14/03/2024	Paired t-test – Application and Examples		T/WB	1-3-24	
49	15/03/2024	Practice Problems – Small Sample Tests		T/WB	〃 〃	
50	18/03/2024	Chi-Square Distribution – Overview		T/WB	〃 〃	
51	18/03/2024	Chi-Square Test for Equality of Variances		T/WB	4-3-24	
52	19/03/2024	Chi-Square Test for Goodness of Fit		T/WB/PPT	〃 〃	
53	21/03/2024	Chi-Square Test for Independence of Attributes		T/WB	〃 〃	

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54	22/03/2024	Chi-Square Test for Association of Attributes			T/WB	05-3-24	
55	25/03/2024	Practice Problems – Chi-Square Tests			T/WB	" "	
56	25/03/2024	ANOVA – Introduction and Need			T/WB	" "	
57	26/03/2024	One-Way ANOVA			T/WB	07-3-24	
58	03/06/2024	Two-Way ANOVA			T/WB	" "	
59	03/06/2024	Two-Way ANOVA – Solved Problems			T/WB	" "	
Planned hours	**Actual hours**	**Date**	**Sign of Faculty**	**Review by HoD**		**Review by Principal**	
35	35	3/6/24					
	UNIT III - Non parametric methods						
66	04/06/2024	Introduction to Non-Parametric Methods – Need and Applications			T/WB	11-3-24	
67	06/06/2024	Advantages and Drawbacks of Non-Parametric Methods			T/WB	" "	
68	07/06/2024	Test for Randomness – Concept and Procedure			T/WB	12-3-24	
69	10/06/2024	Median Test – Theory and Application			T/WB	" "	
70	10/06/2024	Sign Test – One-sample and Paired-sample Cases			T/WB	14-3-24	
71	11/06/2024	Mann-Whitney U Test – Concept and Test Statistic			T/WB	" "	
72	13/06/2024	Mann-Whitney U Test – Solved Examples			T/WB	15-3-24	
73	14/06/2024	Wilcoxon Signed-Rank Test – Procedure and Use			T/WB	" "	
74	18/06/2024	Wilcoxon Rank-Sum Test (Alternative to Mann-Whitney)			T/WB/PPT	18-3-24	
75	20/06/2024	Kruskal-Wallis Test – Concept and Comparison with ANOVA					
Planned hours	**Actual hours**	**Date**	**Sign of Faculty**	**Review by HoD**		**Review by Principal**	
10	10	20/6/24					
	MODULE IV -Quality control						
76	21/06/2024	Introduction to Quality Control – Concept and Importance			T/WB	18-3-24	
77	24/06/2024	Causes of Variation in Quality – Common vs. Special Causes			T/WB	19-3-24	
78	24/06/2024	Control Limits – Definition and Calculation			T/WB	" "	
79	25/06/2024	Out-of-Control Criteria – Rules and Interpretation			T/WB	21-3-24	
80	27/06/2024	Overview of Control Charts – Variables vs.			T/WB/P[PT	" "	

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		Attributes					
81	28/06/2024	$\bar{X}$ (X-bar) Chart – Construction and Interpretation			T/WB	22-3-24	
82	01/07/2024	R Chart – Construction and Usage			T/WB	" "	
83	01/07/2024	p-Chart – Concept, Calculation, and Example			T/WB	25-3-24	
84	02/07/2024	np-Chart – Concept, Use, and Problems			T/WB	" "	
85	04/07/2024	c-Chart – When to Use and How to Construct			T/WB	26-3-24	
Planned hours	**Actual hours**	**Date**	**Sign of Faculty**	**Review by HoD**		**Review by Principal**	
	6	4/7/24					

COURSE PLANSTA4C04 STATISTICAL INFERENCE AND QUALITY CONTROL

FACULTY

HOD

SHAMSHAD AMEERA.U
Assist. Professor & Head
Department of Mathematics
Ambedkar College of Arts & Science
Wandoor, Malappuram Dt.

