Semester - III			
Part III Allied - Statistics I			
Code :15UMAA31	**Hrs/week :6**	**Hrs/Sem :90**	**Credits : 5**

Objectives

To help the students to understand the uses of statistics in various competitive fields.

Unit I

Moments - Skewness and kurtosis - Curve fitting - Method of least squares - fitting lines - parabolic, exponential & logarithmic curves (Text book 1 Chapter 4,5)

Unit II

Correlation &regression - scatter diagram - Karl Pearson's coefficient of correlation - properties - lines of regression coefficient & properties - rank correlation (Text book 1 Chapter 6 §sections 6.1,6.2 6.3))

Unit III

Random variables, distribution function, two dimensional random variables, moment generating function, cumulants and characteristic function (Text book 2 chapter5&7 §sections 5.2 to 5.5 and 7.1 to 7.3)

Unit IV

Discrete probability distribution - geometric, binomial & Poisson distribution & their moment generating functions, characteristic function, properties & simple application.(Text book 2§Chapter8§Section8.4,8.5,8.7 (Omitting Negative Binomials))

Unit V

Continuous probability distributions - Beta1 , Beta2 &Gamma distributions, normal distributions - their properties - simple problems - importance of normal distribution (Text book 2§ Chapter 9 §sec 9.2, 9.5,9.6 and 9.7)

Text Books

1. S.Arumugam and A.Issac, **Statistics**, New Gamma publishing House. Palayamkottai
2. Gupta S.C., Kapoor V.K., **Fundamentals of mathematical Statistics** Eleventh edition, Sultan Chand & Sons, Educational Publishers, New Delhi

Reference books

1 H.C.Saxena, **Elementary Statistics,** S.Chand & Company Ltd., New Delhi

2. J.N.Kapurand Saxena, **Mathematical Statistics,**S.Chand & Company Ltd., New Delhi

Semester – IV			
Part III Allied - Statistics II			
Code :15UMAA41	**Hrs/week :6**	**Hrs/Sem :90**	**Credits :5**

Objectives

1. To cater needs of statistics in professional and academic courses
2. To understand the application of statistics in various fields

Unit I

Characteristics of index numbers, Laspeyers and Paasche's – Bowley's - Marshall and Erdgeworth's index numbers - Tests - Unit test - Commodity reversal test, Time reversal test, Circular test. §Text book 2 chapter 9

Unit II

Statistical Quality Control - Definition, Advantages, Process control - Control chart, Mean chart, Range chart, P - chart, -. §Text book1 volume2 chapter 7 (page 1052 - 1074)

Unit III

Testing of hypothesis - Null and Alternate Hypothesis. Type I and Type II errors - Critical region, level of significance - Test of significance for large samples - Testing a single proportion - Difference of proportions - testing a single mean - Difference of means. §Text book1 volume2 chapter 3 (page 881 -908)

Unit IV

Tests based on t - distribution - Single mean - Difference of means - Tests based on F distribution - Variance ratio test - Test based on chi square distribution - Independence - Goodness of fit. §Text book1 volume2 chapters 3&4 (page 910 -920, 939-990, 1006-1009)

Unit V

Analysis of Variance - One way and two way classified data - Basis of experimental design - simple problems. §Text book2 chapter17

Text Books

- Gupta S.P., **Statistical Method** , forty fourth editionSultan chand & sons publishers-New Delhi.
- ArumugamS. and IssacA., **Statistics**, New Gamma publishing House. Palayamkottai.

Reference Book

1. Gupta S.C., Kapoor V.K., **Fundamentals of mathematical Statistics** , Eleventh edition, Sultan Chand & Sons, Educational Publishers, New Delhi

Semester – IV			
Part IV Skill Based Practical - Office Automation			
Code :15UMAS31	**Hrs/week :2**	**Hrs/Sem :60**	**Credits :2**

List of Practical for Office Automation

MSWORD 2000

- Letter Writing (Formal) – Application for a job
- Tables – Creating Time Table
- Inserting Pictures(Clip Art, Smart Art, Word Art)
- Inserting Shapes (Flow Charts)
- Formatting a Page- colors, watermark etc .
- Inserting Mathematical symbols and Formula
- Inserting Charts

