

Name of Institute: Indus Institute of Management Studies (IIMS)

Name of Faculty: Dr. Tejal Shah

Course code: IMB0107

Course name: Business Mathematics

Pre-requisites: H.S.C

Credit points: 4 Credits

Offered Semester: I

Course Lecturer (weeks 01 – 12)

Full name: Dr. Tejal Shah

Department with siting location: Management

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Consultation times: 2.00 PM to 4.00 PM

Students will be contacted throughout the Session via Mail with important information relating to this Course.

Course Objectives

By participating in and understanding all facets of this Course a student will:

- 1) To help the students develop understanding of the basic principles of mathematics.
- 2) To familiarize students with the application of mathematics to business problems.
- 3) To provide the student basic understanding of the mathematical ideas and technical tools used in modeling
- 4) Prepare students for subsequent work in their business majors and for their future careers in the business community.

Course Outcomes (CO)

Apply mathematical concepts and principles to perform computations

Apply mathematics to solve problems

Create, use and analyze graphical representations of mathematical relationships

Communicate mathematical knowledge and understanding

Apply technology tools to solve problems

Perform abstract mathematical reasoning

Course Outline

(Key in topics to be dealt)

Unit-I

Set Theory

Concept of Set & Set Membership; Subset & Set Equality; Set Operations;
Fundamental Laws of Set Operation; Venn Diagram, Cartesian Product of two sets;
Special Topics on Sets - Partition, Power Set Business Application of Set Theory.

Permutations & Combinations

Permutations & Combinations: Introduction Important Notations - Their Meaning & Properties Permutation when things are repeated Restricted Combination Applications

Unit-II

Function & Limit

Meaning and Definition of Function Different types of functions, Construction of Functions; Linear & Quadratic Functions; Some Special Functions – Log Function; Exponential Function; Modulus Function Graphical Presentation of Functions Zeros of a Function Functions used in Economics (Demand, Supply, Revenue, Cost, Profit, Production, Average Cost & Average Revenue) Application of Function to Business - Break-even Analysis Functions & Their Applications Limits Limits of a Function; Continuous Functions Limits of a Sequence; Rules of Limit; Standard Results of Limits

Unit-III

Co-ordinate Geometry

Cartesian Co-ordinate System; General Equation of Straight Line; Standard Equation of Straight Line; Distance Formula; Intercept & Slope of a Line; Different Forms of Equations of a straight Line Concept and properties of Perpendicular and Parallel Lines

Unit-IV

Progressions

Meaning of Sequence & Series; General Terms of Sequence; Sum of Series Arithmetic Progression; Sum of a series, Arithmetic Mean Geometric Progression; Sum of a series, Geometric Mean Introduction to Harmonic Progression Sum of the Finite & Infinite Progression & Applications.

Method of delivery

Lectures, PPT, case studies, experiential exercises, Active Learning Techniques.

Study time

Four hours per week

CO-PO Mapping (PO: Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6
CO 1	3	2	-	3	-	3
CO 2	3	1	-	3	-	3
CO 3	2	1	-	3	-	3
CO 4	3	2	-	3	-	3
CO 5	2	1	1	3	1	3
CO 6	2	2	1	3	-	3

Blooms Taxonomy and Knowledge retention (For reference)

(Blooms taxonomy has been given for reference)

