



**Lokmanya Tilak Jankalyan Shikshan Sanstha's**  
**PRIYADARSHINI BHAGWATI COLLEGE OF ENGINEERING**  
**An Autonomous Institute Affiliated to RTM, Nagpur University, Nagpur**  
**Accredited with Grade "A" by NAAC**  
 Harpur Nagar, Umred Road (Near Bada Tajbagh), Nagpur-440 024  
 Tel:+91-712-2710281,2710282;Fax:91-712-2710283  
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**Scheme of Teaching, Examination & Evaluation**  
**B. Tech. IV Semester Computer Science & Engineering**  
**(A Four-Year Degree Programme)**

Sr. No.	Category	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			Min. Passing Marks			Ex Duration (H)
				L	T/A	P		Continuous Evaluation	End Sem Exam	Total	Continuous Evaluation	End Sem Exam	Total	
1	PCC	CSE401T	Object Oriented Programming	3	--	0	3	40	60	100	--	15	45	3
2	PCC	CSE401P	Object Oriented Programming	--	--	2	1	25	25	50	--	--	25	-
3	PCC	CSE402T	Computer Architecture and Organization	3	--	0	3	40	60	100	--	15	45	3
5	PCC	CSE403T	Theory of Computation	3	--	0	3	40	60	100	--	15	45	3
6	MDM	CSAI404T	Multidisciplinary Minor	2	--	0	2	20	30	50	--	8	23	2
7	OE	CSAI405T	Open Elective-II	2	--	0	2	20	30	50	--	8	23	2
8	VSEC	CSE406P	Computer Workshop-I	0	--	4	2	50	50	100	--	--	50	-
8	HSSM (AEC-02)	HUM407T	Ability Enhancement Course	2	--	0	2	20	30	50	--	8	23	2
9	HSSM	HUM408T	Entrepreneurship Development & Management	2	--	0	2	20	30	50	--	8	23	2
10	VEC	EC409T	Digital and Technological Solutions	2	--	0	2	20	30	50	--	8	23	2
<b>Total</b>				<b>19</b>	<b>0</b>	<b>6</b>	<b>22</b>	<b>300</b>	<b>400</b>	<b>700</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-</b>

➤ L–Lecture, P–Practical(Half Credit/Hour), T–Tutorial, A–Activity

**\*BasketforAbilityEnhancementCourses**

Sr.No	Category	Course Code	CourseName
1	HSSM	HUT407T-1	EffectiveTechnicalCommunication
2	HSSM	HUT407T-2	स मा ज मा ध्य मां सा ठी " म रा ठी "
3	HSSM	HUT407T-3	स मा ज मा ध्य मां सा ठी " हिं दी "

MultidisciplinaryMinor			
Sr. No.	Category	Course Code	CourseName
1	MDM	CSAI404T	Introductionto ComputerNetwork

OpenElective-II			
Sr. No.	Category	CourseCode	CourseName
1	OE	CSAI405T	CyberLaw&EthicsinIT

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
**FOUR YEAR BACHELOR OF TECHNOLOGY (B.TECH.) DEGREE PROGRAMME YEAR /**

**SEMESTER: II / IV**

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
CSE401T	Object Oriented Programming	3	--	--	3	40	60	100	3

**Prerequisite(s):** None

**Course Objectives:**

1.	This course provides fundamental concept of object-oriented programming in Java
2.	To use the Java SDK environment to create, debug and run simple Java programs.
3.	To write reasonably complex Java programs involving sorting, searching, customized exception handling etc. in an object oriented way.

**Course Outcomes:**

At the end of this course, students will be able to

<b>CO1</b>	Understand the structure and model of the Java programming language
<b>CO2</b>	Understand the concepts of interface and abstract classes to define generic classes.
<b>CO3</b>	Demonstrate the purpose of user-defined exception using exception handling keywords
<b>CO4</b>	Use multithreading concepts to develop interprocess communication
<b>CO5</b>	Apply the proper problem-solving technique to develop Java applications

**Unit I: Object Oriented Programming features****[7Hours][12Marks]**

Objects and classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Characteristics of Java, Java Source File Structure – Compilation. Fundamental Programming Structures in Java, features of Java, Introduction of JDK, JRE and JVM, Operators and Data Types.

