

Course Outcomes

<i>Course Code</i>	<i>Course Name</i>	<i>Course Outcomes</i>
CS-201/101	Computer System Programming	<ol style="list-style-type: none">1. Able to have fundamental knowledge on basics of computers hardware and number systems.2. Able to understand the basic terminology used in computer programming3. Able to write, compile and debug programs in C language.4. Able to use different data types in a computer program.5. Able to design programs involving decision structures, loops and functions.6. Able to understand the dynamics of memory by the use of pointers.7. Able to use different data structures and create/update basic data files.
CS-191/291	Computer Programming Lab	<ol style="list-style-type: none">1. Able to have fundamental concept on basics commands in Linux.2. Able to write, compile and debug programs in C language.3. Able to formulate problems and implement algorithms in C.4. Able to effectively choose programming components that efficiently solve computing problems in real-world.
CS-301	Data Structures & Algorithms	<ol style="list-style-type: none">1. Able to understand the concepts of data structure, data type and array data structure.2. Able to analyze algorithms and determine their time complexity.3. Able to implement linked list data structure to solve various problems.4. Able to understand and apply various data structure such as stacks, queues, trees and graphs to solve various computing problems using C-programming language.

CS-391

Data Structures
Laboratory

5. Able to implement and know when to apply standard algorithms for searching and sorting.
6. Able to effectively choose the data structure that efficiently model the information in a problem
1. Able to understand the importance of structure and abstract data type, and their basic usability in different applications through different programming languages.
2. Able to analyze and differentiate different algorithms based on their time complexity.
3. Able to understand the linked implementation, and its uses both in linear and non-linear data structure.
4. Able to understand various data structure such as stacks, queues, trees, graphs, etc. to solve various computing problems.
5. Able to implement various kinds of searching and sorting techniques, and know when to choose which technique.
6. Able to decide a suitable data structure and algorithm to solve a real world problem.

IT-301

Object Oriented
Programming

- 1) Able to differentiate between structures oriented programming and object oriented programming.
- 2) Able to use object oriented programming language like C++ and associated libraries to develop object oriented programs.
- 3) Able to understand and apply various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using C++ language.
- 4) Able to apply concepts of operator-overloading, constructors and destructors.

IT-391

Object Oriented
Programming Lab

- 5) Able to apply exception handling and use built-in classes from STL.
1. To be able to apply an object oriented approach to programming and identify potential benefits of object-oriented programming over other approaches.
2. To be able to reuse the code and write the classes which work like built-in types.
3. To be able to design applications which are easier to debug, maintain and extend.
4. To be able to apply object-oriented concepts in real world applications.

CS-502

Design and Analysis of
Algorithms

1. Able to understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
2. Able to understand the difference between process & thread, issues of scheduling of user-level processes / threads and their issues & use of locks, semaphores, monitors for synchronizing multiprogramming with multithreaded systems and implement them in multithreaded programs.
3. Able to understand the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system.
4. Able to understand the design and management concepts along with issues and challenges of main memory, virtual memory and file system.
5. Able to Able to understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.
6. Able understand the classes P, NP, and NP-Complete and be able to prove that a certain problem is NP-Complete.

CS-505/ 605 Computer Organization & Architecture

1. Ability to understand how computer hardware has evolved to meet the needs of multiprocessing systems, Instruction Set Architecture: Instruction format, types, various addressing modes.
2. Ability to understand the basic components and design of the CPU: the ALU and control unit.
3. Understand the memory organization: SRAM, DRAM, concepts on cache memory, Memory Interleaving, Associative memory, Virtual memory organization.
4. Ability to understand the parallelism both in terms of a single processor and multiple processors.
5. Understand the I/O Organization: Basics of I/O, Memory-mapped I/O & I/O mapped I/O, Types of I/O transfer: Program controlled I/O, Interrupt-driven I/O, DMA.

CS-503/ 603 Microprocessors & Interfacing

1. Able to understand the architecture and organization of microprocessor along with instruction coding formats.
2. Able to understand, write structured and well-commented programs in assembly language and in a higher-level language with an ability to test and debug them in the laboratory.

EC-506/406 Introduction to Digital Communication

3. Able to understand the memory and addressing concepts for interfacing I/O devices to the microprocessor.
4. Able to understand software/ hardware interrupts and further write programs to perform I/O using handshaking and interrupts.
5. Able to have an understanding of digital interfacing and system connections.

