List of Revised Courses

Department : *Computer science and Engineering*

Programme Name : *B.Tech.*

Academic Year : 2020-21

List of Revised Courses

Sr. No.	Course Code	Name of the Course
01.	CS06TPE07	Artificial Intelligence
02.	CS06PPC08	Java Lab
03.	CS06TPC12	Java
04.	CS6TPC01	Operating System
05.	CS05TES05	Microprocessor And Interface
06.	CS05TPC10	Parallel Computing
07.	CS05PPC06	Parallel Computing Lab
08.	CS06TPC11	Design And Analysis of Algorithms
09.	CS06PPC07	Design And Analysis of Algorithms Lab
10.	CS8TPE01	Soft Computing
11.	MA201TBS01	Mathematics-I
12.	MA202TBS03	Mathematics-II
13.	EC201TES01	Basic Electrical And Electronics Engineering
14.	ME201PES01	Engineering Graphics
15.	EC201PES03	Basic Electrical And Electronics Engineering Lab

Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2020-21

School : *School of Studies of Engineering and Technology*

Department : *Computer Science and Engineering*

Date and Time : *july 10, 2020 – 11:30 AM*

Venue : *Department of CSE*

The scheduled meeting of member of Board of Studies (BoS) of Department of Computer Science and Engineering , School of Studies of Engineering and Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur was held to design and discuss the B. Tech. Final year , 3rd Year and 2nd Year scheme and syllabi.

The following members were present in the meeting:

1. Dr. Sanjay Shrivastava (External Expert Member BoS, Dept. of CSE., Ravishankar University Raipur)
2. Mr. Amit Sharma (External Member, BOS)
3. Dr. Alok Kumar singh Kushwaha(HOD, Associate Prof., Dept. of CSE.-cum Chairman, BOS)
4. Mrs.Nishi Yadav (Member BoS, Assistant Professor, Dept. of CSE)
5. Mr. Amit Baghel (Invited Member, Assistant Professor, Dept. of CSE)
6. Dr.Manish Shrivastava (Invited Member, Assistant Professor, Dept. of CSE)
7. Mrs. Raksha Pandey (Invited Member, Assistant Professor, Dept. of CSE)

Following points were discussed during the meeting

1. Syllabus revision for B. Tech 2nd year, 3rd Year and Final Year for the session 2020-21
2. Modification of the credit and course code of B. Tech 2nd year, 3rd Year and Final Year for the Session 2020-21
3. Implementation of CBCS in all year
4. Introduction of new subjects in the B.Tech. 3rd year and 4th

The committee discussed and approved the scheme and syllabi. The following courses were revised in the of B. Tech. Final year (VII and VIII Semesters) :

- Artificial Intelligence (CS06TPE07)
- Java Lab(CS06PPC08)
- Java(CS06TPC12)
- Operating System(CS6TPC01)
- Microprocessor And Interface(CS05TES05)
- Parallel Computing(CS05TPC10)
- Parallel Computing Lab(CS05PPC06)
- Design And Analysis of Algorithms(CS06TPC11)
- Design And Analysis of Algorithms Lab(CS06PPC07)
- Soft Computing(CSSTPE01)
- Java(CS06TPC12)

The following new courses were introduced in the of B. Tech. Final year (VII and VIII Semesters):

- E-COMMERCE (CS06TOE02)
- HUMAN RESOURCE MANAGEMENT(CS06TOE03)
- BUSINESS INTELLIGENCE(CS06TOE04)
- MOBILE APPLICATION DEVELOPMENT LAB(S08PPE02)
- CLOUD COMPUTING LAB(CS08PPE03)
- BIG DATA ANALYSIS LAB(CS08PPE04)
- COMPUTER PROGRAMMING (CS202TES04)
- COMPUTER PROGRAMMING LAB(CS202PES05)

विभागाध्यक्ष
Head
संगणक विज्ञान एवं अभियांत्रिकी
Computer Science & Engg.
अभियांत्रिकी एवं प्रो. अध्ययन शाला
SOS, Engg. & Technology
गु.घा. विश्वविद्यालय, बिलासपुर (छ.ग.)
G.G.Vishwavidyalaya, Bilaspur (C.G.

Signature & Seal of HoD

Scheme and Syllabus

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF STUDIES IN ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA
THIRD YEAR, SEMESTER - V
W.E.F. SESSION 2020-21

Branch :- Computer Science & Engg. **Year : III** **Sem- V**

S. No.	Code no.	Subject	Periods			Evaluation Scheme			Credits
			L	T	P	IA	ESE	Total	
1	CS05TES05	Microprocessor and Interfaces	3	0	0	30	70	100	3
2	CS05TPC08	Relational Data Base Management System	3	0	0	30	70	100	3
3	CS05TPC09	Formal Language and Automata Theory	3	0	0	30	70	100	3
4	CS05TPC10	Parallel Computing	3	0	0	30	70	100	3
5	CS05TPEX	Professional Elective-I	3	0	0	30	70	100	3
6	CS05TMC02	Constitution of India	3	0	0	0	0	0	0
	PRACTICAL								
1	CS05PPC05	Relational Data Base Management System Lab	0	0	3	30	20	50	1.5
2	CS05PPC06	Parallel Computing Lab	0	0	3	30	20	50	1.5
3	CS05PPR01	Minor Project- I	0	0	3	30	20	50	1.5
		Total							**19.5**

Professional Elective-I Subject V Sem.			
S. No.	**Subject Code**	**Subject**	**Credits**
1	CS05TPE01	Software Engineering	3
2	CS05TPE02	Information Theory & coding	3
3	CS05TPE03	Mobile Communication	3
4	CS05TPE04	Multimedia System Design	3

SCHEME FOR EXAMINATION
B.TECH (FOUR YEAR) DEGREE COURSE
COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF STUDIES IN ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA
THIRD YEAR, SEMESTER - VI
W.E.F. SESSION 2020-21

Branch :- Computer Science & Engg. Year : III Sem- VI

S. No.	Code no.	Subject	Periods			Evaluation Scheme			Credits
			L	T	P	IA	ESE	Total	
1	CS06TPC11	Design and Analysis of Algorithms	3	0	0	30	70	100	3
2	CS06TPC12	Java	3	0	0	30	70	100	3
3	CS06TPC13	Computer Graphics	3	0	0	30	70	100	3
4	CS06TPEX	Professional Elective-I	3	0	0	30	70	100	3
5	CS06TPEX	Professional Elective-II	3	0	0	30	70	100	3
6	CS06TOEX	Open Elective-I	3	0	0	30	70	100	3
	PRACTICAL								
1	CS06PPC07	Design and Analysis of Algorithms Lab	0	0	3	30	20	50	1.5
2	CS06PPC08	Java Lab	0	0	3	30	20	50	1.5
3	CS06PPR02	Minor Project-II	0	0	3	30	20	50	1.5
		Total							**22.5**

Professional Elective-I & II Subject VI Sem.				Open Elective-I Subject VI Sem.			
S.No	Subject Code	Subject	Credits	S.No.	Subject Code	Subject	Credits
1	CS06TPE05	Digital Image Processing	3	1	CS06TOE01	Management Information System	3
2	CS06TPE06	Robotics	3	2	CS06TOE02	E-Commerce	3
3	CS06TPE07	Artificial Intelligence	3	3	CS06TOE03	Human Resource Management	3
4	CS06TPE08	Software Testing and Quality Assurance	3	4	CS06TOE04	Business Intelligence	3

Sem- VII

S No	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L^1	T^2	P^3	IA	ESE	TOTAL	
1	CS7TPC01	Compiler Design	3	1	0	40	60	100	4
2	CS7TPC02	Artificial Intelligence	3	1	0	40	60	100	4
3	CS7TPEXX	PE Choice –I VIIth Semester	3	1	0	40	60	100	4
4	CS7TPEXX	PE Choice –II VIIth Semester	3	1	0	40	60	100	4
5	CS7TOEXX	OE-I VII th Semester	3	0	0	40	60	100	3
		PRACTICAL							
1	CS7LPC01	Compiler Design Lab	0	0	3	30	20	50	2
2	CS7LPC02	Artificial Intelligence Lab	0	0	3	30	20	50	2
3	CS7LPR01	Seminar	0	0	3	30	20	50	2
4	CS7LPR02	Minor Project Lab	0	0	3	30	20	50	2
					Total Credits			700	27