PRINCIPAL

AMBEDKAR COLLEGE OF ARTS & SCIENCE
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BCM4C04 QUANTITATIVE TECHNIQUES FOR BUSINESS		Cognitive level	Program outcomes 1-Low correlation 2-Moderate Correlation 3- High correlation											
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
DIRECT METHOD														
CO1	Explain the core concepts of estimation theory, including unbiasedness, consistency, efficiency, and sufficiency, and how they relate to point estimation.	Remember	3		2		2			1				
CO2	Apply maximum likelihood and moment estimation methods to estimate parameters of probability distributions and evaluate their efficiency using Cramer-Rao inequality	Apply	3		2	1	2			1				
CO3	Analyze various hypothesis testing procedures, such as the Neyman-Pearson Lemma and large sample tests and interpret the outcomes of these tests in practical scenarios	Apply & Analyze	3		2		3	1		1				
CO4	Evaluate non-parametric testing methods like the Mann-Whitney U test, Kruskal-Wallis test, and Median test for different types of data where parametric assumptions are violated.	Create	2		3		2	1		1				

CO5	Design and implement quality control charts (X-bar, R-chart, p-chart) to monitor and improve the quality of manufacturing processes, identifying causes of variation and suggesting corrective actions	Innovate	3	2	2	2	2	1	1	2				
INDIRECT METHOD														MAP
Class Room contests		Analyze & Create	3		2			1	2					

Course outcome –Program outcome Mapping Table

Course Faculty QAC Member HoD

COURSE PRE-ANALYSIS

Dear Students,

Welcome back to class, I would like to thank all of you for sparing your time in filling up this Course Pre-Analysis survey for the effective conduct of Computer Aided Design and Manufacturing Course. As you know that this survey is meant for knowing the knowledge level of the students with respect to this course, please fill it very carefully. At this juncture, I am glad to welcome the suggestions from you all (if any).

Rate your prior knowledge about the topics mentioned below

Course Outcomes	Description	Rate your prior knowledge about the topics			
		Excellent (4)	Good (3)	Moderate (2)	Fair (1)
CO1	**Explain the core concepts of estimation theory, including unbiasedness, consistency, efficiency, and sufficiency, and how they relate to point estimation.**			2	
CO2	**Apply maximum likelihood and moment estimation methods to estimate parameters of probability distributions and evaluate their efficiency using Cramer-Rao inequality**				1

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CO3	Analyze various hypothesis testing procedures, such as the Neyman-Pearson Lemma and large sample tests and interpret the outcomes of these tests in practical scenarios				1
CO4	Evaluate non-parametric testing methods like the Mann-Whitney U test, Kruskal-Wallis test, and Median test for different types of data where parametric assumptions are violated.				1
CO5	Design and implement quality control charts (X-bar, R-chart, p-chart) to monitor and improve the quality of manufacturing processes, identifying causes of variation and suggesting corrective actions				1
	MAPPING OF PROGRAM OUTCOMES			(2)	

Name of the student: Adla AP

Signature of the student

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Course outcome –Program Specific outcome Mapping Table

Course outcomes	Program Specific outcomes		
	PSO1	PSO2	PSO3
CO1	✓		✓
CO2	✓		✓
CO3	✓	✓	✓
CO4	✓	✓	✓
CO5	✓	✓	✓

Course Faculty **QAC Member** **HoD**

SHARSHAD MUHAMMED U
Asst. Professor & Head
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DIRECT ASSESSMENT OF COURSE OUTCOMES

INTERNAL ASSESSMENT TEST .....MARKS			
()			
Objective	To Identify What Students Have Learned and also to identify students strength and weakness		
To file	Answer scripts	**Frequency**	2 times in a semester on dates specified by University
Format	.		
Evaluation	Based on answer given in the scripts		
ASSIG NMENT: .... MARKS			
Objective	To enhance students understanding of a complex structural problems		
Product	Hand written assignment sheets		
Frequency	Monthly or after completing improvement test		
Format	Questions from both question papers		
Evaluation	Based on rubrics		
Criteria	No. of assignments: 3 to 5, Submit on or before the date of submission		
END SEMESTER EXAMINATION 75 MARKS (Reduced to 60 Marks)			
Objective	**To assess the each student's knowledge of the course**		
Product	Result analysis		
Frequency	Semester		
Format	Part –A =20 marks, Part –B= 30 marks, Part C=10 Marks Total marks = 60, Duration : 2 hours		
Evaluation	Based on answer given in the scripts		
Marks out of 75	22.5-37.5	37.5- 52.5	52.5-75	0-37.5
Levels of	1	2	3	Counseling /

Attainment Levels of COs

STA4C04-Statistical inference and Quality control			
Assessment Methods	Target-Attainment Levels		Attainement
Internal Assessment	Level 1	50% of students scoring more than 35% marks in internal assessment tools	**LEVEL 03**
	Level 2	60% of students scoring more than 35% marks in internal assessment tools	
	Level 3	70% of students scoring more than 35% marks in internal assessment tools	
Assessment Methods	**Target-Attainment Levels**		Attainement
University Assessment	Level 1	50% of students scoring more than 35% marks in UE assessment tools	**LEVEL 03**
	Level 2	60% of students scoring more than 35% marks in UE assessment tools	
	Level 3	70% of students scoring more than 35% marks in UE assessment tools	

