Vivekanand Education Society's

College of Arts, Science and Commerce

(Autonomous)

Sindhi Society, Chembur, Mumbai, Maharashtra – 400 071.

Accredited by NAAC "A Grade" in 3rd Cycle - 2017
Best College Award – Urban Area, University of Mumbai (2012-13)
Recipient of FIST Grant (DST) and STAR College Grant (DBT)

Affiliated to the

University of Mumbai

Syllabus for

Program: T.Y.B.Com.(Minor)

Department of Mathematics

As per Choice Based Semester and Grading System (CBSGS)
with effect from Academic Year 2025 - 2026

Course Learning Objective
The objective of this course is to equip students with the skills to confidently use Excel for business mathematics, including data entry, formatting, and essential functions. students will be able to understand the architecture and components of a computer system and explore file systems, operating systems, and application software relevant to commerce. Students will learn to perform arithmetic, logical, and financial calculations, create visualizations, and manage data efficiently.

Course Learning Outcomes
Students will be able to: ● Operate and navigate basic computer systems and applications. ● Practice safe, ethical, and responsible use of the internet and digital tools. ● Apply MS Excel tools for organizing, analyzing, and interpreting business data. ● Handle simple DBMS structures and perform CRUD operations. ● Solve business math problems like interest, profit, commission, and break-even using Excel. ● Work with financial functions and logic-based Excel operations.

Unit no.	Details of topics	No of lectures
1.	**Foundations of Computer Systems and Applications:** **Fundamentals of Computers :** Components of a computer system: Input, Output, CPU, Storage,Types of computers: Desktops, Laptops, Servers, Mobile devices, Operating Systems: Windows, Linux, Mobile OS,Concept of files, folders, drives **Software and Applications :**Types of Software: System, Application, Utility, Overview of productivity software: MS Office Suite (Word, Excel, PowerPoint), Open-source alternatives: LibreOffice, Google Workspace, Special commerce tools: Tally, ERP, SAP (overview only), Office Applications in Commerce. **Network Basics and Infrastructure:** Definition, Types (LAN, MAN, WAN) Advantages.Network Structures – Server Based, Client server, Peer to Peer.Topologies – Star, Bus, Ring. Network Media, Wired-Twisted Pair, Co-axial, Fiber Optic and Wireless –netwok. **Internet and Communication Tools:** Concept of Internet, WWW, Web browsers,Search Engines and Academic Search Strategies. Email: structure, etiquette, uses in commerce. Cloud computing and online storage (Google Drive,	15

	OneDrive), Definition, Types of connections, sharing internet connection, Hot Spots. Services on net- WWW, Email-Blogs. IP addresses, Domain names, URLs, Hyperlinks, Web Browsers. Searching Directories, Search engines, Boolean search (AND, OR, NOT), Advanced search, Meta Search Engines. Email – POP/SMTP accounts in Email, Different parts of an Email address. Receiving and sending emails with attachments by scanning attachments for viruses. Cyber Crime, Hacking, Sniffing, Spoofing **Cybersecurity and Digital Responsibility :** Types of digital threats: viruses, phishing, ransomware, Safe browsing practices and strong passwords, Introduction to cybersecurity laws and ethics in India, Digital footprint and responsible use of social media **Understanding Data and Databases:** What is data? Information vs. Data. Why databases are important in business. Traditional file systems vs. databases. Real-life examples (Retail billing, Banking, Inventory, HR)**.** What is a DBMS? Components of a DBMS (Tables, Records, Fields, Keys). Relational Model: Tables and Relationships.Primary Key, Foreign Key, ER Diagram (simple concept with 2–3 entities). CRUD operations (Create, Read, Update, Delete). Querying databases (Simple filters using Excel or access). Importance of data integrity and validation. Introduction to database applications in accounting, sales, HR.	
2.	**Introduction to MS-EXCEL** **Creating and navigating worksheets and adding information to worksheets:** Types of data, entering different types of data such as texts, numbers, dates, functions. Quick way to add data: Auto complete, Autocorrect, Auto fill, Auto fit. Undo and Redo. Moving data, contiguous and non-contiguous selections, and selecting with the keyboard. Cut-Copy, Paste. Adding and moving columns or rows, and inserting columns and rows. Find and replace values. Spell check. Formatting cells, Numbers, dates, Times, Font, Colors, Borders, fills. **Multiple Spreadsheets:** Adding, removing, hiding, and renaming worksheets. Add headers/Footers to a Workbook. Page breaks, preview. Creating formulas, inserting functions, cell references, Absolute, Relative (within a worksheet, other worksheets and other workbooks). **Data Analysis:** Sorting, Subtotal. Filter with customized conditions. Solver **Functions:** Database Functions LOOKUP, VLOOKUP, HLOOKUP Using Financial functions in Excel based on annuities, EMI such as FV, PV, PMT, PPMT, IPMT, NPER, RATE, NPV, IRR. Conditional Logic functions such as IF, COUNTIF, SUMIF and their applications. Mathematical and statistical functions. ROUND, ROUNDDOWN,	15

