Building Mathematical Ability

Common Course to all UG-PG Programmes – 3 credit

Mathematics can help develop critical thinking and problem-solving skills, which are valuable in many fields like competitive examinations and is useful in analyzing aspects many problems. It improves logical reasoning, abstract thinking and statistical of the students. Additionally, many jobs and careers require a certain level of mathematical knowledge, so having a strong foundation in mathematics can increase employability.

The foundational course- Building Mathematical Ability is proposed to introduce as compulsory course for 2nd semester of UG and 1st semester of PG students of all streams with effect from academic year 2023-24.

Unit1: *Mathematics*

Basic set theory and Permutations and combinations.
Mathematical logic: Introduction, proposition and truth values, logical connectives, tautology and contradiction, logical equivalences, converse, inverse and Contrapositive ofaconditional statement.

Unit2:*Commercial Mathematics*
Cost price, selling price, profit and loss, simple interest, compound interest(reducing balance and flat rate of interest), stocks and shares. Housing loan and insurance, simple equated monthly installments (EMI) calculation.
Income tax: simple calculation of individual tax liability.

Unit3:*Statistics*
Sources of data: primary and secondary; types of data, graphical representation of data. Population, sample, variable, parameter. Statistic, simple random sampling, use of random number tables. Measures of central tendency: arithmetic mean, median and mode; measures of dispersion: range, variance, standard deviation and coefficient of variation. Bivariate data: scatter plot, Pearson's correlation coefficient, simple line arregression.

Unit 4: *Financial literacy*
Definition, Function and Theories of Money: Money and its functions –The concepts and definition s of money-Measurement of money –Advantages of money – Scheduled and Non-scheduled Banks- Commercial Banks, its functions and credit creation –High powered Money-usage of debit and credit cards-Functions of a central bank-Quantitative and qualitative methods of credit control-Bank rate policy-Cash reserve ratio—Open market operations –Statutory liquidity ratio-Repo rate –Reverse Repo rate-Selective credit control-, role and functions of Reserve Bank of India-Objectives and limitations of monetary policy With special reference to India.

References:

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2. Building Mathematical Ability, Foundation Course, University of Delhi, S. Chand Publications
3. Lewis, M.K. and p. d., Monetary Economics. Oxford University press, New york, 2000.
4. C Rangarajan, :Indian Economy : Essays in Money and Finance, 1999
5. Brahmaiah , B. and P. Subbarao , Financial Futures and Options, Himalaya Publishing House , Mumbai,1998.