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DEPARTMENT OF STATISTICS

CO ATTAINMENT - IA TEST MARKS (IV SEM. 2023-2024)

Sem IV

Course:STA4C04-Statistical inference and Quality control

Name of the faculty member: HIMA KC

Sl. No.	Name of the student	REG NO	IA TEST Q1 TO Q14 CO1 TO CO5	COURSE OUTCOMES IA TEST CO1 TO CO5	
		Max. Marks	30	%age	Y/N
1	ADLA.P	UFAWSMT001	26	87	Y
2	DILSHA.AP	UFAWSMT003	10	33	N
3	HIBA SHERIN.MK	UFAWSMT005	10	33	N
4	HUSNA SHERIN.K	UFAWSMT006	18	60	Y
5	MUFEEDA	UFAWSMT007	30	100	Y
6	RINSHA.TP	UFAWSMT008	23	77	Y
7	RISVANA SHERIN	UFAWSMT009	23	77	Y
8	SAHANA MUMTHAZ	UFAWSMT010	23	77	Y
9	SANA.MT	UFAWSMT011	9	30	N
10	SANA.VK	UFAWSMT012	24	80	Y
11	SANEEBA.K	UFAWSMT013	8	27	N
12	SHAHMA.CH	UFAWSMT014	8	27	N
13	SHIFNA SHARIN	UFAWSMT016	15	50	Y
14	FAYIZ.C	UFAWSMT017	18	60	Y
15	MOHAMMED SWALIH.C	UFAWSMT018	9	30	N
16	MUHAMMED SINAN.SV	UFAWSMT019	18	60	Y
17	SHAHID IRFAN.TP	UFAWSMT020	9	30	N
18	ARYA.VR	UFAWSMT021	10	33	N
19	ASNA RUBA.K	UFAWSMT022	30	100	Y
20	FATHIMA RANNA.T	UFAWSMT024	16	53	Y
21	HANNA MOL	UFAWSMT025	10	33	N
22	HARSHA MOHANDAS.CM	UFAWSMT026	10	33	N
23	IRFANA SHERIN KALLINGAL	UFAWSMT027	10	33	N
24	MANYA.P	UFAWSMT028	12	40	Y
25	MINNA.P	UFAWSMT029	9	30	N
26	RINSHA.V	UFAWSMT030	10	33	N
27	RISHIKA.PK	UFAWSMT031	10	33	N
28	SARANYA.KN	UFAWSMT032	17	57	Y
29	SHIFNA SHERI.K	UFAWSMT033	10	33	N
30	ABHINAV.P	UFAWSMT034	9	30	N
31	AKSHAY RAJ.K	UFAWSMT035	10	33	N
32	MAQBOOL RAASI.PM	UFAWSMT037	9	30	N
33	SIBIL.V	UFAWSMT038	10	33	N

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34	VISHNU.C	UFAWSMT039	10	33	N
35	MASHBOOBA S V	UFAWSMT040	24	80	Y
				15	
				50.00	

FOR LAL (MAT5B08)	CO1 to CO5
TARGET: 50% C	**50.0**

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CO ATTAINMENT - ASSIGNEMENT(IV SEM. 2024-2025)

Sem.IV

Name of the faculty member: HIMA KC

Sl. No.	Name of the student	REG NO	ASSIGNMENT	SEMINAR	ATTENDANCE	COURSE OUTCOMES				ATTENDANCE	
			CO1 to CO5	CO4 to CO5		CO1 - 5		CO4 - 5			
		Max. Marks	3	3	3	%age	Y/N	%age	Y/N	%age	Y/N
1	ADLA.P	UFAWSMT001	3	3	3	100	Y	100	Y	100	Y
2	DILSHA.AP	UFAWSMT003	3	3	2	100	Y	100	Y	66.6667	Y
3	HIBA SHERIN.MK	UFAWSMT005	3	3	2	100	Y	100	Y	66.6667	Y
4	HUSNA SHERIN.K	UFAWSMT006	3	3	3	100	Y	100	Y	100	Y
5	MUFEEDA	UFAWSMT007	3	3	3	100	Y	100	Y	100	Y
6	RINSHA.TP	UFAWSMT008	3	3	3	100	Y	100	Y	100	Y
7	RISVANA SHERIN	UFAWSMT009	3	3	2	100	Y	100	Y	66.6667	Y
8	SAHANA MUMTHAZ	UFAWSMT010	3	3	3	100	Y	100	Y	100	Y
9	SANA.MT	UFAWSMT011	3	3	3	100	Y	100	Y	100	Y
10	SANA.VK	UFAWSMT012	3	3	3	100	Y	100	Y	100	Y
11	SANEEBA.K	UFAWSMT013	3	3	3	100	Y	100	Y	100	Y
12	SHAHMA.CH	UFAWSMT014	3	3	3	100	Y	100	Y	100	Y
13	SHIFNA SHARIN	UFAWSMT016	3	3	3	100	Y	100	Y	100	Y
14	FAYIZ.C	UFAWSMT017	3	3	3	100	Y	100	Y	100	Y
15	MOHAMMED SWALIH.C	UFAWSMT018	3	3	3	100	Y	100	Y	100	Y
16	MUHAMMED SINAN.SV	UFAWSMT019	3	3	3	100	Y	100	Y	100	Y