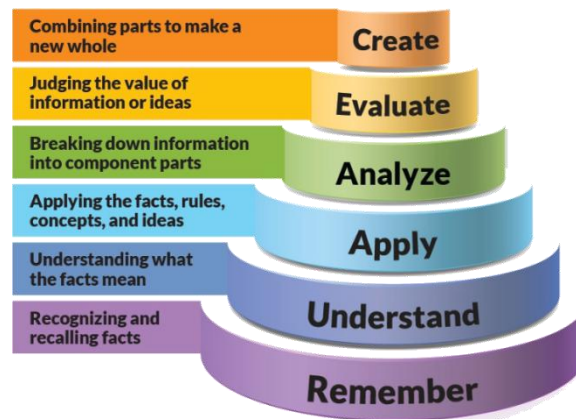


Figure 1: Blooms Taxonomy

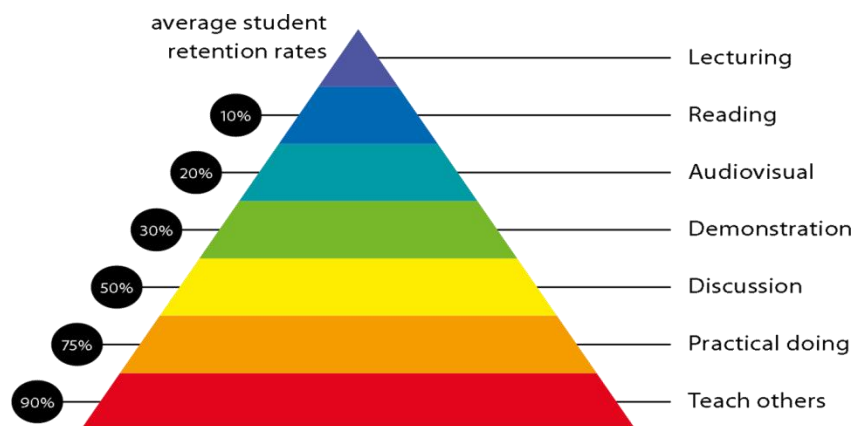


Figure 2: Knowledge retention

Graduate Qualities and Capabilities covered

(Qualities graduates harness crediting this Course)

General Graduate Qualities	Specific Department of _____ Graduate Capabilities
Informed Have a sound knowledge of an area of study or profession and understand its current issues, locally and internationally. Know how to apply this knowledge. Understand how an area of study has developed and how it relates to other areas.	1 Professional knowledge, grounding & awareness
Independent learners Engage with new ideas and ways of thinking and critically analyze issues. Seek to extend knowledge through ongoing research, enquiry and reflection. Find and evaluate information, using a variety of sources and technologies. Acknowledge the work and ideas of others.	2 Information literacy, gathering & processing
Problem solvers Take on challenges and opportunities. Apply creative, logical and critical thinking skills to respond effectively. Make and implement decisions. Be flexible, thorough, innovative and aim for high standards.	4 Problem solving skills
Effective communicators Articulate ideas and convey them effectively using a range of media. Work collaboratively and engage with people in different settings. Recognize how culture can shape communication.	5 Written communication
	6 Oral communication
	7 Teamwork
Responsible Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity. Act with integrity as part of local, national, global and professional communities.	10 Sustainability, societal & environmental impact

Practical work:

1. ASSIGNMENT -1 Theory questions from unit 1
2. ASSIGNMENT -2 Sums from unit 2
3. ASSIGNMENT -3 Problem-solving
4. ASSIGNMENT -4 Practical Problems

Lecture/tutorial times

Lecture	Monday	09:00 – 10:00 am	Room
Lecture	Wednesday	09:00 – 10:00 am	Room
Lecture	Wednesday	02:00 – 3:00 pm	Room
Lecture	Friday	09:00 – 10:00 am	Room

Attendance Requirements

The University norms states that it is the responsibility of students to attend all lectures, tutorials, seminars and practical work as stipulated in the Course outline. Minimum attendance requirement as per university norms is compulsory for being eligible for mid and end semester examinations.

