

**Solapur University, Solapur**  
**B.Com.-I (Semester I)**  
**Elective Subject**  
**Business Mathematics**  
**Choice Based Credit System Syllabus**  
**(w. e. f. June 2016)**

**Introduction :**

*The basic intention of this paper is to familiarize the students with basic concepts of the Business Mathematics and a hands on practice of the various mathematical operations. The objective of this course is to impart knowledge to students to improve their logical reasoning ability and interpretation of various business results. The course aims at acquainting the students with the emerging issues in business, trade and commerce regarding analyzing business facts.*

**Objectives of the course:**

1. To expose students of Commerce to basic Mathematical concepts
2. To inculcate an analytical approach to the subject matter.
3. To stimulate the students interest by showing the relevance and use of Mathematical knowledge.
4. To study and critically analyze Mathematical reasoning to problems of business.
5. To develop arithmetical and numerical abilities.
6. To boost logical and quantitative thinking
7. To enlighten the student abilities to apply the mathematical concepts to real life problems in Commerce, Economics and Management.
8. To use the concept of EMI.
9. To understand applications of matrices in business.
10. To solve LPP to maximize the profit and to minimize the cost.
11. To prepare a base of various courses like C.A.,C.W.A.,C.S.,M.B.A., etc.

**Advantages of the course:**

On successful completion of this syllabi student will be able to get well acquainted with the fundamentals of Mathematics. He will have understood the role of Mathematics for taking various decisions. He will have developed intelligence by recognizing Mathematical Techniques in Decision making at Strategic & Tactical Level. He will be motivated to make his mind set for taking up entrepreneurship as a career. He will be able to formulate of business problem and solve it to decide policies of business firms.

**Eligibility of the course:** XII Std or equivalent examination passed

**Duration:** First term of B.Com. I

**Medium of instruction:** English

**Structure of the course:**

Course	Paper No.	Title	Theory Lectures Per Week	Total Periods of Teaching in a Semester	Duration Of University Exam	Marks For University Exam
B.Com.I / Sem-I	6	Business Mathematics	04	60 (15 Weeks )	2½ hrs	70

**Syllabus:**

Unit No.	Topic	Subtopics	Periods
1	Mathematics of Finance	Interest concept and Principal, rate of interest, period, Maturity value, Simple Interest, , Compound interest, Present value ,Simple examples. Time value of money, Annuity, Types of annuities- Immediate annuity, annuity due , perpetuity . Present value of annuity, Equated Monthly Installments (EMI) using reducing and flat interest system. Simple problems on immediate Annuity and annuity due with $n \leq 4$ .	15
2	Determinants and Matrices	Definition of second & Third order Determinant, calculation of values of determinants up to third order, Solution of system of linear equations by Cramer's rule, Properties of determinants(without proof). Simple examples. Definition of a Matrix, , Algebra of matrices, Equality of Matrices, Transpose of matrix, Inverse of matrix (by Adjoint method), Solution of a system of linear equations having unique solution and involving not more than three variables (by Adjoint Method),. Special types of matrices, Applications of matrix to business problems	15
3	Linear Programming Problem (L.P.P.)	Mathematical formulation of L.P.P. upto 2 variables, Graphical method of solution of L.P.P., Commercial examples. Cases having no solution, Multiple solution, Unbounded solution.	15
4	Function of Real Variable	Constant, Variable, Interval, Function, Illustrative examples on value of a function. Functions related to business & economics, Cost Function, Demand Function, Revenue function, Profit function, Break-even point. Determination of form of a function using Newton's Interpolation formula for unequal interval. Standard functions, Definitions of Even, Odd, Linear, Quadratic, Exponential, Logarithmic, Inverse, Explicit, Implicit, Parametric, Composite, Increasing & Decreasing functions. Graph of a function.	15

**Note :**

1. Use of soundless calculators are allowed.
2. Graph papers are allowed to use.
3. More stress should be given on commercial applications

**Reference books:**

1. Business Mathematics- Kapoor V.K., Sancheti D.C.
2. Business Mathematics - Dr. Amarnath Dikshit & Dr. Jinendra Kumar Jain.
3. Business Mathematics - V. K. Kapoor (Sultan chand & sons, Delhi. )
4. Business Mathematics - Bari ( New Literature publishing company, Mumbai. )
5. Problems in Operation Research - P. K. Gupta and Man Mohan
6. Qualitative Methods and Operation Research - G.Gopikuttan (Himalaya Publishing House)
7. Commercial Arithmetic - P. S. Chiplunkar and C. G. Kulkarni,( Narendra Prakashan.)
8. Mathematics in Commerce and Economics, - Qazi Zameerudding and V. K. Khanna,
9. Commerical Arithmetics- Sutar
10. Business Mathematics - Soni R.S.

11. Business Mathematics- Veena G.R. (New age international Publishers, New Delhi).  
 12. Business Mathematics – G.V.Kumbhojkar

Nature of Question Paper For B.ComI /Sem-I: Business Mathematics

Time: - 2½ hrs.