EXCEL 2000

- Mark sheet Preparation
- Payroll Preparation
- Mathematical, Statistical
- Logical Functions and Financial Functions
- Graphs and Charts

MS POWERPOINT

- Presentation I – National/ International Leader
- Presentation II – Story/ incident
- Presentation III- Subject (Maths)

Books for Reference

1. A. Leon, Introduction to computers

2. Stephen L.Nelson,Office 2000The complete reference, Tata McGraw Hill Publishing Company Limited

Semester - III			
Part IV Skill Based Subject - Mathematics for Competitive Exam			
Code :15UMAS41	**Hrs/week :2**	**Hrs/Sem :60**	**Credits :2**

Objectives

To train the students appearing for the competitive examinations

Unit I

Numbers – Square roots & cube roots(Chapter 1& 5)

Unit II

Time & Distance – Polygons(Chapter 17 & 25)

Unit III

Problems on Numbers – Problems on Ages(Chapter 7 & 8)

Unit IV

True Discount – Banker's Discount – Calendar (Chapter 26, 27 & 29)

Unit V

Series Test (Determination of wrong or missing term in the series) - BODMAS Rule.(Chapter 4)

Text Book

1. Agarwal R.S., **Arithmetic Subjective and Objective for Competitive Examinations (Revised Edition 2011)**, S.Chand and Company Ltd. , Ram Nagar, New Delhi - 55

2.Agarwal R.S., **Quantative Aptitude** , S.Chand and Company Ltd. , Ram Nagar,

New Delhi - 55

Semester –V			
Part III Core X	**Operations Research**		
Code :18UMAC54	**Hrs/week : 4**	**Hrs/Semester :60**	**Credits : 4**

Vision

To solve problems using appropriate techniques, interpret the results obtained and translate solutions into directives for action.

Mission

To familiarize the students with the basic concepts, models and statements of the operations research theory.

Course Outcome:

CO. No	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	identify optimum solution.	1	Un
CO-2	interpret the mathematical tools that are needed to solve optimization problems.	2	Ap
CO-3	make decision and improve its quality.	3	Ev
CO-4	comprehend the concept of a Transportation Model and develop the initial solution for the same	4	Un
CO-5	apply the Hungarian method for solving assignment problems	5	Ap
CO-6	examine the significant impact of job sequencing system on total elapsed time management	8	An
CO-7	use CPM and PERT techniques, to plan, schedule, and control project activities.	4	Ap
CO-8	apply Mathematical theories to Commerce and Business and Management	3	Ap

Semester – V			
Part III Core X	**Operations Research**		
Code :18UMAC54	**Hrs/week : 4**	**Hrs/Semester :60**	**Credits : 4**

Unit I

Transportation problem - Mathematical formulation - North West Corner Rule - Vogel's approximation method (Unit penalty method) - The method of matrix minima - optimality test - Maximization - u - v method.

(Chapter 10, Sec 10.1 10.2 10.8 – 10.13, pages 247, 248, 252 273)

Unit II

Assignment problem - Mathematical formulation - Method of solution - Maximization of the effective matrix

(Chapter 11, Sec 11.1, 1.2, 11.3 &11.4, pages 295 – 315)

Unit III

Sequencing problem - n - jobs and two machines - n - jobs and three machines, two jobs and m – machines

(Chapter 12, Sections 12.1, 12.2, 12.3 12.4 12.5 &12.6, pages 327 – 342)

Unit IV

Network Scheduling – Introduction - Basic Components – Logical Sequencing – Rules of Network Construction – Critical Path Analysis

(Chapter 25, Sec 25.1, 25.2, 25.3, 25.4 25.5,25.6 &12.6, pages 763 – 780)

Unit V

Probability Considerations in PERT - Probability of Meeting the Schedule Time.

(Chapter 25, Sec 25.7, pages 781 – 790)

Text Book

1.GuptaP.K., Kantiswarup and Manmohan, Operations Research, Sultan Chand & Sons, Educational Publishers, New Delhi -2, Reprint 2011.

Books for Reference

1.Prem Kumar Gupta and Hira D.S., Operations Research, Sultan Chand & Sons, Educational Publishers, New Delhi -2 .

2.Billy E Gillet, Introduction to Operations Research, Tata McGraw Hill publishing Company, New Delhi.

