

## FYCS/SYCS/SYIT Internal ATKT Syllabus ( Sept-2019)

---

### FY BSc Comp. Sci.

#### SEM- I

##### **SUB: Descriptive Statistics and Introduction to Probability**

Measures of Central tendency: Mean, Median, mode for grouped frequency distribution. Measures dispersion: Variance, standard deviation, coefficient of variation for grouped frequency distribution,

Quartiles, quantiles Real life examples, correlation, Karl Pearson's coefficients of correlation, Linear regression: fitting of linear regression using least square regression, coefficient of determination.

#### SEM- II

##### **SUB: Statistical Methods and Testing of Hypothesis:**

**Standard distributions:** Expectation and variance of a random variable, pmf, pdf, cdf, Introduction and properties without proof for following distributions; binomial, normal, chi-square, t, F. Examples

**Hypothesis testing:** one sided, two sided hypothesis, critical region, p-value, tests based on t, Normal and F, confidence intervals, one way analysis of variance.

### SY BSc Computer Sci.

#### SEM- III

##### **Sub: Combinatorics and Graph Theory**

Introduction to Combinatorics: Strings, Sets, and Binomial Coefficients: Strings- Combinations, Combinatorial, Induction: Introduction, The Positive Integers are Well Ordered,

Graph Theory: Eulerian and Hamiltonian Graphs, Graph Coloring, Planar Counting, Labeled Trees

Network Flows: Example on the Ford-Fulkerson Labeling Algorithm.

## FYCS/SYCS/SYIT Internal ATKT Syllabus ( Sept-2019)

---

### **SY BSc INFORMATION TECHNOLOGY**

#### **SEM III**

##### **SUB: Applied Mathematics**

Matrices: Inverse of a matrix, Properties of matrices, Rank of Matrix, Characteristics roots and characteristics vectors, Cayley Hamilton Theorem

Differential Equation: Separation of Variables, Exact differential Equation, Linear differential equation  $f(D)y = X$ , The complimentary Function, , Particular integral : Short methods, Particular integral

The Laplace Transform: Properties of Laplace Transformation, First Shifting Theorem, Second Shifting Theorem, Laplace Transform of an Integral, Laplace Transform of Derivatives,

#### **SEM IV**

##### **SUB: Computer Oriented Statistical Techniques**

The Mean, Median, Mode, and Other Measures of Central Tendency, Quartiles, Deciles, and Percentiles, statistical Decision Theory: Statistical Decisions, Statistical Hypotheses, Tests of Hypotheses and Significance, or Decision Rules, Type I and Type II Errors, Level of Significance, Tests Involving Normal Distributions, Two-Tailed and One-Tailed Tests; The Chi-Square Test for Goodness of Fit, Contingency Tables, The Least-Squares Regression Lines,

---

**Department of Mathematics**

**EVEN MID ATKT syllabus**

**FYBMS and FYBFM (Business statistics--SEM2)**

Arithmetic mean, median, mode for grouped and ungrouped data, combined mean, Quartiles, Percentile, Concept of dispersion, absolute and relative measures of dispersion, range, quartile deviation, coefficient of quartile deviation, variance, standard deviation, coefficient of variation.

**FYBFM (COMPUTER SKILLS-SEM2)**

**Module 1. Computer Hardware**

Personal Computers- identification/demonstration of different storage Devices like CD and CD drive, hard disk- HDD, storing and retrieving data from various storage devices, identification of various input and output devices. Primary memory, RAM and ROM- Processor- CPU, its speed- machine cycle, ports, computer buses, Different types of printers. Introduction to trouble shooting of personal computers.

**Module 2. Windows**

Introduction, features, various versions of windows, My computer, my documents, recycle bin, network neighbourhood, start menu, taskbar, file and folder operation (creating, copying, moving, deleting), system tools, creating shortcuts

**SYBAF (IT IN ACCOUNTANCY-II SEM-4)**

**MODULE 1 Business Process**

Introduction, Definition and Meaning of business process Flow of business process for accounting, purchase, sales and finance Classification of business processes Introduction, Definition and Meaning of Business Process Management Principles and practices of Business Process Management Business Process Management life cycle Theories of Business Management Process Implementation of Business process Management – need, key factors and importance Automation of business Processes – benefits, risks, challenges Accounting systems automation IT and Business Process Management Information systems – Meaning, Use of IT in accountancy

