

Department of Information Technology
Sikkim Manipal Institute of Technology

Course Outcomes

III SEMESTER

Srl. No.	Semester	Subject Code	Subject Name	Course Outcomes
1.	III	MA302	ENGINEERING MATHEMATIC -III	<p>CO1 Identify and apply the different theorems and properties of Boolean Algebra in simplifying Boolean Expressions.</p> <p>CO2 Use concepts of Group theory to the model real-world problems.</p> <p>CO3 Develop ability to handle complex integrations appearing in different engineering areas</p> <p>CO4 Make connections between the concepts of Fourier analysis and applications in the field of Signal processing, Image processing etc</p>
2.		IT1302	DATA STRUCTURES	<p>CO1 Students will be able to define basic data structures essential for developing computer programs.</p> <p>CO2 Students will be able to identify complexities of different data structures.</p> <p>CO3 Students will be able to select appropriate data structure, and apply for problem solving.</p> <p>CO4 Students will be able to use searching and sorting techniques for problem solving.</p>
3.		IT 1303	SOFTWARE ENGINEERING	<p>CO1 Know all the phases of software development</p> <p>CO2 Manage a project including planning, scheduling and risk assessment/ management.</p> <p>CO3 Recognize the requirements and specifications for software development.</p> <p>CO4 Comprehend coding and unit testing techniques of software development.</p>
4.		IT1304	DIGITAL CIRCUITS AND LOGIC DESIGN	<p>CO1 Develop a digital logic and apply it to solve real life problems</p> <p>CO2 Analyze, design and implement combinational logic circuit.</p>



				<p>CO3 Analyze, design and implement sequential logic circuits</p> <p>CO4 Classify different semiconductor memories.</p>
5.		IT 1305	APPLIED ELECTRONICS	<p>CO1 understand the concept of PN junction diode, some special purpose diodes, regulated power supply and its application.</p> <p>CO2 get knowledge about various transistor configuration, its operation, transistor as amplifier, junction field effect transistor and metal oxide semiconductor field effect transistors</p> <p>CO3 gather knowledge on op-amp, its characteristics, and applications</p> <p>CO4 get idea about IC 555 timer and its application as multivibrator</p>
6.		IT 1306	NUMERICAL TECHNIQUES	<p>CO1 Analyze and evaluate the accuracy of common numerical methods</p> <p>CO2 Predict any unknowns from given data sets</p> <p>CO3 Apply numerical methods to solve simultaneous equations and matrix inversion</p> <p>CO4 Obtain approximate solutions to mathematical problems</p>
7.		IT 1362	DATA STRUCTURES LAB	<p>CO1 Will be able to learn linear and non-linear data structures.</p> <p>CO2 Will be able to implement programs using recursion.</p> <p>CO3 Will be able to implement searching methods.</p> <p>CO4 Will be able to implement sorting methods.</p>
8.		IT 1348	DIGITAL CIRCUIT AND LOGIC DESIGN LAB	<p>CO1 To determine the various logic gates and its functionalities</p> <p>CO2 To evaluate Boolean algebra and design it using logic gates.</p> <p>CO3 To analyze and design various combinational circuits</p> <p>CO4 Design and develop various sequential circuits</p>
9.		IT 1349	APPLIED ELECTRONICS LAB	<p>CO1 understand the concept of PN junction diode, some special purpose diodes, regulated power supply and its application.</p> <p>CO2 get knowledge about various transistor configuration, its operation, transistor as amplifier, junction field</p>



				effect transistor and metal oxide semiconductor field effect transistors CO3 gather knowledge on op-amp, its characteristics, and applications CO4 get idea about IC 555 timer and its application as multivibrator
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IV SEMESTER

Srl. No.	Semester	Subject Code	Subject Name	Course Outcomes
1.	IV	MA 1404	ENGINEERING MATHS-IV	CO1 Explain the concept of probability, random variables, Differentiate the ideas between discrete and continuous random variable CO2 Students are made aware of fundamentals of probability and statistical theories CO3 Students are made capable of applying the knowledge of probability and statistics to analyze different real world situations CO4 Random process, Markov process and Markov chains which are essentially models of many time dependent processes such as signals in communications, time series analysis
2.		IT 1402	COMPUTER ORGANIZATION AND ARCHITECTURE	CO1 Describe the fundamental organization of a computer system. CO2 Identify the functional units of the processor and the factors affecting its performance. CO3 Identify and distinguish the organization of various parts of a system memory hierarchy CO4 Analyze design principles & implement concepts of computer architecture
3.		IT 1403	OBJECT ORIENTED PROGRAMMING WITH C++	CO1 To understand the difference between the procedures oriented programming and object oriented programming. CO2 To apply the concept of object oriented programming to solve the real world problems. CO3 To illustrate the process of data file manipulations using C++ CO4 To apply virtual and pure virtual function & complex programming situations.