Semester VI			
Part III Core XIII Mechanics			
Code :18UMAC63	**Hrs/week :6**	**Hrs/Semester :90**	**Credits :4**

Vision

Getting knowledge to apply mechanical theory

Mission

Using the mechanical knowledge in their day-to -day life

Course Outcome

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	understand the equilibrium of forces	1	Un
CO-2	know the conditions for equilibrium	3	Ev
CO-3	distinguish between parallel and non parallel forces	8	Cr, Ap
CO-4	know the types of friction laws	1	Cr
CO-5	apply friction laws in problems	5	Un, Ap
CO-6	understand the two types of impact	1	Ap
CO-7	understand the simple harmonic motion	3, 7	Ap
CO-8	determine the simple harmonic motion	4	Ap

Semester VI			
Part III	**Core XIII**	**Mechanics**	
Code :18UMAC63	**Hrs/week :6**	**Hrs/Semester :90**	**Credits :4**

Unit I

Lami's theorem, Parallel forces and moments - Resultant of Two like and unlike parallel forces, moment of a force - t Varignon's theorem - moment of force about an axis couples.

(Text Book 1: Chapter 3,4, pages 52-96)

Unit II

Equilibrium of three forces acting on rigid body subjected to any three forces - three coplanar forces theorem, Two Trigonometrical theorems, problems.

(Text Book 1: Chapter5, pages 98-142)

Unit III

Frictions - Laws of friction - angle of friction - cone of friction - Equilibrium of particle on a rough inclined plane under a Force.

(Text Book 1: Chapter7, pages 206-262)

Unit IV

Fundamental laws of impact - impact of a smooth sphere on a fixed smooth plane - direct impact of smooth elastic spheres**.**

(Text Book2: Chapter 8, pages 215-261)

Unit V

Definition - Geometrical representation of S.H.M.'s –Composition of S.H.M.'s of the same period and in the same line - Composition of S.H.M.'s of the same period and in two perpendicular directions.

(Text Book2: Chapter 10, pages 309-355)

Text Books

1. Venkatraman, M.K.Statics, Agasthiar Book House, Tiruchirapalli, Aug 2011
2. Venkatraman M.K, Dynamics, Agasthiar Book house, Tiruchirapalli, 16th Edition, Jan 2014

Books for Reference

1**.** Duraipandian P., Mechanics, S.Chand and Company Ltd
2. Bali N.P., Dynamics, Laxmi Publication, Delhi

Semester – V			
Part III Core Integral II Statistical Inference			
Code :18UMAI52	**Hrs/week :4**	**Hrs/Semester :60**	**Credits :4**

Vision

It gives the knowledge of statistical quality control techniques and their applications

Mission

To apply the statistical techniques in their work stations

Course Outcome

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	understand the uses of statistical quality control.	1	Un
CO-2	compute the upper and lower control limits for different chart	3	Ev
CO-3	analyse the usage of different charts.	8	Cr, Ap
CO-4	know type I and type II error	1	Cr
CO-5	classify the different test static	5	Un, Ap
CO-6	check the difference between small and large samples.	1	Ap
CO-7	evaluate t-test, F-test etc	3, 7	Ap
CO-8	apply the correct test static	4	Ap

Semester – V			
Part III Core Integral II Statistical Inference			
Code :18UMAI52	**Hrs/week :4**	**Hrs/Sem :60**	**Credits :4**

Unit I

Statistical Quality Control - Definition, Advantages, Process control - Control chart, Mean chart, Range chart

(Text Book1: Vol.2, Chapter 7, Pages1051-1074)

Unit II

Control chart for standard Deviation, Control chart for C, Control chart for P ,np- chart

(Text Book1: Vol.2, Chapter 7, Pages 1082-1091)

Unit III

Testing of hypothesis - Null and Alternate Hypothesis. Type I and Type II errors - Critical region, level of significance - Test of significance for large samples - Testing a single proportion - Difference of proportions - testing a single mean - Difference of means.