**Unit II: Operators and String****[7Hours][12Marks]**

Control Flow, Command line arguments, static modifier, this keyword, Garbage collection, Method overloading, Declaration and initialization of an array, One Dimensional Array, Two-Dimensional Array, String Handling: String constructors, Data conversion using valueOf(), toString() methods, Methods for String Comparison, Searching string and modifying string

**Unit III: Inheritance****[7Hours][12Marks]**

Inheritance: Types of inheritance, Abstract class, Method Overriding, super keyword, final modifier  
Packages: Package Fundamental, importing packages, Regular Expression: Introduction and methods of Matcher class.

**Unit IV: Interface****[7Hours][12Marks]**

Concept of interface, advantages of interface, relationship between classes and interface, Exception Handling: Fundamental Exception type: Checked, Unchecked Exceptions, throw and throws keywords, creating user defined exceptions, Built-in Exceptions

**Unit V: Threads and Multi-threading****[8 Hours][12Marks]**

Fundamentals, Thread Life Cycle, Ways of creating threads, creating multiple threads, isAlive(), join(), sleep(), Thread Synchronization, Thread priorities, Inter thread communication, Methods for suspending, resuming and stopping threads.

**Text Books:**

1. “The Complete Reference”, Herbert Schildt, 8<sup>th</sup> Edition, Tata McGraw-Hill publications.
2. “Head First Java”, Kathy Sierra, Bert Bates, 2<sup>nd</sup> Edition, O’Reilly Media.
3. “Programming in Java”, E. Balguruswami, 5<sup>th</sup> edition, McGraw Hill Education.

**Reference Books:**

1. “Sun Certified Java Programmer for Java 6”, Kathy Sierra, 1<sup>st</sup> Edition, Tata McGraw-Hill Publications.
2. “The Java TM Programming Language”, Arnold, Holmes, Gosling, Goteti, 4<sup>th</sup> Edition, Addison Wesley Professional.
3. “Core Java for Beginners”, Rashmi Kanta Das, 3<sup>rd</sup> Edition, Vikas Publication.
4. “Java A Beginner’s Guide”, Herbert Schildt, 5<sup>th</sup> Edition, Tata McGraw Hill.

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**FOUR YEAR BACHELOR OF TECHNOLOGY (B.TECH.) DEGREE**  
**PROGRAMME YEAR / SEMESTER: II / IV**

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
CSE401P	Object Oriented Programming Lab	--	--	2	1	25	25	50	-

**Prerequisite(s):** Knowledge of Basic Programming

**Course Objectives:**

1	To understand fundamentals of object-oriented programming in Java
2	To be able to apply different data structures to solve real life problems
3	To write small/medium scale Java programs to solve simple real world problems.

**Course Outcomes:**

At the end of this course, students will be able to

CO1	Understand the structure and model of the Java programming language
CO2	Understand the concepts of interface and abstract classes to define generic classes.
CO3	Demonstrate the purpose of user defined exception using exception handling keywords
CO4	Use the Java SDK environment to create, debug and run Java programs.
CO5	Apply the proper problem-solving technique to develop Java applications

**Note:**

- Practical's are based on Object Oriented Programming with Java syllabus
- There should be at the most two practicals per unit
- Minimum ten practical's have to be performed
- IDE (e.g. Eclipse, NetBeans or VS Code)
- Do not include study experiment

**Sample List of Practical:**

1. Write a Java program to demonstrate the use of classes and object concepts with suitable example.
2. Write the program in Java to illustrate the concept of static polymorphism.
3. Write the program in Java to illustrate the concept of runtime polymorphism.
4. Write a Java program to demonstrate the working of final modifier.
5. Write a Java program to illustrate the need of inheritance with real time example
6. Write a Java program to demonstrate the working of abstract modifier.
7. Write a Java program to demonstrate the purpose of interface.
8. Write a Java program to demonstrate the purpose of user defined package.
9. Write a Java program to demonstrate the notion of multiple catch blocks.
10. Write a Java program to implement a thread-based multitasking.
11. Write a Regular Expression to represent all valid mobile numbers/ Mail Id etc.
12. Write a Java program to illustrate the working of Set interface and its classes

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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### FOUR YEAR BACHELOR OF TECHNOLOGY (B.TECH.) DEGREE

#### PROGRAMME YEAR / SEMESTER: II / IV

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
CSE402T	Computer Architecture and Organization	3	--	--	3	40	60	100	3

**Prerequisite(s):** Basics knowledge of computers

#### Course Objectives:

1	The objective of this course is to learn the basic concept of interrupts and their usage to implement I/O control and data transfers and show the function of each element of a memory hierarchy.
2	To demonstrate basic operations involved in execution of an instruction.
3	To interpret the design of the various functional units and components of computers.

