PO, PEO, PSO and CO

of

(Computer Science Engineering)
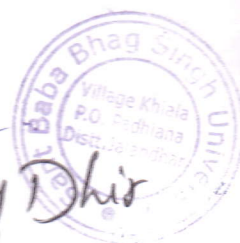
(Dr. Jaydeep Kaur)

(Dr. Vijay Dhir)

COURSE OUTCOMES (Cos)

B.TECH

2018, 2019

AND 2020

BATCH

Dr. Jagdeep Kaur
(Dy. Dean)

Dr. Vijay Dhir
(Dean)

COURSE OUTCOMES FOR BATCHES 2018, 2019 and 2020

S. No	Semester	Course Name	Course Code		Course Outcomes
1	1	Engineering Physics	PHY105-18/ PHY105-19/PHY105	CO1	To develop the understanding of laws of thermodynamics and their application in various processes.
				CO2	To formulate and solve the engineering problems on Electromagnetism.
				CO3	To aware of limits of classical physics & to apply the ideas in solving the problems in their parent streams.
2	1	Engineering Mathematics-I	MAT103-18/ MAT103-19/MAT103	CO1	Inculcate an ability to identify engineering problems
				CO2	Inculcate an ability to formulate engineering problems
				CO3	Inculcate an ability to solve engineering problems
3	1	Basic Electrical Engineering	EE101-18/ EE101-19/EE101	CO1	To familiarize with AC, DC circuits & their fundamentals
				CO2	To inculcate the skills to develop Magnetic circuits & Transformer
				CO3	To check the accuracy of Electrical Machines and Measuring Instruments
				CO4	To give them a sound foundation that eventually will help them in their coming technical futures.
4	1	Engineering Physics Laboratory	PHY107-18/ PHY107-19/PHY107	CO1	To gain knowledge in the scientific methods and learn the process of measuring different Physical variables
				CO2	To develop the skills in arranging and handling different measuring instruments
				CO3	To get familiarized with experimental errors in various physical measurements
				CO4	To suggest on how the contributions could be made of the same order, so as to minimize the errors.
5	1	Basic Electrical Engineering Laboratory	EE103-18/EE103-19/EE103	CO1	To calculate the electrical parameters of dc circuits and single phase ac circuits.
				CO2	To apply the concept of electromagnetic induction.
				CO3	To analyse the chemical and heating effect of electric current
				CO4	To select the conducting,insulating and semi conducting materials.
6	1	Fundamentals of Computer Technology Laboratory	CSE103-18	CO1	To understand basics of computers, Input Output devices and programming concepts of C++
				CO2	To inculcate the skills to design logic to the problems.
				CO3	To develop solutions to problems demonstrating usage of control structure, modularity, classes, I/O and the scope of the class members
				CO4	To implement solutions to various I/O operations and String manipulations
7	1	Engineering Workshop	ME107-18/ ME107-19/ME107	CO1	To Implement Fitting,carpentry,black smithy,sheet metal and welding shop.
				CO2	To Sketch & label various parts of bench moulding m/c.
				CO3	To apply skills in production of quality jobs.
8	1	Physical Training- I (NSO/NCC/NSS)	PT101-18/PT103-18/PT105-18	CO1	To imbibe the concepts and benefits of NCC/NSS/NSO
				CO2	To practice the NCC/NSS/NSO
				CO3	To compete and excel in NCC/NSS/NSO
9	2	Engineering Chemistry	CHM105-18/ CHM105-19/CHM105	CO1	Students Acquired knowledge of the basic chemistry, to understand and explain scientifically the various chemistry related problems in engineering field
				CO2	Inculcate an ability to identify & Solve all problems based on different chemical reactions
				CO3	Enable to understand new developments in chemistry
10	2	Engineering Mathematics-II	MAT104-18/ MAT104-19/MAT104	CO1	Enable students to use effective mathematical tools for the solutions of differential equations that model physical processes
				CO2	Enable students to derive mathematical models of physical systems.
				CO3	Enable students to use tools of differentiation and integration of functions of complex variable that are used in various techniques

11	2	Basic Electronics & Communication Engineering	ECE101-18/ ECE101-19/ECE101	CO1	To understand fundamentals of electronic components, devices, transducers	
				CO2	To formulate principles of digital electronics	
				CO3	To apply principles of various communication systems	
12	2	Communication Skills-I	ENG121-18/ ENG121-19/ ENG121	CO1	To understand communication and problem solving skills	
				CO2	To develop professionals with idealistic, practical and moral values.	
				CO3	To enhance inter personal skills and be an effective goal oriented team player	
				CO4	To re-engineer attitude and its influence on behavior	
				CO5	To assist in employability skills.	
13	2	Engineering Drawing	ME103-18/ ME103-19/ME103	CO1	To prepare, coordinate and output drawings in accord with best practices for architectural, civil and mechanical applications	
				CO2	To apply orthographic and isometric projection and sectioning principles to architectural, civil and mechanical engineering drawing	
				CO3	To develop technical design documents from conceptual design	
14	2	Engineering Chemistry Laboratory	CHM107-18/ CHM107-19/ CHM107	CO1	To understand the basic concepts involved in the analyses.	
				CO2	To apply the concepts of chemistry.	
				CO3	To develop analytical skills for applications in engineering	
15	2	Basic Electronics & Communication Engineering Laboratory	ECE103-18/ ECE103-19/ ECE103	CO1	To understand about the network elements, types of networks, analysis complex circuits using Mesh current & Nodal voltage meth	
				CO2	To gain knowledge about the solution methods of AC and DC circuits.	
				CO3	To get an insight into solution of RLC circuits, analysis of coupled circuits	
16	2	Communication Skills-I Laboratory	ENG123-18/ ENG123-19/ENG123	CO1	To understand the role of thinking in all forms of communication	
				CO2	To enhance communicative skills in real life situations.	
				CO3	To improve lexical, grammatical and communicative competence.	
				CO4	To equip students with oral and appropriate written communication skills	
				CO5	To assist students with employability and job search skills.	
17	2	Physical Training- II (NSO/NCC/NSS)	PT102-18/PT104-18/PT106-18	CO1	To imbibe the concepts and benefits of NCC/NSS/NSO	
				CO2	To practice the NCC/NSS/NSO	
				CO3	To compete and excel in NCC/NSS/NSO	
18	3	ITWORKSHOP	CSE205-18/ CSE205-19/ CSE205	CO1	To Become familiar with additional MATLAB functions and looping/conditional statements	
				CO2	To Learn how to create and use MATLAB m files.	
				CO3	To Learn how to write and use MATLAB functions.	
19	3	ITWORKSHOP lab	CSE211-18 / CSE211-19/ CSE211	CO1	To Become familiar with additional MATLAB functions and looping/conditional statements	
				CO2	To Learn how to create and use MATLAB m files.	
				CO3	To Learn how to write and use MATLAB functions.	
20	3	Introduction to Data Structure	CSE201-18/ CSE201-19/ CSE201	CO1	Ability to analyze algorithms and aalgorithm correctness.	
				CO2	Ability to summarize searching and sorting techniques	
				CO3	Ability to describe stack,queue and linked list operation.	
12				CO4	Ability to have knowledge of treeand graphs concepts.	

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21	3	Object Oriented Programming Systems C166	CSE203-18/ CSE203-19/CSE203	CO1	Understand the difference between the top-down and bottom-up approach
				CO2	Describe the object-oriented programming approach in connection with C++
				CO3	Apply the concepts of object-oriented programming
				CO4	Illustrate the process of data file manipulations using C++
22	3	Digital Electronics	ECE207-18/ ECE207-19/ ECE207	CO1	Have a thorough understanding of the fundamental concepts and techniques used in digital electronics
				CO2	To understand and examine the structure of various number systems and its application in digital design.
				CO3	The ability to understand, analyze and design various combinational and sequential circuits
				CO4	Ability to identify basic requirements for a design application and propose a cost effective solution
23	3	Professional Communication Skills	ENG205-18/ ENG205-19/ENG205	CO1	Demonstrate critical and innovative thinking.
				CO2	Display competence in oral, written, and visual communication.
				CO3	Apply communication theories.
				CO4	Show an understanding of opportunities in the field of communication.
24	3	Digital Electronics Lab	ECE211-18/ ECE211-19/ ECE211	CO1	Distinguish between analog and digital systems.
				CO2	Identify the various digital ICs and understand their operation.
				CO3	Apply Boolean laws to simplify the digital circuits.
				CO4	Design simple logic circuits.
25	3	IT Workshop(Sci Lab/MATLAB)	CSE211-18/ CSE211-19/CSE211	CO1	Use programming operations to calculate solutions
				CO2	Determine better and more accurate solutions
				CO3	Perform and evaluate algebraic and trigonometric operations using built-in functions
				CO4	Assign and manage variables
26	3	Object Oriented Programming Systems Lab	CSE209-18/ CSE209-19/CSE209	CO1	Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects
				CO2	Understand dynamic memory management techniques using pointers, constructors, destructors, etc
				CO3	Describe the concept of function overloading, operator overloading, virtual functions and polymorphism
				CO4	Demonstrate the use of various OOPs concepts with the help of programs.
27	3	Engineering Mathematics-III	MAT205-18/ MAT205-19/MAT205	CO1	Enable students to use Fourier Series & Laplace Transform to make Circuits in Electrical & Electronics Engineering.
				CO2	Check the condition for a complex variable function to be analytic and/or harmonic & find complex conjugates
				CO3	Enable students to use Laplace transform techniques to solve second-order ordinary differential equations i.
28	3	Physical Training- III (NSO/NCC/NSS)	PT201-18/PT203-18/PT205-18	CO1	To imbibe the concepts and benefits of NCC/NSS/NSO
				CO2	To practice the NCC/NSS/NSO
				CO3	To compete and excel in NCC/NSS/NSO
29	4	Discrete Structures	CSE202-18/ CSE202-19/CSE202	CO1	Perform operations on various discrete structures such as sets, functions, relations, and sequences
				CO2	Apply algorithms and use of graphs and trees as tools to visualize and simplify Problems
				CO3	Use of K-Maps and Truth Tables to construct and verify correctness of a Boolean expression
30	4	Computer Organization & Design	CSE204-18/ CSE204-19/CSE204	CO1	Explain the organization of basic computer , its design and the design of control unit
				CO2	Demonstrate the working of central processing unit and RISC and CISC Architecture
				CO3	Elaborate advanced concepts of computer architecture, Parallel Processing, interprocessor communication and synchronization