4.	IT 1404	DATABASE MANAGEMENT SYSTEMS	<p>CO1 Understand the advantages and structure of DBMS.</p> <p>CO2 Design and implement a database schema for a given problem domain & apply queries using SQL to retrieve required information from databases</p> <p>CO3 Apply normalization techniques on a given database design</p> <p>CO4 Understand transactions, database recovery techniques and security issues</p>
5.	IT 1405	INTRODUCTION TO SIMULATION AND MODELLING	<p>CO1 To explain various tools necessary for simulation and concept of systems</p> <p>CO2 Illustrate queuing systems and general principles behind discrete event simulation</p> <p>CO3 Explain various statistical models necessary for simulation</p> <p>CO4 Evaluate various simulation models</p>
6.	IT 1406	FORMAL LANGUAGE AND AUTOMATA	<p>CO1 Understand the basic properties of formal languages and grammars.</p> <p>CO2 Design grammars and automata (recognizers) for different language classes.</p> <p>CO3 Construct algorithms for different problems and identify the correctness on different restricted machine models of computation.</p> <p>CO4 Acquire concepts relating to the theory of computation and computational models including decidability and intractability.</p>
7.	IT 1461	OPS WITH C++ LABORATORY	<p>CO1 To develop program to show the differences between the procedures oriented programming and object oriented programming.</p> <p>CO2 To apply the concept of object oriented programming to solve the real world problems.</p> <p>CO3 To illustrate the process of data file manipulations using C++</p> <p>CO4 To apply virtual and pure virtual function & complex programming situations.</p>
8.	IT 1462	DATABASE MANAGEMENT SYSTEMS LAB	<p>CO1 Understanding of the Basic data retrieval techniques</p> <p>CO2 Understanding of SQL</p>



				<p>CO3 Implementation of database constraints</p> <p>CO4 Implementation of correlating multiple databases</p>
9.		IT 1463	COMPUTER ORGANIZATION AND ARCHITECTURE LAB	<p>CO1 An ability to understand theory of Digital Design and Computer Organization to provide an insight of how basic computer components are specified.</p> <p>CO2 An ability to understand the functions of various hardware components and their building blocks</p> <p>CO3 An ability to understand computer buses and input/output peripherals</p> <p>CO4 An ability to understand memory hierarchy and design of primary memory</p>

V SEMESTER

Srl. No.	Semester	Subject Code	Subject Name	Course Outcomes
1.	V	IT1501	ARTIFICIAL INTELLIGENCE	<p>CO1 Explain the basic concepts of Artificial Intelligence</p> <p>CO2 Interpret basic concepts of production system and various search algorithm</p> <p>CO3 Illustrate basic concepts of knowledge representation</p> <p>CO4 Explain the basic concepts of game playing, planning, understanding, learning and expert systems</p>
2.		IT1502	COMPUTER GRAPHICS	<p>CO1 Students are provided an understanding of how a computer generates the fundamental graphics output primitives.</p> <p>CO2 Students are given the knowledge regarding methods involved in generating 2-D graphics operations. It includes coordinate systems and transformations.</p> <p>CO3 Students are given the knowledge regarding methods involved in viewing and clipping</p> <p>CO4 Students are given the knowledge regarding methods involved in 3D graphics transformation operations.</p>