IA- Internal Assessment , ESE – End Semester Examination

Open Elective Subjects VIIth Semester			Credit	Professional Elective Subject VII th Semester			Credit
SN	Subject Code	Subject		SN	Subject Code	Subject	
1	CS7TOE01	Web Technologies	3	1	CS7TPE01	Data Mining	4
2	CS7TOE02	Information Theory and Coding	3	2	CS7TPE02	Wireless Sensor Network	4
3	CS7TOE03	Swarm Intelligence, Co-evolution and Rough Sets	3	3	CS7TPE03	Intrusion Detection System	4
4	CS7TOE04	Digital Image Processing	3	4	CS7TPE04	Cyber Crime and Security	4

Sem- VIII

S.No.	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L^1	T^2	P^3	IA	ESE	TOTAL	
1	CS8TPC01	Network Security	3	1	0	40	60	100	4
2	CS8TPEXX	PE-I VIIIth Semester	3	1	0	40	60	100	4
3	CS8TOEXX	OE-I VIIIth Semester	3	1	0	40	60	100	4
		PRACTICAL							
1	CS8LPR01	Major Project	0	0	20	150	100	250	10
2	CS8LPC01	Network Security Lab	0	0	3	30	20	50	2
					Total Credits			600	24

Open Elective Subjects VIII Semester			Credit	Professional Elective Subject VIII Semester			Credit
SN	Subject Code	Subject		SN	Subject Code	Subject	
1	CS8TOE01	Enterprise Resource Management	4	1	CS8TPE01	Soft Computing	4
2	CS8TOE02	Cloud Computing	4	2	CS8TPE02	Introduction to Computational Intelligence	4
3	CS8TOE03	Internet of Things	4	3	CS8TPE03	Neural Network Learning and Fuzzy Systems	4
4	CS8TOE04	Distributed Computing	4	4	CS8TPE04	TCP-IP	4

Semester- VI

SN	Subject Code	Subjects	Period /week			Evaluation Scheme			Total Credit
			L	T	P	IA	ESE	TOTAL	
1	CS6TPC01	Operating System	3	1	0	40	60	100	4
2	CS6TPC02	Design and Analysis of Algorithm	3	1	0	40	60	100	4
3	CS6TPEXX	PE Choice-I VI th Semester	3	1	0	40	60	100	4
4	CS6TPEXX	PE Choice-II VIth Semester	3	1	0	40	60	100	4
5	CS6TOEXX	OE-I VIth Semester	3	0	0	40	60	100	3
		PRACTICAL							
1	CS6LPC01	Operating System Lab	0	0	3	30	20	50	2
2	CS6LPC02	Design and Analysis of Algorithm Lab	0	0	3	30	20	50	2
3	CS6LPR01	Mini Project Lab	0	0	3	30	20	50	2
						Total Credits		650	25

Open Elective Subjects VI th Semester			Credit
SN	Subject Code	Subject	
1	CS6TOE01	Computer Graphics	3
2	CS6TOE02	Robotics	3
3	CS6TOE03	Operation Research	3
4	CS6TOE04	Geo-Informatics and GIS Application	3

Professional Elective Subject VI th Semester			Credit
SN	Subject Code	Subject	
1	CS6TPE01	Microprocessor and Interfaces	4
2	CS6TPE02	Software Engineering	4
3	CS6TPE03	UNIX Operating System	4
4	CS6TPE04	Multimedia System Design	4

SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A CENTRAL UNIVERSITY)

CBCS-NEW, EVALUATION SCHEME

PROPOSED (W.E.F. SESSION 2020-21)

B. TECH. FIRST YEAR (SEMESTER- I)

(Common for CH, CE, IPE, ME)

S.No.	COURSE No.	SUBJECT	PERIODS			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	SUB-TOTAL	
THEORY									
1.	MA201TBS01	MATHEMATICS-I	3	1	-	30	70	100	4
2.	CY201TBS02	CHEMISTRY	3	1	-	30	70	100	4
3.	CE201TES01	ENGINEERING MECHANICS New Course	3	1	-	30	70	100	4
4.	CS201TES02	COMPUTER PROGRAMMING	3	0	-	30	70	100	3
5.	CM201TES03	BASIC CIVIL & MECHANICAL ENGINEERING New Course	3	0	-	30	70	100	3
6.	LW201TMC01	INDIAN CONSTITUTION New Course	2	0	-	-	-	-	-
		TOTAL	**17**	**3**	**-**	**150**	**350**	**500**	**18**
PRACTICALS									
1.	CY201PBS01	CHEMISTRY LAB	-	-	2	30	20	50	1
2.	CE201PES01	ENGINEERING MECHANICS LAB New Course	-	-	2	30	20	50	1
3.	CS201PES02	COMPUTER PROGRAMMING LAB	-	-	2	30	20	50	1
		TOTAL	**-**	**-**	**6**	**90**	**60**	**150**	**3**
		GRAND TOTAL	**17**	**3**	**6**	**240**	**410**	**650**	**21**

Total Credits:**21** Total Contact Hours:**26** Total Marks:**650**

L:LECTURE, T:TUTORIAL, P:PRACTICAL, IA : INTERNAL ASSESSMENT, ESE:END SEMESTER EXAMINATION
*INTERNAL ASSESSMENT- Two Class Test of 15 Marks each will be conducted.

SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A CENTRAL UNIVERSITY)

CBCS-NEW, EVALUATION SCHEME

PROPOSED (W.E.F. SESSION 2020-21)

B. TECH. FIRST YEAR (SEMESTER- II)

(Common for CH, CE, IPE, ME)

S. No.	COURSE No.	SUBJECT	PERIODS			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	SUB-TOTAL	
THEORY									
1.	MA202TBS03	MATHEMATICS-II	3	1	-	30	70	100	4
2.	PH202TBS04	PHYSICS	3	1	-	30	70	100	4
3.	EC202TES04	BASIC ELECTRICAL & ELECTRONICS ENGINEERING	3	1	-	30	70	100	4
4.	IT202TES05	INTRODUCTION TO INFORMATION TECHNOLOGIES New Course	2	0	-	30	70	100	2
5.	EN202THS01	ENGLISH COMMUNICATION	3	0	-	30	70	100	3
		TOTAL	**14**	**3**	**-**	**150**	**350**	**500**	**17**
PRACTICALS									
1.	PH202PBS02	PHYSICS LAB	-	-	2	30	20	50	1
2.	ME202PES03	ENGINEERING GRAPHICS	1	-	3	30	20	50	3
3.	ME202PES04	WORKSHOP TECHNOLOGY & PRACTICES	1	-	2	30	20	50	2
4.	EC202PES05	BEE LAB	-	-	2	30	20	50	1
		TOTAL	**2**	**-**	**9**	**120**	**80**	**200**	**7**
		GRAND TOTAL	**16**	**3**	**9**	**270**	**430**	**700**	**24**

Total Credits:**24** Total Contact Hours:**28** Total Marks:**700**

L:LECTURE, T:TUTORIAL, P:PRACTICAL, IA : INTERNAL ASSESSMENT, ESE:END SEMESTER EXAMINATION
*INTERNAL ASSESSMENT- Two Class Test of 15 Marks each will be conducted.

Sub Title: ARTIFICIAL INTELLIGENCE		
Sub Code: CS06TPE07	No. of Credits : 3=3: 0: 0(L-T-P)	No of lecture hours/week :03
Exam Duration : 3 hours	IA+ESE=30+70	Total no of contact hours:36

COURSE OBJECTIVE:

1. To create appreciation and understanding of both the achievements of AI and the theory underlying those achievements.
2. To introduce the concepts of a Rational Intelligent Agent and the different types of Agents that can be designed to solve problems
3. To review the different stages of development of the AI field from human like behavior to Rational Agents.