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31	4	Operating Systems	CSE206-18/ CSE206-19/ CSE206	CO1	An ability to understand basic concepts aout operating system
				CO2	An ability to compare various file systems and its operating systems examples.
				CO3	An ability to describe process management ,scheduling and concurrency control mechanisims.
				CO4	An ability to analyze memory management and deadlocks.
32	4	Database Design & Management I	CSE208-18/ CSE208-19/CSE208	CO1	Understand a relational table schema
				CO2	Write and read (understand) simple SQL queries
				CO3	Design ER diagrams for new databases and read (understand) ER diagrams
33	4	Environmental Sciences	EVS101-18/ EVS101-19/EVS101	CO1	Students will possess the intellectual flexibility necessary to view environmental questions from multiple perspectives, prepared to
				CO2	Demonstrate a general understanding of the breadth and interdisciplinary nature of environmental issues
				CO3	Be well-prepared for meaningful careers and post-graduate education in fields related to environmental science and beyond.
34	4	Microprocessor	ECE218-18/ ECE218-19/ECE218	CO1	Describe the general architecture of a microcomputer system and architecture &organization of 8085 & 8086 Microprocessor and
				CO2	Understand and realize the Interfacing of memory & various I/O devices with 8085 microprocessor
				CO3	Understand the architecture and operation of Programmable Interface Devices and realize the programming & interfacing of it with
35	4	Operating Systems Lab	CSE210-18/ CSE210-19/ CSE210	CO1	To learn the fundamentals of Operating Systems.
				CO2	Understand the process management policies and scheduling of processes by CP
				CO3	Describe and analyze the memory management and its allocation policies.
36	4	Database Design & Management I Lab	CSE212-18/ CSE212-19/CSE212	CO1	Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Alge
				CO2	Create and populate a RDBMS for a real life application, with constraints and keys, using SQL
				CO3	Retrieve any type of information from a data base by formulating complex queries in SQL
37	4	Microprocessor Lab	ECE214-18/ ECE214-19/ ECE214	CO1	Implement assembly language program for given task for 8085 microprocessor
				CO2	Build a program on a microprocessor using arithmetic & logical instruction set of 8085
				CO3	Develop the assembly level programming using 8086 loop instruction set
38	4	Physical Training-IV (NSO/NCC/NSS)	PT202/PT20 4/ PT206-18	CO1	To imbibe the concepts and benefits of NCC/NSS/NSO
				CO2	To practice the NCC/NSS/NSO
39	5	Principles of Software Engineering & Design	CSE301-18/ CSE301-19/CSE301	CO1	Define various software application domains and remember different process model used in software development
				CO2	Explain needs for software specifications also they can classify different types of software requirements and their gathering techni
				CO3	Convert the requirements model into the design model and demonstrate use of software and userinterface design principles
40	5	Design & Analysis of Algorithms	CSE303-18/ CSE303-19/CSE303	CO1	Students will be able to choose appropriate advanced data structure for given problem
				CO2	Students will be able to calculate complexity
				CO3	Students will be able to calculate complexity

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41	5	Theory of Automata & Computation	CSE305-18/ CSE305-19/CSE305	CO1	Understand, design, construct, analyze and interpret Regular languages, Expression and Grammars
				CO2	Design different types of Finite Automata and Machines as Acceptor, Verifier and Translator
				CO3	Understand, design, analyze and interpret Context Free languages, Expression and Grammars
42	5	Human Values and Professional Ethics	SSC303-18	CO1	To Understand the significance of value inputs in a classroom and start applying them in their life and profession
				CO2	To Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and C
				CO3	To Understand the value of harmonious relationship based on trust and respect in their life and profession
				CO4	To Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment
43	5	Constitution of India	PLS303-18	CO1	Understand the emergence and evolution of Indian Constitution
				CO2	Understand the structure and composition of Indian Constitution
				CO3	Understand and analyse federalism in the Indian context
44	5	Principles of Software Engineering & Design Lab	CSE307-18/ CSE307-19/CSE307	CO1	Sketch a Modeling with UML
				CO2	Deploy Structural Modeling
				CO3	Examine estimation about schedule and cost for project development
45	5	Design & Analysis of Algorithms Lab	CSE309-18/ CSE309-19/ CSE309	CO1	Students will able to apply the dynamic programming technique to solve the problems
				CO2	Students will be able to apply the greedy programming technique to solve the problems
				CO3	Students will be able to select a proper pattern matching algorithm for given problem
46	5	*Industrial Training (undertaken after 4th semester)	CSE311-18/ CSE311-19/ CSE311	CO1	Capability to acquire and apply fundamental principles of engineering
				CO2	Become updated with all the latest changes in technological world
				CO3	Ability to identify, formulate and model problems and find engineering solution based on a systems approach
47	5	Mobile Application Development	CSE313-18/ CSE313-19/ CSE313	CO1	Describe Android platform, Architecture and features.
				CO2	Design User Interface and develop activity for Android App
				CO3	Use Intent , Broadcast receivers and Internet services in Android App
48	5	Programming in Java	CSE315-18/ CSE315-19/ CSE315	CO1	Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing s
				CO2	Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific proble
				CO3	Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application developmen
49	5	COMPUTER GRAPHICS&VISUALIZATION	CSE305	CO1	To Understand the fundamental graphical operations and the implementation on computer
				CO2	To Get a glimpse of recent advances in computer graphicsUnderstanding user interface issues that make the computer easy for t
				CO3	To Understand user interface issues that make the computer easy for the novice to use
50	6	Compiler Construction	CSE302-18/ CSE302-19/ CSE302	CO1	Understand concepts of lexical analyzer and compiler otimization
				CO2	Design symbol tables
				CO3	Generate intermediate codes
51	6	Data Communication & Networks	CSE304-18/ CSE304-19/ CSE304	CO1	Describe the functions of each layer in OSI and TCP/IP model
				CO2	Classify the routing protocols and analyze how to assign the IP addresses for the given network
				CO3	Explain the types of transmission media with real time applications
52	6	Data Communication & Networks Lab	CSE308-18/ CSE308-19/ CSE308	CO1	Understand fundamental underlying principles of computer networking

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				CO2	Understand details and functionality of layered network architecture	
				CO3	Understand and design application layer protocols and internet applications such as network security, Email and DNS	
53	6	Minor Project	CSE310-18/ CSE310-19/CSE310	CO1	Identify the requirements for the real world problems	
				CO2	Study and enhance software or hardware skills	
				CO3	Demonstrate and build the project successfully by hardware requirements, coding, emulating and testing.	
54	6	Simulation & Modeling	CSE312-18/ CSE312-19/CSE312	CO1	Have a clear understanding of the need for the development process to initiate the real problem	
				CO2	Have a clear understanding of principle and techniques of simulation methods informed by research direction	
				CO3	Be able to model any system from different fields	
55	6	Computer Vision	CSE314-18/ CSE314-19/ CSE314	CO1	To identify basic concepts, terminology, theories, models and methods in the field of computer vision	
				CO2	Describe known principles of human visual system	
				CO3	Describe basic methods of computer vision related to multi-scale representation, edge detection and detection of other primitives,	
56	6	Internet web Programming	CSE316-18/ CSE316-19/ CSE316	CO1	Implement interactive web page(s) using HTML, CSS and JavaScript	
				CO2	Design a responsive web site using HTML5 and CSS3	
				CO3	Describe and differentiate different Web Extensions and Web Services	
57	6	Machine Learning	CSE318-18/ CSE318-19/ CSE318	CO1	Have a good understanding of the fundamental issues and challenges of machine learning: data, model selection, model complex	
				CO2	Appreciate the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of super	
				CO3	Be able to design and implement various machine learning algorithms in a range of real-world applications	
58	6	Distributed Systems	CSE320-18/ CSE320-19/CSE320	CO1	Students will identify the core concepts of distributed systems: the way in which several machines orchestrate to correctly solve p	
				CO2	Students will examine how existing systems have applied the concepts of distributed systems in designing large systems, and will	
				CO3	Analyze different algorithms and techniques for the design and development of distributed systems subject to specific design and	
59	6	Wireless Communications	CSE322-18/ CSE322-19/ CSE322	CO1	Explain the Classification of mobile communication systems	
				CO2	Analyze the Mobile radio propagation, fading, diversity concepts and the channel modeling	
				CO3	Analyze Multiuser Systems, CDMA, WCDMA network planning and OFDM Concepts	
60	6	Communication Networks	CSE372-18/ CSE372-19/ CSE372	CO1	Independently understand basic computer network technology	
				CO2	Identify the different types of network devices and their functions within a network	
				CO3	Identify the different types of network topologies and protocols	
				CO4	Understand and building the skills of subnetting and routing mechanisms	
61	6	Computer Organization	CSE374-18/ CSE374-19/ CSE374	CO1	Interpret the functional architecture of computing systems	
				CO2	Identify, compare and assess issues related to ISA, memory, control and I/O functions	
				CO3	Design and analyze solutions in the area of computer architecture	
62	7	Cryptography & Security	CSE403-18/ CSE403-19/ CSE403	CO1	Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fi	
				CO2	Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and au	
				CO3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifyi	
63	7	Multimedia & Animation	CSE405-18/ CSE405-19/ CSE405	CO1	To impart the knowledge about Animation execution, workflow & post-production	
				CO2	Import graphics and textures created on other applications into a multimedia software program	

