COURSE CURRICULUM FRAMEWORK UNDER AUTONOMY

Program: B.Sc.
Department: Information Technology

Semester I		
Course code	**Course Title**	**Credits**
SBIT101	**Fundamentals of Programming with C and C++** Introduction to C Programming Functions, Arrays, Pointers Introduction to Object Oriented Programming, Classes, Constructers and Destructors Polymorphism, Virtual Functions, Inheritance, working with Files	2
SBIT101PR	**Fundamentals of Programming with C and C++ Practical**	2
SBIT102	**Computer Organisation & Architecture** Introduction, Operating Systems, User interfaces Memory System Organization, I/O Systems Number System, Logic Gates KMAP, Combinational Logic, Flip flop, Counters & Registers	2
SBIT102PR	**Computer Organisation & Architecture Practical**	2
SBIT103	**Web Programming** Internet and the World Wide Web, HTML5 HTML5 Page layout and navigation, Tables, Forms and Media Java Script, jQuery PHP, Advanced PHP and MySQL	2
SBIT103PR	**Web Programming Practical**	2
SBIT104	**Discrete Mathematics** The Logic of Compound Statements, Quantified Statements, Set Theory, Functions Relations, Graphs and Trees Elementary Number Theory and Methods of Proof, Sequences, Mathematical Induction, and Recursion Counting and Probability	2
SBIT104PR	**Discrete Mathematics Practical**	2
SBIT105	**Communication Skills** Introduction, The Process of Communication, Barriers to Communication Listening Skills, Reading Skills, Writing Skills Technical Writing, Technology based Communication Letter Writing, Non-verbal Communication and Body Language, Verbal aptitude Interview Skills, Different Types of Interviews, Group Discussion Presentation Skills	2
SBIT105PR	**Communication Skills Practical**	2

Semester II		
Course code	**Course Title**	**Credits**
SBIT201	**Python Programming** Introduction to Python Programming Datatypes, Functions Files, Exceptions, Regular Expression, Multithreaded programming, Modules Creating the GUI, Storing Data in MySQL Database, Web Frameworks, Django	2
SBIT201PR	**Python Programming Practical**	2
SBIT202	**Advanced Web Programming** Introducing XML React Introduction of Laravel PHP Framework Migrations, Eloquent ORM, Flask	2
SBIT202PR	**Advanced Web Programming Practical**	2
SBIT203	**Microprocessor and Embedded System** 8086 microprocessor architecture, pin diagrams and timing diagrams Instruction Set and Assembly Language Programming of 8086 Characteristics and quality attributes of embedded systems, Embedded Systems – Application and Domain Specific Designing Embedded System with 8051 Microcontroller The 8051 Microcontrollers, Programming embedded systems 8051 Programming in C, Real Time Operating System (RTOS), Design and Development:	2
SBIT203PR	**Microprocessor and Embedded System Practical**	2
SBIT204	**Computer Network** Introduction to Networks and the Physical Layer Data Link Layer, Network Layer, Transport Layer, Application Layer	2
SBIT204PR	**Computer Network Practical**	2
SBIT205	**Green Computing** Overview and Issues, Initiatives and Standards, Minimizing Power Usage, Cooling, Datacenter Design and Redesign, Changing the Way of Work Going Paperless, Recycling, Hardware Considerations Greening Your Information Systems, Staying Green	2
SBIT205PR	**Green Computing Practical**	2

Semester III		
Course code	**Course Title**	**Credits**
SBIT301	**Applied Mathematics** Matrices, Complex Numbers Equation of the first order and of the first degree, Differential equation of the first order of a degree higher than the first The Laplace Transform, Inverse Laplace Transform Multiple Integrals, Applications of Integral, Beta and Gamma Functions	3
SBIT301PR	**Applied Mathematics Practical**	2.5
SBIT302	**Applied Data Structures and Algorithms** Introduction, Array Linked List, Stack Queue, Sorting and Searching Techniques, Tree Advanced Tree Structures, Graph	2
SBIT302PR	**Applied Data Structures and Algorithms Practical**	2
SBIT303	**Operating System** Introduction to Operating system & Compiler Design, Processes and Threads Memory Management, File Systems, Secondary-Storage Structure Deadlocks, Protection and Security, Multiple Processor Systems Virtualization, Cloud, Migrating into a Cloud	3
SBIT303PR	**Operating System Practical**	2.5
SBIT304	**Databases and Transactions** Introduction to Databases, Relational database model and Design, Indexing Introduction to SQL and Constraints: Query Processing in SQL, User Privileges Introduction to PL / SQL, Control Blocks Transaction management and Concurrency	3
SBIT304PR	**Databases and Transactions Practical**	2.5
SBIT305	**Core Java with JSP** Introduction to OOPS & Java, Packages, Arrays Multithreading, Exceptions, Byte streams, Debugging, GIT Basics Event Handling, Abstract Window Toolkit, Swing, JDBC Introduction to JSP	3
SBIT305PR	**Core Java with JSP Practical**	2.5