UNIT No	Syllabus Content	No of Hours
1	Introduction of Artificial Intelligence(AI), Difference between Intelligence and Artificial Intelligence, Definitions of AI, Strong AI and Weak AI, Application areas of AI, Comparison of Conventional and AI Computing, History of AI, Turing Test, Branches of AI, Intelligent Agents, State Space Representation, Production System, Heuristic Search, Search Methods (Uninformed Search and Informed Search), Breadth First Search, Depth First Search, Difference between Breadth First Search and Depth First Search, Hill Climbing, Best First Search.	8
2	Role of Knowledge Representation in AI, Types of Knowledge, Properties of Knowledge Representation System, Categories of Knowledge Representation Scheme, First Order Predicate Calculus, Well Formed Formula in Predicate Logic, Conversion to Clausal Form, Resolution in Predicate Logic, Semantic Nets, Properties of Semantic Nets, Frames, Scripts, Advantages and Disadvantages of Scripts.	7
3	Introduction of Expert System, Comparison between Human Expert and Expert System, Comparison between Expert System and Software System, Difference between Knowledgebase and Database, Basic Components of an Expert System, Characteristics of Expert System, Life Cycle Development of Expert System, Advantages of Expert System, Limitation of Expert System, Expert System Tools, Existing Expert Systems (DENDRAL and MYCIN).	7

4	**Introduction to LISP :** Syntax and Numeric Functions, Working with GNU CLISP, Basic Data Objects in GNU CLISP, Basic List Manipulation Functions in GNU CLISP (setq, car, cdr, cons, list, append, last, member, reverse), User Defined Functions in GNU CLISP, Predicates (atom, equal, evenp, 69odell, oddp, zerop, >=, <=, listp, null) and Conditionals (cond and if) in GNU CLISP, Logical Functions (not, or, and) in GNU CLISP, Input / Output and Local Variables (read, print, princ, terpri, format, let, prog) in GNU CLISP, Recursion and Iteration(do) in GNU CLISP, Arrays in GNU CLISP	7
5	Introduction to PROLOG, Term, Ground Term, Function, Predicate, Features of PROLOG, Program Clause, Unit Clause, Logic Program, Goal Clause, Empty Clause, Simple Query, Conjunctive Query, Structure of PROLOG Program, Working with SWI-Prolog General Syntax of PROLOG, Execution of a Query in Logic Program (Ground Query and Non-Ground Query), Law of Universal modus ponen, Ground Reduction, PROLOG Control Strategy, Search Tree and Proof Tree, Relational and Arithmetic Operators, Recursion in PROLOG, Lists manipulation in PROLOG, Iterative programming in PROLOG.	7

COURSE OUTCOMES: The students would have learnt

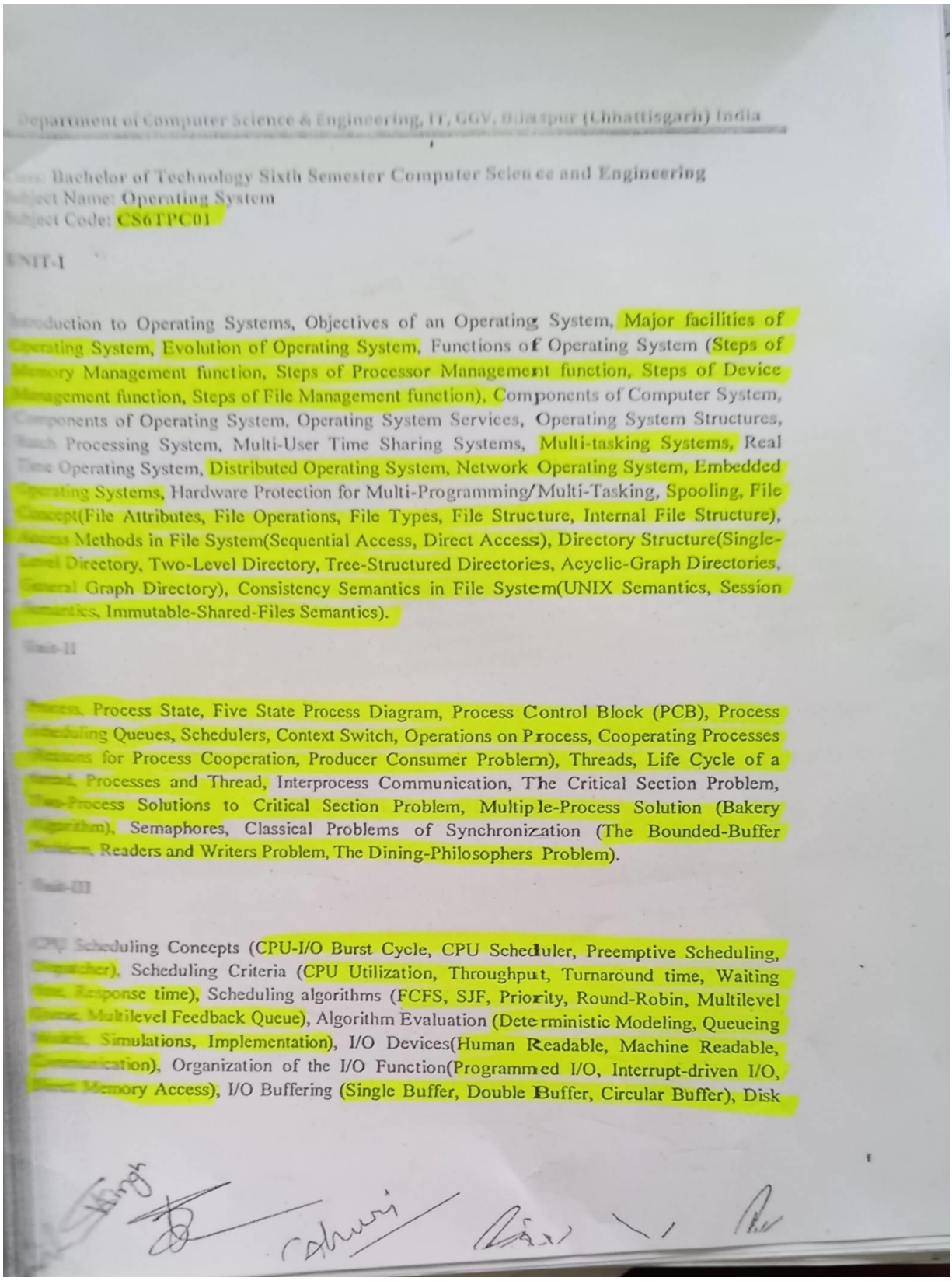
CO1: Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.
CO2: Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
CO3: Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing
CO4: Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.
CO5: Formulate and solve problems with uncertain information using Bayesia approaches.
CO6: Apply concept Natural Language processing to problems leading to understanding of cognitive computing

Text Books:

1. E. Rich and K. Knight, Artificial Intelligence, Forty Sixth Edition, Tata McGrawHill,2007.
2. D.W. Patterson, Introduction to Artificial Intelligence and Expert Systems, Tenth Edition, Prentice Hall of India, 2001.

Reference Books:

1. S. Kaushik, Logic and Prolog Programming, New Age International Limited, 2006.



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Sixth Semester Computer Science and Engineering
Subject Name: Operating System
Subject Code: CS6TPC01

UNIT-I

Introduction to Operating Systems, Objectives of an Operating System, Major facilities of Operating System, Evolution of Operating System, Functions of Operating System (Steps of Memory Management function, Steps of Processor Management function, Steps of Device Management function, Steps of File Management function), Components of Computer System, Components of Operating System, Operating System Services, Operating System Structures, Batch Processing System, Multi-User Time Sharing Systems, Multi-tasking Systems, Real Time Operating System, Distributed Operating System, Network Operating System, Embedded Operating Systems, Hardware Protection for Multi-Programming/Multi-Tasking, Spooling, File Concept(File Attributes, File Operations, File Types, File Structure, Internal File Structure), Access Methods in File System(Sequential Access, Direct Access), Directory Structure(Single-Level Directory, Two-Level Directory, Tree-Structured Directories, Acyclic-Graph Directories, General Graph Directory), Consistency Semantics in File System(UNIX Semantics, Session Semantics, Immutable-Shared-Files Semantics).