#### Course Outcomes:

At the end of this course, students will be able to

<b>CO1</b>	Comprehend the organization and operation of digital computers.
<b>CO2</b>	Learn different number systems and its operations.
<b>CO3</b>	Gain knowledge of 8085 microprocessor architecture and its instruction sets
<b>CO4</b>	Understand about Microinstructions and control signals
<b>CO5</b>	Understand different types of memory and standard I/O interfaces and Interrupt handling Mechanism.

**Unit I: Basic Functional Blocks of a Computer****[7Hours][12Marks]**

CPU, memory, input-output subsystems, control unit. Instruction set architecture of a CPU- registers, Von Neumann Architecture, Basic operational concepts, Bus structures, addressing modes, Assembly Language and Subroutine

**Unit II: Arithmetic****[7Hours][12Marks]**

Number System, Types of number system: Binary, Octal, Decimal, Hexadecimal. Arithmetic: Number Representation, Addition of Positive numbers, Logic Design for fast adders, Addition and Subtraction, Arithmetic and Branching conditions multiplication - shift-and-add, Booth multiplier, fast Multiplication, Integer Division, Floating point numbers and operations.

**Unit III: Processing Unit****[7Hours][12Marks]**

Some fundamental concepts, Execution of a complete instruction, Single, two, three bus organization, Sequencing of control Signals. 8085 microprocessor architecture: Instruction set, instruction types and formats; Instruction execution, instruction cycles, different types of machine cycles and timing, Processors: Families of microprocessors Chips, Introduction to RISC & CISC Processors.

**Unit IV: Control Unit****[7Hours][12Marks]**

Hardwired control, Micro programmed control unit, Micro instructions, micro instruction sequencing and execution, grouping of control signals, Micro program sequencing, Micro Instructions with next Address field, Sequencing of control Signals.

**Unit V: The Memory System****[8Hours][12Marks]**



Some Basic Concepts, Semiconductor RAM Memories, Memory system considerations, Semiconductor ROM Memories, Memory interleaving, Cache Memory, Mapping techniques, Virtual memory, Memory Management requirements, I/O Devices, DMA, Interrupt handling, Introduction to Pipelining. Parallel Processing, Instruction Pipeline.

**Text Books:**

1. "Computer Organization", V. Carl Hamacher 4<sup>th</sup> edition McGraw-Hill
2. "Computer Architecture Organization", 3<sup>rd</sup> Edition by John P. Hayes. WCB/McGraw-Hill
3. "Computer Organization and Design (The Hardware/Software Interfaces)", David A. Patterson & John L. Hennessy Morg. 4<sup>th</sup> edition Morgan Kaufmann.

**Reference Books:**

1. Computer Architecture and Parallel processing, Hwang Kai, McGraw-Hill Int.
2. Computer Organization and Architecture: Design for Performance, 10<sup>th</sup> Edition William Stallings, Person Education.
3. Computer System Design and Architecture", 2<sup>nd</sup> Edition by Vincent P. Heuring and Harry F. Jordan, Person Education.

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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### FOUR YEAR BACHELOR OF TECHNOLOGY (B.TECH.) DEGREE PROGRAMME

YEAR/ SEMESTER: II / IV

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
CSE403T	Theory of Computation	3	--	--	3	40	60	100	3

**Prerequisite(s):** Basics of Discrete Mathematics

**Course Objectives:**

1	The objective of this course is to give an overview of the theoretical foundations of computer science from the perspective of formal languages.
2	To illustrate finite state machines to solve problems in computing.
3	Students will be able to explain the hierarchy of problems arising in the computer sciences.

**Course Outcomes:**

At the end of this course students are able to:

CO1	Interpret the mathematical foundations of computation including automata theory and construct abstract machines including finite automata.
CO2	Infer the theory of formal languages and grammars
CO3	Make use of pumping lemma to show that a language is not regular/not context-free
CO4	Construct the abstract machines including pushdown automata, and Turing machines from their associated languages and grammar.
CO5	Show whether a given problem is solvable or unsolvable.