(Text Book1: Vol.2, Chapter 3, Pages 882 – 908)

Unit IV

Tests based on t - distribution - Single mean - Difference of means - Tests based on F distribution - Variance ratio test - Test based on chi square distribution - Independence - Goodness of fit. (excluding the test for correlation)

(Text Book1: Chapter 3- 4, Pages 910 – 920, 954 – 970, 1006-1009)

Unit V

Analysis of Variance - One way and two way classified data - Basis of experimental design - simple problems.

(**Text Book2: chapter 17 pages 481 – 506)**

Text Books

1.Gupta S.P., Statistical Method , 44-th edition Sultan Chand & Sons Publishers-New Delhi.

2.Arumugam S. and Issac A., Statistics, New Gamma publishing House. Palayamkottai, 2016.

Books for Reference

1. Gupta S.C., Kapoor V.K., Fundamentals of mathematical Statistics , Eleventh edition, Sultan Chand & Sons, Educational Publishers, New Delhi

2. Sancheti D.C, Kapoor V.K., Statistics, Sultan Chand & Sons, Educational Publishers, New Delhi

Semester – III			
Part III NME I- Mathematics for Competitive Examinations I			
Code : 21UMAN31	**Hrs/week : 2**	**Hrs/Semester : 30**	**Credits : 2**

Objectives

- To train the students appearing for the competitive examinations
- To inculcate the skills in Arithmetic ability

Course Outcomes

Co No	Upon completion of this course, students will be able to	PSO s addressed	CL
Co-1	solve mathematical problems using shortcut methods.	3	Cr
Co-2	develop their calculating and computing skills.	5	Ap
Co-3	solve the questions with accuracy and within the given time limit.	3	Cr
Co-4	build confidence to face the competitive examinations.	3	Cr
Co-5	enhances logical reasoning skills, arithmetic skills, aptitude skills.	6	Ap
Co-6	simplify and evaluate algebraic expressions.	3	Ev

Semester – III			
Part III NME I- Mathematics for Competitive Examinations I			
Code : 21UMAN31	**Hrs/week : 2**	**Hrs/Semester : 30**	**Credits : 2**

Unit I

H.C.F and L.C.M of Numbers

(Chapter 2, Pages 22-36)

Unit II

Simplification

(Chapters 4, Pages 58-75)

Unit III

Average

(Chapter 7, Pages 124-138)

Unit IV

Time & Work

(Chapters 11, Pages 206-222)

Unit V

Time & Distance

(Chapter 13, Pages 231-243)

Text Book

Aggarwal R.S., **Objective Arithmetic** (Edition 2004), S.Chand and Company Ltd. , Ram Nagar, New Delhi - 55

Books for Reference

1. Aggarwal R.S., **Arithmetic Subjective and Objective for Competitive Examinations** (Revised Edition 2011), S.Chand and Company Ltd. , Ram Nagar, New Delhi - 55
2. Abhijit Guha, **Quantitative Aptitude for Competitive Examinations**, Tata McGraw-Hill Publishing Company Ltd., New Delhi.

Semester – IV			
Part III NME II- Mathematics for Competitive Examinations II			
Code : 21UMAN41	**Hrs/week : 2**	**Hrs/Semester : 30**	**Credits : 2**

Objectives:

- To train the students appearing for the competitive examinations
- To inculcate the skills in Arithmetic ability

Course Outcomes

CO. No	Upon completion of this course, students will be able to	PSO s addressed	CL
CO-1	solve mathematical problems using shortcut methods.	3	Cr
CO-2	develop their calculating and computing skills.	5	Ap
CO-3	solve the questions with accuracy and within the given time limit.	3	Cr
CO-4	build confidence to face the competitive examinations.	3	Cr
CO-5	enhances logical reasoning skills, arithmetic skills, aptitude skills.	6	Ap
CO-6	use mathematical concepts in real world situations.	4	Ap

Semester – IV			
Part III NME II-Mathematics for Competitive Examinations II			
Code : 21UMAN41	**Hrs/week : 2**	**Hrs/Semester: 30**	**Credits : 2**

Unit I

Square Root and Cube Root

(Chapter 5, Pages 76-95)

Unit II

Problems on Numbers

(Chapter 16, Pages 267-278)

Unit III

Problems on Ages

(Chapters 17, Pages 279-285)

Unit IV

Simple Interest

(Chapter 18, Pages 286-298)

Unit V

Compound Interest

(Chapter 19, Pages 299-312)

Text Book

Aggarwal R.S., **Objective Arithmetic** (Edition 2004), S.Chand and Company Ltd. , Ram Nagar, New Delhi - 55.