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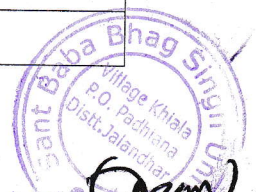(Dr. Dean)

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				CO3	Create an effective interactive site for use on the internet
64	7	Information Theory and Coding	ECE405-18/ ECE405-19/ ECE405	CO1	Create an effective interactive site for use on the internet
				CO2	Comprehend various error control code properties
				CO3	Apply convolution codes for performance analysis & cyclic codes for error detection and correction
65	7	Graph Theory	CSE407-18/ CSE407-19/ CSE407	CO1	Students apply the algorithms that are treated in the course for solving graph theoretical problems
				CO2	Studentsapply the theorems that are treated in the course for problem solving and proofs
				CO3	Students decides in what situations the theorems that are treated in the course can be applied
66	7	Design & Management of Big Data	CSE409-18/ CSE409-19/ CSE409	CO1	Explain the motivation for big data systems and identify the main sources of Big Data in the real world
				CO2	Demonstrate an ability to use frameworks like Hadoop, NOSQL to efficiently store retrieve and process Big Data for Analytics
				CO3	Apply several newer algorithms for Clustering Classifying and finding associations in Big Data
67	7	Cloud Computing	CSE411-18/ CSE411-19/ CSE411	CO1	Define Cloud Computing and memorize the different Cloud service and deployment models
				CO2	Describe importance of virtualization along with their technologies
				CO3	Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing
68	7	Organization Behaviour	MGT401-18/ MGT401-19/ MGT401	CO1	Demonstrate the applicability of the concept of organizational behavior to understand the behavior of people in the organization
				CO2	Demonstrate the applicability of analyzing the complexities associated with management of individual behavior in the organization
				CO3	Analyze the complexities associated with management of the group behavior in the organization
69	7	Industrial Training cum Project Work	CSE401-18/ CSE401-19/ CSE401	CO1	Capability to acquire and apply fundamental principles of engineering
				CO2	Become master in one's specialized technology
				CO3	Knack to be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills
70	7	Concepts of Operating System	CSE471-18/ CSE471-19/ CSE471	CO1	Describe the important computer system resources and the role of operating system in their management policies and algorithms
				CO2	Understand the process management policies and scheduling of processes by CPU
				CO3	Describe and analyze the memory management and its allocation policies
71	7	Data Warehouse & Data Mining	CSE473-18/ CSE473-19/ CSE473	CO1	Demonstrate an understanding of the importance of data mining and data warehouse
				CO2	Organize and Prepare the data needed for data mining using pre preprocessing techniques
				CO3	Perform exploratory analysis of the data to be used for mining
72	8	Fundamentals of Digital Signal Processing	CSE404-18/ CSE404-19/ CSE404	CO1	Interpret, represent and process discrete/digital signals and sytems
				CO2	Design, implementation, analysis and comparison of digital filters for processing of discrete time signals
				CO3	Practical implementation issues such as computational complexity, hardware resource limitations as well as cost of DSP systems or DSP Processors
73	8	Computational Intelligence	CSE406-18/ CSE406-19/CSE406	CO1	Apply these techniques in applications which involve perception, reasoning and learning
				CO2	To understand the fundamental theory and concepts of neural networks, neuro-modeling, several neural network paradigms and its applications.
				CO3	To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic control and other machine intelligence applications of fuzzy logic
				CO4	To understand the basics of an evolutionary computing paradigm known as genetic algorithms and its application to engineering optimization problems
74	8	Ad-hoc Wireless Network	CSE408-18/ CSE408-19/CSE408	CO1	Explain the Fundamental Concepts and applications of ad hoc and wireless sensor networks
				CO2	Describe routing protocols for ad hoc wireless networks with respect to TCP design issues
				CO3	Explain the concepts of network architecture and MAC layer protocol for WSN
				CO4	Examine the network security solution and routing mechanism

75	8	Major Project	CSE402-18/ CSE402-19/CSE402	CO1	Discover potential research areas in the field of IT
				CO2	Compare and contrast the several existing solutions for research challenge
				CO3	Demonstrate an ability to work in teams and manage the conduct of the research study
				CO4	Formulate and propose a plan for creating a solution for the research plan identified
76	8	Image Analysis	CSE472-18/ CSE472-19/ CSE472	CO1	Review the fundamental concepts of a digital image processing system
				CO2	Analyze images in the frequency domain using various transforms.
				CO3	Evaluate the techniques for image enhancement and image restoration
				CO4	Categorize various compression techniques
77	8	Concepts of Cloud Computing	CSE474-18/ CSE474-19/ CSE474	CO1	Define Cloud Computing and memorize the different Cloud service and deployment models
				CO2	Describe importance of virtualization along with their technologies
				CO3	Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing
				CO4	Explain the core issues of cloud computing such as security, privacy, and interoperability
				CO5	Provide the appropriate cloud computing solutions and recommendations according to the applications used
78	8	Big Data	CSE476-18/ CSE476-19/ CSE476	CO1	Explain the motivation for big data systems and identify the main sources of Big Data in the real world
				CO2	Demonstrate an ability to use frameworks like Hadoop, NOSQL to efficiently store retrieve and process Big Data for Analytics
				CO3	Apply several newer algorithms for Clustering Classifying and finding associations in Big Data
				CO4	Develop Big Data Solutions using Hadoop Eco System
79	8	Network Security	CSE478-18 /CSE478-19/ CSE478	CO1	To provide conceptual understanding of network security issues, challenges and mechanisms
				CO2	To develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms
				CO3	To describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms
				CO4	Various network security applications, IPSec, Firewall, IDS, Web security, Email security, and Malicious software etc
80	1&2	Fundamentals of Computer Technology	CSE101-18	CO1	Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.
				CO2	To inculcate the skills to develop algorithms and flowcharts for a given problems.
				CO3	Understanding the concept of computer software and their different types.
				CO4	Write, compile and debug programs in C++ language and use different data types for writing the programs.
				CO5	Design programs connecting decision structures, loops and array.
				CO6	Design programs of OOPs by using class.
81	1&2	Fundamentals of Computer Technology Laboratory	CSE103-18	CO1	To understand basics of computers, Input Output devices and programming concepts of C++
				CO2	To inculcate the skills to design logic to the problems.
				CO3	To develop solutions to problems demonstrating usage of control structure, modularity, classes, I/O and the scope of the class me
				CO4	To implement solutions to various I/O operations and String manipulations
82	1&2	Physical Training- II (NSO/NCC/NSS)	PT102-18/PT104-18/PT106-18	CO1	To imbibe the concepts and benefits of NCC/NSS/NSO
				CO2	To practice the NCC/NSS/NSO
				CO3	To compete and excel in NCC/NSS/NSO

Dr. Jagdeep ... Dr. Vijay Dhir

UNIVERSITY INSTITUTE OF ENGINEERING & TECHNOLOGY

B.TECH COMPUTER SCIENCE & ENGINEERING

PO, PEO, PSO AND CO (BATCH 2021 ONWARDS)

Dr. Jagdeep Kaur
(Dy. Dean)

Dr. Vijay Dhir
(Dean)

Under graduate Programme Outcomes (PO)- B.TECH

At the end of Programme/Degree mentioned above , the graduates will be able to ......

PO1.	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and engineering specialization to the solution of complex engineering problems.
PO2.	**Problem analysis:** Identify, formulate, research literature, and analyze engineering problems to arrive at substantiated conclusions using first principles of mathematics, natural, and engineering sciences.
PO3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components, processes to meet the specifications with consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.
P10	**Communication:** Communicate effectively with the engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions
P11	**Project management and finance**: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments
P12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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(Dean)

Under Graduate Programme Specific Outcomes (PSO)- B.TECH

PSO1.	Ability to acquire knowledge in Computer Science and Engineering and develop innovative solutions to complex problems.
PSO2.	Design and build websites, android apps, automated projects using the knowledge of programming, testing,life cycle models, artificial intelligence, machine learning and CASE tools.
PSO3.	Pursue life long learning in advanced technologies of Computer Science and Engineering and apply it for the benefit of the society.

Under Graduate Programme Educational Objective (PEO)- B.TECH

The Graduate/Undergraduate will be….