Unit-II

Process, Process State, Five State Process Diagram, Process Control Block (PCB), Process Scheduling Queues, Schedulers, Context Switch, Operations on Process, Cooperating Processes (Reasons for Process Cooperation, Producer Consumer Problem), Threads, Life Cycle of a Thread, Processes and Thread, Interprocess Communication, The Critical Section Problem, Two-Process Solutions to Critical Section Problem, Multiple-Process Solution (Bakery Algorithm), Semaphores, Classical Problems of Synchronization (The Bounded-Buffer Problem, Readers and Writers Problem, The Dining-Philosophers Problem).

Unit-III

CPU Scheduling Concepts (CPU-I/O Burst Cycle, CPU Scheduler, Preemptive Scheduling, Dispatcher), Scheduling Criteria (CPU Utilization, Throughput, Turnaround time, Waiting time, Response time), Scheduling algorithms (FCFS, SJF, Priority, Round-Robin, Multilevel Queue, Multilevel Feedback Queue), Algorithm Evaluation (Deterministic Modeling, Queueing Models, Simulations, Implementation), I/O Devices(Human Readable, Machine Readable, Communication), Organization of the I/O Function(Programmed I/O, Interrupt-driven I/O, Direct Memory Access), I/O Buffering (Single Buffer, Double Buffer, Circular Buffer), Disk

Structure, Disk Performance Parameter(Seek Time, Rotational Delay, Transfer Time), Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK).

Unit-IV

Introduction to Dead Locks, System Model, Deadlock Characterization (Necessary Conditions, Resource-Allocation Graph), Methods for Handling Deadlocks, Deadlock Prevention, Introduction of Deadlock Avoidance, Safe State, Resource-Allocation Graph Algorithm, Banker's Algorithm (Safety Algorithm, Resource-Request Algorithm), Deadlock Detection(Wait for Graph for Single Instance of Each Resource Type, Deadlock Detection Algorithm for Several Instances of a Resource Type), Recovery from Deadlock(Process Termination, Resource Preemption), Combined Approach to Deadlock Handling.

Unit-V

Basic Concepts of Memory Management(Address Binding, Static and Dynamic Allocation, Logical and Physical Addresses, Swapping, Relocation, Protection and Sharing, Fixed and Variable Memory Partitioning, Fragmentation), Contiguous Memory Allocation, Memory Allocation Techniques (First-fit Allocation, Best-fit Allocation, Worst-fit Allocation), Non-Contiguous Memory Allocation, Paging Concept, Paging Implementation and Hardware Requirements, Segmentation, Segmentation Implementation and Hardware Requirements, Need for Virtual Memory, Principle of Locality, Virtual Memory System, Demand Paging, Page Replacement Algorithms (FIFO Page-replacement Algorithm, Optimal Page-Replacement Algorithm, Least Recently Used Page-Replacement Algorithm), Thrashing, Allocation of Frames(Minimum Number of Frames, Allocation Algorithms, Global Versus Local Allocation).

Text Book:

1. A. Silberschatz, G. Galvin and P. E. Gagne, *Operating System Concepts*, Seventh Edition, Wiley, 2004.
2. W Stallings, *Operating Systems Internals and Design Principles*, Sixth Edition, Pearson, 2009.

Other Reference:

1. M Milenkovic, *Operating Systems Concepts and Design*, Second Edition, Tata McGraw Hill, 1997.
2. S Das, *UNIX Concepts and Applications*, Fourth Edition, Tata McGraw Hill, 2009.

Sub Title: JAVA LAB	
Sub Code: CS06PPC08	No. of Credits : 1.5=0: 0: 1.5(L-T-P)
Exam Duration : 3 hours	IA+ESE =30+20

Lab OBJECTIVE:

1. To provide the knowledge of Basics of Java.
2. To learn the Concept of package and Applet in Java.
3. To develop an awareness of modern programming language.
4. Provide practical Knowledge and Skills for developing a program with java.
5. Develop ability to design a small software using java.

Unit No.	Content	Teaching Hours
I, II, III, IV and V	• Write a program to find a factorial of a given number . • Write a program to show all relational and Logical operatior • Write a program using Constructors • Write any program using the concept of method overloading. • Write a program to show the concept of Inheritance. • Write a program to using 10 string operations • Write a program using packages • Write a program to show the concept of Synchronization in Multithreading. • Write a program to show exception handling in java • Write a program to show human face using Applets	18

LAB OUTCOMES: The students would have learnt

CO1: The basic Concept of JAVA.
CO2: Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
CO3: About Concept of Multithreading, Packages and Applet.
CO4: Read and make elementary modifications to Java programs that solve real world problems
CO5: To develop small Software using JAVA.

Text Books:

1. Programming with Java A Primer, E.Balagurusamy, , Fourth Edition, McGrawHill, 2010.

Sub Title: JAVA		
Sub Code: CS06TPC12	No. of Credits : 3=3: 0: 0(L-T-P)	No of lecture hours/week :03
Exam Duration : 3 hours	IA+ESE=30+70	Total no of contact hours:36

COURSE OBJECTIVE:

1. To discuss the fundamental concepts of OOPs and Java
2. To discuss the Differences between C/C++ and Java.
3. Knowledge of Multithreading, Packages and Applet.
4. Use of Java on different Platform.
5. Learn to develop a small project using Java

UNIT No	Syllabus Content	No of Hours
1	**Java Fundamentals:** Basic Concepts of Object-Oriented Programming, Java History, Java Features, How Java Differs from C and C++, Web Browsers, Java Environment, Java Program Structure, Java Tokens, Installing and Configuring Java, Implementing a Java Program, Java Virtual Machine, Command Line Arguments, Programming Style.	8
2	Constants, Variables and Data Types, Declaration of Variables, Giving values to variables, Scope of Variables, Symbolic Constants, Type Casting, Getting Values of Variables, Standard Default Values, Java Operators, Arithmetic Expression, Evaluation of Expressions, Precedence of Arithmetic Operators, Operator Precedence and Associativity, Mathematical Functions, Control Statements (if statement, switch statement and Conditional operator statement), Decision Making and Looping (while construct, do construct, for construct), Jumps in Loops.	7
3	**Class,Objects and Methods:** Introduction of Class, Defining a Class, Fields Declaration, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods, **Inheritance:** Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Abstract Methods and Classes, Visibility Control **Introduction of Array:** One Dimensional Array, Creating an array, Two-Dimensional arrays, Strings, Wrapper Classes. **Interfaces:** Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables, **Packages:** Java API Packages, Using System Packages, Naming Conventions, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a Package, Hiding Classes, Static Import.	7

4	**Introduction to Multithreaded Programming:** Difference between Multithreading and Multitasking, Creating threads, Extending the thread class, Stopping and Blocking a thread, Life Cycle of a thread, Using thread Methods, Thread Exception, Thread Priority, Synchronization, Implementing the Runnable Interface, Inter-thread Communication. Managing Errors and Exceptions: Types of Errors, Exceptions, Syntax of	7
5	Introduction of Applet Programming, How Applets Differ from Applications, Preparing to Write Applets, Building Applet Code, Applet Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML file, Running the Applet, Passing Parameters to Applets, Aligning the Display, Displaying Numeric values, Getting input from the user, Event handling, Introduction of Graphics Programming, Introduction to AWT package, **Managing Input/Output Files in Java:** Concept of Streams, Stream Classes, Byte Stream Classes, Character Stream Classes, Other useful I/O classes, Using the file class, Input/Output exceptions.	7

COURSE OUTCOMES: The students would have learnt

CO1: Understanding of basic concept of Java Programming
CO2: Knowledge of the structure of Java.
CO3: The Concept of Exception Handling, Package and Applet
CO4: To use the Java programming language for various programming technologies (understanding)
CO5: To develop a software in the Java programming language.