17	SHAHID IRFAN.TP	UFAWSMT020	3	3	2	100	Y	100	Y	66.6667	Y
18	ARYA.VR	UFAWSMT021	3	3	3	100	Y	100	Y	100	Y
19	ASNA RUBA.K	UFAWSMT022	3	3	3	100	Y	100	Y	100	Y
20	FATHIMA RANNA.T	UFAWSMT024	3	3	3	100	Y	100	Y	100	Y
21	HANNA MOL	UFAWSMT025	3	3	3	100	Y	100	Y	100	Y
22	HARSHA MOHANDAS.CM	UFAWSMT026	3	1	3	100	Y	33.33	N	100	Y
23	IRFANA SHERIN KALLINGAL	UFAWSMT027	3	3	1	100	Y	100	Y	33.3333	Y
24	MANYA.P	UFAWSMT028	3	3	3	100	Y	100	Y	100	Y
25	MINNA.P	UFAWSMT029	3	3	3	100	Y	100	Y	100	Y
26	RINSHA.V	UFAWSMT030	3	3	2	100	Y	100	Y	66.6667	Y
27	RISHIKA.PK	UFAWSMT031	3	3	3	100	Y	100	Y	100	Y
28	SARANYA.KN	UFAWSMT032	3	3	3	100	Y	100	Y	100	Y
29	SHIFNA SHERI.K	UFAWSMT033	3	3	2	100	Y	100	Y	66.6667	Y
30	ABHINAV.P	UFAWSMT034	3	1	2	100	Y	33.33	N	66.6667	Y
31	AKSHAY RAJ.K	UFAWSMT035	3	3	3	100	Y	100	Y	100	Y
32	MAQBOOL RAASI.PM	UFAWSMT037	3	3	3	100	Y	100	Y	100	Y
33	SIBIL.V	UFAWSMT038	3	3	2	100	Y	100	Y	66.6667	Y
34	VISHNU.C	UFAWSMT039	3	1	1	100	Y	33.33	Y	33.3333	Y
35	MASHBOOBA S V	UFAWSMT040	3	3	3	100	Y	100	Y	100	Y
					0						
						35		33		35	
						100.00		**94.29**		**100.00**	

FOR LAL (MTS5B08)	CO1 TO 3	CO4 TO 5	ATTENDANCE
	100.00	**94.29**	**100.00**

TARGET: 1) 90% OF STUDENTS WILL SCORE 35% OF MARKS IN ASSIGNMENT

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DEPARTMENT OF STATISTICS

CO ATTAINMENT - FOURTH SEMESTER EXAM MARKS (IV SEM . 2024-2025)