PEO1.	**Acquiring knowledge of Computer Science and other engineering disciplines for analyzing and developing innovative solutions to real world problems.**
PEO2.	**Developing interdisciplinary projects using latest tools, techniques and models for the benefit of the society and environment**
PEO3	**Demonstrating team leadership and effective communication skills while pursuing a career in life-long learning, research and development or generating employments through startups.**
PEO4	**Preparing competitive examinations for higher studies abroad or for getting job in private, public or multinational companies.**

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COURSE OUTCOMES FOR B.TECH CSE, BATCH 2021 ONWARDS

S.No	Semester	Course	Course Code	Course Outcome	
1	3	Computer Organization and Architecture	CSE251	CO1	Draw the functional block diagram of a single bus architecture of a computer and describe the function of the instruction execution cycle, RTL interpretation of instructions, addressing modes, instruction set.
				CO2	Write assembly language program for specified microprocessor for computing 16 bit multiplication, division and I/O device interface (ADC, Control circuit, serial port communication).
				CO3	Write a flowchart for Concurrent access to memory and cache coherency in Parallel Processors and describe the process.
				CO4	Given a CPU organization and instruction, design a memory module and analyze its operation by interfacing with the CPU.
				CO5	Given a CPU organization, assess its performance, and apply design techniques to enhance performance using pipelining, parallelism and RISC methodology
2	3	Computer Organization and Architecture Laboratory	CSE257	CO1	Assemble personal computer.
				CO2	Implement the various assembly language programs for basic arithmetic and logical operations.
				CO3	Demonstrate the functioning of microprocessor/microcontroller-based systems with I/O interface.
3	3	Engineering Mathematics-III	MAT253	CO1	Acquaint with the derivative of functions of more than one variable and the concept of Maxima & Minima
				CO2	Find double integrals and apply the idea in certain problems arising in the engineering
				CO3	To use effective mathematical tools for the solutions of differential equations that model physical processes
4	3	IT Workshop	CSE255	CO1	Understand functions, loops and statements used in Matlab.
				CO2	Use MATLAB effectively to analyze and visualize data.

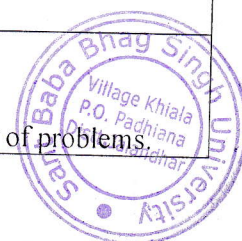Dr. Jagdeep ...
(Dr. Dean)

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(Dean)

				CO3	Demonstrate understanding and use of fundamental concepts of MATLAB to do simple but large calculations and print out graphs
5	3	IT Workshop laboratory	CSE261	CO1	Understand MATLAB functions, loops and statements
				CO2	Analyze input and output functions, for reading and writing data
				CO3	Implement arithmetic operations on Matrices.
6	3	Data Structure and algorithms	CSE253	CO1	For a given algorithm student will able to analyze the algorithms to determine the time and computation complexity and justify the correctness.
				CO2	For a given Search problem (Linear Search and Binary Search) student will able to implement it.
				CO3	For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
				CO4	Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity.
				CO5	Student will able to implement Graph search and traversal algorithms and determine the time and computation complexity.
7	3	Data Structure and algorithms Laboratory	CSE259	CO1	Design and analyze the time and space efficiency of the data structure
				CO2	Identity the appropriate data structure for given problem.
				CO3	Gain practical knowledge on the applications of data structures
8	3	Analog Electronics Circuits	EE217	CO1	Understand the characteristics of transistors.
				CO2	Design and analyze various rectifier and amplifier circuits.
				CO3	Design sinusoidal and non-sinusoidal oscillators.

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#		Course	Code	CO	Description
				CO4	Understand the functioning of OP-AMP and design OP-AMP based circuits
9	3	Analog Electronics Circuits Laboratory	EE223	CO1	Study of the characteristics of diodes and transistors.
				CO2	Design and analyze diode and transistor-based circuits.
				CO3	Understand the functioning of OP-AMP and design OP-AMP based circuits.
10	3	Effective Technical Communication	ENG205	CO1	Understand Language skills.
				CO2	Use their technical writing and presentation skills effectively to draft business letters, email messages, fax, acceptance and rejection letters.
				CO3	Analyze importance of LSRW skills in communication.
				CO4	Enhance self-esteem and personality development.
11	3	Engineering Mathematics-III	MAT253	CO1	Enable students to use Fourier Series & Laplace Transform to make Circuits in Electrical & Electronics Engineering.
				CO2	Check the condition for a complex variable function to be analytic and/or harmonic & find complex conjugates
				CO3	Enable students to use Laplace transform techniques to solve second-order ordinary differential equations i.
12	3	Physical Training- III (NSO/NCC/NSS)	PT201/PT203/PT205	CO1	To imbibe the concepts and benefits of NCC/NSS/NSO
				CO2	To practice the NCC/NSS/NSO
				CO3	To compete and excel in NCC/NSS/NSO
13	4	Discrete Mathematics	MAT212	CO1	Use mathematically correct terminology and notation
				CO2	Construct correct direct and indirect proofs
				CO3	Use division into cases in a proof.
				CO4	Use counter examples.
				CO5	Apply logical reasoning to solve a variety of problems.

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14	4	Design & Analysis of Algorithms	CSE256	CO1	For a given algorithms analyze worst-case running times of algorithms based on asymptotic analysis and justify the correctness of algorithms .
				CO2	Describe the greedy paradigm and explain when an algorithmic design situation calls for it. For a given problem develop the greedy algorithms.
				CO3	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and- conquer algorithms. Derive and solve recurrence relation.
				CO4	Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. For a given problems of dynamic-programming and develop the dynamic programming algorithms, and analyze it to determine its computational complexity.
15	4	Design & Analysis of Algorithms Laboratory	CSE262	CO1	Analyze the complexities of various problems in different domains.
				CO2	Understand methods for analyzing the efficiency and correctness of algorithms (such as exchange arguments, recurrence, induction, and average case analysis).
				CO3	Compare, contrast, and choose appropriate algorithmic design techniques to present an algorithm that solves a given problem.
				CO4	Develop the efficient algorithms for the new problem with suitable designing techniques.
16	4	Operating Systems	CSE254	CO1	Create processes and threads.
				CO2	Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time. Waiting Time, Response Time.
				CO3	For a given specification of memory organization develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time.
				CO4	Design and implement file management system.
				CO5	For a given I/O devices and OS (specify) develop the I/O management functions in OS as part of a uniform device
17	4	Environmental Studies	EVS002	CO1	Measure environmental variables and interpret results.
				CO2	Evaluate local, regional, and global environmental topics related to resource use and management.
				CO3	Propose solutions to environmental problems related to resource

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18	4	Organization Behavior	MGT007	CO1	Understand the main theories of Organizational Behavior;
				CO2	Analyze how these theories and empirical evidence can help to understand contemporary organizational issues;
				CO3	To apply theories to practical problems in organizations in a critical manner.
19	4	Operating Systems Lab	CSE266	CO1	Understand and execute basic commands of shell script.
				CO2	Apply basic operations in shell scripts which are required for different applications.
				CO3	Identify and understand concept of file systems in shell script
				CO4	Apply concept of creating new process from parent process.
20	4	Universal Human Values 2: Understanding Harmony	SSC007	CO1	To become more aware of themselves, and their surroundings(family, society, nature)
				CO2	More responsible in life, and in handling problems with sustainable solutions.
				CO3	Keeping human relationships and human nature in mind.
21	4	Digital Electronics	EE216	CO1	Understand working of logic families and logic gates.
				CO2	Design and implement Combinational and Sequential logic circuits.
				CO3	Understand the process of Analog to Digital conversion and Digital to Analog conversion.
				CO4	Be able to use PLDs to implement the given logical problem.
22	4	Digital Electronics Laboratory	EE224	CO1	Study and understand truth table
				CO2	Design and Verify Adder and Subtractor
				CO3	Implement encode and decoder using logic gates.
				CO4	Verify flip flops: RS, JK, D and T.
23	4	Physical Training-IV (NSO/NCC/NSS)	PT202/PT204/PT206	CO1	To imbibe the concepts and benefits of NCC/NSS/NSO
				CO2	To practice the NCC/NSS/NSO

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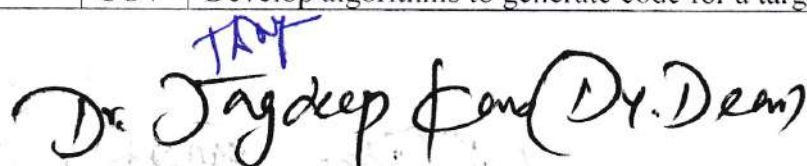|					
24	5	Object Oriented Programming	CSE357	CO1	Understand concepts of object-oriented programming.
				CO2	Compare Object oriented programming with procedure-oriented programming.
				CO3	Write object-oriented programs using classes, objects, overloading operators and member functions.
				CO4	Apply constant keyword, friend class, constructors and destructors through programming.
25	5	Object Oriented Programming Laboratory	CSE367	CO1	Design a program using member function in and out of the class.
				CO2	Write a program to demonstrate use of Constructors and Destructors.
				CO3	Implement operator overloading through C++ programming
				CO4	Demonstrate Inheritance and polymorphism in real world problems using C++
26	5	Signals and Systems	EE222	CO1	Understand the concepts of continuous time and discrete time systems.
				CO2	Analyse systems in complex frequency domain.
				CO3	Understand sampling theorem and its implications
27	5	Database Management System	CSE353	CO1	For a given query write relational algebra expressions for that query and optimize the developed expressions
				CO2	For a given specification of the requirement design the databases using E-R method and normalization.
				CO3	For a given specification construct the SQL queries for Open source and Commercial DBMS - MYSQL, ORACLE, and DB2.
				CO4	For a given query optimize its execution using Query optimization algorithms
				CO5	For a given transaction-processing system, determine the transaction atomicity, consistency, isolation, and durability.
				CO6	Implement the isolation property, including locking, time stamping based on concurrency control and Serializability of scheduling.

