C P PATEL AND F H SHAH COMMERCE (AUTONOMOUS) COLLEGE, ANAND

(Managed by SARDAR PATEL EDUCATION TRUST, ANAND)

AFFILIATED TO SARDAR PATEL UNIVERSITY, V V NAGAR

An ISO 9001 2015 Certified / An ISO 14001-2015 Certified / An ISO 21001-2018 Certified
GUJARAT INSTITUTIONAL RATING FRAMEWORK (4 STAR)

AAA Reaccredited CGPA 3.56 – GRADE A^+ KCG-Dept of Edu. Got of Gujarat-April 2017

NAAC Reaccredited - CGPA 3.30 - GRADE 'A^{+}' UGC – MHRD, Govt of India – June 2022

Syllabus as per NEP 2020 with effect from the Academic Year 2023-2024

Bachelor of Commerce (B Com)
Semester - II

Course Code	UB2MDCOM03	Title of the Course	Mathematics for Commerce-II
Total Credits of the Course	04	Hours per Week	04

	Course Content	

Course Objectives	1. To introduce students to the concept of determinants, enabling them to understand their properties, computations, and applications in various mathematical fields.	
	2. To provide students with a comprehensive understanding of matrices, emphasizing operations, transformations and their significance in diverse mathematical applications.	
	3. To equip students with the skills to formulate and solve linear programming problems, enabling them to optimize resource allocation efficiently.	
	4. To introduce students to transportation problems and algorithms, enabling them to model and solve real-world distribution and logistical challenges	

Unit	Description	Weightage (%)
1.	**Determinant** Definition of determinants, Basic rules of determinants (without proof), Solution of linear equations in two and three variables using Cramer's formula, rules based examples of determinant. Application of determinant in commerce.	25 %
2.	**Matrix**: Definitions of matrix, Type of matrices: Row matrix, Column Matrix, Square Matrix, Null Matrix, Transpose of Matrix, Symmetric Matrix, Skew symmetric Matrix, Diagonal Matrix, Scalar Matrix, Identity Matrix, Adjoin of Matrix, Inverse of Matrix, Addition, Subtraction, Matrix Multiplication by scalar and Multiplication of Matrices, Solution of consistent system of linear equations using matrix inverse method for two and three variables. Application of Matrix in commerce.	25 %

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3.	**Linear Programming Problem (LPP):** Meaning and Mathematical form of LPP, Assumptions and limitations of LPP, uses of LPP, Definitions: Objective functions Constrains, Solution, Feasible solution, Optimum Feasible solution, Solution of LPP by Graphical Method. Application of Linear Programming in Commerce.	**25%**
4.	**Transportation Problem:** Meaning of Transportation Problem, Mathematical form of Transportation problems, Solution of Transportation problems by North-West Corner Rule, Matrix Minima (Least Cost) Method, Vogel's Approximation Method. Application of Transportation problems in commerce.	**25 %**

Teaching-Learning Methodology	Lecture, Assignment, Quiz, Seminars, Content- Focused Methods, Interactive / Participative Methods and online lectures.

Evaluation Pattern		
Sr. No.	**Details of the Evaluation**	**Weightage**
1.	Written Examination	25%
2.	Continuous Internal Assessment in the form of Quizzes, Seminars, Assignments, Viva voce, Attendance	25%
3.	Semester End Examinations	50%

Course Outcomes	
1.	Student will be able to understand the fundamental properties of determinants and apply determinants in solving systems of linear equations and evaluating matrix inverses.
2.	Students will be able to perform matrix operations including addition, subtraction, multiplication, and transpose and apply matrices to represent and solve systems of linear equations

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3.	Student will be able to formulate linear programming models for optimization problems and apply graphical methods to solve linear programming problems.
4.	Student will be able to analyze and interpret solutions to optimize transportation logistics in industries such as supply chain management.

Suggested References	
Sr. No.	**References**
1	Sancheti & Kapoor: Statistic: Theory, Methods and Applications, Sultan Chand & Sons, New-Delhi.
2	Kapoor, V. K: Business Mathematics, Sultan Chand and Sons, New Delhi.
3	S. D. Sharma and J. K. Sharma, Operation Research, Macmillan Publishers India Limited
4	H A Taha: Operations Research: An Introduction, Pearson/ Prentice Hall.
5	Operation Research: P. K. Gupta and Man Mohan, Sultan Chand and Sons
6	Quantitative Techniques for Management, N D Vora
7	Vyas H R : Operation Research and Quantitative Techniques: B S Shah Publication, Ahmedabad

On-line resources to be used if available as reference material
On-line Resources:
https://atozmath.com/default.aspx
https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=ZLCHeZEhCZ8yCri36nSF3A==