Books for Reference

1. Aggarwal R.S., **Arithmetic Subjective and Objective for Competitive Examinations** (Revised Edition 2011), S.Chand and Company Ltd. , Ram Nagar, New Delhi - 55.
2.Abhijit Guha, **Quantitative Aptitude for Competitive Examinations**, Tata McGraw-Hill Publishing Company Ltd., New Delhi.

SEMESTER-I			
Skill Enhancement Course - I Professional English for Mathematics - I			
Course Code:21UMAPE1	**Hrs/Week: 2**	**Hrs/Sem: 30**	**Credits: 2**

Objectives:

- To develop the language skills of students by offering adequate practice in professional contexts.
- To enhance the lexical, grammatical and socio-linguistic and communicative competence of first year physical sciencesstudents

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PO addressed	CL
CO-1	Recognise their own ability to improve their own competence in using the language	3	Un
CO-2	Use language for speaking with confidence in an intelligible and acceptablemanner	3	An
CO-3	Understand the importance of reading forlife	8	Cr
CO-4	Read independently any unfamiliar texts withcomprehension	3	Un
CO-5	Understand the importance of writing in academiclife	3	An
CO-6	Write simple sentences without committing error of spelling or grammar.	4	Un
CO-7	Develop critical thinking skills and get culturally aware of the targetsituation	3	Cr

SEMESTER-I			
Skill Enhancement Course - I Professional English for Mathematics - I			
CourseCode :21UMAPE1	**Hrs/Week: 2**	**Hrs/Sem: 30**	**Credits: 2**

UNIT 1: COMMUNICATION

Listening and Speaking:

Listening to audio text and answering questions

Listening toInstructions

Pair work and small group work.

Reading and writing:

Comprehension passages –Differentiate between facts and opinion

Developing a story with pictures**.**

Word Power/Vocabulary:

Register specific - Incorporated into the LSRW tasks

Grammar in Context:

Adverbs, Prepositions.

UNIT 2: DESCRIPTION

Listening: Listening to process description.-Drawing a flow chart.

Speaking: Role play (formal context)

Reading: Skimming/Scanning-Reading passages on products, equipment and gadgets.

Writing: Process Description –Compare and Contrast

Paragraph-Sentence Definition and Extended definition- Free Writing.

Vocabulary: Register specific -Incorporated into the LSRW tasks.

UNIT 3: NEGOTIATION STRATEGIES

Listening: Listening to interviews of specialists / Inventors in fields (Subject specific)

Speaking: Brainstorming.(Mind mapping). Small group discussions (Subject-Specific)

Reading: Longer Reading text.

Writing: Essay Writing (250 words)

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 4: PRESENTATION SKILLS

Listening: Listening to lectures.

Speaking: Short talks.

Reading: Reading Comprehension passages

Writing: Writing Recommendations

Interpreting Visuals inputs

Vocabulary: Register specific -Incorporated into the LSRW tasks

UNIT 5: CRITICAL THINKING SKILLS

Listening: Listening comprehension- Listening for information.
Speaking: Making presentations (with PPT- practice).
Reading: Comprehension passages –Note making.
Comprehension: Motivational article on Professional Competence, Professional Ethics and Life Skills)
Writing: Problem and Solution essay– Creative writing –Summary writing
Vocabulary: Register specific - Incorporated into the LSRW tasks