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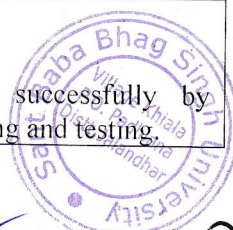|					
28	5	Database Design and Management Laboratory	CSE365	CO1	Understand, appreciate and effectively explain the underlying concepts of database technologies
				CO2	Design and implement a database schema for a given problem-domain
				CO3	Normalize a database
				CO4	Populate and query a database using SQL DML/DDL commands.
				CO5	Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS
29	5	Formal Language and Automata Theory	CSE355	CO1	Write a formal notation for strings, languages and machines.
				CO2	Design finite automata to accept a strings of a language
				CO3	For a given language determine whether the given language is regular or not
				CO4	Distinguish between computability and non-computability and decidability and undecidability
30	5	Human Values and Professional Ethics	SSC006	CO1	Understand the significance of value inputs in a classroom and start applying them in their life and profession
				CO2	Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
				CO3	Understand the value of harmonious relationship based on trust and respect in their life and profession
				CO4	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.
31	5	Constitution of India	LAW005	CO1	To understand and explain concepts in constitutional law.
				CO2	Identify and discuss in depth the sources of constitution.
				CO3	To understand how the governance system is working in the country
				CO4	To understand the relations between Centre and State including legislative, executive and financial.
				CO5	Understand the distinction between various constitutional organs and their relations with each other and concept of separation of power.
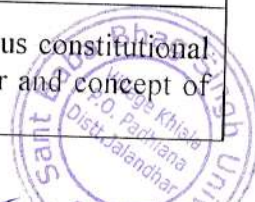
32	5	Mobile Application Development	CSE359		
				CO1	Define multimedia to potential clients.
				CO2	Identify and describe the function of the general skill sets in the multimedia industry.
				CO3	Identify the basic components of a multimedia project.
33	5	Programming in Java	CSE361	CO1	Use an integrated development environment to write, compile, run, and test simple object- oriented Java programs.
				CO2	Read and make elementary modifications to Java programs that solve real-world problems.
				CO3	Validate input in a Java program.
				CO4	Identify and fix defects and common security issues in code.
34	5	Computer Graphics	CSE363	CO1	Understand the fundamental graphical operations and the implementation on computer.
				CO2	Get a glimpse of recent advances in computer graphics.
				CO3	Describe user interface issues that make the computer easy for the novice to use.
				CO4	Discuss interface issues that make the computer easy for the novice to use.
35	6th	Compiler Design	CSE352	C01	For a given grammar specification develop the lexical analyser
				CO2	For a given parser specification design top-down and bottom-up parsers
				CO3	Develop syntax directed translation schemes
				CO4	Develop algorithms to generate code for a target machine

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36	6th	Compiler Design Laboratory	CSE376	C01	Design Lexical analyzer for given language using C and LEX tools.
				CO2	Design and convert BNF rules into YACC form to generate various parsers.
				C03	Generate various parsers.
				CO4	Generate machine code from the intermediate code forms
				CO5	Implement Symbol table
37	6th	Computer Networks	CSE354	CO1	Explain the functions of the different layer of the OSI Protocol.
				CO2	Draw the functional block diagram of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) describe the function of each block.
				CO3	For a given requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component
				CO4	For a given problem related TCP/IP protocol developed the network programming.
				CO5	Configure DNS DDNS, TELNET, EMAIL, File Transfer
38	6th	Computer Network Laboratory	CSE378	CO1	Understand functionality of various network components.
				CO2	Prepare straight cable and cross cable
				CO3	Configure TCP/IP protocol in windows & LINUX
				CO4	Implement file and printer sharing
				CO5	Design class A, B and C network
39	6th/ 7th/ 8th	Project-I/ Project-II/Project-III	CSE380/ CSE463/ CSE458	C01	Identify the requirements for the real world problems
				CO2	Study and enhance software/ hardware skills
				C03	Demonstrate and build the project successfully by hardware requirements, coding, emulating and testing.

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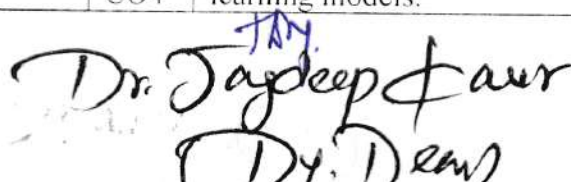|					
40	6th	Data Mining	CSE358	C01	Understand the concepts of Data Mining
				CO2	Familiarize with association rule mining
				CO3	Familiarize various classification algorithms
				CO4	Understand the concepts of Cluster analysis
				CO5	Explain various clustering techniques
41	6th	Computer Vision	CSE360	CO1	Identify basic concepts, terminology, theories, models and methods in the field of computer vision
				CO2	Describe basic methods of computer vision related to multi-scale representation, edge detection and detection of other primitives, stereo, motion and object recognition.
				CO3	Assess which method to use for solving a given problem.
				CO4	Analyze the accuracy of the methods
42	6th	Internet web Programming	CSE362	CO1	Implement interactive web page(s) using HTML, CSS and JavaScript.
				CO2	Design a responsive web site using HTML5 and CSS3.
				CO3	Describe and differentiate different Web Extensions and Web Services.
				CO4	Build Dynamic web site using server side PHP Programming and Database connectivity.
43	6th	Machine Learning	CSE364	CO1	Recognize the characteristics of machine learning that make it useful to real-world problems.
				CO2	Characterize and differentiate between supervised and unsupervised learning techniques.
				CO3	Explain Reinforcement learning and its control
				CO4	Represent concepts of Decision trees.
44	6th	Distributed Systems	CSE366	C01	Identify characteristics of distributed system.
				CO2	Explain the system models of distributed processing and communication.
				CO3	Explain distributed deadlock detection.
				CO4	Explain distributed transaction and its types.

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45	6th	Wireless Communications	CSE368	CO1	Understand and explain the Classification of mobile communication systems.
				CO2	Examine state-of-the-art distributed systems, such as Google File System.
				CO3	Learn the principles, architectures, algorithms and programming models used in distributed systems
46	7th	Cryptography & Security	CSE451	CO1	Understand concepts related to security attacks, encryption, decryption techniques, substitution and transposition techniques.
				CO2	Describe principles of public key cryptography, RSA algorithm.
				CO3	Explain authentication requirements and use of hash function
47	7th	Multimedia & Animation	CSE453	C01	Understand fundamentals of animation.
				CO2	Get knowledge of 3D Modeling tools
				CO3	Compare between Polygon Modeling and NURBS modeling
48	7th	Natural Language Processing	CSE455	C01	Understand basic concepts of Natural language processing
				CO2	Explain Machine translation and speech recognition
49	7th	Graph Theory	CSE453	CO1	Understand basic concepts of graph
				CO2	Apply Kruskal and Dijkstra algorithms
				CO3	Describe matrix representation of graph
				CO4	Solve chromatic polynomial
50	7th	Design & Management of Big Data	CSE409	CO1	Identify the characteristics of datasets and compare the trivial data and big data for various applications.
				CO2	Understand and apply Hadoop architecture and associated computing techniques and technologies.
				CO3	Select and implement computing environment, Hadoop, Hive that are suitable for the applications under consideration.
				CO4	Recognize and implement Hadoop ecosystem components YARN,HIVE and PIG.

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51	7th	Cloud Computing	CSE461	CO1	Understand characteristics and types of cloud computing
				CO2	Describe architecture of cloud computing
				CO3	Explain virtualization and its types
				CO4	Demonstrate knowledge of cloud computing to real world examples
52	7th	General Biology	BOT002	CO1	Students will learn about diverse biological systems and their functions
				CO2	Students will learn about the enzymes macromolecules works in the diverse organisms.
				CO3	Students will learn about the relationship of genetics and morphological features of the organism and their passage from parents to offsprings
				CO4	Students will learn about application of thermodynamic principles in biological system
53	8th	Digital Signal Processing	EE418	CO1	Represent signals mathematically in continuous and discrete-time, and in the frequency domain.
				CO2	Analyse discrete-time systems using z-transform.
				CO3	Understand the Discrete-Fourier Transform (DFT) and the FFT algorithms.
				CO4	Design digital filters for various applications.
				CO5	Apply digital signal processing for the analysis of real-life signals.
54	8th	Computational Intelligence	CSE454	CO1	To Illustrate fundamental understanding of artificial intelligence (AI)and its applications.
				CO2	To apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning
				CO3	To acquire the knowledge of real-world Knowledge representation.
				CO4	To Illustrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, artificial neural networks and other machine learning models.