Text Books:

1. E.Balagurusamy, Programming with Java A Primer, Fourth Edition, McGrawHill, 2010.

Reference Books:

1. H.Schildt, Java TM 2: The Complete Reference, Fourth Edition, Tata McGrawHill, 2001.
2. K. A. Mughal and R. W. Rasmussen, A Programmer's Guide to Java TM SCJP
3. Certification A Comprehensive Primer, Third Edition, Addison Wesley, 2008.

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Sub Title: PARALLEL COMPUTING		
Sub Code: CS05TPC10	No. of Credits : 3=3: 0: 0(L-T-P)	No of lecture hours/week :03
Exam Duration : 3 hours	IA+ESE=30+70	Total no of contact hours:36

COURSE OBJECTIVE:

1. To introduce parallel, distributed and cloud computing, the major concept, ideas and various hardware model of parallel and distributed system.
2. To study design the multiprocessor system by various interconnection network like static and dynamic etc.
3. To study various technique for vector pipeline architecture design to achieve parallelism (concurrency)
4. To study about advanced and more power full processor technology
5. To study about parallel algorithm design, programming language and tools like Python, CUDA. To study about architecture design of GPU.

UNIT No	Syllabus Content	No of Hours
1	**Introduction Of Parallelism:** Introduction -parallelism in Uniprocessor systems, Principles of Scalable Performance, architectural classification schemes, SISD, SIMD, MISD, MIMD architectures, multiprocessor and multicomputer, UMA, NUMA, COMA, NORMA model Parallel algorithms: Various Soritng	8
2	**Parallel Models & Interconnection Network:** System Interconnect architecture – static, dynamic, multistage interconnection networks, design considerations throughputs, delay, blocking and non-blocking properties interconnected memory organization - C-Access, S-Access, C-S access.	7
3	**Pipeline & Vector Processing:** Principal of Pipelining - Over lapped parallelism, principal of Liner pipelining processor, General pipelining and reservation tables, arithmetic pipelining, Design of pipeline Instruction units, arithmetic pipelining design example, hazard detection and resolution, JOB sequencing and collision prevention, vector processing function organization of instructions in IBM 360/91.	7
4	**Advanced Processor and Parallelism:** Advanced processor technology – RISC & CISC computers, super scalar architecture, principles of multithreading, multithreaded architectures of MP systems. Context switching policies, shared variables, locks, semaphores, monitor, multitasking and Cray multiprocessor.	7

5	**Parallel Programming Design Coding And Dubugging:** CPU parallelism, GPU parallelism- program, Exploiting parallelism in programmed-multidimensional arrays, directed acyclic graphs, distance and direction vectors, data flow computer and data flow graphs. Parallel algorithm structure, analyzing parallel algorithm. Elementary parallel algorithms, Programming: Parallel programming with Synchronous and Asynchronous, Various API of MPS, PYTHON, CUDA, OpenCL.	7

COURSE OUTCOMES: The students would have learnt

CO1: Spontaneously able to design the multiprocessor system with various hardware electronics circuit like CU, ALU, RAM etc.
CO2: Design new interconnection network which connects the processors and other devices like input and output devices (I/O)
CO3: Spontaneously try and invented a new type of pipeline processor architecture in which throughput can be as better as possible than all other.
CO4: How do combine the techniques of parallelism to obtain a more power full architecture as a outcome.
CO5: Course outcomes are skills and abilities to make parallel algorithm and program to enhance the speed up of execution of process.

Text Books:

1. Computer Architecture & Parallel processing - Kai Hwang 7 Briggs.(MGH).
2. Advanced Computer Architecture with Parallel Programming", K. Hwang, MGH.
3. Quinn, Parallel computing – theory and practice, Tata McGraw Hill.
4. Sima and Fountain, Advanced Computer Architectures, Pearson Education
5. Ed. Afonso Ferreira and Jose' D. P. Rolin, Parallel Algorithms for irregular problems - State of the art, Kluwer Academic Publishers

Reference Books:

1. Parallel Computers: Arch.& Prog., Rajaraman & Siva Ram Murthy, PHI.
2. Parallel computing- Theory and practice - Michael J Quinn- Mc Graw Hill
3. Selim G. Akl, The Design and Analysis of Parallel Algorithms, PH International.

Sub Title: MICROPROCESSOR AND INTERFACES		
Sub Code: CS05TES05	No. of Credits : 3=3: 0: 0(L-T-P)	No of lecture hours/week :03
Exam Duration : 3 hours	IA+ESE=30+70	Total no of contact hours:36

COURSE OBJECTIVE:

1. To describe the basic architecture of 8086.
2. To discuss the Instruction set of 8086.
3. Evaluate the different technique of interfacing with memory and IO devices.
4. Develop knowledge about interfacing devices and peripheral devices.
5. To describe the basic architecture of 80386 and co-processor.

UNIT No	Syllabus Content	No of Hours
1	Microprocessor Architecture -8086, Register organization of 8086, Signal descriptions of 8086 chip, Physical Memory organization, Introduction to Maximum and Minimum mode operation, Processor 8088. .	8
2	Instruction formats, Addressing modes, Instruction Set of 8086: Data transfer instructions, Arithmetic instructions, Logical instructions, Branch instructions, Shift and rotate instructions, String Manipulation instructions, Machine Control Instruction, Flag Manipulation Instruction, Assembler Directive and Operators Programming with an Assembler, Programming examples.	7
3	Introduction to Stack, Stack Structure of 8086, Interrupt, Interrupt and Interrupt Service Routines, Non Maskable Interrupt, Maskable Interrupt. Subroutine, MACROS: Defining a MACRO, Passing Parameters to MACRO.	7
4	Memory Interfacing, Interfacing I/O Ports, Programmable Interval Timer 8253: Architecture and Signal Description, Operating modes, Programming and Interfacing 8253, DMA Controller 8257: Architecture and Signal Description, Keyboard/Display Controller 8279: Architecture and Signal Description, Mode of Operation, Floppy Disk Controller 8272: Architecture and Signal Description, Commands.	7
5	Multi microprocessor System: Numeric Processor 8087, IO Processor 8089. 80386: Features, Architecture and Signal Description, Register Organization, Real Mode, Protected Mode, Virtual Mode, Paging, Segmentation.	7

Sub Title: PARALLEL COMPUTING LAB	
Sub Code: CS05PPC06	No. of Credits : 1.5=0: 0: 1.5(L-T-P)
Exam Duration : 3 hours	IA+ESE =30+20

Lab OBJECTIVE:

1. To study about various platform and libraries of parallel processing.
2. To study about to create MPI programs to accomplish a computational task
3. To study about of API to carried out MPI
4. To study about to know GPU importance in parallel programming
5. To study about of shared memory in parallel

Unit No.	Content	Teaching Hours
I, II, III, IV and V	• Understanding the environment of OMP, MPI, CUDA • Parallel programming environment and platform. • Create and simulate multiple processes and threads on MP system. • Simulate parallel program to synchronization and pooling of processes. • Simulate the loop and function in parallelism manner. • Simulate a parallel algorithm to perform some mathematical calculation and their execution time. • Simulate the parallel sorting algorithm and their execution time. • Simulate the parallel searching algorithm and their execution time. • Simulate parallel some operation on array and list with their execution time. • Optimization technique using shared memory module on MP system. • Heterogeneous calculation using PYTHON (PTK), CUDA, and OPENCL tool kit.	18

LAB OUTCOMES: The students would have learnt

CO1: Simulate and create process and threads
CO2: Simulate parallel algorithm using various MPI
CO3: Simulate parallel program for many computational task
CO4: Simulate various memories to carry out optimization.
CO5: Do synchronous and asynchronous of process and pooling.