Details of referencing system to be used in written work

Text books

- 1) A Text Book of Business Mathematics: Padmalochan Hazarika, Publishers: S.Chand
- 2) Business Mathematics: Theory and Application: J.K. Sharma, Publishers: Ane Books

Additional Materials (Reference Books)

- 1) Business Mathematics: D.C. Sancheti and V.K. Kapoor, Publishers: Sultan Chand
- 2) Business Mathematics: J.K. Singh, Himalaya Publishing House
- 3) Mathematics for Management: M. Raghavachari, Tata Mc GrawHillreference Books:

ASSESSMENT GUIDELINES

Your final course mark will be calculated from the following:

Example:		
Quiz 1	5% (week 4)	Objective (1-3)
Quiz II	5% (week 8)	Objective (1-4)
Mid semester	30% (due week 10)	Objectives (2-5)
Final exam (<i>closed book</i>)	60%	Objectives (1-5)

SUPPLEMENTARY ASSESSMENT

Students who receive an overall mark less than 40% in mid semester or end semester will be considered for supplementary assessment in the respective components (i.e mid semester or end semester) of semester concerned. Students must make themselves available during the

supplementary examination period to take up the respective components (mid semester or end semester) and need to obtain the required minimum 40% marks to clear the concerned components.

Practical Work Report/Laboratory Report:

A report on the practical work is due the subsequent week after completion of the class by each group.

Late Work

Late assignments will not be accepted without supporting documentation. Late submission of the reports will result in a deduction of -% of the maximum mark per calendar day

Format

All assignments must be presented in a neat, legible format with all information sources correctly referenced. **Assignment material handed in throughout the session that is not neat and legible will not be marked and will be returned to the student.**

Retention of Written Work

Written assessment work will be retained by the Course coordinator/lecturer for two weeks after marking to be collected by the students.

University and Faculty Policies

Students should make themselves aware of the University and/or Faculty Policies regarding plagiarism, special consideration, supplementary examinations and other educational issues and student matters.

Plagiarism - Plagiarism is not acceptable and may result in the imposition of severe penalties. Plagiarism is the use of another person's work, or idea, as if it is his or her own - if you have any doubts at all on what constitutes plagiarism, please consult your Course coordinator or lecturer. Plagiarism will be penalized severely.

Do not copy the work of other students.

Do not share your work with other students (except where required for a group activity or assessment)

Course schedule(subject to change)

(Mention quiz, assignment submission, breaks etc as well in the table under the Teaching Learning Activity Column)

Week #	Topic & contents	CO Addressed	Teaching Learning Activity (TLA)
Weeks 1	Concept of Set & Set Membership; Subset & Set Equality; Set Operations;	CO1 & CO2	Lecture
Weeks 2	Fundamental Laws of Set Operation; Venn Diagram, Cartesian Product of two sets; Special Topics on Sets - Partition, Power Set Business Application of Set Theory.	CO1 & CO2	Lecture
Week 3	Permutations & Combinations: Introduction Important Notations - Their Meaning & Properties Permutation when things are repeated Restricted Combination Applications	CO1, CO2 & CO3	Lecture
Week 4	Meaning and Definition of Function Different types of functions, Construction of Functions; Linear &	CO1, CO2 & CO4	Lecture
Week 5	Quadratic Functions; Some Special Functions – Log Function; Exponential Function; Modulus Function Graphical Presentation of Functions Zeros of a Function	CO3	Lecture
Week 6	Functions used in Economics (Demand, Supply, Revenue, Cost, Profit, Production, Average Cost & Average Revenue) Application of Function to Business - Break-even Analysis	CO3 & CO4	Lecture
Week 7	Functions & Their Applications Limits Limits of a Function; Continuous Functions Limits of a Sequence; Rules of Limit; Standard	CO3 & CO4	Lecture

	Results of Limits		
Week 8	Cartesian Co-ordinate System; General Equation of Straight Line; Standard Equation of Straight Line; Distance Formula; Intercept & Slope of a Line;	CO4	Lecture
Week 9	Different Forms of Equations of a straight Line Concept and properties of Perpendicular and Parallel Lines	CO4	Lecture
Week 10	Meaning of Sequence & Series; General Terms of Sequence; Sum of Series	CO4 & CO5	Lecture
Week 11	Arithmetic Progression; Sum of a series, Arithmetic Mean Geometric Progression; Sum of a series,	CO6	Lecture
Week 12	Geometric Mean Introduction to Harmonic Progression Sum of the Finite & Infinite Progression & Applications.	CO4 & CO5	Lecture