**MODULE 2 Computerized accounting system & Auditing**

Introduction and meaning Uses and Benefits Role Need and requirements of computerized accounting Basic requirements of computerized accounting system Limitations of computerized accounting system Understand the development and design of a computerized accounting system; determining how the accounting data will be processed, i.e. what accounts and books are needed and what is the desired output i.e. financial reports and other reports. Accounting Software Introduction and meaning Advantages of accounting software Uses of Accounting software Various accounting software Accounting software TALLY – Accounting and reports Understanding the need and importance of IT in auditing

**SYBMS (IT IN BUSINESS MANAGEMENT-II SEM-4)**

**MODULE 1-Management Information System**

• Overview of MIS Definition, Characteristics • Subsystems of MIS (Activity and Functional subsystems) • Structure of MIS • Reasons for failure of MIS. • Understanding Major Functional Systems Marketing & Sales Systems Finance & Accounting Systems Manufacturing & Production Systems Human Resource Systems Inventory Systems • Sub systems, description and organizational levels • Decision support system Definition Relationship with MIS • Evolution of DSS, Characteristics, classification, objectives, components, applications of DSS

**MODULE 2- ERP/E-SCM/E-CRM**

• Concepts of ERP • Architecture of ERP Generic modules of ERP • Applications of ERP • ERP Implementation concepts ERP lifecycle • Concept of XRP (extended ERP) • Features of commercial ERP software Study of SAP, Oracle Apps, MS Dynamics NAV, Peoplesoft • Concept of e-CRM E-CRM Solutions and its advantages, How technology helps? • CRM Capabilities and customer Life cycle Privacy Issues and CRM • Data Mining and CRM CRM and workflow Automation • Concept of E-SCM Strategic advantages, benefits E-SCM Components and Chain Architecture • Major Trends in e-SCM

**TYBMS : (OPERATION RESEARCH SEM-6)**

- a) Introduction To Operations Research
- Operations Research - Definition, Characteristics of OR, OR Techniques, Areas of Application, Limitations of OR.
- b) Linear Programming Problem • Introduction to Linear Programming • Applications of LPP • LPP Formulation (Decision Variables, Objective Function, Constraints, Non Negativity Constraints)
- c) Linear Programming Problems: Graphical Method • Maximization & Minimization Type Problems. (Max. Z & Min. Z) • Two Decision Variables and Maximum Three Constraints Problem • Constraints can be "less than or equal to", "greater than or equal to" or a combination of both the types i.e. mixed constraints. • Concepts: Feasible Region of Solution, Unbounded Solution, Redundant Constraint, Infeasible Solution, Alternative Optima.
- d) Assignment Problems, Hungarian Method to solve Assignment Problems.

**FYBAF:** Business Mathematics **(Sem - 2)**

Ratio- Definition, Continued ratio, Inverse Ratio. Proportion - Continued proportion, Direct proportion, Inverse proportion, Variation - Inverse variation, Joint variation, Percentage - Meaning and computation of percentage Terms and formulae, Discount - Trade discount, Cash discount, problems involving cost price, selling price, trade discount, cash discount. Commission and brokerage Problems based on a mix of above types can be included.

Matrices and Determinants : Symmetric matrices , Skew-symmetric matrices ,Diagonal Matrices with their examples. Finding inverse of a square matrix , if it exists by Adjoint method. Finding  $\text{Adj}(A)$  for any square matrix  $A$ . Solving System of equations by Cramer's Rule and Matrix inversion method. Properties of Matrices. Finding determinant of a square matrix . Evaluating determinants by using properties of determinants.

**SYCS:** Linear Algebra Using Python (Sem - 4)

Vector Space: Vectors are functions, Vector Space: Vectors are functions, Solving a triangular system of linear equations. Linear combination, Span, Linear systems, homogeneous, linearly dependent and linearly independent

Matrix: Matrices as vectors, vector-matrix multiplication in terms of linear combinations, Matrix-vector multiplication in terms of dot-products, Null space, Basis, Dimension: Dimension and rank, Dimension and linear functions, Gaussian elimination: Echelon form.