	ROUNDUP, CEILING, FLOOR, INT, MAX, MIN, MOD, SQRT, ABS, AVERAGE.	
3.	**MATHEMATICAL APPLICATIONS** Problem based on following concepts: **Simple Interest, Compound Interest:** Use Excel formulas to compute interest: $=P*R*T$ and compound interest $=P*(1+R)\wedge T$. Apply these to short-term business loans. **Present & Future Value:** Use built-in functions like $=PV()$ and $=FV()$ for monthly savings plans and recurring investments. Compare results with manual formulas. **Loan EMI Calculator:** Use $=PMT()$, $=IPMT()$, and $=PPMT()$ to calculate EMI breakdown. Create an amortization table showing principal and interest for each month. **Discount, Brokerage, Trade Discount, Commission:** Apply successive discount formulas using Excel and calculate selling prices. Use logical conditions (IF statements) to compute brokerage under tiered commission rules. Model real estate or insurance agent commissions. Percentages and Profit/Loss Calculation. Break-even & CVP Analysis **Linear Programing Problem (LPP) :** Using SOLVER to solve optimization problems.	15

Recommended Reference Books & Resources:

- *Fundamentals of Computers – V. Rajaraman*
- *Computer Fundamentals – P.K. Sinha*
- *Microsoft Excel Bible – John Walkenbach*
- *Business Mathematics – Qazi Zameeruddin, V.K. Kapoor*
- *Learn Microsoft Office Excel – Online Microsoft Docs and Tutorials*
- *Cybersecurity for Beginners – Raef Meeuwisse*
- *LibreOffice and Google Workspace Guides – Official Documentation*

Teaching Pattern

1. Three lectures of one hour per week.
2. One practical of 2 hours per week per batch.

Practicals:
1. Resume making using Canva.Using AI.
2. Autofill, Conditional formatting, Data validation
3. Sorting, Filtering, Subtotal
4. Cell referencing and Formulae

5. Logical and Conditional functions
6. Database functions
7. Financial functions
8. Mathematical and Statistical Functions
9. Solver
10. Projects

Modality of Assessment

The performance of the learners shall be evaluated by conducting the Semester End Theory Examination of 60 Marks and the Internal Examination of 40 Marks.

Overall Examination and Marks Distribution Pattern
SEMESTER V and VI

Course		Grand Total
Theory	**60**	**100**
Internal	**40**	

A. Theory - External examination - 60%   **60 marks**

    Semester End Theory Assessment
    Duration - Each paper shall be of 2 2-hour duration.

Theory question paper pattern:-
    For every unit (20 marks per unit):
    Attempt any FOUR sub-questions out of six based on each unit (5 marks each sub-question)

B. Theory - Internal assessment - 40%   **40 marks**

Sr. No.	Evaluation type	Marks
1	Written Exam	10
2	Practical	20
3	Journal and Attendance	10