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55	8th	Internet of Things	CSE456		
				CO1	To learn about the middleware for Internet of Things.
				CO2	Understand the concepts of Web of Things
56	6th	Basics of Computer Network	CSE381		
				CO1	Understand basics of computer network
				CO2	Describe ISO-OSI reference model
				CO3	Explain various layers of OSI model
				CO4	Implement and demonstrate networking
57	6th	Introduction to Big Data Analytics	CSE383		
				CO1	Understand introduction to Big Data and Hadoop.
				CO2	Explain the design of Hadoop Distributed File System
				CO3	Discuss Hadoop file system interfaces.
				CO4	Explain MapReduce and its features
58	6th	CyberSecurity	CSE382		
				CO1	Analyze and evaluate the cyber security needs of an organization.
				CO2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.
				CO3	Measure the performance and troubleshoot cyber security systems
59	6th	Adhoc Wireless Network	CSE384		
				CO1	Understand concepts of adhoc networks
				CO2	Describe and understand MAC protocols and its issues
				CO3	Explain WSN routing and QIOS in WSN
				CO4	Examine necessity for mesh network

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60	6th	Basic of Database Design	CSE481		
				CO1	Understand basic concepts of database
				CO2	Develop and Design ER diagram
				CO3	Develop Relational database management system using constraints and normalization concepts
				CO4	Implement security issues on the developed databases
61	7th	Fuzzy logic	CSE483	CO1	Understand concepts of Fuzzy logic and fuzzy set operations.
				CO2	Understand and describe operations on fuzzy relations.
				CO3	Explain features of the membership function
				CO4	Implement conversion of fuzzy to crisp using fuzzy arithmetic
62	6th	Datawarehouse	CSE484	CO1	Understand characteristics and functionality of data warehouse
				CO2	Explain architecture of Data warehouse
				CO3	Explain types of OLAP architectures.
				CO4	Explain schemas in data warehouse
63	6th	Image Analysis	CSE486	CO1	Understand basic concepts of digital image processing
				CO2	Describe image enhancement techniques
				CO3	Explain image restoration and compression using degradation models

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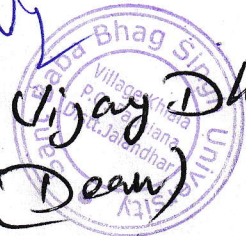| 64	6th	Grid Computing	CSE488		
				CO1	Understand parallel and distributed computing
				CO2	Explain grid monitoring systems
				CO3	Explain data management and grid security
65	6th	E-commerce and ERP	CSE490	CO1	Equip students with the basics of E-Commerce, technologies involved with it and various issues associated with.
66	6th	Network security	CSE492	CO1	Understand basic concepts and security in network technology
				CO2	Explain IPv6
				CO3	Explain classical encryption techniques
				CO4	Illustrate applications of Network Security

UNIVERSITY INSTITUTE OF ENGINEERING & TECHNOLOGY

M.TECH COMPUTER SCIENCE & ENGINEERING

PO, PEO, PSO AND CO (BATCH 2021 ONWARDS)

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Dr. Vijay Dhir
(Dean)

Post-Graduate Programme Outcomes (PO)- M.TECH
At the end of Programme/Degree mentioned above , the post graduates will be able to ......

PO1	Apply the scientific knowledge gained from the study of computer science and engineering for developing research projects, writing research papers, understanding the need of patents and copyrights. (Research knowledge)
PO2	Generate solution to research problems in the field of computer science and engineering using analytical and reasoning tools.(Problem Solving)
PO3	Innovate solutions through research and technological knowledge to address societal and environmental challenges. (Innovative Solutions)
PO4	Strengthen and focus on finding quality solution to complex problems through systematic research and development. (Research Skills)
PO5	Use case tools and techniques to formulate solution to engineering, research, medical and agriculture problems with reduced plagiarism. (Modern Tools usage)
PO6	Achieve desired goals through effective team leadership skills. (Collaborative and Multidisciplinary skills)
PO7	Develop and plan project delivery on time, in scope and with in the budget by applying the concepts of engineering and management. (Project Management and Finance)
PO8	Understand and implement human values and professional ethics for the welfare of the society.(Social Responsibilities and Ethical practices)
PO9	Professional communication skill plays major role in building relationships, trust and helps one to understand better and to present his views across table in an effective manner. (Communication)
P10	Ensure life-long learning to keep oneself updated and to better understand current scenario. (Life-long learning)
P11	Effective research and development is possible through independent thinking and learning skills. (Independent and Reflective Learning)

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Post -Graduate Programme Educational Objective (PEO) -M.TECH The Graduate/Postgraduate will be….	
PEO1.	Contributing to research and development through the knowledge gained during study of specializations in Computer Science & Engineering.
PEO2.	Developing innovative solutions to complex problems using research ethics and Intellectual property rights.
PEO3	Demonstrating human values and professional ethics while working collaboratively on multidisciplinary projects.
PEO4	Pursuing career in life long learning or generating employments by setting of startups for the welfare and well being of rural youth.

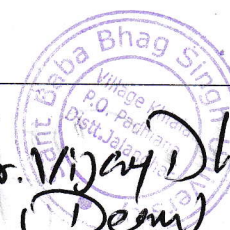| Post Graduate Programme Specific Outcomes (PSO)- M.TECH	
PSO1.	Analyze and understand the need of research and development, Intellectual property rights , patents and plagiarism checking tools.
PSO2.	Ability to understand the need of human values and professional ethics while publishing research papers, writing and developing research projects, research grants, books and dissertations.
PSO3	Pursue a career in software development, entrepreneurship, database administration, network and cyber security, artificial intelligence, machine learning, higher studies, teaching or quality testing using available CASE tools.

Dr. Jagdeep Kaur
(Dy. Dean)

Dr. Vijay Dhir
(Dean)

COURSE OUTCOME FOR M.TECH, BATCH 2021 ONWARDS

1	1st	Artificial Intelligence Techniques	CSE501	CO1	To explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence
				CO2	To explain how Artificial Intelligence enables capabilities that are beyond conventional technology, for example, chess- playing computers, self-driving cars, robotic vacuum cleaners.
				CO3	To use classical Artificial Intelligence techniques, such as search algorithms, mini-max algorithm, neural networks, tracking, and robot localization.
				CO4	To apply Artificial Intelligence techniques for problem solving
2	1st	Data Structure Programming	CSE503	CO1	To describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
				CO2	To describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs
				CO3	To demonstrate different methods for traversing trees
				CO4	To discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing
3	1st	Research Methodology & IPR	MAT524	CO1	To understand the need of research.
				CO2	To analyze the importance of literature review in problem formulation.
				CO3	To differentiate between primary and secondary source of data.
				CO4	To prepare research proposal and draft thesis report.
4	1st	Data Structure Programming Laboratory	CSE505	CO1	To implement various operations in arrays
				CO2	To implement various operation in stack and queue
				CO3	To implement sorting algorithms

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Dr. Vijay Dhir
(Dean)

5	1st	Advanced Distributed System	CSE507	CO1	To understand the basic principles of distributed systems.
				CO2	To describe the problems and challenges associated with functioning of distributed systems.
				CO3	To explain how these problems affect the software design
6	1st	Network Technology and Security	CSE509	CO1	To understand basic protocols of Ipv6
				CO2	To explain the need of security techniques across network to protect data and information.
				CO3	To describe encryption and decryption techniques
				CO4	To design a secured network
7	1st	Adhoc Networking	CSE511	CO1	To understand MAC protocols.
				CO2	To classify routing protocols.
				CO3	To identify issues in adhoc transport layer.
				CO4	To describe Sensor Network architecture.
8	1st	Data Mining and Data Warehouse Technology	CSE513	CO1	To identify the problem
				CO2	To understand models and algorithms in data warehousing and data mining
				CO3	To choose relevant models and algorithms
				CO4	To apply and analyze the behavior of the algorithms.

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9	1st	Cloud computing technology	CSE515	CO1	To understand the importance of cloud computing
				CO2	To list characteristics of cloud computing
				CO3	To describe different types of cloud
				CO4	To explain architecture of cloud computing
10	1st	Advanced Parallel Computing	CSE517	CO1	To understand basic terms used in parallel computing
				CO2	To classify parallel computers
				CO3	To describe parallel computer architecture
				CO4	To analyze parallel algorithms
11	1st	Advanced Distributed System Laboratory	CSE519	CO1	To understand the client server based program
				CO2	To implement Mutual Exclusion algorithms
				CO3	To demonstrate process or code migration
12	1st	Network technology and Security Laboratory	CSE521	CO1	To understand the concepts of confidentiality, availability and integrity (CIA) in context of information assurance.
				CO2	To handle configuring host and network level technical security controls to include host firewalls, user access controls, intrusion detection, prevention and encryption at all levels
				CO3	To describe the hardware, software and services that comprise an enterprise network.
				CO4	To articulate integration of components to form a network solution
13	1st	Adhoc Networking Laboratory	CSE523	CO1	To understand devices and equipment's needed in installation of network
				CO2	To describe configuration and installation of active directory.
				CO3	To design a peer-to-peer Adhoc Wireless Network
14	1st	Data Mining and Data Warehouse technology laboratory	CSE525	CO1	To understand building of Data Warehouse
				CO2	To describe classification of data sets
				CO3	To perform clustering on data sets
15	2nd	Cloud Computing Technology Laboratory	CSE527	CO1	To create spreadsheets and notes on Google drive.
				CO2	To define and implement virtualization using different types of hypervisors.
				CO3	To Install and configure Hadoop
16	2nd	Parallel Computing Laboratory	CSE529	CO1	To write a single instruction multiple data parallel program
				CO2	To design and implement a network

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Dr. Vijay Dhir
(Dean)

17	2nd	Mathematical Foundation of Computer Science	CSE502	CO1	To understand Mathematical logic and Truth tables
				CO2	To describe Set Theory
				CO3	To explain algebraic structures with examples and properties.
				CO4	To solve combinations and permutations.
18	2nd	Soft Computing Technologies	CSE504	CO1	To comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory.
				CO2	To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic.
				CO3	To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitations.
				CO4	To understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications
19	2nd	Soft Computing Technologies Laboratory	CSE506	CO1	To understand components of Soft Computing and its implementation in MATLAB
				CO2	To analyze the applications which can use Fuzzy logic
				CO3	To explore practical applications of Neural Networks
20	2nd	Mini Project with Seminar	CSE508	CO1	To understand different aspects of problem.
				CO2	To describe the problem statement by doing thorough Literature survey
				CO3	To design solution to complex innovative problem
				CO4	Analyze and present seminar report along with a project in the area of study.
21	2nd	Advanced Database Design and Management System	CSE510	CO1	To explain the features of database management systems and Relational database.
				CO2	To analyze the existing design of a database schema using ER diagrams and apply concepts of normalization to design an optimal database.
				CO3	To identify the need of Concurrent transactions and locking and explain their types, advantages and disadvantages
22	2nd	Natural Language Processing	CSE514	CO1	To apply core computer science concepts and algorithms, such as dynamic programming.
				CO2	To apply the methods to new NLP problems and will be able to apply the methods to problems outside NLP.
				CO3	To get familiar with some of the NLP literature and will read and suggest improvements to published work.
				CO4	To conduct research in NLP or related fields.

