CONTENTS

UNIT I – INTRODUCTION TO COMPUTERS **1-30**

Computers: Introduction to computers and their fundamental characteristics; history and evolution of computers; classification of computers; applications of computers in different domains; basic organization of a computer; input, processing, storage, and output operations; data representation; computer hardware and software; operating systems; introduction to computer networks and the Internet.

UNIT II – PROGRAMMING LANGUAGES **31-69**

Programming Languages: Introduction to programming and program development; program development life cycle; problem identification and problem-solving techniques; program design tools; algorithms; flowcharts; pseudocode; role of algorithms in software development; programming languages and their classification; programming paradigms; procedural programming; structured programming; modular programming; programming concepts; procedural units; functions and modules; declarative programming concepts; introduction to secure programming practices.

UNIT III – APPLICATION DEVELOPMENT **70-103**

Application Development: Introduction to application development and software development processes; problem-solving techniques for application development; requirements identification; application planning and design; platform selection; modeling; incremental and iterative development; software reuse; modularization; algorithmic thinking; abstraction; decomposition; testing and debugging; error identification and correction; software maintenance; introduction to secure and privacy-aware application development.

UNIT IV – INTRODUCTION TO CYBER SECURITY **104-147**

Cyber Security Fundamentals: Introduction to cybersecurity and information security; basic cybersecurity concepts; security objectives and principles; layers of security; vulnerabilities and threats; threat actors and attacker motivations; harmful cyber activities;

active and passive attacks; software-based attacks; hardware-based attacks; computer criminals and cybercrime; Internet governance, challenges, and constraints; the CIA Triad—Confidentiality, Integrity, and Availability; information assets and asset protection; security mechanisms; risk awareness and basic cybersecurity practices. These topics align with widely recognized foundational information-security concepts and security/privacy control principles.

UNIT V – PRIVACY ISSUES **148-187**

Data Privacy: Introduction to data privacy and fundamental privacy concepts; personal and sensitive information; data privacy attacks; data linking and profiling; privacy risks in digital systems; privacy policies and their specifications; privacy policy languages; privacy protection principles; data collection and sharing; privacy in web and mobile applications; privacy in healthcare, finance, education, and other domains; ethical considerations in handling personal information; development of privacy-aware systems.

REFERENCES **188**