Sem.IV Course:STA4C04-Statistical inference and Quality control

S+A 9+A 6:F+	Name of the student	REG NO	COURSE OUTCOM	CO ATTAINMENT	
			O 1 TO CO	CO 1 TO CO5	
		Max. Marks	30	%age	Y/N
1	ADLA.P	UFAWSMT001	24	80	Y
2	DILSHA.AP	UFAWSMT003	12	40	Y
3	HIBA SHERIN.MK	UFAWSMT005	12	40	Y
4	HUSNA SHERIN.K	UFAWSMT006	18	60	Y
5	MUFEEDA	UFAWSMT007	15	50	Y
6	RINSHA.TP	UFAWSMT008	18	60	Y
8	SAHANA MUMTHAZ	UFAWSMT010	12	40	Y
9	SANA.MT	UFAWSMT011	12	40	Y
10	SANA.VK	UFAWSMT012	18	60	Y
11	SANEEBA.K	UFAWSMT013	12	40	Y
12	SHAHMA.CH	UFAWSMT014	12	40	Y
13	SHIFNA SHARIN	UFAWSMT016	15	50	Y
14	FAYIZ.C	UFAWSMT017	21	70	Y
15	MOHAMMED SWALIH.C	UFAWSMT018	18	60	Y
16	MUHAMMED SINAN.SV	UFAWSMT019	18	60	Y
17	SHAHID IRFAN.TP	UFAWSMT020	12	40	Y
18	ARYA.VR	UFAWSMT021	21	70	Y
19	ASNA RUBA.K	UFAWSMT022	21	70	Y
20	FATHIMA RANNA.T	UFAWSMT024	18	60	Y
21	HANNA MOL	UFAWSMT025	0	0	N
22	HARSHA MOHANDAS.CM	UFAWSMT026	0	0	N
23	IRFANA SHERIN KALLINGAL	UFAWSMT027	20	66.67	Y
24	MANYA.P	UFAWSMT028	15	50	Y
25	MINNA.P	UFAWSMT029	12	40	Y
26	RINSHA.V	UFAWSMT030	12	40	Y
27	RISHIKA.PK	UFAWSMT031	12	40	Y
28	SARANYA.KN	UFAWSMT032	15	50	Y
29	SHIFNA SHERI.K	UFAWSMT033	12	40	Y
30	ABHINAV.P	UFAWSMT034	0	0	N
31	AKSHAY RAJ.K	UFAWSMT035	0	0	N
32	MAQBOOL RAASI.PM	UFAWSMT037	12	40	Y
33	SIBIL.V	UFAWSMT038	12	40	Y

34	VISHNU.C	UFAWSMT039	0	0	N
35	MASHBOOBA S V	UFAWSMT040	12	40	Y
				29	
				93.55	
		FOR L&L (MTS5B08)	CO1 to CO5		
			93.55		
		TARGET: 75% OF STUDENTS WILL SCORE 35% OF MARKS			

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DEPARTMENT OF STATISTICS

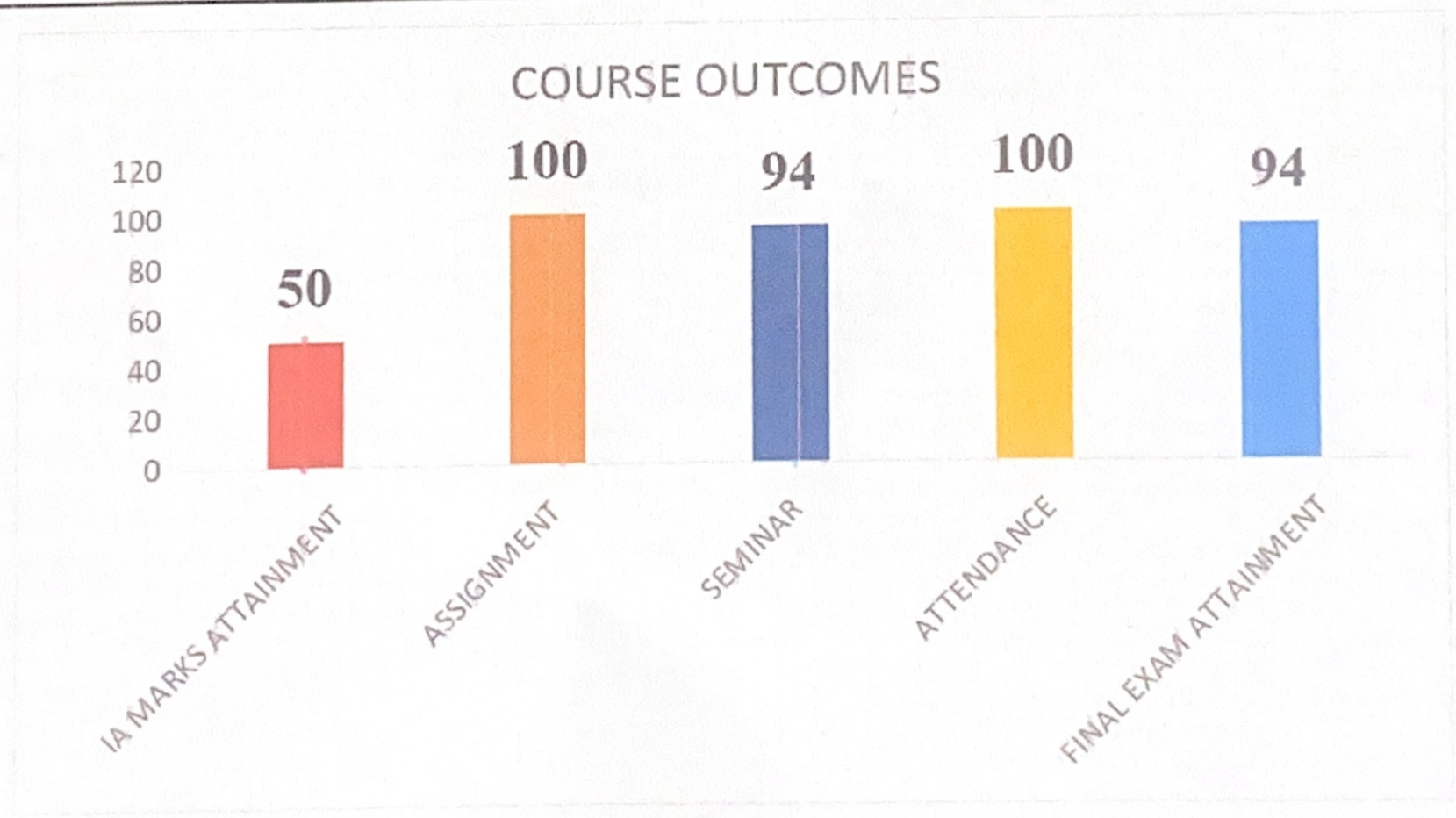
DIRECT ASSESSMENT METHOD - CO ATTAINMENT (ODD SEM . 202324-25