1. Students will be able to analyze signals in time and frequency domain.
2. Students will be able to identify different analog modulation schemes; analyze and solve typical problems involving analog modulation/demodulation systems.
3. Students will be able to distinguish between different pulse modulation systems, multiplexing techniques and analyse PCM systems including effects of noise.
4. Students will be able to identify different digital modulation schemes, and design corresponding modulators/demodulators. They will be able to distinguish between different network topologies, protocols, data - flow and error control techniques, sand between synchronous and asynchronous transmission.
5. Students will be able to solve fundamental problems on entropy, information rate, source coding, coding efficiency and channel capacity.

CS-593/ 693 Microprocessor Lab

1. Able to understand and gain the knowledge of computer hardware.
2. Able to configure computer systems.
3. Able to do various port programming
4. Able to do Assembly language programming for 8086 microprocessor.
5. Able to do TSR programming with interrupt

CS-401/ 501	Operating Systems	<ol style="list-style-type: none"> 1. Able to understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications. 2. Able to understand the difference between process & thread, issues of scheduling of user-level processes / threads and their issues & use of locks, semaphores, monitors for synchronizing multiprogramming with multithreaded systems and implement them in multithreaded programs. 3. Able to understand the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system. 4. Able to understand the design and management concepts along with issues and challenges of main memory, virtual memory and file system. 5. Able to Able to understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.
CS-594	Advanced Programming Lab	<ol style="list-style-type: none"> 1. Able to understand & implement the Object Oriented Programming concepts. 2. Able to create packages and interfaces using java program. 3. Able to implement Exception Handling in java. 4. Able to use graphical user interface and Event Handling in java. 5. Able to develop and deploy Applet in java.
IT-703	Object Oriented System Design	<ol style="list-style-type: none"> 1. Ability to gather and specify requirements of the software projects and to analyze software requirements with existing UML tools 2. Ability to design and test software using UML tools 3. Ability to estimate the project with respect to effort and development time

4. Ability to take up a software development project and to work in a team as well as independently on software projects.

CS-701 Artificial Intelligence

1. Able to describe the design of a compiler and the phases of program translation from source code to executable code and the files produced by these phases.
2. Able to explain lexical analysis phase and its underlying formal models such as finite state automata, push-down automata and their connection to language definition through regular expressions and grammars.
3. Able to explain the syntax analysis phase and identify the similarities and differences among various parsing techniques and grammar transformation techniques.
4. Able to use formal attributed grammars for specifying the syntax and semantics of programming languages.
5. Able to identify the effectiveness of optimization and explain the differences between machine-dependent and machine-independent translation.
6. Able to use the powerful compiler generation tools such as Lex and YACC.

IT-702 Computer Security

1. Able to understand the basic concepts and goals of Information security such as Confidentiality, Integrity, Authentication, Non-Repudiation, Authorization, and Availability and their relevance in various Contexts.
2. Able to understand the classical cryptosystems and techniques used to break them.
3. Able to understand the ideas of public key cryptosystems and digital signature schemes.
4. Able to understand different network issues as well as database security issues and the solutions for them through firewall, intrusion detection system.
5. Able to understand and critically evaluate a range of access control and authentication mechanisms.
6. Able to understand the legal privacy and ethical issues in computer security.