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23	2nd	Machine Learning using Python	CSE516	CO1	To identify and Understand goals and applications of Machine Learning.
				CO2	To design and analyze various machine learning techniques and computing environment that are suitable for the applications under consideration.
				CO3	To understand and explore supervised and unsupervised learning paradigms of machine learning
				CO4	To explore deep learning techniques and various feature extraction strategies.
24	2nd	Image processing using Matlab	CSE518	CO1	To understand the need for image transforms different types of image transforms and their properties.
				CO2	To develop any image processing application.
				CO3	To understand the rapid advances in machine vision.
				CO4	To learn different techniques employed for the enhancement of images.
25	2nd	Advanced Software Engineering	CSE520	CO1	To define various software application domains and remember different process models that are used in software development.
				CO2	To explain the need of software specifications. Moreover, they can classify different types of software requirements and their gathering techniques.
				CO3	To convert the requirements model into the design model and demonstrate use of software and user interface design principles.
				CO4	To distinguish between SCM and SQA and can also able to classify different testing strategies and statics.
26	2nd	Advanced Database Design and Management System Laboratory	CSE522	CO1	To formulate and analyze problem statement
				CO2	To identify the need of design and normalization
				CO3	To design a database using ER diagrams and integrity constraints
				CO4	To implement a database which ensures data security norms
27	2nd	Big Data Analytics Laboratory	CSE512	CO1	To optimize business decisions.
				CO2	To understand the architectural concepts of Hadoop and map reduce
				CO3	To implement java concepts required for map reduce programs
				CO4	To apply PIG and HIVE in Hadoop echo system.
				CO5	Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media application

Dr. Jagdeep Kaur (Dy. Dean)   Dr. Vijay Dhir (Dean)
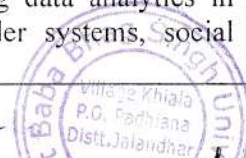
28	2nd	Natural Language Processing Laboratory+C 423	CSE526	CO1	To analyze and understand basics of NLP
				CO2	To develop advanced NLP tools
				CO3	To design solutions to practical problems in the field of NLP
29	2nd	Machine Learning using python laboratory	CSE528	CO1	To identify solution for a problem using machine learning techniques
				CO2	To solve the problem using identified machine learning technique.
				CO3	To apply Dimensionality reduction techniques.
				CO4	Design application using python.
30	2nd	Image processing using Matlab laboratory	CSE530	CO1	To understand the need for simulation/implementation for the verification of mathematical functions.
				CO2	To understand the main features of the MATLAB/SCILAB program development environment to enable their usage in the higher learning.
				CO3	To implement simple mathematical functions/equations in numerical computing environment such as MATLAB/SCILAB.
				CO4	To interpret and visualize simple mathematical functions and operations there on using plots/display
31	2nd	Advanced Software Engineering Laboratory	CSE532	CO1	To study and use CASE tools.
				CO2	To develop and design software requirement specification for an identified problem statement.
				CO3	To check feasibility of the identified solution and draft project plan using Gantt Chart
				CO4	To calculate complexity and develop UML diagrams for the identified problem statement .
32	3rd	Dissertation-I	CSE601	CO1	To understand the need of problem formulation after literature review.
				CO2	To review the format of writing research paper and thesis report
				CO3	To identify the dissertation goal and Research question
				CO4	To design a research paper with no plagiarism
33	3rd	Mobile Computing Concepts and Technology	CSE603	CO1	To understand the architecture and applications of mobile computing
				CO2	To analyze Network aspects and security issues in GSM and GPRS
				CO3	To describe challenges during data dissemination
				CO4	To explain Middleware services

Dr. Jagdeep Kaur
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34	3rd	Cryptography and Information Security	CSE605	CO1	To understand critical concepts of information security.
				CO2	To enumerate the phases of the security systems development life cycle.
				CO3	To describe the information security roles of professionals with in an organization
				CO4	To develop counter measures to provide a threat free system
35	3rd	Block Chain Architecture design and use cases	CSE607	CO1	To understand the basic architecture of blockchain.
				CO2	To understand theory of bitcoin.
				CO3	To describe components of blockchain.
				CO4	To explain applications of blockchain in financial service, supply chain.
36	3rd	Speech Signal Processing	CSE607	CO1	To record, analyze, characterize, modify, and synthesize signals.
				CO2	To use speech analysis and synthesis technologies, explain how they work, and discuss their strengths and limitations.
				CO3	To design, execute, interpret, and evaluate simple studies that utilize speech processing methods.
				CO4	To present and discuss research, both orally and in writing, to other students and scientists.
37	4th	Dissertation-II	CSE602	CO1	To prepare detailed dissertation report for pre-submission and final submission
				CO2	To comprehend and present the synopsis
				CO3	To Submit detailed report in front of the examination board
38	3rd	Introduction To Rural Technology & Community Development	CSE611	CO1	To understand nature, scope and limitation of statistics
				CO2	To analyze need and qualities of information
				CO3	To differentiate marketing selling and retailing
39	3rd	Industrial Safety Engineering	ME611	CO1	To identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
				CO2	To apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
				CO3	To communicate effectively with a range of audiences
				CO4	To recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Dr. Jaydeep Carver (Dy. Dean)

Dr. Vijay Dhir (Dean)

40	3rd	Concepts of composite material	ME613	CO1	To understand types, manufacturing processes, and applications of composite materials
				CO2	To analyze problems on macromechanical behavior of lamina
				CO3	To analyze problems on micromechanical behavior of lamina
				CO4	To analyze problems on macromechanical behavior of laminate
				CO5	To analyze problems on bending, buckling, and vibration of laminated plates and beams
				CO6	To obtain laminate behavior using a computer program
41	3rd	Concepts of Renewable Energy Resources	ME615	CO1	To make interpretation about the energy sources, comprehend the energy and energy types.
				CO2	To make interpretation about the solar energy, explain the solar energy power plants.
				CO3	To make interpretation about the geothermal energy, explain the production of electricity from geothermal fluid.
42	3rd	Electrical Installation and safety	EE611	CO1	To acquire the knowledge of different types wires and wiring systems, electric supply act.
				CO2	To explain the importance of earthing, rating of wires and cables
43	3rd	Business Analytics	COM223	CO1	To understand the role of business analytics within an organization.
				CO2	To analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.
				CO3	To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.
				CO4	To become familiar with processes needed to develop, report, and analyze business data.
				CO5	To use decision-making tools/Operations research techniques.
				CO6	To manage business process using analytical and management tools.
				CO7	To analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc
44	3rd	Introduction to Internet of Things	CSE611	CO1	To demonstrate knowledge of data analytics.
				CO2	To demonstrate the ability of think critically in making decisions based on data and deep analytics.
				CO3	To demonstrate the ability to use technical skills in predicative and prescriptive modeling to support business decision-making.
				CO4	To demonstrate the ability to translate data into clear, actionable insights.

Dr. Jagdeep Kaur

(Dy. Dean)

45	3rd	Software Project Planning & Management	CSE613	CO1	To understand stepwise project planning, contract management and project evaluation techniques
				CO2	To perform strategic and technical assessment of the project under evaluation.
				CO3	To analyze cash flow and risk evaluation involved in the project
				CO4	To comprehend schedule of the project using network planning models.
				CO5	To identify and analyze hazards involved in the project
				CO6	To schedule, organize and monitor teams for effective project management
46	1st/ 2nd	ENGLISH FOR RESEARCH PAPER WRITING	ENG001	CO1	To develop writing skills by analyzing model texts
				CO2	To expand academic vocabulary
				CO3	To consolidate more advanced aspects of English grammar relevant to writing research papers
				CO4	To consolidate language functions found in research papers
				CO5	To compare various practices and conventions used in writing research papers across a range of disciplines
47	1st/ 2nd	DISASTER MANAGEMENT	EVS004	CO1	To learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response.
				CO2	To critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
				CO3	To develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
				CO4	To critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in
48	1st/ 2nd	SOCIAL AND VALUE EDUCATION	EDU004	CO1	To understand value of education and self- development
				CO2	To Imbibe good values in students.
				CO3	To gain knowledge about the importance of character.
49	1st/ 2nd	CONSTITUTION OF INDIA	LAW006	CO1	To discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
				CO2	To discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
				CO3	To discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
				CO4	To discuss the passage of the Hindu Code Bill of 1956.

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50	1st/ 2nd	PEDAGOGY STUDIES	EDU003	CO1	To understand what pedagogical practices are being used by teachers in formal and informal classrooms in developing countries.
				CO2	To explain what is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners.
				CO3	To demonstrate how can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.