**UNIT I: Finite Automata (FA)****[7 Hours][12Marks]**

Basic Terminology and Definitions, Chomsky hierarchy, Deterministic Finite Automata, language of a DFA. Nondeterministic Finite Automata, Equivalence of Deterministic and Non-Deterministic Finite Automata, Applications of Finite Automata, Finite Automata with Epsilon Transitions, Eliminating Epsilon transitions, Minimization of Deterministic Finite Automata, Finite automata with output (Moore and Mealy machines) and Inter conversion.

**UNIT II: Regular Grammars (RG)****[08Hours][12Marks]**

Definition, regular grammars and FA, Conversations. Proving languages to be non-regular, Pumping lemma, applications, Closure properties of regular languages. **Regular Expressions (RE):** Introduction, Identities of Regular Expressions, Finite Automata and Regular Expressions, converting from DFA's to Regular Expressions, Converting Regular Expressions to Automata, applications of Regular Expressions.

**UNIT III: Context Free Grammar (CFG)****[07 Hours][12Marks]**

Definition, Parse Tree, Derivation Trees, Rightmost and Leftmost derivations of Strings and Conversations. Ambiguity in CFG's, Minimization of CFG's, Normal forms for CFG, Pumping Lemma for CFL's.

**UNIT IV: Push down Automata (PDA)****[07 Hours][12Marks]**

Definition, Model, Non-determinism, acceptance by two methods and their equivalence, conversion of PDA to CFG, CFG to PDAs, closure and decision properties of CFLs.

**UNIT V: Turing Machines (TM)****[07Hours][12Marks]**

Formal definition and behavior, Languages of a TM, TM as acceptor, TM as transducers, Variations of TM, linear bounded automata, TM as computer of function. Properties of recursive and recursively enumerable languages, Recursively enumerable set, Undesirability, Decidability and solvability, Post correspondence Problem, Primitive recursive functions, Ackerman function

**Textbooks:**

1. Theory of Computation - O.G. Kakde, 1<sup>st</sup> Edition, Laxmi Publication
2. Introduction to the Theory of Computation, Michael Sipser, 3<sup>rd</sup> edition, Cengage Learning.
3. An Introduction to Formal Languages and Automata, Peter Linz, 5<sup>th</sup> Edition, Malloy, Inc.
4. Theory of Computation, Vivek Kulkarni, Oxford University Press, ISBN-13: 978-0-19-808458-7.
5. Introduction to Automata Theory Languages and Computation, John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, 3<sup>rd</sup> edition, Pearson Education.

**Reference books:**

1. Theory of Computer Science Automata Languages and Computation, K.L.P. Mishra, 3<sup>rd</sup> Edition, Prentice Hall of India
2. Introduction to languages and the Theory of Computation, John C Martin, 3<sup>rd</sup> Edition, TMH
3. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley, 2<sup>nd</sup> Edition, Wiley Publication

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**B.Tech in (Branch Name) And Minors in Computer Science and Engineering**

**YEAR/SEMESTER: II/IV**

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
CSAI404T	Introduction To Computer Networks	2	--	--	2	20	30	50	2

**Prerequisite(s): None**

**Course Objectives:**

<b>1</b>	Study the functioning of data communication and computer network.
<b>2</b>	Select relevant transmission media and switching techniques as per need.
<b>3</b>	Study the various networking devices.

**Course Outcomes:**

At the end of this course, students will be able to

<b>CO1</b>	Describe the importance of Computer Network with basic networking concepts.
<b>CO2</b>	Describe the functions of each layer in OSI model and characteristics of the given type of media.
<b>CO3</b>	Explain with sketches the different network topologies and connecting devices.

**Unit I: Introduction To Data Communication and Network:****[8 Hours][10 Marks]**

Basic concepts of Computer Network, Uses of Computer Network, Applications and Benefits. Data Communication Components, Data Representation, data flow (Simplex, Half-Duplex and Full-Duplex mode), Network Criteria, Categories of Network (LAN, MAN, WAN, PAN).

**Unit II: OSI Model and Transmission Media****[8Hours][10Marks]**

Introduction to OSI Reference Model and its need in Networking. Introduction to Communication Media: Guided Transmission Media (Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable), Unguided Transmission Media (Radio Waves, Microwaves, Infrared, a Satellite).