Semester: IV Course:STA4C04-Statistical inference and Quality control

Name of the faculty member: HIMA KC

TARGET: 60% ATTAINMENT

COs	CO1 to CO5
IA MARKS ATTAINMENT	50
ASSIGNMENT	100
SEMINAR	94
ATTENDANCE	100
FINAL EXAM ATTAINMENT	94
AVERAGE	**88**



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DEPARTMENT OF STATISTICS

COURSE EXIT SURVEY RESPONSES (FOURTH SEM . 2024-2025)

Semester: IV

Course:STA4C04-Statistical inference and Quality control

Name of the faculty member: HIMA KC

Sl. No.	NAME OF THE STUDENT	REG NO	Are you able to Understand core concepts of estimation theory, including unbiasedness, consistency, efficiency, and sufficiency, and how they relate to point estimation.	Are you able to Apply maximum likelihood and moment estimation methods to estimate parameters of probability distributions and evaluate their efficiency using Cramer-Rao inequality	Are you able to Analyze various hypothesis testing procedures, such as the Neyman-Pearson Lemma and large sample tests and interpret the outcomes of these tests in practical scenarios	Are you able to Evaluate non-parametric testing methods like the Mann-Whitney U test, Kruskal-Wallis test, and Median test for different types of data where parametric assumptions are violated.	Are you able to Design and implement quality control charts (X-bar, R-chart, p-chart) to monitor and improve the quality of manufacturing processes, identifying causes of variation and suggesting corrective actions
COURSE OUTCOMES			CO1	CO2	CO3	CO4	CO5
1	ADLA.P	UFAWSMT001	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	4 (Very Good)	5 (Excellent)
2	DILSHA.AP	UFAWSMT003	4 (Very Good)	4 (Very Good)	4 (Very Good)	5 (Excellent)	4 (Very Good)
3	HIBA SHERIN.MK	UFAWSMT005	4 (Very Good)	4 (Very Good)	3 (Good)	4 (Very Good)	3 (Good)
4	HUSNA SHERIN.K	UFAWSMT006	4 (Very Good)	4 (Very Good)	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)
5	MUFEEDA	UFAWSMT007	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)	3 (Good)
6	RINSHA.TP	UFAWSMT008	3 (Good)	5 (EXCELLENT)	3 (Good)	3 (Good)	3 (Good)
7	RISVANA SHERIN	UFAWSMT009	3 (Good)	5 (EXCELLENT)	3 (Good)	5 (EXCELLENT)	5 (EXCELLENT)
8	SAHANA MUMTHAZ	UFAWSMT010	5 (EXCELLENT)	3 (Good)	4 (Very Good)	3 (Good)	5 (EXCELLENT)
9	SANA.MT	UFAWSMT011	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)
10	SANA.VK	UFAWSMT012	5 (EXCELLENT)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)
11	SANEEBA.K	UFAWSMT013	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)
12	SHAHMA.CH	UFAWSMT014	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)
13	SHIFNA SHARIN	UFAWSMT016	4 (Very Good)	3 (Good)	5 (EXCELLENT)	4 (Very Good)	3 (Good)