Sub Title: DESIGN AND ANALYSIS OF ALGORITHMS		
Sub Code: CS06TPC11	No. of Credits : 3=3: 0: 0(L-T-P)	No of lecture hours/week :03
Exam Duration : 3 hours	IA+ESE=30+70	Total no of contact hours:36

COURSE OBJECTIVE:

1. To Analysis efficiency of algorithms on the basis of their time complexity and space complexity by mathematically foundation (asymptotic notation)
2. To study about design and analysis of divide and conquer and greedy algorithm on the basis of their attributes and also describe when could be used these technique and which situation for which problem
3. To know dynamic programming(DP) paradigm and algorithm for problems on the different data structure like graph and array
4. Know a branch and bound technique and backtracking technique for problems
5. Know the classes of problems like P,NP on their basis of nature (running time complexity)

UNIT No	Syllabus Content	No of Hours
1	**Algorithms Analysis:** Space and Time Complexity, Asymptotic Notations, mathematical foundations: growth functions, complexity analysis of algorithms, Recursive algorithms, analysis of no-recursive and recursive algorithms, Recurrences equation and their solution. Master method, recursive tree and backward substitution method.	8
2	**Divide & Conquer and Greedy Method:** Divide and conquer-Finding Maxima and Minima Binary search, Merge Sort, Quick Sort, and selection sort. Stassen's Matrix multiplication Greedy method-introduction, Knapsack problem, travelling sales person problem, Minimum Spanning trees- kruskal's algorithm, prim's algorithm, Single source shortest path-Dijkstra's algorithm, Huffman codes.	7
3	**Dynamic Programming and Search Techniques:** Dynamic Programming: Introduction, Matrix chain multiplication, Single source shortest path-Bellman-Ford, all pairs shortest path, optimal binary search tree, o/1 knapsack problem, travelling sales person problem, longest common subsequence Search techniques: Techniques for binary trees, techniques for graphs –DES and BFS, connected components, Bi-connected components, and Strongly-connected components, Topological sorting. **Heap Data Structure:** Min and Max Heap, Fibonacci Heap, Binomial heap, Amortized Analysis, Heap sort.	7

4	**Back Tracking and Branch and Bound:** Backtracking: Back tracking and Recursive back tracking, applications of back tracking paradigm, the 8-queen problem, graph coloring, Hamiltonian cycles. **Branch and Bound:** introduction, 0/1 knapsack problem, travelling sales person problem, Least Cost (LC) search – the 15-puzzle problem.	7
5	**Complexity Class Theory and Pattern Matching :** Problem classes, Optimization problem, decision making problem, P VS NP VS NPC VS NPH,Venn diagram and their analysis, deterministic and non-deterministic polynomial time algorithm, Cook Levin theorem, Verification algorithms for some NP Class: subset sum problem, clique problem, vertex cover, independent set problem, Circuit Satisfiability problem, 2-SAT, 3-SAT etc. Pattern matching: Basic concept of pattern reorganization and their algorithms.	7

COURSE OUTCOMES: The students would have learnt

CO1: Technique to calculate and obtain the running time complexity and space complexity of any kind of algorithm.
CO2: Design divide and conquer and greedy algorithm for problems and at the same time they will able to know that which data structure are adequate to enhance the running time complexity.
CO3: Spontaneously able to described and analyze the dynamic-programming (DP) algorithm moreover when an algorithmic design situation calls for it and can construct a new DP algorithm for given a particular problem.
CO4: Spontaneously able to construct and design branch & bound and backtracking algorithm for a particular problem on the basis of the problem nature analysis and requirement.
CO5: Analyzed and write verification algorithm for some NP and NPH class problems.

Text Books:

1. Thomas H. Cormen, Charles E. Leiserson, Ronald Rivest, Clifford Stein, "Introduction to Algorithm" ,Publisher PHI. ISBN 81-203-2141-3
2. Sanjoy Dasgupta, Christos H. Papadimitriou and Umesh V. Vazirani, Algorithms, Tata McGraw-Hill, 2008
3. Jon Kleinberg and Éva Tardos, Algorithm Design, Pearson, 2005.
4. Michael T Goodrich and Roberto Tamassia, Algorithm Design: Foundations, Analysis, and Interne Examples, Second Edition, Wiley, 2006.

Reference Books:

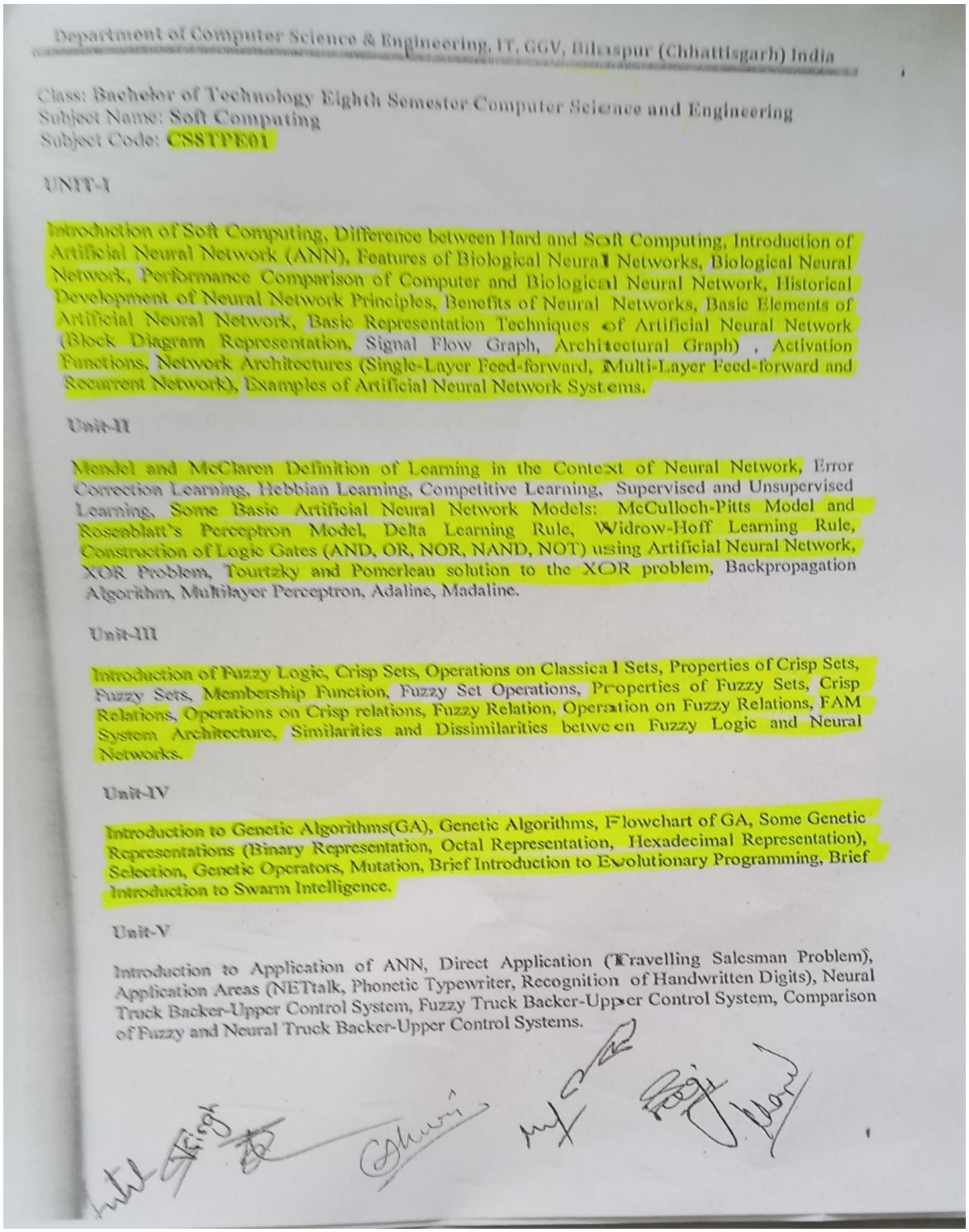
1. Udi Manber, Algorithms – A Creative Approach, Addison-Wesley, Reading, MA, 1989.
2. Harry R. Lewis and Larry Denenberg, Data Structures and Their Algorithms, Harper Collins, 1997