**Unit III: Network Topologies and Connecting Devices****[8Hours][10Marks]**

Network Topologies: Introduction, Definition, Selection, Criteria, Types of Topology - i) Bus ii) Ring iii) Star iv) Mesh v) Tree vi) Hybrid. Introduction to Network Connecting Devices (Hub, Switch, Router, Repeater, Bridge, Gateway, Modem).

**Text Books:**

1. "Computer Networks", Andrew S. Tanenbaum, David Wetherall, Pearson, 5th edition, 2010.
2. "Data communications and networking", Behrouz A. Forouzan, TMH, 5th edition, 2012.
3. "Computer Networks", 5E, Peterson, Davie, Elsevier.

**Reference Books:**

1. "Introduction to Computer Networks and Cyber Security", Chawan-Hwa Wu, Irwin, CRC, 3rd Edition Publications.
2. Computer Networks, A Top-Down Approach, James F. Kurose, Keith W. Ross, 3rd Edition, Pearson.
3. Computer Networks, A Top-Down Approach, Behrouz A. Forouzan, Firoz Mosharraf, Special Indian Edition, 3rd Edition McGraw Hill.

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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

YEAR/SEMESTER: II/IV

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
CSAI405T	Open Elective – II: Cyberlaw and Ethics in IT	2	--	--	2	20	30	50	2

**Prerequisite(s):** None

**Course Objectives:**

1.	This course introduces students about basic Ethics in IT industry.
2.	Explore the nature and principles of ethics-including personal, professional and corporate ethics in a computing context.
3.	Understand the issues related to intellectual freedom, intellectual property and copyright law as they related to electronic publishing.

**Course Outcomes:**

At the end of this course, students will be able to

<b>CO1</b>	To Understand Cyberlaws related Legislation.
<b>CO2</b>	To Understand Information Technology act, Cyber Regulations and E-commerce Business.
<b>CO3</b>	To Understand about Patent, Trademark and Online Dispute Resolution.

**Unit I: Introduction to Cyber law****[08Hours][10Marks]**

**Introduction to Cyberlaw:** Evolution of computer Technology, emergence of Cyberspace. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Cyberspace Web space, Web hosting and web Development agreement, Internet as a tool for global access.

**Unit II: Information Technology Act****[08 Hours][10 Marks]**

Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offenses, Network Service Providers Liability, E-commerce, paper vs paper less contracts E-Commerce models- B2B, B2C,

**Unit III: Cyber law and Related Legislation****[08Hours][10Marks]**

Patent Law, Trademark Law, Copyright, Software – Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code and Criminal Procedural Code, Online Dispute Resolution (ODR).

**Textbook:**

1. Computers, Internet and New Technology Laws, Karnika Seth, Lexis Nexis Butterworths Wadhwa Nagpur.
2. Legal Dimension of Cyber Space, Verma S, K, Mittal Raman, Indian Law Institute, New Delhi.

**Reference Books:**

1. Cyber Laws: Intellectual property & E Commerce, Security- Kumar K, dominant Publisher
2. Cyber Ethics 4.0, Christoph Stuckelberger, Pavan Duggal, by Globethic
3. Information Security policy & Implementation Issues, NIIT, PHI

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**FOUR YEAR BACHELOR OF TECHNOLOGY (B.TECH.) DEGREE PROGRAMME YEAR /**

**SEMESTER: II / IV**

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
CSE406P	Computer Workshop-I	--	--	4	2	50	50	100	--

**Prerequisite(s):** None

**Course Objectives:**

<b>1</b>	This course gives knowledge about HTML tags and their syntax and semantic to write basic HTML Code
<b>2</b>	The students will be able to create different CSS based dynamic HTML pages
<b>3</b>	To develop small/medium scale Websites.

**Course Outcomes:**

At the end of this course, students will be able to:

CO1	Understand the structure and model of the HTML programming language
CO2	Apply the concepts of JavaScript on different HTML code
CO3	Use Bootstrap framework to build website in an easy way
CO4	Explore the use of GITHUB repository
CO5	Transform website to Docker File.

**UnitI:** [5Hours][10Marks]

Web development introduction, Architecture of a website, HTML Introduction, HTML-Basic Formatting Tags, Grouping Using Div. Span, HTML-attributes, Lists, Images and image mapping, Hyperlink, Table, Form, Headers, CSS3-Introduction, CSS3-Syntax, CSS3-Selector, CSS3-Text Font, CSS3-Color background cursor.