IT-714	Enterprise Computing Using Java	<ol style="list-style-type: none"> 1. Able to understand the basic concepts and goals of Information security such as Confidentiality, Integrity, Authentication, Non-Repudiation, Authorization, and Availability and their relevance in various Contexts. 2. Able to understand the classical cryptosystems and techniques used to break them. 3. Able to understand the ideas of public key cryptosystems and digital signature schemes. 4. Able to understand different network issues as well as database security issues and the solutions for them through firewall, intrusion detection system. 5. Able to understand and critically evaluate a range of access control and authentication mechanisms. 6. Able to understand the legal privacy and ethical issues in computer security.
IT-710	Mobile Computing	<ol style="list-style-type: none"> 1. Able to understand the necessary knowledge of cellular Communication, infrastructure-less networks. 2. Able to analyze TCP, MAC protocols and their technical feasibility. 3. Able to work as a part of team on multidisciplinary and device independent application projects. 4. Able to understand and implement the hardware components/architectures/databases/operating system of mobile networks that necessary to built self confidence to develop novel products and solutions for real world. 5. Able to promote the awareness of the life-long learning, business ethics, professional ethics and current marketing scenarios.
CS-402	Database Management Systems	<ol style="list-style-type: none"> 1. Able to master the basic concepts and understand the applications of database systems. 2. Able to construct an Entity-Relationship (E-R) model from specifications and to perform the transformation of the conceptual model into corresponding logical data structures. 3. Able to understand the basic database storage structures and access techniques. 4. Able to distinguish between good and bad database design, apply data normalization principles, and be aware of the impact of data redundancy on database integrity and maintainability. 5. Able to construct queries and maintain a simple database using SQL. 6. Able to apply database transaction management and database recovery.
CS-403	Principles of	<ol style="list-style-type: none"> 1. Able to understand the fundamental concepts of most programming languages & the tradeoff

	Programming Languages	<p>between language design and implementation.</p> <ol style="list-style-type: none"> 2. Able to compare programming languages, assess programming languages critically and scientifically. 3. Able to understand the use of formal description for a programming language and the essence of program execution by evaluators: interpreter, compiler. 4. Able to understanding different programming paradigms: analyze the principles of imperative, object-oriented, functional and logic programming. 5. To be able to design a new programming language in principle.
CS-492	Database Systems Laboratory	<ol style="list-style-type: none"> 1. Able to create database with different types of integrity constraints and use the SQL commands such as DDL, DML, DCL, TCL to access data from database objects. 2. Able to use database security & authorization in order to access database for the different kinds of the user. 3. Able to access and manipulate data using PL/SQL blocks. 4. Able to connect database to front end using JDBC and ODBC driver.
IT-603	Computer Networks	<ol style="list-style-type: none"> 1. Ability to understand how computer hardware has evolved to meet the needs of multiprocessing systems, Instruction Set Architecture: Instruction format, types, various addressing modes. 2. Ability to understand the basic components and design of the CPU: the ALU and control unit. 3. Understand the memory organization: SRAM, DRAM, concepts on cache memory, Memory Interleaving, Associative memory, Virtual memory organization. 4. Ability to understand the parallelism both in terms of a single processor and multiple

processors.

5. Understand the I/O Organization: Basics of I/O, Memory-mapped I/O & I/O mapped I/O, Types of I/O transfer: Program controlled I/O, Interrupt-driven I/O, DMA.

IT-601 Software Engineering

1. Ability to gather and specify requirements of the software projects.
2. Ability to analyze software requirements with existing tools
3. Able to differentiate different testing methodologies
4. Able to understand and apply the basic project management practices in real life projects
5. Ability to work in a team as well as independently on software projects

1. Able to describe the design of a compiler and the phases of program translation from source code to executable code and the files produced by these phases.

2. Able to explain lexical analysis phase and its underlying formal models such as finite state automata, push-down automata and their connection to language definition through regular expressions and grammars.

CS-601 Compiler Design

3. Able to explain the syntax analysis phase and identify the similarities and differences among various parsing techniques and grammar transformation techniques.

4. Able to use formal attributed grammars for specifying the syntax and semantics of programming languages.

5. Able to identify the effectiveness of optimization and explain the differences between machine-dependent and machine-independent translation.

6. Able to use the powerful compiler generation tools such as Lex and YACC.

CS-810	Advanced Computer Architecture	<ol style="list-style-type: none"> 1. Able to understand the advanced concepts of computer architecture. 2. Able to analyze to the major differentials of RISC and CISC architectural characteristics. 3. Able to investigate modern design structures of Pipelined and Multiprocessors systems. 4. Become acquainted with recent computer architectures and I/O devices, as well as the low-level language required to drive/manage these types of advanced hardware. 5. Able to prepare selected reports that imply some emergent topics supporting material essence
CS-882	Project	<ol style="list-style-type: none"> 1. Able to do some innovative work with applying the knowledge gained from various courses undergone in the earlier years. 2. Able to exhibit both analytical and synthetical skills. 3. Able to know the complete project life cycle and the project time estimation & its management. 4. Able to gain knowledge of various simulation tools. 5. Able to culture working in a team.
CS-883	General Viva Voce	<ol style="list-style-type: none"> 1. Students will be able to analyze signals in time and frequency domain. 2. Students will be able to identify different analog modulation schemes; analyze and