3.		IT1503	MICROPROCESSOR	<p>CO1 Student will be able to recall and apply a basic concept of digital fundamentals to Microprocessor based personal computer system.</p> <p>CO2 Student is able to describe the architecture and different modes of operations of an 8085 microprocessor.</p> <p>CO3 Student will be able to understand different addressing modes and instructions of 8085, design and develop assembly language programs using software interrupts, subroutines, macros</p> <p>CO4 Student is able to interface memory, I/O devices and interrupt controller with 8085 microprocessors</p>
4.		IT1504	OPERATING SYSTEM	<p>CO1 Students will be able to understand concepts and definitions associated with Computer Operating Systems.</p> <p>CO2 Students are made aware of Operating System design principles.</p> <p>CO3 Students will have knowledge regarding fundamental operating system abstractions such as processes, threads, files, semaphores, IPC, shared memory regions, etc.</p> <p>CO4 Students will be able to understand, analyze and apply the concepts of different scheduling algorithms, Process Synchronization techniques, Deadlock, Memory Management, File management and I/O Management.</p>
5.		IT1505	DESIGN AND ANALYSIS OF ALGORITHM	<p>CO1 Understand the different standard approaches of algorithm design as well as the relevance of space – time complexity for practical applications and performance measurement.</p> <p>CO2 Design effective, efficient, elegant and readable algorithms for various classes of computing problems.</p>



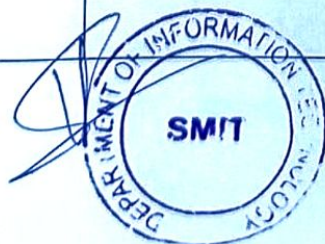
			<p>CO3 Analyze benchmarked or existing algorithms to choose the most optimal ones as per their requirement.</p> <p>CO4 Apply the above mentioned concepts while working with Back Tracking and Branch & Bound.</p>
6.	BA 1510	INDUSTRIAL MANAGEMENT	<p>CO1 To provide basic knowledge of functions of management along with their practical implications</p> <p>CO2 To enable students to use the available resources to achieve the desired goal in a more efficient and effective way.</p> <p>CO3 To help students to understand the importance of management-worker relation inside the organization.</p> <p>CO4 To help them to understand of employee behavior in order to solve workplace problem</p>
7.	IT 1561	COMPUTER GRAPHICS LABORATORY	<p>CO1 Understanding of the standard graphics library</p> <p>CO2 Implementation algorithms for output primitives in 2D graphics</p> <p>CO3 Implementation of 2D transformations processes</p> <p>CO4 Implementation of 2D viewing and clipping</p>
8.	IT 1562	MICROPROCESSOR LABORATORY	<p>CO1 To illustrate the architecture and Instruction set of Intel 8085 microprocessor.</p> <p>CO2 To determine programming strategies and select proper mnemonics and run their program on the training boards</p> <p>CO3 To demonstrate the fundamentals of assembly level programming of microprocessors and provide practical hands on experience with Assembly Language Programming</p> <p>CO4 To solve different problems by developing different programs and apply a combination of hardware and software to address the problem</p>



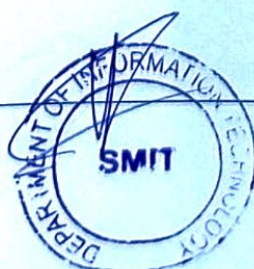
9.		IT 1563	OPERATING SYSTEM LABORATORY	<p>CO1 Students will be made aware of the basic Concept of Linux/Unix Operating System, usage of different Commands, and System Calls.</p> <p>CO2 Students will be able to understand and analyze the concepts of different CPU Scheduling, Process Synchronizations, Deadlock Handling, and Memory Management Techniques.</p> <p>CO3 Students will be able to apply and demonstrate the concepts of different CPU Scheduling, Process synchronization techniques.</p> <p>CO4 Students will be able to apply and demonstrate the concepts of different deadlock handling and memory management techniques.</p>
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VI SEMESTER

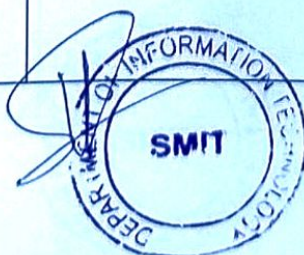
Srl. No.	Semester	Subject Code	Subject Name	Course Outcomes
1.	VI	IT 1601	JAVA PROGRAMMING	<p>CO1 Provide an overview of the Java Programming Language and introduce the concepts of datatypes, variables, arrays, operators, control statements in Java.</p> <p>CO2 Introduce the concepts of class template, methods, inheritance in Java.</p> <p>CO3 Develop the fundamentals of packages, interfaces and exception handling to create full-fledged non-GUI Java applications.</p> <p>CO4 Understand the concepts of thread and enumeration in Java to write programs for maximum utilization of the CPU and create web-based Java applets.</p>
2.		IT 1602	COMPUTER NETWORKS	<p>CO1 Understand fundamental of computer networks, reference models, and types of networks such</p>



