SKILL ENHANCEMENT COURSES

SYLLABUS FOR THE

SUBJECT: MATHEMATICS

for the award of the Degree in

BACHELOR OF ARTS/ BACHELOR OF SCIENCE/HONOURS
(Offered under 4-year UG Degree Programme)

(Credit Based Grading System)
under NEP 2020

Batch: 2025–29

GURU NANAK DEV UNIVERSITY AMRITSAR

SCHEME

SKILL ENHANCEMENT COURSES

MATHEMATICS

SEC-I

Sr. No.	Course Code	Course Title	Credits L-T-P	Total Marks
1.		STATISTICAL ANALYSIS USING EXCEL (THEORY)	1-0-0	25
2.		STATISTICAL ANALYSIS USING LABORATORY (PRACTICAL)	0-0-2	50

SEC-II

Sr. No.	Course Code	Course Title	Credits L-T-P	Total Marks
1.		ENHANCING MATHEMATICAL SKILLS (THEORY)	3-0-0	75

SEC-III

Sr. No.	Course Code	Course Title	Credits L-T-P	Total Marks
1.		LATEX TYPESETTING (THEORY)	1-0-0	25
2.		LATEX TYPESETTING LABORATORY (PRACTICAL)	0-0-2	50

MATHEMATICS
(SKILL ENHANCEMENT COURSE (OPTIONAL) FOR ALL STREAMS)
(SEC-I)
STATISTICAL ANALYSIS USING EXCEL
(THEORY)

Time: 3 Hours **L-T-P**
1-0-0
Marks: 25

Instructions for the Paper Setters: -
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Objective: Statistics Analysis using Excel is a basic course to understand descriptive statistics, Linear correlation and Regression analysis using MS Excel. The course will enable to draw the information from the data and that will help in decision making process. The basic objective of this course is to demonstrate how to use MS Excel for statistical analysis.

SECTION–A

Introduction to statistics, functions of statistics, collection of data, presentation of data, tabulation of data, charting of data, introduction to excel/spss, graphs in excel, measures of central tendency-, mean, median - meaning and computation, mode- meaning and computation, weighted average mean, geometric mean and harmonic mean.

SECTION–B

Measures of dispersion, types of dispersion- range, quartile deviation, mean deviation, standard deviation, co-efficient of variation.

SECTION–C

Skewness- Karl Pearson co-efficient of skewness, Bowley's co-efficient of skewness and Kurtosis.

SECTION–D

Correlation, Types of correlation, positive, negative, linear. methods of correlations - Karl Pearson's Co-efficient of correlation, rank correlation coefficient.

BOOKS RECOMMENDED:-

1. S.C. Gupta. Fundamentals of Mathematical Statistics, S. Chand Publication, 2000.
2. K. Berk, & P. Carey. Data Analysis with Microsoft Excel, Duxbury Press, 2000.

MATHEMATICS
(SKILL ENHANCEMENT COURSE (OPTIONAL) FOR ALL STREAMS)
(SEC-I)
STATISTICAL ANALYSIS USING EXCEL LABORATORY
(PRACTICAL)

Time: 3 Hours **L-T-P**
0-0-2
Marks: 50

List of Practicals (using excel)

1. Introduction of basics of excel and functions such as ‘sum’, ‘count’, ‘countif’, ‘max’, ‘min’, ‘sort’ etc.
2. To prepare result from the data on marks and number of credits in a given number of courses of a class based on total marks, marks obtained, percentage of marks obtained, grades, and determine SGPA for each student.
3. Create frequency distribution table; plot histogram, bar chart, pie chart, etc.
4. Plotting two dimensional graphs.
5. To find measures of central tendency for a given data.
6. To find measures of dispersion for a given data.
7. To find measures of skewness and kurtosis for a given data.
8. To find Karl Pearson Coefficient of correlation and rank correlation coefficient for a given data.
9. To find regression coefficient for bivariate data and plotting regression lines.

BOOKS RECOMMENDED:-

1. S.C. Gupta. Fundamentals of Mathematical Statistics, S. Chand Publication, 2000.
2. K. Berk, & P. Carey. Data Analysis with Microsoft Excel, Duxbury Press, 2000.