Able to understand the basic terminology used in computer programming	H	M	M											
Able to write, compile and debug programs in C language.	H	H	H	H	M									
Able to use different data types in a computer program.	M	H	H	M										
Able to design programs involving decision structures, loops and functions.	M	H	H	M										
Able to understand the dynamics of memory by the use of pointers.	M	H	M											
Able to use different data structures and create/update basic data files.	M	H	H	H	M							M		

CS-191/291 Computer Programming Lab

CR-3

COs \ POs	a	b	c	d	E	f	G	h	i	j	k	l
Able to have fundamental concept on basics commands in Linux.		M										
Able to write, compile and debug programs in C language.	M	H	M	M	H							
Able to formulate problems and implement algorithms in C.	M	H	H	H	M							
Able to effectively choose programming components that efficiently solve computing problems in real-world.	M	H	H	H	M							M

CS-301 Data Structures & Algorithms

CR-4

COs \ POs	a	b	c	d	e	f	g	h	i	j	k	l
Able to understand the concepts of data structure, data type and array data structure.	H	M	M	M	M					M		
Able to analyze algorithms and determine their time complexity.	H	H	M	H	H				M			
Able to implement linked list data structure to solve various problems.	M	H	H	H	H				M	M		
Able to understand and apply various data structure such as stacks, queues, trees and graphs to solve various computing problems using C-programming language.	H	H	H	H	H				M	M		

Able to implement and know when to apply standard algorithms for searching and sorting.	H	H	H	H	H					H		M
Able to effectively choose the data structure that efficiently model the information in a problem	H	H	H	H	H					M	M	

CS-391 Data Structures Laboratory

CR-4

COs	POs	a	b	c	d	e	f	g	h	i	j	k	l
Able to understand the importance of structure and abstract data type, and their basic usability in different applications through different programming languages.		H	M	M	M	M				M	M	M	
Able to analyze and differentiate different algorithms based on their time complexity.		H	H	M	H	M				M			M
Able to understand the linked implementation, and its uses both in linear and non-linear data structure.		H	H	H	H	H					M		
Able to understand various data structure such as stacks, queues, trees, graphs, etc. to solve various computing problems.		H	H	H	H	H					M	M	
Able to implement various kinds of searching and sorting techniques, and know when to choose which technique.		M	H	H	H	H							
Able to decide a suitable data structure and algorithm to solve a real world problem.		H	H	H	H	H				M	M	H	H

IT-301 Object-Oriented Programming

CR-3

COs	POs	a	b	c	d	e	f	g	h	i	j	k	l
Able to differentiate between structure oriented programming and object oriented programming.		H	M	M	M	M					M		
Able to use object oriented programming language like C++ and associated libraries to develop object oriented programs.		H	H	M	H	H				M			

Able to understand and apply various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using C++ language.	H	H	H	H	H					M	M		
Able to apply concepts of operator-overloading, constructors and destructors.	M	H	H	H	H					M	M		
Able to apply exception handling and use built-in classes from STL.	M	H	H	H	M					M	M		

IT-391 Object-Oriented Programming Lab

CR-4

CO \ PO	a	b	c	d	e	f	g	h	i	j	k	L
To be able to apply an object oriented approach to programming and identify potential benefits of object-oriented programming over other approaches.	H	H	H	M	H						M	
To be able to reuse the code and write the classes which work like built-in types.	H	H	M	H	H							
To be able to design applications which are easier to debug, maintain and extend.	M	H	H	H	H				M	M		
To be able to apply object-oriented concepts in real world applications.	H	H	H	H	H				M			M

CS-402 Database Management Systems

CR-4

CO \ PO	a	b	c	d	e	f	g	h	i	J	k	l
Able to master the basic concepts and understand the applications of database systems.	H	M	M			M						
Able to construct an Entity-Relationship (E-R) model from specifications and to perform the transformation of the conceptual model into corresponding logical data structures.	H	H	H	H	H			M	M			

Able to understand the basic database storage structures and access techniques.	M	H	H	H	M					M			
Able to distinguish between good and bad database design, apply data normalization principles, and be aware of the impact of data redundancy on database integrity and maintainability.	H	H	H	H	M					M	M		
Able to construct queries and maintain a simple database using SQL.	H	H	H	H	H					H		M	M
Able to apply database transaction management and database recovery.	H	H	M	H						M		M	M