Links for Reference

1. Britannica, T. E. (Ed.). (2020, April 16). Marie Curie. Retrieved June 18, 2020, from Encyclopedia
2. Britannica. Wikipedia, T. E. (Ed.). (16, June 2020). Marie Curie. Retrieved June 18, 2020, from
Wikipedia.
3. https://www.myindiamyglory.com/2018/07/12/raman-effect-how-indian-scientist-cv-raman-discovered-why-sea-is-blue/
4. https://opensource.com/resources/internet-of-things
5. http://warofcurrents.newtfire.org/
6. https://www.youtube.com/watch?v=ubpsosv7mHM
7. https://www.englishclub.com/reading/health/cell-phone.htm
8. https://www.britannica.com/biography/Isaac-Asimov
9. https://www.softschools.com/
10. https://www.space.com/17056-kalpana-chawla-biography.html
11. https://labour.gov.in/childlabour/census-data-child-labour
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13. https://www.youtube.com/watch?v=WEKzNH09Vqs
14. https://www.bbc.com/news/world-europe-48616174
15. https://semiengineering.com/how-5g-differs-from-previous-network-technologies/
16. https://www.thehindubusinessline.com/info-tech/scientists-caution-government-to-go-slow-on-5g-roll-out/article28737197.ece
17. https://www.downtoearth.org.in/interviews/science-and-technology/-5g-is-unlikely-to-cause-health-concerns--63698

SEMESTER-II			
Skill Enhancement Course - II Professional English for Mathematics - II			
Course Code :21UMAPE2	**Hrs/Week: 2**	**Hrs/Sem: 30**	**Credits: 2**

Objectives:

- To Increase the proficiency of students from all levels and abilities by refining their speaking, writing, reading, and listening skills.
- To provide a comprehensive and intensive course that assists students in achieving their professional, personal and educational objectives.

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PO addressed	CL
CO-1	understand the basic objective of the course and obtain strong professional vocabulary for its application at different platforms	3	Un
CO-2	Apply the knowledge for writing purposes such as Presentation, drafting and project report etc.	2	Ap
CO-3	Evaluate the correct and error-free writing by being well-versed in rules of English grammar and cultivate relevant technical style of communication and presentation.	8	Ev
CO-4	Apply techniques for developing inter-personal communication and to respond questions at a formal interview	8	Ap
CO-5	Apply it for practical and oral presentation purposes by being honed up in presentation skills and voice-dynamics	6	Ap
CO-6	Use critical thinking skills to face everyday life situations.	5	Cr
CO-7	Develop strategic competence that will help in efficient communication	6	Ap
CO-8	Apply the acquired knowledge and ideas in giving opinions during the meeting and making concluding remarks.	8	An

SEMESTER-II			
Skill Enhancement Course –II Professional English for Mathematics - II			
Course Code :21UMAPE2	**Hrs/Week: 2**	**Hrs/Sem: 30**	**Credits: 2**

UNIT 1: COMMUNICATIVE COMPETENCE

Listening and Speaking:

Listening and responding to complaints (formal situation)

Listening to problems and offering solutions (informal)

Reading and writing:

Reading aloud (brief motivational anecdotes)

Writing a paragraph on a proverbial expression/motivational idea.

Word Power/Vocabulary:

Synonyms & Antonyms

Grammar in Context:

Adverbs, Prepositions.

UNIT 2: PERSUASIVE COMMUNICATION

Listening and Speaking:

Listening to famous speeches and poems

Making short speeches- Formal: welcome speech and vote of thanks.

Informal occasions- Farewell party, graduation speech

Reading and Writing:

Writing opinion pieces (could be on travel, food, film / book reviews or on any contemporary topic)

Reading poetry

Reading aloud: (Intonation and Voice Modulation)

Identifying and using figures of speech - simile, metaphor, personification etc.

Word Power/Vocabulary:

Idioms & Phrases

Grammar in Context

Conjunctions and Interjections.

UNIT 3: DIGITAL COMPETENCE

Listening and Speaking:

Listening to Ted talks

Making short presentations – Formal presentation with PPT, analytical presentation of graphs and reports of multiple kinds

Interactions during and after the presentations

Reading and writing:

Writing emails of complaint

Reading aloud famous speeches

Word Power/Vocabulary:

One Word Substitution

Grammar in Context:

Sentence Patterns

UNIT 4: CREATIVITY AND IMAGINATION

Listening and Speaking

Participating in a meeting: face to face and online

Listening with courtesy and adding ideas and giving opinions during the meeting and making concluding remarks.

Reading and Writing

Reading visual texts – advertisements

Writing a Brochure

Word Power/Vocabulary:

Denotation and Connotation

Grammar in Context:

Sentence Types.

