

## B.Sc. ACTUARIAL AND FINANCIAL MATHEMATICS

### Program Syllabi

**Course Title** : Calculus-1  
**Course Code** : MTH101C  
**Credit hrs.** : 5

**Semester-1**

#### **Unit-I:**

The tangent and velocity problems, limit of a function,  $\varepsilon$ - $\delta$  definition of a limit, calculating limits using limit laws, continuity, limits at infinity, horizontal asymptote, derivatives and rates of change, derivative as a function.

#### **Unit-II:**

Derivatives of polynomial and exponential functions, product and quotient rule, derivatives of trigonometric functions, chain rule, implicit differentiation, derivatives of logarithmic functions, rates of change, exponential growth and decay, linear approximations and differentials

#### **Unit-III:**

Maximum and minimum values, the Mean Value Theorem, how derivatives affect the shape of a graph, indeterminate forms and L'Hospital's Rule, curve sketching, optimization problems

#### **Unit -IV:**

Antiderivatives, areas and distances, the definite integral, the Fundamental Theorem of Calculus, indefinite integral.

#### **Textbook:**

- Calculus – Early Transcendentals by James Stewart

#### **Supplementary books:**

- Calculus by Thomas and Finney. Morgan Kaufmann Pub.
- A First Course in Calculus - by Serge Lang,
- Calculus – by Howard Anton
- Integral Calculus - by Hari Krishan
- Calculus I & II by Tom Apostol

## B.Sc. ACTUARIAL AND FINANCIAL MATHEMATICS

**Course Title** : Computer Fundamentals  
**Course Code** : CSE103F  
**Credit hrs.** : 2+1

**Semester-1**

### **Unit-I:**

Introduction to Computers, A Simple Computer Model, Hardware and Software essentials of a computer, Need of computer in present world, Characteristics of computers, Evolution of Computers, Basic Operations of a computer System.

### **Unit-II:**

Input/output Units: Defining Input and Output units, types and description of Input-Output devices, Printing devices.

Storage: Primary memory, Memory Cell, Memory organization, ROM, RAM and its types, Secondary storage devices and its types.

### **Unit-III:**

System Software and utilities, Application Software, Licensed and Open source software's, Need of Operating Systems, Types of Operating systems, World Wide Web, How internet works, Benefits and drawbacks of using internet, LAN, WAN, MAN.

### **Unit-IV (LAB):**

Microsoft office (MS Word, MS Excel, MS PowerPoint), Introduction to Linux operating system.

Text Books:

1. Introduction to Computers by Peter Norton, Tata McGraw Hill.

### **Reference books:**

2. Computer Fundamentals by V. Rajaraman, Pearson Education.
3. Unix concepts and applications, Sumitabha Das, Tata McGraw Hill.

## B.Sc. ACTUARIAL AND FINANCIAL MATHEMATICS

**Course Title** : Management Process  
**Course Code** : SBS101C  
**Credit hrs.** : 4

**Semester-1**

### **Unit-1:**

Various approaches to management, process and functions of management, managerial role, managerial skill, Management environment scanning, approaches to counter environment. Management philosophy, values and value system.

### **Unit-II:**

Planning concepts, process, and parameters. Types of planning. Strategic planning concept and significance, planning for change. Management by objective concept and significance. The control process: concept and significance.

### **Unit-III:**

Importance of organization, formal organization elements: organizational chart. Division of labor, departmentation-methods of departmentation. Source of authority; the scalar chain of command, decentralization of authority. Responsibility-accountability.

### **Unit-IV:**

Distinctive features of the human resources, manpower planning, recruitment and selection: sources of recruitment, selection criteria. Motivation, meaning and approaches. Work motivation. Theories of motivation-Maslow need hierarchy. Herzbrg's motivation theory. Meaning of leadership, theories of leadership/ trait and situational theories. Management control and audits: accounting audit. The management audit: purpose and scope.

### **Suggested Readings:**

1. George R. Terry and Stephan G. Franklin, "Principles of Management".
2. Knootz, Harold and C.O. Dinell, "Management a system and contingency analysis of managerial functions".
3. Banerjee Shyam, "Principles and practices of management".

## B.Sc. ACTUARIAL AND FINANCIAL MATHEMATICS

**Course Title** : Professional Communication  
**Course Code** : ENG101F  
**Credit hrs.** : 3

**Semester-1**

**Unit-I:** Essentials of communication: Communication, its significance & Role. The process of communication, Barriers to communication. Methods of communication, verbal & non-verbal communication, Interpersonal communication, decoding body language.

**Unit-II:** Essentials of strong writing skills, language and style. Paragraph writing, developing perspective, Report writing, importance, structure, style and drafting of reports.

**Unit-III:**

Business correspondence, ramification of business letters, analyzing audience, purpose, layout & form and types. Proposal writing. Presentation skills, Tips for good communication, Interview etiquette, e-mail etiquette, telephone etiquette

**Textbooks:**

- Seely, John. Writing and Speaking Delhi: OUP
- Wallace, Michael J. Study Skills in English. New Delhi: CUP, 1998.
- Mohan, Krishna and Meera Banerji. Developing Communication Skill, Delhi: Macmillian, 1990.
- Sasikumar V., P. Kiranmai Dutt and Geetha Rajeevan. A Course in Listening and Speaking (I & II) Bangalore: Foundation Books, 2006.
- Chaturvedi, P.D and Mukesh Chaturvedi. Business Communication, Delhi: Pearson Education, 2006.
- Taylor, Shirley. Communication for Business New Delhi: Pearson Education, 1988.