CS-492 Database Management Systems Lab

CR-4

PO	a	b	c	d	e	f	g	h	i	j	k	l
CO Able to create database with different types of integrity constraints and use the SQL commands such as DDL, DML, DCL, TCL to access data from database objects.	M	H	H	M	M							
Able to use database security & authorization in order to access database for the different kinds of the user.	M	H	M		H			M				
Able to access and manipulate data using PL/SQL blocks.	M	H	H	H	H							
Able to connect database to front end using JDBC and ODBC driver.	M				M							

CS-401/501 Operating System

CR-4

CO \ PO	A	b	C	d	e	f	g	h	i	j	k	l
Able to understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.	H	H	M	M	M					M	M	
Able to understand the difference between process & thread, issues of scheduling of user-level processes / threads and their issues & use of locks, semaphores, monitors for synchronizing multiprogramming with multithreaded systems and implement them in multithreaded programs.	H	H	H	H	H		M		M	M	M	
Able to understand the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system.	M	H	H	H	H				M	H	H	
Able to understand the design and management concepts along with issues and challenges of main memory, virtual memory and file system.	H	H	H	H	H	H			M	M	H	
Understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.	H	H	H	H	H	H			H	H	M	

CS-403 Principle of Programming Languages

CR-4

CO \ PO	A	b	C	d	e	f	g	h	i	j	k	l
Able to understand the fundamental concepts of most programming languages & the tradeoff between language design and implementation.	H	M	M	M	M							
Able to compare programming	M	H	H	M	M						M	

algorithms.													
Able to understand the techniques used for designing fundamental graph theory algorithms and apply them to solve other related problems.	H	H	H									H	
Able to identify and analyze criteria and specifications appropriate to new problems, and choose the appropriate algorithmic design technique for their solution.	H	H	H									H	
Able understand the classes P, NP, and NP-Complete and be able to prove that a certain problem is NP-Complete.	H	H	H	H									H

CS-505/605 Computer Organization and Architecture

CR-4

CO \ PO	a	b	C	d	e	f	g	h	i	j	k	l
Ability to understand how computer hardware has evolved to meet the needs of multiprocessing systems, Instruction Set Architecture: Instruction format, types, various addressing modes.	M	H	H				M					

Ability to understand the basic components and design of the CPU: the ALU and control unit.	H	H	H				M					
Understand the memory organization: SRAM, DRAM, concepts on cache memory, Memory Interleaving, Associative memory, Virtual memory organization.	H	H	H				M					
Ability to understand the parallelism both in terms of a single processor and multiple processors.	M	H	H				M					
Understand the I/O Organization: Basics of I/O, Memory-mapped I/O & I/O mapped I/O, Types of I/O transfer: Program controlled I/O, Interrupt-driven I/O, DMA.	H	H	H				M					

CO \ PO	A	b	C	d	e	f	g	h	i	j	k	l
Able to understand different models used for study of computer networks and ability to identify different designs.	H	H	M		H							
Able to understand how information transforms while moving through network and understand different technologies used to improve efficiency of communication	H	H	M		H					M		
Able to understand how to preserve the integrity of data communication on network.	H	H	H	H	H					M		
Able to design and engineer routes to create interconnect of nodes.	H	H	H	H	H					M		
Able to understand working of world wide web and electronic mail technologies.	H	H	H		H						M	

CO \ PO	A	b	C	d	e	f	g	h	i	j	k	L
Ability to gather and specify requirements of the software projects.	M	M			M	M			M	H	M	M
Ability to analyze software requirements with existing tools	M	H	M	M	H					M		
Able to differentiate different testing methodologies	M	H	H	H	H				M	M		
Able to understand and apply the basic project management practices in real life projects	H	H	M	H	H				M	M		H
Ability to work in a team as well as independently on software projects		M	M		M				H	M	M	