**UnitII:** [5Hours][10Marks]

IntroductiontoJavaScript,VariablesandAssignments,WritingFunctions,DynamicWebPage Creation, JavaScript Validation, JavaScript Validation Syntax.

**UnitIII:** [5Hours][10Marks]

Introduction to Bootstrap: What is Bootstrap Framework, Why Bootstrap, Major Features of Bootstrap, setting up Environment, how to apply Bootstrap to Applications. Bootstrap Grid: What is Bootstrap Grid, what is Container, how to use p themes, how to Display ResponsiveImages, Bootstrap Form Layout, Bootstrap Button, display text like muted and warning etc. Bootstrap Components, Bootstrap Plug-Ins.

**UnitVI:** [5Hours][10Marks]

IntroductiontoGIT:WhatisGITHUB,howtohostprojectonGITHUB.

**UnitV:** [4Hours][10Marks]

Introductiontocontainerization,DockerFile,StepsinvolvedtoTransformwebsitetoDockerFile

**TextBooks:**

1. 'HTML5andCSS3All-in-OneforDummies'(3<sup>rd</sup>Edition)byAndyHarris,WileyPublications
2. 'LearningWebDesign'(4<sup>th</sup>Edition)byJenniferRobbins,O'RellyPublication

**ReferenceBooks:**

1. HeadFirstHTMLandCSS'(2<sup>nd</sup>Edition)byElisabethRobsonandEricFreeman, O'Rell Publication
2. 'HeadFirstJavaScriptProgramming'byElisabethRobsonandEricFreeman,O'RellyPublication
3. LearningDockerbyJeevaS.Chelladhural,VinodSingh,SecondEdition,PacktPublication.
4. TheDockerBookbyJamesTurnbull

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**DEPARTMENT OF CSE/AI/ETC/CIVIL/EE**

**BACHELOR OF TECHNOLOGY (B.TECH.) DEGREE PROGRAMME YEAR**

**/ SEMESTER: II/ IV**

Sr.No	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hours)
			L	T	P		Continuous Evaluation	End Sem Exam	Total	
1	HUM407T	Effective Technical Communication	2	-	-	2	20	30	50	2

<b>Course Code:</b> HU4T	<b>Course Title:</b> Effective Technical Communication
<b>L-2Hrs/week</b>	<b>Credits-2</b>
<b>Sr.No.</b>	<b>Course Objectives:</b> The objectives of this course is-
1	At the end of the semester, students will have enough confidence to face competitive examination to pursue master's degree. They will enhance language skills required to write their Reviews/Projects/Reports. They will be able to organize their thoughts in English and hence face job interviews more confidently.

<b>Sr.No.</b>	<b>Course Outcomes:</b> After completing the course, the student will be able to:
CO1	Students will enhance language competence and acquire knowledge of structure of language.
CO2	Students will be able to prepare themselves to face challenges of competitive examinations and the interview process and can become employable. They will develop vocabulary and construct error free sentences in English.
CO3	Students will become familiar with technology enabled communication and can develop business writing skills. They will be able to recall and utilize the knowledge of drafting business letters, reports in correct format. Will develop comprehension skills by solving unseen passages.

Contents	No. of Hours
<b>Unit I. Functional Grammar:</b> Common errors in English: Question tag error, Lexical Error, Subject verb agreement error, Articles error, Prepositional errors, Idioms & Phrases, Change the Voice Assignment: [ 10 sentences of each type of errors given, 10 examples of Voice, 20 idioms related to color, mythology, body parts, animal names]	8 [10Marks]
<b>Unit II. English for Competitive Exams &amp; Interview Techniques:</b> Word building ( <b>English</b> words /phrases derived from other languages), Technical Jargon's, Synonyms/Antonyms, Analogies, Give one word for, Types & Techniques of Interview Assignment: [ 10 words/phrases of foreign origin, 10 Technical Jargon's, 20 words for both Synonyms/Antonyms, 10 examples of verbal Analogy, 25 examples of One word substitute.	8 [10Marks]
<b>Unit III. Formal Correspondence &amp; Technical writing</b> Business Letters, [Order, Complaints, Job applications and Resume], Analytical comprehension, [fictional & non-fictional unseen texts], Report writing, Writing Research paper format. Assignment: Write a cover letter along with Resume, Format of email writing with example, Summer camp report/Investigation report, Analytical Comprehension (Complete passage with suitable question/Answers)	8 [10Marks]