Total Marks-70

Question No.	Type of Question	Marks
Q. 1	Multiple choice questions (four alternatives should be given)	14
	1 -----	
	(a) (b) (c) (d)	
	2	
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	13	
	14	
Q. 2	Short Answer Questions	07 07
	(A) (B)	
Q. 3	Short Answer Questions	07 07
	(A) (B)	
Q. 4	Long Answer Questions (Attempt 1)	14 14
	(A) (B)	
Q. 5	Long Answer Questions (Attempt 1)	14 14
	(A) (B)	

This syllabus was put together by following professors:

Dr. S. M. Aherkar  
 Prof .N. K. Hipperkar  
 Prof. D. A. Gornale

**Solapur University, Solapur**  
**B.Com.-I (Semester II)**  
**Elective Subject**  
**Business Mathematics**  
**Choice Based Credit System Syllabus**  
**(w. e. f. Winter 2016)**

**Introduction :**

*The basic purpose of this paper is to familiarize the students with basic concepts of Calculus in Business Mathematics and a hands on practice of the various calculus operations. The aim of this course is to impart knowledge to students to improve their logical reasoning ability and interpretation of various business results. The course makes an effort for acquainting the students with the emerging issues in business, trade and commerce regarding analyzing business facts.*

**Objectives of the course:**

- 1.To impart knowledge of basic Mathematical concepts
- 2.To give stress on an analytical approach of the subject matter.
- 3.To arouse the students interest by showing the relevance and use of Mathematical knowledge.
- 4.To study and critically analyze Mathematical reasoning to problems of business.
- 5.To build up arithmetical and numerical abilities.
- 6.To enhance logical and quantitative thinking
- 7.To understand useful functions in business
- 8.To boost the student ability to apply the mathematical concepts to real life problems in Commerce, Economics and Management.
- 9.To arrive at minimum cost and maximum revenue using derivatives.

**Advantages of the course:**

On successful completion of this syllabi student will be able to get well acquainted with the fundamentals of Calculus. He will have understood the role of Calculus for taking various decisions. He will have developed intelligence by recognizing Mathematical Techniques in Decision making at Strategic & Tactical Level. He will be provoked to make his mind set for taking up entrepreneurship as career. He will be able to formulate of business problem and solve it to decide policies of business firms.

**Eligibility of the course:** XII Std or equivalent examination passed

**Duration:** Second term of B.Com. I

**Medium of instruction:** English

**Structure of the course:**

Course	Paper No.	Title	Theory Lectures Per Week	Total Periods of Teaching in a Semester	Duration Of University Exam	Marks For University Exam
B.Com.I / Sem-II	6	Business Mathematics	04	60 (15 Weeks )	2½ hrs	70

**Syllabus:**

Unit No.	Topic	Subtopics	Periods
1	Ratio, Proportion, Logarithms, Progression	Ratio, Proportion, Logarithms, Definition of A.P. & G.P., To find $T_n$ & $S_n$ , Simple practical commercial problems.	15
2	Limit of a function	Theorems on limits (without proof), Simple examples on evaluation of limits – Direct type, Factorization, Simplification, Rationalization, Infinity type, $a^x$ type.	10
3	Differentiation	Definition, derivative using first Principle. Rules of Differentiation(without proof), Derivatives of simple algebraic functions, . Derivative of composite, Parametric, Inverse, Exponential, Logarithmic, Implicit functions, Simple Examples. Second Order Derivative (involving one variable) : Maxima & Minima. Commercial Applications of Derivative – Marginal Cost function, Average Cost function. Marginal Average Cost function. Minimum Average Cost. Marginal Revenue function, Maximum Revenue, Maximum Profit, Price Elasticity of Demand. Numerical examples.	20
4	Integration :	Definitions, Standard forms, Integration by substitution, by parts, by use partial fractions. Illustrative examples. Definite integrals – Properties (without proof), Simple examples. Applications of integration to business – Determination of Cost, Revenue, Profit, Demand function, Consumer Surplus, Producer Surplus, Rate of sales. Numerical examples.	15

**Note :**

1. Use of soundless calculators are allowed.
2. Graph papers are allowed to use.
3. More stress should be given on commercial applications
4. For limit, derivative & integration trigonometric ratios (functions) should be omitted.

**Reference books:**

1. Business Mathematics- Kapoor V.K., Sancheti D.C.
2. Business Mathematics - Dr. Amarnath Dikshit & Dr. Jinendra Kumar Jain.
3. Business Mathematics - V. K. Kapoor (Sultan chand & sons, Delhi. )
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7. Commerical Arithmetics- Sutar
8. Business Mathematics - Soni R.S.
9. Business Mathematics- Veena G.R. (New age international Publishers, New Delhi).
10. Essence of Business Mathematics – R.K.Rajput, Discovery Publication House, New Delhi-
11. Elements of Calculus - Bhagvat and Pawate
12. Business Mathematics – G.V. Kumbhojkar

**Nature of Question Paper For B.ComI /Sem-II: Business Mathematics**

Time: - 2½ hrs.

Total Marks-70

Question No.	Type of Question	Marks
Q. 1	Multiple choice questions (four alternatives should be given)	14
	1 -----	
	(a) (b) (c) (d)	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
Q. 2	Short Answer Questions	07 07
	(A) (B)	
Q. 3	Short Answer Questions	07 07
	(A) (B)	
Q. 4	Long Answer Questions (Attempt 1)	14 14
	(A) (B)	
Q. 5	Long Answer Questions (Attempt 1)	14 14
	(A) (B)	

**This syllabus was put together by following professors:**

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