CS-603 Microprocessor & Interfacing

CR-4

CO \ PO	a	b	c	d	e	f	g	h	i	j	k	l
Able to understand the architecture and organization of microprocessor along with instruction coding formats.	H	H	M	M	M					M	H	
Able to understand, write structured and well-commented programs in assembly language and in a higher-level language with an ability to test and debug them in the laboratory.	H	H	H	H	H				M		H	
Able to understand the memory and	H	H	H	H	H				M	M	H	

addressing concepts for interfacing I/O devices to the microprocessor.												
Able to understand software/hardware interrupts and further write programs to perform I/O using handshaking and interrupts.	H	H	H	H	H				M	M	H	
Able to have an understanding of digital interfacing and system connections.	H	H	H	H	H				M	M	H	

CS-593/ 693 Microprocessor Labs

CO \ PO	A	b	C	d	e	f	g	h	i	j	k	l
Able to gain knowledge about computer hardware.	H	H	M	M	M					M	H	
Able to configure systems.	H	H	H	H	H				M		H	
Able to do Various port programming	H	H	H	H	H				M	M	H	
Able to do Assembly language programming for 8086 microprocessor.	H	H	H	H	H				M	M	H	
Able to do TSR programming with interrupt	H	H	H	H	H				M	M	H	

CO \ PO	a	b	c	d	e	f	g	H	i	J	k	l
Able to describe the design of a compiler and the phases of program translation from source code to executable code and the files produced by these phases.	H	M	H	M						M		M
Able to explain lexical analysis phase and its underlying formal models such as finite state automata, push-down automata and their connection to language definition through regular expressions and grammars.	H	H	H	H	M				M			M
Able to explain the syntax analysis phase and identify the similarities and differences among various parsing techniques and grammar transformation techniques.	H	H	H	H	M				M			M
Able to use formal attributed grammars for specifying the syntax and semantics of programming languages.	H	H	H	M					M			M
Able to identify the	H	H	H	H					H		M	M

effectiveness of optimization and explain the differences between machine-dependent and machine-independent translation.												
Able to use the powerful compiler generation tools such as Lex and YACC.	H	H	M	H	H				M	M		M

IT-703 Object-Oriented System Design

CR-4

COs \ POs	a	b	c	d	e	f	g	h	i	j	k	L
Ability to gather and specify requirements of the software projects and to analyze software requirements with existing UML tools	M	H	M	M								
Ability to design and test software using UML tools	M	M	H	M							M	
Ability to estimate the project with respect to effort and development time	H	H	M	H	H		M	H	H	H	M	H
Ability to take up a software development project and to work in a team as well as independently on software projects.	M	H	H	M	H				H	H	M	M

CS-701 Artificial Intelligence

CR-4

CO \ PO	A	b	C	d	e	f	g	H	i	j	k	L
Able to understanding of the major areas and challenges of AI	H		H			H		H			M	

Ability to apply basic AI algorithms to solve problems	H	H	H							M		
Able to describe search strategies and solve problems by applying a suitable search method.	M	H	H	H								
Able to describe minimax search and alpha-beta pruning in game playing.	H	H	H	M	H					H		
Able to describe and apply knowledge representation.	H	M	H	M								

IT-702 Computer Security

CR-4

CO \ PO	a	b	c	d	e	f	g	h	i	j	k	L
Able to understand the basic concepts and goals of Information security such as Confidentiality, Integrity, Authentication, Non-Repudiation, Authorization, and Availability and their relevance in various Contexts.	H	M	M	M		M					M	
Able to understand the classical cryptosystems and techniques used to break them.	H	H	M	M	H				M			
Able to understand the ideas of public key cryptosystems and digital signature schemes.	M	H	M	H	H				M			
Able to understand different network issues as well as database security issues and the solutions for them through firewall, intrusion detection system.	H	H	H	H	H	M		M	M	M		
Able to understand and critically evaluate a range of access control and	H	H	H	H	H			M				

authentication mechanisms.												
Able to understand the legal privacy and ethical issues in computer security.	M	H	M	H	H	H			H	M		M

IT-714 Enterprise Computing Using Java

CR-4

CO \ PO	a	b	c	d	e	f	g	h	i	j	k	l
Ability to understand and use, all data types, primitives, operators, control statements, array, function and all the standard objects available through JavaScript and validate a form to create a good animated and dynamic web site using HTML and DOM.	H	H	M	M	M				M	M	M	H
Ability to write a good java programs in GUI using applet, AWT and SWING and handling different kinds of event on it including applying the concepts of multithreading.	H	M	M	M	M				M	M		M
Ability to implements a data tier based on JDBC	M	M	M	M	M				M	M		
Ability to implements a web tier using Java Servlets and JSP with	H		H	M	H				M	M		M

supporting Java Beans and RMI.												
Ability to implements business tier and business logic based on EJB.	H	M	H	H	H					M	M	M