Sr. No	List of Activities	No. of Hours
1	Enhancing word power through Newspaper reading, word games and activities conducted in the class	1
2	Extempore, Group discussions/PPT on any relevant topic to enhance self-confidence and courage	1

**Books Recommended:**

1. Effective technical Communication by Barun K. Mitra, Oxford University Press,
2. Technical Communication-Principles and Practice by Meenakshi Raman & Sharma, Oxford University Press, 2011, ISBN-13-978-0-19-806529-
3. The Cambridge Encyclopedia of the English Language by David Crystal, Cambridge University Press
4. Contemporary Business Communication by Scot Ober, Published by Biztantra,
5. BCOM-A South-Asian Perspective by C. Lehman, D. DuFrene & M. Sinha, Cengage Learning Pvt. Ltd. 2012
6. Business English, by Dept of English, University of Delhi, Published by Dorling Kindersley (India), Pvt .Ltd., 2009, ISBN 978 81 317 2077 6
7. How to Prepare a Research Proposal: Guidelines for Funding and Dissertations in the Social and Behavioral Sciences by Krathwohl & R David
8. Technical Writing- Process and Product by Sharon J. Gerson & Steven M. Gerson, 3<sup>rd</sup> edition, Pearson Education Asia, 2000
9. Developing Communication skills by Krishna Mohan & Meera Banerjee

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**DEPARTMENT OF HUMANITY AND MANAGEMENT**  
**SYLLABUS OF SECOND YEAR BACHELOR OF TECHNOLOGY,**  
**(A Four-Year Degree Programme) SEMESTER**

**IV**

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
<b>HUM408T</b>	<b>Entrepreneurship Development and Management</b>	2	--	--	2	20	30	50	2

**Course Objectives:**

The objectives of the course are

<b>1.</b>	To create awareness about entrepreneurship and Management among students.
<b>2.</b>	To focus on motivating students for entrepreneurship.
<b>3.</b>	To introduce various qualities required for entrepreneurship and Management
<b>4.</b>	To provide conceptual exposure on converting idea to a successful entrepreneurial firm.

**Course Outcomes:**

On completion of this course, learner will be able to

<b>CO1:</b>	Understand on the basic concepts of entrepreneurship and business opportunities of familiars.
<b>CO2:</b>	Acquire the knowledge of different institution conducting EDP (Entrepreneurial Development Programme) and supporting Entrepreneurship Development Skills.
<b>CO3:</b>	Grasp the various Functions of Management, Marketing Management and Perceive the concept of Financial Management for the growth of business.

<b>UNIT I: Introduction to Entrepreneur and Entrepreneurship</b>	<b>(8 Hours)(10 Marks)</b>
<p><b>Entrepreneur:-</b> Introduction, Meaning and Definition of Entrepreneur, Internal and External factors of Entrepreneur, Characteristics of an Entrepreneur, Functions of an Entrepreneur, Types of Entrepreneur, Entrepreneur vs Manager, Entrepreneur vs Entrepreneur.</p> <p><b>Entrepreneurship:-</b> Relationship between entrepreneur and entrepreneurship, Concept and Meaning of Entrepreneurship, Characteristics of Entrepreneurship, Importance of Entrepreneurship, Types of Entrepreneurship, Entrepreneurial Traits or competencies, Entrepreneurship as Career Option, Role of Entrepreneurship in Economic Development.</p>	
<b>UNIT II: Entrepreneurial Development</b>	<b>(8 Hours)(10 Marks)</b>
<p>Meaning of Entrepreneurial Development, Meaning and Need of EDPs, Objectives of Entrepreneurial Development Programme, Phases of Entrepreneurial Development Programme, Role of Entrepreneurial Development Programme, Evaluation of EDPs, Course contents of EDP, Institutions Conducting EDPs In India - (EDII, NIESBUD, TCOs), Problems Faced by EDPs, Suggestions to make EDPs successful, Introduction to Entrepreneurship Development Skills, Women Entrepreneurship</p>	
<b>UNIT III: Basic Concepts of Management</b>	<b>(8 Hours)(10 Marks)</b>
<p>Definition, Nature and Scope of Management, Functions of Management, Meaning and Concepts of Marketing Management, Marketing Mix, Meaning, Nature and Scope of Financial Management, Budgets and their Importance, Difference between Fixed and Flexible Budget.</p>	