UNIT 5: WORKPLACE COMMUNICATION & BASICS OF ACADEMIC WRITING

Listening and Speaking:

Informal interview for feature writing

Listening and responding to questions at a formal interview

Reading and Writing

Writing letters of application

Readers' Theatre (Script Reading)

Dramatizing everyday situations/social issues through skits. (Writing scripts and performing)

Word Power/Vocabulary:

Collocation

Grammar in Context:

Working With Clauses.

Links for Reference

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2. https://youtu.be/moJjKqkn_Xs
3. https://www.collinsdictionary.com/
4. https://www.theguardian.com/commentisfree/2020/sep/08/robot-wrote-this-article-gpt-3
5.https://owl.purdue.edu/owl/general_writing/academic_writing/essay_writing/argumentative_essays
6. https://youtu.be/5ctbvkAMQO4
7. https://www.wareable.com/fitness-trackers/how-your-fitness-tracker-works-1449
8. https://www.hfe.co.uk/blog/a-study-of-fitness-trackers-and-wearables/
9. https://youtu.be/o_f7mp_tTqw
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25.https://celebratepicturebooks.com/tag/writing-resources-for-kids/
26.http://www.englishclub.com/writing/punctuation.htm
27.http://guidetogrammar.org/grammar/marks/marks.htm
28.http://www.grammarbook.com/english_rules.asp

Semester IV	
Self Study Course –Industrial Mathematics	
Code: 21UMASS2	**Credits: 2**

Objectives:

- To understand and develop the linkage between mathematics and business.
- To apply mathematics to engineering, science, society and industry and to emphasis on mathematical modeling, computational techniques and statistical reasoning.

Course Outcomes

CO.No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	evaluate range, quartile, mean deviation and standard deviation.	1	Ev
CO-2	apply basic operation to calculate frequencies.	3	Ap
CO-3	make connections of mathematical ideas to other ideas both inside of and outside of mathematics.	4	Ap
CO-4	demonstrate mathematical skills in the area of conditionally probability.	6	Un
CO-5	evaluate the consistency of data from a sample.	7	Ev
CO-6	demonstrate the knowledge of probability and the standard statistical distributions.	7	Un
CO-7	relate mean deviation and standard deviation.	3	Un
CO-8	measure the association between two binary variables with yule's coefficient.	5	Ev

Semester IV	
Self Study Course – Industrial Mathematics	
Code: 21UMASS2	**Credits: 2**

Unit: I

Measures of dispersions: Measures of dispersions - Range - Quartile - Mean deviation - Standard deviation.

(Chapter: 3, Sec: 3.1, Pages: 60-80)

Unit: II

Theory of Attributes: Theory of Attributes – Positive class frequencies – negative class frequencies - Contrary frequencies.

(Chapter: 8, Sec: 8.1, Pages: 196 - 212)

Unit: III

Consistency of data: Consistency of data- Consistent- Inconsistent - Independence and association of data: Two attributes are independence.

(Chapter: 8, Sec: 8.2, 8.3, Pages: 212-228)

Unit: IV

Probability: Probability – random experiment – relative frequency – probability set function

(Chapter: 11, Sec: 11.1, Pages: 274-281& Exercise)

Unit: V

Probability: Conditional probability.

(Chapter: 11, Sec: 11.2, Pages: 281 - 303)

Text Book

1. Dr. S. Arumugam and Mr. A. Thangapandi Issac., Statistics, 2013, New Gamma Publishing House, Palayamkottai.

Semester - III			
Part III Allied	**Statistics I**		
Course Code :21UMMA31	**Hrs/week : 6**	**Hrs/Sem : 90**	**Credits : 4**

Objectives:

- To help the students to understand the uses of statistics in various competitive fields.
- To apply the statistical tools in their day to day problems.

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	understand the difference between the central moments and general moments	1	Un
CO-2	compute the central moments and general moments	3	Ev
CO-3	apply concepts and theorems in solving problems	8	Cr, Ap
CO-4	find correlation between two variables	3	Ap
CO-5	evaluate particular regression lines	3 and 7	Ap
CO-6	understand the difference between the discrete random variables and the continuous random variables and solve the problems	8	Un, Ap
CO-7	fit Binomial, Poisson and Normal distribution.	8	Ap
CO-8	compare moment generating function and cumulant generating function	2 and 7	Ev

Semester - III			
Part III Allied	**Statistics I**		
Course Code : 21UMMA31	**Hrs/week :6**	**Hrs/Sem: 90**	**Credits : 4**