IT-710 Mobile Computing

CR-4

CO \ PO	a	b	c	d	e	f	g	H	i	j	k	l
Able to understand the necessary knowledge of cellular Communication, infrastructure-less networks.	H	M	M	M	M					M		
Able to analyze TCP, MAC protocols and their technical feasibility.	H	H	M	H	H				M			
Able to work as a part of team on multidisciplinary and device independent application projects.	M	H	H	H	M				M	M		
Able to understand and implement the hardware components/architectures/databases/operating system of mobile networks that necessary to built self confidence to develop novel products and solutions for real world.	H	H	H	M	M				M	M		
Able to promote the awareness of the life-long learning, business ethics, professional ethics and current marketing scenarios.	H	H	H	H	H				H		M	

CS-810 Advanced Computer Architecture

CR-4

CO \ PO	A	b	C	d	e	f	g	h	i	j	k	l
Able to understand the advanced concepts of computer architecture.	H	H	M	M	M					M		

Able to analyze to the major differentials of RISC and CISC architectural characteristics.	H	H	M	H	H				M			
Able to investigate modern design structures of Pipelined and Multiprocessors systems.	M	H	H	H	H				M	M		
Become acquainted with recent computer architectures and I/O devices, as well as the low-level language required to drive/manage these types of advanced hardware.	H	H	H	H	H				M	M		
Able to prepare selected reports that imply some emergent topics supporting material essence	H	H	H	H	H				H		M	

CO \ PO	A	b	C	d	e	f	g	h	i	j	k	l
Students will be able to analyse signals in time and frequency domain.	H	H		M	M							
Students will be able to identify different analog modulation schemes; analyze and solve typical problems involving analog modulation/demodulation systems.	H	H	M	H								
Students will be able to distinguish between different pulse modulation systems, multiplexing techniques and analyse PCM systems including effects of noise.	M	M	M	M								
Students will be able to identify different digital modulation schemes, and design corresponding modulators/demodulators. They will be able to distinguish between different network topologies, protocols, data - flow and error control techniques, sand between synchronous and asynchronous transmission.	H	M	M	M								
Students will be able to solve fundamental problems on entropy, information rate, source coding, coding efficiency	H	H	H	H	M						M	

and channel capacity.												
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CS-883 Grand Viva

CR-2

CO \ PO	a	b	c	d	e	f	g	h	i	j	k	l
Testing the comprehensive knowledge gained on all subjects related to B. Tech, CSE covered in four years.	H	M	M	M	M					M		
Testing the degree of understanding on basic concepts of core subjects of B. Tech, CSE.	H	M	M		M							
Testing the degree of clarity and focus to apply the knowledge and ideas gained in real world problems and issues.	M	H	H	H	H					M		H
Testing the oral										H		

communication and presentation skills.													
Testing the degree of confidence and versatility in answering the varieties of questions posed by a group of faculty members in a moderately short duration.										M	H		M

CS-594 Advance Programming Laboratory

COs	POs	a	b	c	d	e	f	g	h	i	j	k	l
Able to understand & implement the Object Oriented Programming concepts.		H	H	H	M	M					M		
<i>Able to create packages and interfaces using java program.</i>		M	M	H	H	M					M		
<i>Able to implement Exception Handling in java.</i>		M	H	M	H	H							
<i>Able to use graphical user interface and Event Handling in java.</i>		M	M	H	M	H					M		

<i>Able to develop and deploy Applet in java.</i>	M	M	M	M	H					H		M
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CS-882 Project

COs	POs	a	b	c	d	e	f	g	h	i	j	k	l
Able to do some innovative work with applying the knowledge gained from various courses undergone in the earlier years.		H	H	H	M						M		H
Able to exhibit both analytical and synthetical skills.		M	H	H	H	M					M		
Able to know the complete project life cycle and the project time estimation & its management.		M	H	M	M	M							H
Able to gain knowledge of various simulation tools.		M	M	H	H	H					M		
Able to culture working in a team.										H	M		