Sub Title: DESIGN AND ANALYSIS OF ALGORITHMS LAB	
Sub Code: CS06PPC07	No. of Credits : 1.5=0: 0: 1.5(L-T-P)
Exam Duration : 3 hours	IA+ESE =30+20

Lab OBJECTIVE:

1. Understand the recursive type algorithm with their data structure
2. Understand the divide and conquer (with recursive function) and greedy algorithm like merge sort, quick sort and single source shortest path
3. Understand the dynamic programming paradigm and analysis the single source and all pair shortest path algorithm
4. Understand the branch and bound technique ,heap and Fibonacci data structure to implement optimization and sorting problem
5. Analysis about some NP class problems

Unit No.	Content	Teaching Hours
I, II, III, IV and V	• Simulate the Stack data structure (recursion) and do the posteriori analysis. • Simulate BFS, DFS on Graph and estimate the running time. • Simulate Prim's and Kruskal's Algorithm and do the posteriori analysis • Simulate Dijkstra's algorithm and do the posteriori analysis • Simulate all pair shortest path problem and do the posteriori analysis • Simulate Bellman algorithm and do the posteriori analysis • Simulate of Huffman Tree and do the posteriori analysis • Simulate of check whether a given graph is connected or not using DFS method and do the posteriori analysis • Simulate of Heap Tree and heap sort and do the posteriori analysis • Simulate of N Queen's problem using Back Tracking and do the posteriori analysis • Simulate 0/1 Knapsack problem using Dynamic Programming and do the posteriori analysis • Simulate TSP problem using Dynamic Programming and do the posteriori analysis • Simulate fractional Knapsack problem and do the posteriori analysis • Simulate to find a subset sum of a given set of integer number and do the posteriori analysis • Simulate to detect the circle in graph by using DFS algorithm and do the posteriori analysis	18



Department of Computer Science & Engineering, IT, GGV, Bilaspur (Chhattisgarh) India

Class: Bachelor of Technology Eighth Semester Computer Science and Engineering
Subject Name: Soft Computing
Subject Code: CSSTPE01

UNIT-I

Introduction of Soft Computing, Difference between Hard and Soft Computing, Introduction of Artificial Neural Network (ANN), Features of Biological Neural Networks, Biological Neural Network, Performance Comparison of Computer and Biological Neural Network, Historical Development of Neural Network Principles, Benefits of Neural Networks, Basic Elements of Artificial Neural Network, Basic Representation Techniques of Artificial Neural Network (Block Diagram Representation, Signal Flow Graph, Architectural Graph) , Activation Functions, Network Architectures (Single-Layer Feed-forward, Multi-Layer Feed-forward and Recurrent Network), Examples of Artificial Neural Network Systems.

Unit-II

Mendel and McClaren Definition of Learning in the Context of Neural Network, Error Correction Learning, Hebbian Learning, Competitive Learning, Supervised and Unsupervised Learning, Some Basic Artificial Neural Network Models: McCulloch-Pitts Model and Rosenblatt's Perceptron Model, Delta Learning Rule, Widrow-Hoff Learning Rule, Construction of Logic Gates (AND, OR, NOR, NAND, NOT) using Artificial Neural Network, XOR Problem, Tourtzky and Pomerleau solution to the XOR problem, Backpropagation Algorithm, Multilayer Perceptron, Adaline, Madaline.

Unit-III

Introduction of Fuzzy Logic, Crisp Sets, Operations on Classical Sets, Properties of Crisp Sets, Fuzzy Sets, Membership Function, Fuzzy Set Operations, Properties of Fuzzy Sets, Crisp Relations, Operations on Crisp relations, Fuzzy Relation, Operation on Fuzzy Relations, FAM System Architecture, Similarities and Dissimilarities between Fuzzy Logic and Neural Networks.

Unit-IV

Introduction to Genetic Algorithms(GA), Genetic Algorithms, Flowchart of GA, Some Genetic Representations (Binary Representation, Octal Representation, Hexadecimal Representation), Selection, Genetic Operators, Mutation, Brief Introduction to Evolutionary Programming, Brief Introduction to Swarm Intelligence.

Unit-V

Introduction to Application of ANN, Direct Application (Travelling Salesman Problem), Application Areas (NETtalk, Phonetic Typewriter, Recognition of Handwritten Digits), Neural Truck Backer-Upper Control System, Fuzzy Truck Backer-Upper Control System, Comparison of Fuzzy and Neural Truck Backer-Upper Control Systems.

SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
Subject Code:	MA201TBS01	L	T	P	CT-1	CT-II	TOTAL	70	100	04
Subject:	MATHEMATICS-I	3	1	-	15	15	30			

90% Change

Course Content

Calculus (Single Variable)

UNIT 1: Calculus: Evolutes and involutes; Evaluation of definite and improper integrals; Beta and Gamma functions and their properties; Applications of definite integrals to evaluate surface areas and

B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
Subject Code:	EC201TES01 / EC202TES04	L	T	P	CT-1	CT-II	TOTAL	70	100	04
Subject:	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	3	1	-	15	15	30			

Course Learning Objectives:

- To impart a basic knowledge of electrical quantities such as current, voltage, power, energy and. To provide working knowledge for the analysis of basic DC circuits used in electrical and electronic devices.
- To provide working knowledge for the analysis of basic AC circuits used in electrical and electronic devices and measuring instruments
- To explain the working principle, construction, applications of Transformer, DC machines and AC machines.
- To make students understand basics of Diodes and Transistors.
- To impart knowledge about basics of Digital Electronics

80% Change

Course Content:

UNIT-1: DC circuits (8 hours)
Electrical circuit elements (R, L and C), voltage and current sources, Ohm's Law, Kirchoff's current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits. Mesh & nodal analysis, Star-Delta transformation and circuits.

UNIT-2: AC circuits (8 hours)
Representation of sinusoidal waveforms, average and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three-phase balanced circuits, voltage and current relations in star and delta connections. Three-phase power measurement- Two-Wattmeter method.
Construction and working principle of single-phase wattmeter and energy meter. Introduction to Sensors and Transducers.

UNIT-3: Electrical machines (8 hours)
Construction, classification, ideal and practical transformer, equivalent circuit, losses in transformers, tests, voltage regulation and efficiency.
Construction, Working Principle, losses and efficiency of DC Machines and three phase Induction Machine, DC motor.

UNIT-4: Semiconductor devices And application (8 hours)
Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its Characteristics – Half wave and Full wave Rectifiers – Voltage Regulation. Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics.

B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)

SYLLABUS	Periods/	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
Subject Code:	MA202TBS03	L	T	P	CT-1	CT-II	TOTAL	70	100	4
Subject:	MATHEMATICS-II	3	1	-	15	15	30			

90% Change

Course Content:

UNIT 1: First order ordinary differential equations: Exact, linear and Bernoulli's equations, Euler's equations, Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT 2: Ordinary differential equations of higher orders (Prerequisite 2c, 4a) second order linear differential equations with variable coefficients, method of variation of parameters, Cauchy-Euler equation; Power series solutions; Legendre polynomials, Bessel functions of the first kind and their properties.

UNIT 3: Partial Differential Equations – First order (Prerequisite 5a-b): First order partial differential equations, solutions of first order linear and non-linear PDEs.

UNIT 4: Partial Differential Equations– Higher order (Prerequisite 5b-c) Solution to homogenous and non-homogenous linear partial differential equations second and higher order by complimentary function and particular integral method. Flows, vibrations and diffusions, second-order linear equations and their classification, Initial and boundary conditions (with an informal description of well-posed problems).