			as LAN, MAN, WAN, Internet and wireless networks. CO2 Understand and analyze different channel access mechanisms and LAN standards. CO3 Understand, analyze, apply different services and protocols related to Network layer, Transport layer CO4 Understand, apply, and develop different services and protocols related application layer.
3.		IT 1603	MICROCONTROLLER CO1 To understand the architecture and internal organization to 8051 microcontroller CO2 To be able to classify the various instruction and addressing modes of 8051 microcontroller CO3 To illustrate the basic assembly language programming concepts CO4 To explain the basic concepts of interface memory, I/O devices and interrupt controller with 8051 microcontroller.
4.		IT 1604	SYSTEM PROGRAMMING CO1 Define the architecture of a hypothetical machine, its assembly language, macro language, loaders, linkers, compilers. CO2 Describe the structure and design of assemblers, linkers and loaders. CO3 Describe the structure and design of macros. CO4 Explain the concepts and theory behind the compilers and debugger.
5.		IT 1605	DIGITAL IMAGE PROCESSING CO1 To be able to explain the basic concepts and application areas of image processing CO2 To be able to apply image enhancement and image restoration techniques CO3 To be able to apply the colour image processing CO4 To be able to apply image compression, segmentation, representation and description techniques



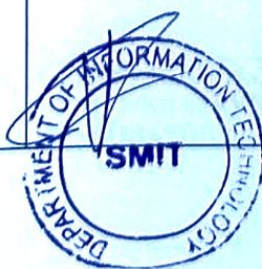
6.		IT 1631	OBJECT ORIENTED MODELLING AND DESIGN	<p>CO1 To introduce the concept of modeling in general and to give an overview of object-oriented methodologies.</p> <p>CO2 To introduce advanced concepts of object modeling such as link, attributes, link class, role names, ordering qualifiers etc.</p> <p>CO3 To analyse and model dynamic behavior of a system through scenario, event-trace diagram and state diagram.</p> <p>CO4 To apply the knowledge of object oriented concepts for solving system modeling and design problems.</p>
7.		IT 1661	JAVA PROGRAMMING LABORATORY	<p>CO1 Create Java programs using the basic concepts of class, datatypes, variables, and arrays, operators etc.</p> <p>CO2 Use the concepts of control statements, methods, inheritance etc. in Java programs.</p> <p>CO3 Build packages and interfaces and develop multi-threaded Java models for synchronizing as well as interthread communications & work with enumeration and metadata annotations.</p> <p>CO4 Develop I/O applets.</p>
8.		IT 1662	COMPUTER NETWORKS LABORATORY	<p>CO1 To get acquainted with Linux /Unix system internals for Inter Process Communication.</p> <p>CO2 To understand the concept of Inter Process Communication and client/server architecture in application development.</p> <p>CO3 To understand how to use TCP and UDP based socket APIs and their differences.</p> <p>CO4 To design reliable servers applications using both TCP and UDP sockets</p>
9.		IT 1663	SYSTEM PROGRAMMING LABORATORY	<p>CO1 Demonstrate Linux commands.</p> <p>CO2 Implement symbol table for a given assembly language program.</p> <p>CO3 Implement single pass, two pass assembler.</p>



				CO4 Experiment with macro processing.
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VII SEMESTER