MATHEMATICS
(SKILL ENHANCEMENT COURSE (OPTIONAL) FOR ALL STREAMS)
(SEC-II)
ENHANCING MATHEMATICAL SKILLS
(THEORY)

Time: 3 Hours **L-T-P**
3-0-0
Marks: 75

Instructions for the Paper Setters: -
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Learning Objective:
1. To introduce concepts of basic arithmetic with emphasis on analytical ability and computational and mental skills needed for various competitive examinations.
2. More emphasis will be on enhancing practical skills- To increase Students' skill to solve lengthy questions using shortcut methods and taking minimum time.

Learning Outcomes:- After completion of this skill enhancement course, students will be able to tackle maximum problems in minimum time involving basic arithmetic in various competitive entrance examinations (Bank P.O., UPSC and Railways recruitment exams, L.I.C., G.I.C. Tax and central excise, I.F.S., CAT, STET and other such exams).

SECTION-A
Basic Vedic Mathematics Techniques in Multiplication, Comparison of Standard Methods with Vedic Methods. Various techniques to carry out some basic operations covering Addition, Subtraction, Multiplication.

SECTION-B
Different methods of Squares (General method, Base method, Duplex method.), Clock and Calendar, Direction and Distance, Coding and Decoding.

SECTION-C
Ranking and Arrangement, Reasoning, Time and Work, HCF and LCM.

SECTION-D
Graphical Analysis & Data Interpretation, Pie-Chart, Line & Bar Chart.

BOOKS RECOMMENDED:-
1. R.S. Aggarwal. Quantitative Aptitude, S. Chand & Company Ltd., New Delhi, 2018.
2. V.S. Agarwala. Vedic Mathematics: Jagatguru Swami Sri Bharti Krsna Tirthaji Maharaja, Motilal Banarsi Das, New Delhi, 1965.

REFERENCE BOOKS RECOMMENDED:-
1. A. Guha. Quantitative Aptitude for Competitive Examinations by Abhijit Guha, Tata McGraw –Hill Pub. Co. Ltd. New Delhi.
2. E. Thorpe. Course in Mental Abilities and Quantitative Aptitude for Competitive Examinations, Tata McGraw Hill Pub. Co. Ltd. New Delhi, 2018.
3. Vedic Mathematics: Past, Present and Future, Siksha Sanskriti Uthana Nyasa, New Delhi.

MATHEMATICS
(SKILL ENHANCEMENT COURSE (OPTIONAL) FOR ALL STREAMS)
(SEC-III)
LATEX TYPESETTING
(THEORY)

Time: 3 Hours **L-T-P**
1-0-0
Marks: 25

Instructions for the Paper Setters: -
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Objective: The objective of this course is to understand the tips and techniques for writing mathematical document via LaTex.

SECTION–A

Installation of the software LaTex, Introduction to LaTex, mathematical symbols, commands for writing mathematical symbols, spacing, Line breaking and page breaking, commenting text.

SECTION–B

Title pages, Header and Footer, Text formatting, Essentials, troubleshooting, creating a title, sections, subsections, labelling, table of contents.

SECTION–C

Font effects, coloured text, font sizes, lists, comments and spacing, special characters, Practical for inserting tables and figures, subfigures.

SECTION–D

Inserting equations, mathematical symbols, inserting a bibliography, citing references, Beamer for making presentations.

TEXT BOOK RECOMMENDED:-

1. H. Kopka, P. W. Daly. Guide to LaTex, Addison-Wesley Professional, 4th Edition, 2003.

MATHEMATICS
(SKILL ENHANCEMENT COURSE (OPTIONAL) FOR ALL STREAMS)
(SEC-III)
LATEX TYPESETTING LABORATORY
(PRACTICAL)

Time: 3 Hours **L-T-P**
0-0-2
Marks: 50

List of Practicals using LaTeX

1. Introduction to LaTeX, preparing and running a .tex file.
2. Inserting tables and figures.
3. Spacing (horizontal and vertical), and adjusting page sizes.
4. Inserting line breaks, Foote notes.
5. Font Effects, Font sizes.
6. Write A Paragraph Containing Different colored text.
7. Use of special symbols like %, &,#,€,$ etc.
8. Mathematical symbols.
9. Write a mathematical text containing equations with equation numbers and unnumbered equations, and system of equations, arrays, matrices.
10. Spacing in math mode.
11. Preparing a bibliography using BibTeX
12. Drafting a document containing citations in text using different citation styles.
13. Beamer templates for making presentations.

TEXT BOOK RECOMMENDED:-

1. H. Kopka, P. W. Daly. Guide to LaTex, Addison-Wesley Professional, 4th Edition, 2003.