



FIRST-YEAR OF BACHELOR OF COMMERCE VSC MATHEMATICS REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: MATHEMATICAL AND STATISTICAL TECHNIQUES
SEMESTER-I, W.E.F. 2023-2024

**RECOMMENDED BY THE BOARD OF STUDIES IN MATHEMATICS
AND
APPROVED BY THE ACADEMIC COUNCIL**

Devrukh Shikshan Prasarak Mandal's

Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal.Sanameshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No: _____

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangmeshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Arts
Name of the Department	:	Mathematics
Name of the Class	:	First Year
Semester	:	I
No. of Credits	:	02
Title of the Course	:	Mathematical and Statistical Techniques
Course Code	:	MTVS102
Name of the Vertical in adherence to NEP 2020	:	VSC
Eligibility for Admission	:	Any 12 th Pass seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2023-2024
Ordinances /Regulations (if any)		

Syllabus for First Year of Bachelor of Commerce (VSC –Maths and Stat)

(With effect from the academic year 2023-2024)

SEMESTER-I

Paper No.–

Course Title: Mathematical and Statistical Techniques

No. of Credits - 02

Type of Vertical: Vocational Skill Course

COURSE CODE: MTVS101

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to...

Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	Remember basic concept of measure of central tendency and variation
CLO-02	Understand	Understand the basics of probability and probability distributions.
CLO-03	Apply	Apply decision-support tools to business decision making and apply knowledge of business concepts and functions in an integrated manner.
CLO-04	Analyze	Analyze and demonstrate the mathematical skill require in mathematically intensive areas in economics and business.

Syllabus for First Year of Bachelor of Commerce of VSC(Maths and Stat.)

(With effect from the academic year 2023-2024)

SEMESTER-I

Paper No.– VSC-I

Course Title: Mathematical and Statistical Techniques No. of Credits - 02

Type of Vertical : Vocational Skill Course

COURSE CODE: MTVS101

Module No.	Content	No. of Lectures
1 Summarization of Measures	<p>a. Measures of Central Tendencies: Definition of Average, Types of Averages: Arithmetic Mean, Median, and Mode for grouped as well as ungrouped data. Quartiles, Deciles and Percentiles. Using Ogive locate median and Quartiles. Using Histogram locate mode. Combined and Weighted mean.</p> <p>b. Measures of Dispersions: Concept and idea of dispersion. Various measures Range, Quartile Deviation, Mean Deviation, Standard Deviation, Variance, Combined Variance.</p>	20
2 Permutation, Combination and Probability	<p>a. Permutation and Combination: Fundamental principle of counting, Permutation as arrangement, combination as selection, Relation between nCr and nPr, Examples on commercial application of permutation and combination.</p> <p>b. Probability Theory: Concept of random experiment/trial and possible outcomes; Sample Space and Discrete Sample Space; Events their types, Algebra of Events, Classical definition of Probability, Addition theorem (without proof), conditional probability. Independence of Events: $P(A \cap B) = P(A) P(B)$, Simple examples.</p> <p>c. Random Variable: Probability distribution of a discrete random variable; Expectation and Variance of random variable, simple examples on probability distributions.</p>	20
3 Decision Theory	<p>Decision making situation, Decision maker, Courses of Action, States of Nature, Pay-off and Pay-off matrix; Decision making under uncertainty, Maximin, Maximax, Minimax regret and Laplace criteria; simple examples to find optimum decision. Formulation of Payoff Matrix. Decision making under Risk, Expected Monetary Value (EMV); Decision Tree; Simple Examples based on EMV. Expected Opportunity Loss (EOL), simple examples based on EOL.</p>	20
	Total	60

Required Previous Knowledge

Basic Knowledge of Mathematical calculations is necessary before starting to learn the course

Access to the Course

The course is available for all the students admitted for Bachelor of Commerce as a VSC (Connected to major). The students seeking admission in other disciplines may select the course as a VSC considering the terms and conditions laid down by the University of Mumbai, the Government of Maharashtra, and the college, from time to time.

Forms of Assessment

The assessment of the course will be of Diagnostic, Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The detailed pattern is as given below.

Term End Evaluation (30 Marks)

Question Paper Pattern

Time: 1 hour

Question No.	Question Pattern	Marks
Q.1	Short Answer Questions (based on Unit I)	10
Q.2	Long Answer Questions (based on Unit II)	10
Q.3	Long Answer Questions (based on Unit III)	10
Total		30

Internal evaluation (20 Marks)

Sr. No.	Description	Marks
1	Mid Term Examination	10
2	Active Participation in teaching learning Process	05
3	Subject related activities as assigned by the teacher	05
Total		20

Grading Scale

The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

References:

1. Mathematics for Economics and Finance Methods and Modelling by Martin Anthony and Norman Biggs, Cambridge University Press, Cambridge low-priced edition, 2000, Chapters 1, 2, 4, 6 to 9 & 10.
2. Applied Calculus: By Stephen Waner and Steven Constenoble, Brooks/Cole Thomson Learning, second edition, Chapter 1 to 5.
3. Business Mathematics By D. C. Sancheti and V. K. Kapoor, Sultan Chand & Sons, 2006, Chapter 1, 5, 7, 9 & 10.
4. Mathematics for Business Economics: By J. D. Gupta, P. K. Gupta and Man Mohan, Tata Mc-Graw Hill Publishing Co. Ltd., 1987, Chapters 9 to 11 & 16.
5. Quantitative Methods-Part-I By S. Saha and S. Mukerji, New Central Book Agency, 1996, Chapters 7 & 12.
6. Mathematical Basis of Life Insurance By S.P. Dixit, C.S. Modi and R.V. Joshi, Insurance Institute of India, Chapters 2: units 2.6, 2.9, 2.20 & 2.21.
7. Securities Laws & Regulation of Financial Market : Intermediate Course Paper 8, Institute of Company Secretaries of India, Chapter 11.
8. Investments By J.C. Francis & R.W. Taylor, Schaum's Outlines, Tata Mc-Graw Hill Edition 2000, Chapters 2, 4 & section 25.1.
9. Indian Mutual Funds Handbook: By Sundar Shankaran, Vision Books, 2006, Sections 1.7, 1.8.1, 6.5 & Annexures 1.1 to 1.3.
10. STATISTICS by Schaum Series.
11. Operations Research by Gupta and Kapoor
12. Operations Research by Schaum Series
13. Fundamentals of Statistics - D. N. Elhance.
14. Statistical Methods - S.G. Gupta (S. Chand & Co.
15. Statistics for Management - Lovin R. Rubin D.S. (Prentice Hall of India)
16. Statistics - Theory, Method & Applications D.S. Sancheti & V. K. Kapoor.
17. Modern Business Statistics - (Revised) - B. Pearles & C. Sullivan - Prentice Hall of India.
18. Business Mathematics & Statistics : B Aggarwal, Ane Book Pvt. Limited
19. Business Mathematics : D C Sancheti & V K Kapoor, Sultan Chand & Sons
20. Business Mathematics : A P Verma, Asian Books Pvt.: Limited.