Srl. No.	Semester	Subject Code	Subject Name	Course Outcomes
1.	VII	IT 1701	CRYPTOGRAPHY AND NETWORK SECURITY	<p>CO1 Students will be able to describe different security attacks and services.</p> <p>CO2 Students will have the fundamental understanding of the objectives of cryptography and network security.</p> <p>CO3 Students will be able to analyze and apply different cryptographic techniques that can be used for information and network security.</p> <p>CO4 Students will be able to evaluate the security of communication systems, networks, and protocols based on a multitude of-security.</p>
2.		IT 1702	WEB TECHNOLOGY AND WEB SERVICES	<p>CO1 To understand the web essentials such as Client, Server and communication.</p> <p>CO2 To be able to apply the concept of web programming by implementing the server side and client side programming.</p> <p>CO3 To be able to illustrate the web data representation and services.</p> <p>CO4 To illustrate the use of web server and client.</p>
3.		IT 1703	EMBEDDED SYSTEMS	<p>CO1 To understand the basic concepts of embedded system and familiarization with embedded processor and its applications.</p> <p>CO2 To summarize the internal organization and architecture of an embedded system.</p> <p>CO3 To be able to apply the concepts of programming environment to develop embedded solutions.</p> <p>CO4 To be able to analyze the hardware and software design requirements of an embedded system.</p>



4.		IT 1704	MULTIMEDIA COMPUTING AND COMMUNICATION	<p>CO1 To build advanced multimedia computing applications comprising of images, videos, and audio and understand core multimedia technologies.</p> <p>CO2 To understand the important multimedia computing methods by presenting a comprehensive coverage of the underlying content processing, content transformation and resource optimization techniques in a variety of systems such as multimedia information retrieval, conferencing, surveillance and security.</p> <p>CO3 Formulate novel approaches for future multimedia computing applications.</p> <p>CO4 Understand the relevance and underlying infrastructure of the multimedia systems. Be aware of factors involved in multimedia systems performance, integration and evaluation.</p>
5.		IT 1732	MOBILE AD-HOC NETWORKS	<p>CO1 Explain basic concepts behind different networks such as wireless LAN, PAN, WAN and MAN</p> <p>CO2 Illustrate various protocols of MANET such as medium access control, routing and transport layer protocol.</p> <p>CO3 Explain different security issues and security protocols of MANET along with energy management issues</p> <p>CO4 Explain basic concepts of wireless sensor networks</p>
6.		IT 1739	PATTERN RECOGNITION	<p>CO1 Understanding of the basic principles and concepts of pattern recognition systems (PR)</p> <p>CO2 Understanding of supervised learning techniques of pattern recognition systems</p> <p>CO3 Understanding of unsupervised learning techniques of pattern recognition systems</p> <p>CO4 Understanding of syntactic pattern recognition</p>
7.		IT 1761	WEB TECHNOLOGY AND WEB SERVICES LABORATORY	<p>CO1 To be able to design web pages.</p>



				<p>CO2 To be able to create dynamic web pages.</p> <p>CO3 To be able to illustrate the web data representation and services.</p> <p>CO4 To be able to apply the concept of web programming by implementing the server side and client side programming.</p>
8.		IT 1762	MULTIMEDIA COMPUTING AND COMMUNICATION LABORATORY	<p>CO1 Perform basic mathematical operations in MATLAB</p> <p>CO2 Perform text processing in MATLAB</p> <p>CO3 Perform image processing in MATLAB</p> <p>CO4 Perform audio and video processing in MATLAB</p>
9.		IT 1771	MINI PROJECT	<p>CO1 To be able to illustrate understanding of the important stages involved in development of the project.</p> <p>CO2 To understand methodologies and professional way of documentation and communication</p> <p>CO3 To understand methodologies and professional way of documentation and communication</p> <p>CO4 To formulate innovative thinking thereby preparing students for major project</p>
10.		IT 1781	INDUSTRIAL TRAINING & SEMINAR	<p>CO1 To be able to apply the fundamental principles of engineering, knowledge and concepts to real time industrial situation.</p> <p>CO2 To efficiently illustrate communication skills, strength, teamwork spirit and self-confidence which will enable the students to enhance their creativity skills.</p> <p>CO3 To understand the impact of engineering solutions and industrial safety in a global and social context.</p> <p>CO4 To be able to identify the latest trends and changes in technology.</p>



VIII SEMESTER

Srl. No.	Semester	Subject Code	Subject Name	Course Outcomes
1.	VIII	IT 1875	MAJOR PROJECT	<p>CO1 Discover potential research areas in the field of IT</p> <p>CO2 To demonstrate a sound technical knowledge of their selected project topic and identify challenges in their area of interest.</p> <p>CO3 To develop effective communication skill by delivering presentations based on topic assigned</p> <p>CO4 Demonstrate the knowledge, skills and attitudes of a professional engineer.</p>