14	FAYIZ.C	UFAWSMT017	4 (Very Good)	4 (Very Good)	4 (Very Good)	5 (EXCELLENT)	5 (EXCELLENT)
15	MOHAMMED SWALIH.C	UFAWSMT018	4 (Very Good)	4 (Very Good)	4 (Very Good)	5 (EXCELLENT)	5 (EXCELLENT)
16	MUHAMMED SINAN.SV	UFAWSMT019	5 (EXCELLENT)	4 (Very Good)	3 (Good)	3 (Good)	1 (Fair)
17	SHAHID IRFAN.TP	UFAWSMT020	4 (Very Good)	3 (Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)
18	ARYA.VR	UFAWSMT021	3 (Good)	3 (Good)	4 (Very Good)	3 (Good)	3 (Good)
19	ASNA RUBA.K	UFAWSMT022	3 (Good)	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)	4 (Very Good)
20	FATHIMA RANNA.T	UFAWSMT024	4 (Very Good)	4 (Very Good)	3 (Good)	4 (Very Good)	4 (Very Good)
21	HANNA MOL	UFAWSMT025	4 (Very Good)	5 (EXCELLENT)	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)
22	HARSHA MOHANDAS.CM	UFAWSMT026	4 (Very Good)	2 (Very Fair)	4 (Very Good)	4 (Very Good)	4 (Very Good)
23	IRFANA SHERIN KALLINGAL	UFAWSMT027	4 (Very Good)	4 (Very Good)	3 (Good)	3 (Good)	5 (EXCELLENT)
24	MANYA.P	UFAWSMT028	5 (EXCELLENT)	4 (Very Good)	4 (Very Good)	3 (Good)	5 (EXCELLENT)
25	MINNA.P	UFAWSMT029	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	3 (Good)
26	RINSHA.V	UFAWSMT030	5 (EXCELLENT)	3 (Good)	4 (Very Good)	3 (Good)	5 (EXCELLENT)
27	RISHIKA.PK	UFAWSMT031	4 (Very Good)	4 (Very Good)	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)
28	SARANYA.KN	UFAWSMT032	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)	3 (Good)
29	SHIFNA SHERI.K	UFAWSMT033	4 (Very Good)	4 (Very Good)	3 (Good)	4 (Very Good)	4 (Very Good)
30	ABHINAV.P	UFAWSMT034	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)
31	AKSHAY RAJ.K	UFAWSMT035	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	5 (EXCELLENT)
32	MAQBOOL RAASI.PM	UFAWSMT037	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)
33	SIBIL.V	UFAWSMT038	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)	4 (Very Good)	3 (Good)
34	VISHNU.C	UFAWSMT039	4 (Very Good)	4 (Very Good)	3 (Good)	4 (Very Good)	4 (Very Good)
35	MASHBOOBA S V	UFAWSMT040	5 (EXCELLENT)	5 (EXCELLENT)	5 (EXCELLENT)	4 (Very Good)	5 (EXCELLENT)
		No. of graded "0"	0	0	0	0	0
		No. of graded "1"	0	0	0	0	1
		No. of graded "2"	0	1	0	0	0
		No. of graded "3"	4	5	8	7	8
		No. of graded "4"	18	18	16	18	12

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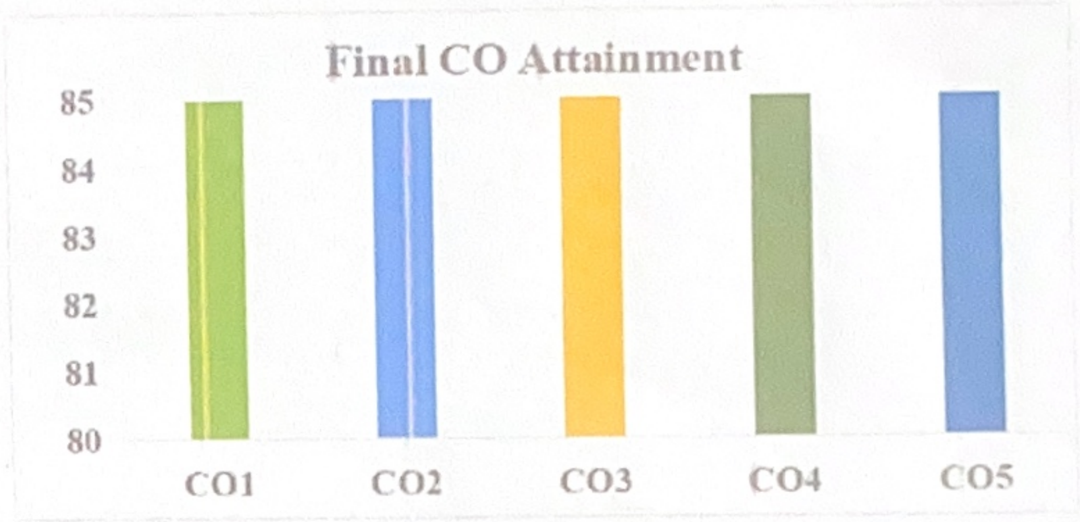
DEPARTMENT OF STATISTICS