UNIT 5: D'Alembert's solution of the wave equation; Duhamel's principle for one dimensional wave equation. Separation of variables method to simple problems in Cartesian coordinates. The Laplacian in plane, cylindrical and spherical polar coordinates, solutions with Bessel functions and Legendre functions. One dimensional diffusion equation and its solution by separation of variables. Boundary-value problems: Solution of boundary- value problems for various linear PDEs in various geometries.

Textbooks/References:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley &Sons, 2006.
2. W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 9th Edition, Wiley India, 2009.
3. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.
4. E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall India, 1995.
5. E. L. Ince, Ordinary Differential Equations, Dover Publications, 1958.
6. G.F. Simmons and S.G. Krantz, Differential Equations, Tata McGraw Hill, 2007.
7. S. J. Farlow, Partial Differential Equations for Scientists and Engineers, Dover Publications, 1993.
8. R. Haberman, Elementary Applied Partial Differential equations with Fourier Series and Boundary Value Problem, 4th Ed., Prentice Hall, 1998.
9. Ian Sneddon, Elements of Partial Differential Equations, McGraw Hill, 1964.
10. Manish Goyal and N.P. Bali, Transforms and Partial Differential Equations, University Science Press, Second Edition, 2010
11. Denian murry,defferential equations ,oxford publications

B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)

SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
		L	T	P	CT-I	CT-II	TOTAL			
Subject Code:	EC201TES01 / EC202TES04							70	100	04
Subject:	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	3	1	-	15	15	30			

Course Learning Objectives:

- To impart a basic knowledge of electrical quantities such as current, voltage, power, energy and. To provide working knowledge for the analysis of basic DC circuits used in electrical and electronic devices.
- To provide working knowledge for the analysis of basic AC circuits used in electrical and electronic devices and measuring instruments
- To explain the working principle, construction, applications of Transformer, DC machines and AC machines.
- To make students understand basics of Diodes and Transistors.
- To impart knowledge about basics of Digital Electronics

80% Change

Course Content:

UNIT-1: DC circuits (8 hours)
Electrical circuit elements (R, L and C), voltage and current sources, Ohm's Law, Kirchoff's current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits. Mesh & nodal analysis, Star-Delta transformation and circuits.

UNIT-2: AC circuits (8 hours)
Representation of sinusoidal waveforms, average and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three-phase balanced circuits, voltage and current relations in star and delta connections. Three-phase power measurement- Two-Wattmeter method.
Construction and working principle of single-phase wattmeter and energy meter. Introduction to Sensors and Transducers.

UNIT-3: Electrical machines (8 hours)
Construction, classification, ideal and practical transformer, equivalent circuit, losses in transformers, tests, voltage regulation and efficiency.
Construction, Working Principle, losses and efficiency of DC Machines and three phase Induction Machine, DC motor.

UNIT-4: Semiconductor devices And application (8 hours)
Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its Characteristics – Half wave and Full wave Rectifiers – Voltage Regulation. Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics.

UNIT 5: Digital Electronics (8 hours)
Binary Number System, Logic Gates, Combinational circuits, Boolean Algebra, De Morgan's Theorem, Half and Full Adders, Flip- Flops. Sequential circuits-Registers and Counters, A/D a D/A Conversion.

Suggested Text / Reference Books:

(i) D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
(ii) D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
(iii)B L Theraja and AK Theraja," A Textbook of Electrical Technology- Vol-I & II, S. CHAND & 2013.
(iv) E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
(v) Jacob Millman, Christos Halkias,, Chetan Parikh, "Millman's Integrated Electronics - Anal Digital Circuit and Systems", 2nd Edition 2017
(vi) Robert L Boylestad, Louis Nashlsky," Electronics devices and circuit theory", Pearson 11th 2013
(vii) M. Morris Mano ," Digital Logic and Computer Design", Pearson, 2004.

B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)

SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
Subject Code:	ME201PES01/ ME202PES03	L	T	P	IA	MSE	TOTAL	20	50	3
Subject:	ENGINEERING GRAPHICS	1	0	3	30	--	30			

30% Change

Course Learning Objectives:

- To learn the basic of Engineering Drawing and Orthographic Projections
- To learn the Sections and Sectional Views of Right Angular Solids
- To learn the Isometric Projections covering and overview of Computer Graphics

UNIT 1: Introduction Engineering Graphics and Engineering Curves: Principles of engineering graphics and their significance – drawing instruments and their use – conventions in drawing – lettering – BIS conventions. Dimensioning rules, geometrical construction. Engineering Curves - Conic Sections, Special Curves-Cycloids, Epicycloids, Hypocycloids, Involutes and trochoid.

UNIT 2: Projection of Points, Straight lines and Planes: Principles of orthographic projections – conventions – first and third angle projections. Projections of points and lines inclined to both the planes. Projections of regular planes, inclined to both planes

UNIT 3: Projections Solids: Introduction, Type of solid, Projections of solids in simple position, Projection of solids with axes inclined to one of the reference planes and parallel to the other, Projections of solids with axes inclined to both H.P. and the V.P.

UNIT 4: Section of Solids and Development of Surfaces: Sectioning of regular solids - Section planes perpendicular to one plane and parallel or inclined to other plane - Development of surfaces of right, regular solids – development of prisms, cylinders, pyramids, cones and their parts.

UNIT 5: Isometric Projections and Orthographic Views: Principles of Isometric Projections-Isometric Scale- Isometric Views Conventions-Plane Figures, Simple and Compound Solids. Conversion of isometric views to orthographic views. Conversion of orthographic views to isometric projections, vice-versa. Introduction to perspective projection.

Computer Aided Drafting: Introduction to computer aided drafting package to make 2-D drawings. Demonstration purpose only - not to be included in examinations.

Textbooks/References:

1. Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House
2. Shah, M.B. & Rana B.C. (2008), Engineering Drawing and Computer Graphics, PearsonEducation
3. Agrawal B. & Agrawal C. M. (2012), Engineering Graphics, TMH Publication
4. Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers
5. CAD Software Theory and User Manuals

Course Outcomes:

1. At the end of the course, the student shall be able to
2. Draw engineering curves, orthographic projections of lines, planes and solids.
3. Draw sections of solids including cylinders, cones, prisms and pyramids.
4. Make development of surfaces, Orthographic and Isometric projections
5. Overview of Computer Graphics.

B. TECH. FIRST YEAR SYLLABUS (W.E.F SESSION 2020-21)

SYLLABUS	(SEMESTER-II)	Periods/ Week			INTERNAL ASSESSMENT (IA)			ESE	Grand total	Credits
Subject Code:	EC201PES03/ EC202PES05	L	T	P	IA	MSE	TOTAL			
Subject:	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB	-	-	2	30	--	30	20	50	1

Course Learning Objectives:

- To understand basic electrical wiring, measurements, errors and method.
- To practically provide the concept of different theorems.
- To have actually hands-on on machines like transformers, DC and AC machines to get better understanding.
- To get experimental knowledge of Diodes and Transistors
- To make students learn Digital logic design.

40% Change

Course Content:
List of experiments/demonstrations:

1. Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Real-life resistors, capacitors and inductors.
2. Measuring the steady-state and transient time-response of R-L, R-C, and R-L-C circuits to a step change in voltage (transient may be observed on a storage oscilloscope).
3. Sinusoidal steady state response of R-L, and R-C circuits – impedance calculation and Verification. Observation of phase differences between current and voltage. Resonance in R-L-C circuits.
4. Transformers: Polarity test, OC & SC tests. Loading of a transformer: measurement of primary and secondary voltages and currents and power.
5. Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor), and single-phase induction machine.
6. Study of Diodes and transistors characteristics.
7. Study of full-wave and half-wave rectifier.
8. Verification of De Morgan's theorems.
9. Study of Logic gates.
10. Study of half and full adder.

Course Outcomes: At the end of the course students will be able to:

- Acquire knowledge about different types of meters and take readings and Construct circuits and measure different electrical quantities.
- Analyze Single Phase and Three phase AC Circuits, the representation of alternating quantities and determining the power in these circuits
- Work on machines like transformers
- Acquire knowledge about different types of diodes and transistors
- Design and understand digital logic circuits