Semester IV		
Course code	**Course Title**	**Credits**
SBIT401	**.Net Technologies with MVC** Introduction to C# & .Net, XML Web Form Controls, Navigation Controls: Getting Started with MVC: Entity Framework, ASP.NET MVC & LINQ, a Web application The ASP.NET Web API	3
SBIT401PR	**.Net Technologies with MVC Practical**	2.5
SBIT402	**Physical Computing and IoT Programming** Introduction and system Architecture IP as the IoT Network Layer, Application Protocols for IoT, Security and Privacy in the Internet of Things Prototyping Embedded Devices, IoT Platform Design Methodology Data and Analytics for IoT, IoT physical Servers and cloud offerings	3
SBIT402PR	**Physical Computing and IoT Programming Practical**	2.5
SBIT403	**Computer Oriented Numerical and Statistical Techniques** Introduction to Quantitative Data: Measures of Central Tendency Moments, Skewness, and Kurtosis, Elementary Sampling Theory, Distributions Statistical Decision Theory, Small Sampling Theory, The Chi-Square Test Curve Fitting and the Method of Least Squares: Correlation Theory: Theory of Estimation	3
SBIT403PR	**Computer Oriented Numerical and Statistical Techniques Practical**	2.5
SBIT404	**Software Methodologies and Management** Introduction, Software Development Process Models, Agile software development, Software Requirements: Requirements Engineering Processes, System Models, User Interface Design, Development Process Models Quality Management. Software Measurement and Metric, Software Cost Estimation, Process Improvement Software reuse, Fundamentals of testing, Test design techniques	2
SBIT404PR	**Software Methodologies and Management Practical**	2
SBIT405	**Advanced Networks and Security** General Network Design, Network Design Models Information Security Overview Enterprise LAN Design, Data Center Design Wireless LAN Design, WAN Technologies and the Enterprise Edge Secure Design Principles, Authentication and Authorization	3

	Encryption, Firewalls, Wireless and WAN Security Intrusion Detection and Prevention Systems	
SBIT405PR	**Advanced Networks and Security Practical**	2.5

Semester V		
Course code	**Course Title**	**Credits**
SBIT501	**Theory of Computing** Finite Automata Regular Expressions, Regular Grammars Context Free Grammar, Pushdown Automata Turing Machines, Recursive And Recursively Enumerable Languages	2
SBIT501PR	**Project Dissertation and Implementation**	3
SBIT502	**Unity** Working with Unity, Scripting, Input Math, 2D & 3D Graphics Physics and Character Control, Animation and Movement, Gameplay Behavior and AI, Sound and Music, User Interface	3
SBIT502PR	**Unity Practical**	3
SBIT503	**Mobile Application Development** Introduction to Android, Activities, Fragments and Intents Android User Interface, Views, Menus and Services Databases, XML Parsing SAX, JSON Parsing, Messaging and E-mail, Location-Based Services and Google Map Introduction of Interface, Swift, iOS UI Controls & Container Views	3
SBIT503PR	**Mobile Application Development Practical**	3
SBIT504	**AI and Soft Computing** Introduction, Intelligent Agents, Problem Solving, Knowledge Representation Conceptual Graphs, Automated Reasoning, Understanding Natura Language Introduction to soft computing, Neural Networks Genetic Algorithm, Fuzzy System	3
SBIT504PR	**AI and Soft Computing Practical**	3
SBIT505	**Service Oriented Architecture with JAVA** Introduction to Jakarta EE8, The SOA Introduction to Java Web Services, SOAP JAXB, XML-Based (Bare) Web Services	3

	Introduction to Enterprise Javabeans, Interceptors, EJB-Based Web Services	
SBIT505PR	**Service Oriented Architecture with JAVA Practical**	3

Semester VI		
Course code	**Course Title**	**Credits**
SBIT601	**IT Infrastructure Management** Introducing Windows 10, MS SCCM Basics Overview of System Center 2012 R2 Operations Manager, Planning & Installation Administration, Management Packs Monitoring Overview	2
SBIT601PR	**Project Dissertation and Implementation**	3
SBIT602	**Cloud Computing and Devops** Cloud Computing Fundaments, Architecture and Management, Cloud Deployment Models, Cloud Service Models, Choosing the Right Cloud Service Model Cloud Service Providers, Open Source Softwares available for the Cloud Deployment, Technological Drivers for Cloud Computing Cloud Security, Advanced Concepts in Cloud Computing, DevOps Concepts and Assessment Framework Tracking code, Continuous Integration, Containers	3
SBIT602PR	**Cloud Computing and Devops Practical**	3
SBIT603	**Machine Learning and Deep Learning** Introduction, Supervised learning Classification, Unsupervised learning Introduction to Deep Learning Recurrent Neural networks (RNNs), Image to Image Translation	3
SBIT603PR	**Machine Learning and Deep Learning Practical**	3
SBIT604	**Big Data with NoSQL** Introduction to Big Data & Hadoop Introduction to MAPREDUCE Programming, Hive, Pig NoSQL, MongoDB, Key Value Data stores Column Database, Graph Databases, Introduction to Cassandra	3
SBIT604PR	**Big Data with NoSQL Practical**	3
SBIT605	**Cyber Security and Forensics** Introduction to Ethical Hacking, Ethics, and Legality, Gathering I Information, Network and Host Information, Cryptography System Hacking, Trojans, Backdoors, Viruses, and Worms, Web Hacking, Attacking Applications Introduction to IT Act 2000 and its amendments, Computer Forensics, Incident response	3

	Network Forensics, Attacks, Report writing	
SBIT605PR	**Cyber Security and Forensics Practical**	3