#### List of Books:

#### Text Books:

1. Entrepreneurial Development - S.S. Khanka, S. Chand Publishing
2. Entrepreneurship - Savita Rastogi, Satyam Publishing House, New Delhi
3. Entrepreneurial Development - S. Anil Kuma, New Age International.
4. Management of Entrepreneurship - N. V. R. Naidu, I. K. International Pvt Ltd.
5. Industrial Management - I. K. Chopde, A. M. Sheikh
6. Business Organization and Management - S. A. Sherlekar

#### Reference Books:

1. "Entrepreneurship" - Hisrich R D and Peters M P, 5th Edition Tata McGraw-Hill, 2002.
2. "Entrepreneurship and Innovation", Rabindra N. Kanungo, Sage Publications, New Delhi, 1998.
3. Small-Scale Industries and Entrepreneurship, - Dr. Vasant Desai, Himalaya Publication.
4. Financing Small Scale Industries in India, - K. C. Reddy, Himalaya Publication.

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**DEPARTMENT OF HUMANITY AND MANAGEMENT**  
**SYLLABUS OF SECOND YEAR BACHELOR OF TECHNOLOGY,**  
**(A Four-Year Degree Programme) SEMESTER**

**IV**

Course Code	Course Name	Hours/Week			Credits	Maximum Marks			ESE Duration (Hrs.)
		L	T	P		Continuous Evaluation	End Sem Exam	Total	
EC409T	Digital and Technological Solutions	2	--	--	2	20	30	50	2

**Course Objectives:**

1.	To gain familiarity with digital paradigms.
2.	To sensitize about role & significance of digital technology.
3.	To provide know-how of communications & networks.
4.	To bring awareness about the e-governance and Digital India initiatives.
5.	To provide a flavour of emerging technologies - Cloud, Big Data, AI-3D printing.

**Course Outcomes:**

On completion of this course, learner will be able to

<b>CO1:</b>	Utilize knowledge about digital paradigm.
<b>CO2:</b>	Understand the realization of importance of digital technology, digital financial tools, e-commerce.
<b>CO3:</b>	Utilize the e-governance and Digital India initiatives.
<b>CO4:</b>	Analyse use & applications of digital technology.

<b>CO5:</b>	Explainbasicknowledgeofallmachinelearningandbigdata.
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<b>UNIT I: Advanced Internet Skills</b>	<b>(8Hours)(10Marks)</b>
Introduction & Evolution of Digital Systems. Role & Significance of Digital Technology. Information & Communication Technology & Tools. Computer System & its working, Software and its types. Operating Systems: Types and Functions. Problem Solving: Algorithms and Flowcharts.	
<b>UNIT II: Communication System</b>	<b>(8Hours)(10Marks)</b>
Principles, Model & Transmission Media. Computer Networks & Internet: Concepts & Applications, WWW, Web Browsers, Search Engines, Messaging, Email, Social Networking. Computer Based Information System: Significance & Types. E-commerce & Digital Marketing: Basic Concepts, Benefits & Challenges.	
<b>UNIT III: Digital India and e-Governance</b>	<b>(8Hours)(10Marks)</b>
Initiatives, Infrastructure, Services and Empowerment. Digital Financial Tools: Unified Payment Interface, Aadhar Enabled Payment System, USSD, Credit / Debit Cards, e-Wallets,	

### List of Books:

#### Text Books:

1. P.N.Thomas and A.Raghuramaraju, "Digital India: Understanding Information, Communication and Social Change," 2<sup>nd</sup> Edition, Sage Publications India Pvt. Ltd., 2017.
2. R.Thareja, "Computer Fundamentals and Programming in C," 2<sup>nd</sup> Edition, Oxford University Press, 2021.
3. R.P.Jain and S.K.Jain, "Introduction to Information Technology," 2<sup>nd</sup> Edition, Firewall Media, 2015.

#### Reference Books:

1. K.D.Tripathi, "Social Media: Concepts, Practices and Trends," 3<sup>rd</sup> Edition, PHI Learning Pvt.Ltd., 2020.
2. N. K.Venkateswaran, "Cyber Security and Digital Forensics: A Practical Approach," 2<sup>nd</sup> Edition, CRC Press, 2018.
3. S.Gandhi and R.Sharma, "Digital Privacy and Security," 3<sup>rd</sup> Edition, Springer Nature Singapore Pvt. Ltd., 2021.

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