Unit I

Moments - Skewness and kurtosis - Curve fitting - Method of least squares - fitting lines - parabolic, exponential & logarithmic curves **(Text book 1 Chapter 4,5)**

Unit II

Correlation &regression - scatter diagram - Karl Pearson's coefficient of correlation - properties - lines of regression coefficient & properties - rank correlation

(Text book 1 Chapter 6 §sections 6.1,6.2 6.3)

Unit III

Random variables, distribution function, two dimensional random variables, moment generating function, cumulants and characteristic function

(Text book 2 chapter5&7 §sections 5.2 to 5.5 and 7.1 to 7.3)

Unit IV

Discrete probability distribution - Geometric, Binomial & Poisson distribution & their moment generating functions, characteristic function, properties & simple application. **(Text book 2§Chapter8§Section8.4,8.5,8.7 (Omitting Negative Binomials)**

Unit V

Continuous probability distributions - Gamma distributions, Normal distributions - their properties - simple problems - importance of normal distribution

(Text book 2§ Chapter 9 §sec 9.2, 9.5,9.6 and 9.7)

Text Books

1. S.Arumugam and A.Issac, *Statistics*, New Gamma publishing House. Palayamkottai

2. Gupta S.C., Kapoor V.K., *Fundamentals of mathematical Statistics* Eleventh edition, Sultan Chand & Sons, Educational Publishers, New Delhi.

Reference books

1 H.C.Saxena, *Elementary Statistics*, S.Chand& Company Ltd., New Delhi

2. J.N.Kapurand Saxena, *Mathematical Statistics*,S.Chand& Company Ltd., New Delhi.

Semester – IV			
Part III Allied	**Statistics II**		
Course Code : 21UMMA41	**Hrs/week : 6**	**Hrs/Sem : 90**	**Credits : 4**

Objectives:

- To cater needs of statistics in professional and academic courses
- To understand the application of statistics in various fields.

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	understand the difference between the weighted index numbers and unweighted	1 and 2	Un
CO-2	compute the upper and lower control limits for different chart	3	Ev
CO-3	find approximate solutions to problems	4 and 8	Cr & Un
CO-4	apply concepts and theorems in solving problems.	4	Ap
CO-5	demonstrate problem solving skills	3	An
CO-6	know type I and type II error	1	Cr
CO-7	classify the different test static	5	Un & Ap
CO-8	apply the correct test static	4	Ap

Semester – IV			
Part III Allied	**Statistics II**		
Course Code : 21UMMA41	**Hrs/week :6**	**Hrs/Sem :90**	**Credits :4**

Unit I

Characteristics of index numbers, Laspeyers and Paasche's – Bowley's - Marshall and Erdgeworth's index numbers - Tests - Unit test - Commodity reversal test, Time reversal test, Circular test.**§Text book 2 chapter 9**

Unit II

Statistical Quality Control - Definition, Advantages, Process control - Control chart, Mean chart, Range chart, p - chart, np – chart.

§Text book1 volume2 chapter 7 (page 1052 - 1074)

Unit III

Testing of hypothesis - Null and Alternate Hypothesis. Type I and Type II errors - Critical region, level of significance - Test of significance for large samples - Testing a single proportion - Difference of proportions - testing a single mean - Difference of means. **§Text book1 volume2 chapter 3 (page 881 -908)**

Unit IV

Tests based on t - distribution - Single mean - Difference of means - Tests based on F distribution - Variance ratio test - Test based on chi square distribution - Independence - Goodness of fit.

§Text book1 volume2 chapters 3&4 (page 910 -920, 939-990, 1006-1009)

Unit V

Analysis of Variance - One way and two way classified data - Basis of experimental design - simple problems. **§Text book2 chapter17**

Text Books

1. Gupta S.P., *Statistical Method*, forty fourth edition Sultanch and & sons publishers-New Delhi.
2. Arumugam S. and Issac A., *Statistics*, New Gamma publishing House. Palayamkottai.

Reference Book

1. Gupta S.C., Kapoor V.K., *Fundamentals of Mathematical Statistics* , Eleventh edition, Sultan Chand & Sons, Educational Publishers, New Delhi.