**K.J. Somaiya College of science and commerce**

**Department of mathematics**

**INTERNAL ATKT SYLLABUS OF FYBFM/FYBMS/SYBAF/SYBFM/SYBMS**

**FYBFM**

**SEM I**

**UNIT 1**

**BUSINESS MATHEMATICS**

Ratio- Definition, Continued ratio, Inverse Ratio. Proportion - Continued proportion, Direct proportion, Inverse proportion, Variation - Inverse variation, Joint variation, Percentage - Meaning and computation of percentage Terms and formulae, Discount - Trade discount, Cash discount, problems involving cost price, selling price, trade discount, cash discount. Commission and brokerage Problems based on a mix of above types can be included.

**UNIT 2**

**Financial Mathematics**

Interest - Simple interest, compound interest, Equated monthly instalments, reducing balance and flat rate of interest Annuity - Annuity immediate, present value and future value, Stated annual rate and effective annual rate Shares- Concept, face value, market value, dividend, Equity shares, preference shares, bonus shares. Mutual Fund- Simple problems on calculation of net income after considering entry load, exit load, dividend, change in net asset value

**FYBMS**

**SEM-I**

**UNIT 1**

**BUSINESS MATHEMATICS**

Ratio- Definition, Continued ratio, Inverse Ratio. Proportion - Continued proportion, Direct proportion, Inverse proportion, Variation - Inverse variation, Joint variation, Percentage - Meaning and computation of percentage Terms and formulae, Discount - Trade discount, Cash discount, problems involving cost price, selling price, trade discount, cash discount. Commission and brokerage Problems based on a mix of above types can be included.

**UNIT 2**

**Financial Mathematics**

Interest - Simple interest, compound interest, Equated monthly instalments, reducing balance and flat rate of interest Annuity - Annuity immediate, present value and future value, Stated annual rate and effective annual rate Shares- Concept, face value, market value, dividend, Equity shares, preference shares, bonus shares. Mutual Fund- Simple problems on calculation of net income after considering entry load, exit load, dividend, change in net asset value

## K.J. Somaiya College of science and commerce

### Department of mathematics

#### SYBAF

##### **SEMESTER III - IT IN ACCOUNTANCY- I**

###### **UNIT 1 Introduction to Computers**

History of Computers, Parts of Computers, Hardware: Specifications and Data Storage Management

Software: Concept of System Software and Applications, Networking: Introduction and types of network topologies

###### **UNIT 2 Office Productivity Tools**

**MS Word:** Creating, Editing, Formatting and Printing of Documents, Using Tools, Mailmerge and Print Review and Set-up

**MS Excel:** Creating Worksheet, Creating Various Formulae, Creating Charts, Rename and Copy of Worksheets, Using Tools, Printing Review and Set-up

**Power Point:** Create Project Report, Create Slides, Animation, Page Designing, Insert Image, View Page, Print Review and Set-up. Use of Tools In Accounting :- Preparation of vouchers, invoices and reports, Calculation of Interest, Depreciation, TDS, Salary, Taxes, inventory and reconciliation

#### SYBMS

##### **SEMESTER III -IT IN BUSINESS MANAGEMENT - I**

###### **UNIT 1 Introduction to IT Support in Management**

###### **Information Technology concepts**

Concept of Data, Information and Knowledge, Concept of Database

###### **Introduction to Information Systems and its major components.**

Types and Levels of Information systems. Main types of IT Support systems

Computer based Information Systems (CBIS)

Types of CBIS - brief descriptions and their interrelationships/hierarchies

Office Automation System(OAS), Transaction Processing System(TPS), Management

Information System(MIS), Decision Support Systems (DSS), Executive Information

System(EIS), Knowledge based system, Expert system, Success and Failure of Information

Technology. IT Development Trends.

Major areas of IT Applications in Management, Concept of Digital Economy and Digital Organization.

IT Resources, Open Source Software - Concept and Applications. Study of Different Operating Systems. (Windows / Linux/ DOS)

**K.J. Somaiya College of science and commerce**

**Department of mathematics**

**SYBFM**

**SEMESTER III- COMPUTER SKILLS**

**UNIT 1**

**Advanced Spreadsheet**

Pivot, Advanced formulae, Lookups, Macros, Working with other programmes, Inserting a spreadsheet sheet in word document, modifying an inserted spreadsheet, Inserting a linked chart in a Word Document, Inserting graphic in a spreadsheet

**UNIT 2**

**Data Based Management Systems**

Concepts, Tables, Fields, Datatypes, RDBMS, Primary Key, Foreign Key

---