COURSE EXIT SURVEY RESPONSES (FOURTH SEM . 2024-2025)

Semester:IV		Course:STA4C04-Statistical inference and Quality control									
Name of the faculty member: HIMA KC											
CO No.	CO description	Course Exit Survey Questions	No. of students given the ratings						Total Responses	Weighted Average	CO Max. Count	%age CO attainment
			0	1	2	3	4	5				
CO1	Explain the core concepts of estimation theory, including unbiasedness, consistency, efficiency, and sufficiency, and how they relate to point estimation.	Are you able to Understand core concepts of estimation theory, including unbiasedness, consistency, efficiency, and sufficiency, and how they relate to point estimation.	0	0	0	4	18	13	35	3.92	5	78.42
CO2	Apply maximum likelihood and moment estimation methods to estimate parameters of probability distributions and evaluate their efficiency using Cramer-Rao inequality	Are you able to Apply maximum likelihood and moment estimation methods to estimate parameters of probability distributions and evaluate their efficiency using Cramer-Rao inequality	0	0	1	5	18	11	35	3.79	5	75.79
CO3	Analyze various hypothesis testing procedures, such as the Neyman-Pearson Lemma and large sample tests and interpret the outcomes of these tests in practical scenarios	Are you able to Analyze various hypothesis testing procedures, such as the Neyman-Pearson Lemma and large sample tests and interpret the outcomes of these tests in practical scenarios	0	0	0	8	16	11	35	3.76	5	75.26
CO4	Evaluate non-parametric testing methods like the Mann-Whitney U test, Kruskal-Wallis test, and Median test for different types of data where parametric assumptions are violated.	Are you able to Evaluate non-parametric testing methods like the Mann-Whitney U test, Kruskal-Wallis test, and Median test for different types of data where parametric assumptions are violated.	0	0	0	7	18	10	35	3.76	5	75.26

CO5	Design and implement quality control charts (X-bar, R-chart, p-chart) to monitor and improve the quality of manufacturing processes, identifying causes of variation and suggesting corrective actions	Are you able to Design and implement quality control charts (X-bar, R-chart, p-chart) to monitor and improve the quality of manufacturing processes, identifying causes of variation and suggesting corrective actions	0	1	0	8	12	14	35	3.76	5	75.26

CO Assessment method	CO1	CO2	CO3	CO4	CO5
Direct method (IA Test, Assignment/quiz and exam)	88	88	88	88	88
Weightage (80%)	70	70	70	70	70
Indirect method (Course Exit Survey	78.42	75.79	75.26	75.26	75.26
Weightage (20%)	15.68	15.16	15.05	15.05	15.05
Final CO Attainment	**85.74**	**85.21**	**85.11**	**85.11**	**85.11**



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DEPARTMENT OF CIVIL ENGINEERING

CO-PO-PSO MAPPING (ODD SEM . 2023-2024)

Semester: IV

Course:STA4C04-Statistical inference and Quality control

Name of the faculty member: HIMA KC

(I) CO Attainment

A: Direct assessment (80%)-Tests, Assignment, Examination

B: Indirect assessment (20%)-Course end survey

COs	Mapping of POs	Mapping of PSOs	Direct Assessment (a)	Indirect Assessment (b)	Overall Attainment 0.8 (a) + 0.2(b)	Target (%)	Attainment
CO1	PO1, PO3, PO4 & PO9	PSO1, PSO2 & PSO3	88	78.42	86	75	YES
CO2	PO1, PO3, PO5 & PO7	PSO1, PSO2 & PSO3	88	75.79	85		
CO3	PO1, PO2, PO3, PO5 & PO9	PSO1, PSO2 & PSO3	88	75.26	85		
CO4	PO1, PO3, PO4, PO5& PO8	PSO1, PSO2 & PSO3	88	75.26	85		
CO5	PO1, PO4, PO5, PO7 & PO8	PSO1, PSO2 & PSO3	88	75.26	85		

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