Dr. Jaydeep Law
(Dy. Dean)

M.TECH COMPUTER SCIENCE & ENGINEERING

COURSE OUTCOMES OF 2020 BATCH

1	M.Tech 1st	Artificial Intelligence Techniques	CSE501	CO1	To explain what constitutes "Artificial" Intelligence and how to identify systems with Artificial Intelligence
				CO2	To explain how Artificial Intelligence enables capabilities that are beyond conventional technology, for example, chess- playing computers, self-driving cars, robotic vacuum cleaners.
				CO3	To use classical Artificial Intelligence techniques, such as search algorithms, mini-max algorithm, neural networks, tracking, and robot localization.
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2	1st	Data Structure Programming	CSE503	CO1	To describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
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				CO3	To differentiate between primary and secondary source of data.
				CO4	To prepare research proposal and draft thesis report.
4	1st	Data Structure Programming Lab	CSE505	CO1	To implement various operations in arrays
				CO2	To implement various operation in stack and queue

M.TECH COMPUTER SCIENCE & ENGINEERING

COURSE OUTCOMES OF 2020 BATCH

				CO3	To implement sorting algorithms
5	1st	Advanced Distributed System	CSE507	CO1	To understand the basic principles of distributed systems.
				CO2	To describe the problems and challenges associated with functioning of distributed systems.
				CO3	To explain how these problems affect the software design
6	1st	Network Technology and Security	CSE509	CO1	To understand basic protocols of Ipv6
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7	1st	Adhoc Network and its application	CSE511	CO1	To understand MAC protocols.
				CO2	To classify routing protocols.
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8	1st	Data Mining and Data Warehouse Technology	CSE513	CO1	To identify the problem
				CO2	To understand models and algorithms in data warehousing and data mining
				CO3	To choose relevant models and algorithms

M.TECH COMPUTER SCIENCE & ENGINEERING

COURSE OUTCOMES OF 2020 BATCH

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				CO4	To apply and analyze the behavior of the algorithms.
9	1st	Cloud computing technology	CSE515	CO1	To understand the importance of cloud computing
				CO2	To list characteristics of cloud computing
				CO3	To describe different types of cloud
				CO4	To explain architecture of cloud computing
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17	2nd	Mathematical Foundation of Computer Science	CSE502	CO1	To understand Mathematical logic and Truth tables
				CO2	To describe Set Theory
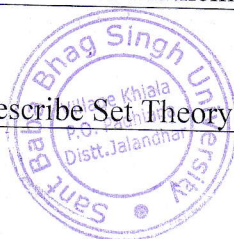
M.TECH COMPUTER SCIENCE & ENGINEERING

COURSE OUTCOMES OF 2020 BATCH

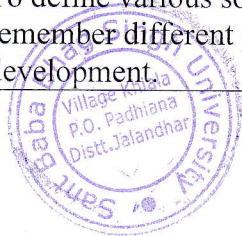|					
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				CO2	To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic.
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				CO2	To describe the problem statement by doing thorough Literature survey
				CO3	To design solution to the problem
				CO4	Analyze and present seminar report along with a project in the area of study.
21	2nd	Advanced Database Design and Management System	CSE510	CO1	To explain the features of database management systems and Relational database.

M.TECH COMPUTER SCIENCE & ENGINEERING

COURSE OUTCOMES OF 2020 BATCH

				CO2	To analyze the existing design of a database schema using ER diagrams and apply concepts of normalization to design an optimal database.
				CO3	To identify the need of Concurrent transactions and locking and explain their types, advantages and disadvantages
22	2nd	Natural Language Processing	CSE514	CO1	To apply core computer science concepts and algorithms, such as dynamic programming.
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24	2nd	Image processing using Matlab	CSE518	CO1	To understand the need for image transforms different types of image transforms and their properties.
				CO2	To develop any image processing application.
				CO3	To understand the rapid advances in machine vision.
				CO4	To learn different techniques employed for the enhancement of images.
25	2nd	Advanced Software Engineering	CSE520	CO1	To define various software application domains and remember different process models that are used in software development.

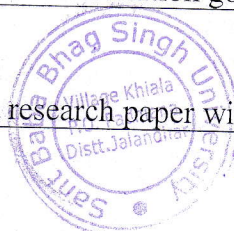|					
				CO2	To explain the need of software specifications. Moreover, they can classify different types of software requirements and their gathering techniques.
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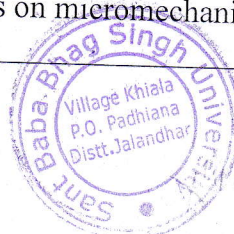| 33 | 3rd | Mobile Computing | CSE603 | CO1 | To understand the architecture and applications of mobile computing |
				CO2	To analyze Network aspects and security issues in GSM and GPRS
				CO3	To describe challenges during data dissemination
				CO4	To explain Middleware services
34	3rd	Cryptography and Information Security	CSE605	CO1	To understand critical concepts of information security.
				CO2	To enumerate the phases of the security systems development life cycle.
				CO3	To describe the information security roles of professionals with in an organization
				CO4	To develop counter measures to provide a threat free system
35	3rd	Block Chain Architecture design and use cases	CSE607	CO1	To understand the basic architecture of blockchain.
				CO2	To understand theory of bitcoin.
				CO3	To describe components of blockchain.
				CO4	To explain applications of blockchain in financial service, supply chain.
36	3rd	Speech Processing	CSE607	CO1	To record, analyze, characterize, modify, and synthesize signals.
				CO2	To use speech analysis and synthesis technologies, explain how they work, and discuss their strengths and limitations.
				CO3	To design, execute, interpret, and evaluate simple studies that utilize speech processing methods.

M.TECH COMPUTER SCIENCE & ENGINEERING

COURSE OUTCOMES OF 2020 BATCH

37	4th	Dissertation-II	CSE602	CO4	To present and discuss research, both orally and in writing, to other students and scientists.
				CO1	To prepare detailed dissertation report for pre-submission and final submission
				CO2	To comprehend and present the synopsis
				CO3	To Submit detailed report in front of the examination board
38	3rd	Introduction To Rural Technology & Community Development	CSE611	CO1	To understand nature, scope and limitation of statistics
				CO2	To analyze need and qualities of information
				CO3	To differentiate marketing selling and retailing
39	3rd	Industrial Safety Engineering	ME611	CO1	To identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
				CO2	To apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
				CO3	To communicate effectively with a range of audiences
				CO4	To recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
40	3rd	Concepts of composite material	ME613	CO1	To understand types, manufacturing processes, and applications of composite materials
				CO2	To analyze problems on macromechanical behavior of lamina
				CO3	To analyze problems on micromechanical behavior of lamina

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COURSE OUTCOMES OF 2020 BATCH

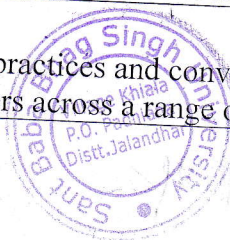|					
				CO4	To analyze problems on macromechanical behavior of laminate
				CO5	To analyze problems on bending, buckling, and vibration of laminated plates and beams
				CO6	To obtain laminate behavior using a computer program
41	3rd	Concepts of Renewable Energy Resources	ME615	CO1	To make interpretation about the energy sources, comprehend the energy and energy types.
				CO2	To make interpretation about the solar energy, explain the solar energy power plants.
				CO3	To make interpretation about the geothermal energy, explain the production of electricity from geothermal fluid.
42	3rd	Electrical Installation and safety	EE611	CO1	To acquire the knowledge of different types wires and wiring systems, electric supply act.
				CO2	To explain the importance of earthing, rating of wires and cables
43	3rd	Business Analytics	COMM223	CO1	To understand the role of business analytics within an organization.
				CO2	To analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.
				CO3	To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.
				CO4	To become familiar with processes needed to develop, report, and analyze business data.
				CO5	To use decision-making tools/Operations research techniques.
				CO6	To mange business process using analytical and management tools.
				CO7	To analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports.

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COURSE OUTCOMES OF 2020 BATCH

44	3rd	Internet of Things	CSE611-13		
				CO1	To demonstrate knowledge of data analytics.
				CO2	To demonstrate the ability of think critically in making decisions based on data and deep analytics.
				CO3	To demonstrate the ability to use technical skills in predicative and prescriptive modeling to support business decision- making.
				CO4	To demonstrate the ability to translate data into clear, actionable insights.
45	3rd	Software Project Planning & Management	CSE613	CO1	To understand stepwise project planning, contract management and project evaluation techniques
				CO2	To perform strategic and technical assessment of the project under evaluation.
				CO3	To analyze cash flow and risk evaluation involved in the project
				CO4	To comprehend schedule of the project using network planning models.
				CO5	To identify and analyze hazards involved in the project
				CO6	To schedule, organize and monitor teams for effective project management
46	1st/2nd	ENGLISH FOR RESEARCH PAPER WRITING	ENG001	CO1	To develop writing skills by analyzing model texts
				CO2	To expand academic vocabulary
				CO3	To consolidate more advanced aspects of English grammar relevant to writing research papers
				CO4	To consolidate language functions found in research papers
				CO5	To compare various practices and conventions used in writing research papers across a range of disciplines

47		DISASTER MANAGEMENT	EVS501	CO1	To learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response.
				CO2	To critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
				CO3	To develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
				CO4	To critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in
48	1st/2nd	VALUE EDUCATION	CSE001	CO1	To understand value of education and self- development
				CO2	To Imbibe good values in students.
				CO3	To gain knowledge about the importance of character
49	1st/2nd	CONSTITUTIONAL LAW	LAW001	CO1	To discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
				CO2	To discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
				CO3	To discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
				CO4	To discuss the passage of the Hindu Code Bill of 1956.
50	1st/2nd	PEDAGOGY STUDIES	EDU001	CO1	To understand what pedagogical practices are being used by teachers in formal and informal classrooms in developing countries.
				CO2	To explain what is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners.
				CO3	To demonstrate how can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy.