1.1.3 & 1.2.1

Supporting Documents- IKGPTU Amritsar <u>Campus</u>

Mapping of Courses to Employability/ Skill Development



Name of the Department: Mechanical Engineering

BTPHXX-18 - Physics & Physics Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	P012	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: To be able to understand the basic principles of Quantum mechanics and to apply these	v		√	=	√		√	√	· ✓	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
to the complex phenomenon CO 2: To be able to understand the concept of wave packets using Heisenberg's uncertainty			√		√		√	√	V	V	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
principle. CO 3: To be able to apply Schrodinger's wave equations to study the complex physical phenomenon.			√		√		√	√	√	√	√	√	Understand ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 4: To be able to understand the structure of crystalline solids by applying knowledge of crystallography.			V		√		√	V		√		V	Understand ng	li Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

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CO 5: To be able to understand semiconducting materials by using the concepts of band theory of solids.	V	√	√	√	√	√	√	√	√	√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
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BTAMXX-18 - Maths-1

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1:Students will be able to remember terminologies and formulae in matrices, complex	√		√		.√		√	√	√	√	V	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO2: Students will be able to understand and interpret the concepts of matrices, complex			√		√		V	V	√	V	V	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO3:Students will be able to compare and analyze the methods in matrices, complex numbers	√	√	V	√	√	√	√	V	√	√	√	V	Applying	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

BTEE101-18 Basic Electrical Engineering

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Course Outcome CO1: Have the knowledge of	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
DC circuits, AC Circuits, basic magnetic circuits, working principles of electrical machines, and components	√	√	√		V		V	✓	V	V	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 2: Be able to analyze of DC circuits, AC Circuits		√	√		√		√	V	✓	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 3: Understand the basic magnetic circuits and apply it to the working of electrical machines		√	V		V		V	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 4: Be introduced to types of wiring, batteries, and LT witchgear.		✓	✓		√		v	√		✓		V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

BTEE101-18 Basic Electrical Engineering Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Employ	Attainment of CO
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CO1: The ability to use common electrical measuring instruments and understand the fundamentals of electrical CO 2: The ability to make	√	✓	√	√	V	√	√	√	✓	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
electrical connections, and measure power, power factor using appropriate equipments.		✓	√	✓	√	V	√	V	V	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 3: Have the knowledge of electrical machines, components and their ratings		√	. ✓	✓	V	√	√	√	v	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 4: Understand the operation of transformers and electrical machines		√	✓	✓	✓	√		✓		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

Paper BTME101-18 Engineering Graphics & Design

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	P012	Skill	Employ	Assessment Tools to Measure Attainment of CO
CO1: design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental.	√	√	√	V	√	√	√	√	✓	√	√	√	Design	Entrepr	

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CO 2: to prepare to communicate effectively.	√	✓	✓	√	√	√	V	✓	√	√	✓	√	Communicat e	Yes	Minor Exams, Quiz, Assignments, End Term Exams
CO 3: to prepare to use the techniques, skills, and modern engineering tools necessary for engineering practice.	√	√	√	√	√	√	√	V	√	√	√	√	Apply	Yes	Minor Exams, Quiz, Assignments, End Term Exams

BMPD101-18 Mentoring and professional Development

Course Outcome CO1: The student will be able	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
to effectively communicate and present technical material.	√	✓	✓		√		√	√	√	√	√	√	Understandi ng		Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO2: Ability to think critically and creatively to generate innovative and optimum solutions.		√	√		√		√	v	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO3:The student will be able to identify, evaluate and synthesise information from a range of sources to optimise process engineering design		✓	✓ 		√		✓	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams



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CO4: Engage in continuous education, training and research, and take control of their own learning and overall development.	√	√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
								9		Term Exams

BTCH101-18 - Chemistry -1

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.	√		√		√		√	√	√	√	√	√.	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
Rationalise bulk properties and processes using thermodynamic considerations.			√		√		√	V	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic Rationalise periodic			√		√		√	V	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
properties such as ionization potential, electronegativity, oxidation states and electronegativity.		0	√		√		√	√		√		✓	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

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List major chemical reactions that are used in the synthesis of molecules.	√	√	√	√	√	V	√	V	✓	V	√	√	Applying	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
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BTCH102-18 - Chemistry Lab

Course Outcome Estimate rate constants of	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
reactions from concentration of reactants/products as a function of time	√		√		√		√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End
Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride			√		√		√	V	V	√	✓	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
Synthesize a small drug molecule and analyse a salt sample			√		√		✓	√	√	✓	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

BTAMXX-18 Mathematics II

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Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Attainment of CO
CO1: The mathematical tools needed in evaluating multiple integrals and their usages.	√		✓	✓	√		√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 2: The effective mathematical tools for the solutions of differential equations that model physical processes,			√	√	√		√	√	√	V	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 3: The tools of differentiation and integration of functions that are used in various techniques dealing engineering problems.			√	√	√		√	V	√	√	V	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

BTPS101-18 Programming for Problem Solving

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
To formulate simple algorithms for arithmetic and logical problems.	√	√ ,	√	√	√	√	√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

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To translate the algorithms to programs (in C language).	✓	√	√	√	√	√	√	√	√	√	√ √	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To test and execute the programs and correct syntax and logical errors.	√	✓	√	V	√	√	√	√	V	√	V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To implement conditional branching, iteration and recursion.	✓	√		√	V		√		√		V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To decompose a problem into functions and synthesize a complete program using divide and conquer approach.	√	√		√	V		√		√		V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To use arrays, pointers and structures to formulate algorithms and programs.	✓	✓		√	√		√		√		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.	√	√		√	√		V		V		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To apply programming to solve simple numerical method problems, namely rot finding of function, differentiation of function and	√	У И		√	V		√		V		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams



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BTPS102-18 Programming for Problem Solving Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
To formulate the algorithms for simple problems	V	√	V	√	√.	√	V	√	√	√	V	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To translate given algorithms to a working and correct program	√	✓	√	~	V	√	V	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To be able to correct syntax errors as reported by the compilers	√	√	V	✓	√	V	√	√	V	√	√	V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To be able to identify and correct logical errors encountered at run time	√	√	~		√	√		√		V		V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To be able to write iterative as well as recursive programs	√	V	V		V	V		√		√		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams



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To be able to represent data in arrays, strings and structures and manipulate them through a program	√	√	√	√	√	√	√		√ .	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To be able to declare pointers of different types and use them in defining self referential structures.	√	V	√	√	√	√	√		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
To be able to create, read and write to and from simple text files.	√	V	V	√	√	V	√	1.0	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

Paper BTMP 101-18 Workshop/Manufacturing Practices

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Attainment of CO
CO1: gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate	√	√	√	V	√	√	V			√	V	√	Understandi ng	Yes	Minor Exams, Project based learning, Assignments,End Term Exams
CO 2: able to fabricate components with their own hands.	√	√	√	√	√	V	V			√	√	√	Apply	Yes	Minor Exams, Project based learning, Assignments,End Term Exams

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CO 3: Get practical knowledge of the dimensional accuracies and dimensional tolerances possible with	√	V	√	√	√	√	√	. 🗸	√	√	Understandi ng	Yes	Project based learning, Assignments,End Term Exams
CO 4: By assembling different components, they will be able to produce small devices of their interest.	√	√	√	√	√	√	√	√		√	Apply	Yes	Minor Exams, Project based learning, Assignments,End Term Exams

Paper BTHU101-18 English

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Attainment of CO
The objective of the course is to help the students become the independent users of English language.	√	√	√	√	V	V	√			V	√	√	Understandi ng	Yes	Minor Exams, Project based learning, Assignments,End Term Exams
Students will acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.	√	√	V	√	√	√	√			√	√	√	Apply	Yes	Minor Exams, Project based learning, Assignments,End Term Exams
Students will be able to understand spoken and written English language, particularly the language of their chosen technical field.	√	√	√	V	V	V	√			√ 1	√	√	Understand ng	Yes	Minor Exams, Project based learning, Assignments,End Term Exams

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They will be able to converse fluently.	√	√	√	√	√	√	√		V	√	Apply	Yes	Minor Exams, Project based learning, Assignments,End Term Exams
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Paper BTHU102-18 English Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Attainment of CO
The objective of the course is to help the students become the independent users of English language.	√	√	√	√	√	√	V			V	√	√	Understandi ng	Yes	Minor Exams, Project based learning, Assignments,End Term Exams
Students will acquire basic proficiency in listening and speaking skills.	V	√	√	V	√	V	√			√	√	√	Apply	Yes	Minor Exams, Project based learning, Assignments,End Term Exams
Students will be able to understand spoken English language, particularly the language of their chosen technical field.	√	√	V	√	V	V	√			√	√	√	Understandi ng	Yes	Minor Exams, Project based learning, Assignments,End Term Exams
They will be able to converse fluently	√	√	V	V	√	√	√			V		√	Apply	Yes	Minor Exams, Project based learning, Assignments,End Term Exams

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BMPD101-18 Mentoring and professional Development

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: The student will be able to effectively communicate and present technical material.	√	√	V		√		√	√	V	V	V	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO2: Ability to think critically and creatively to generate innovative and optimum solutions.		✓	√ .		V		√	√	√	V	✓	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO3:The student will be able to identify, evaluate and synthesise information from a range of sources to optimise		√	√		√		√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
process engineering design CO4: Engage in continuous education, training and research, and take control of their own learning and overall development.		√	√		√		√	√		√		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

Paper BTME301-18 Fluid Mechanics

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Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Understand the concept of fluids and their properties.	√	√	√			√	√		√	V		√	Understandi ng	Yes	Minor Exams, Quiz, Assignments, End Term Exams
CO 2:Apply the concept to solve the problems related to statics, dynamics and kinematics	√	√	√			√	V		√	√		√	Understandi ng	Yes	Minor Exams, Quiz, Assignments, End Term Exams
CO3: Use and apply dimensional analysis and similitude techniques to various physical	√	√	√			√	√		√	√		V	Understand ng	Yes	Minor Exams, Quiz, Assignments, End Term Exams
CO4: Distinguish various types of flows and learn flow measurement methods.	√	√	√			√	√		√	√		√	Analyse	Yes	Minor Exams, Quiz, Assignments, End Term Exams

BTME302-18 Theory of Machines -1

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Attainment of CO
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CO1: Understand									√	Understandi	Yes	Minor Exams, Assignments, End
constructional and working features of important machine elements.	√	√	√	√	√	√	V	V	V	ng		Term Exams
CO2: Design belt, rope and chain drives for transmission of motion from one shaft to	√	√	√	.√	√	√	√	✓	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
CO3: Identify different Cam and follower pairs for different applications and	√	✓	√	√	√	√	√	V	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
CO4: Understand the function of brakes, dynamometers, flywheel and governors.	√	√	✓	√	✓	√	√	√	√	Understandi ng, Applying		Minor Exams, Assignments, End Term Exams

BTME303-18: Machine Drawing

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Assessment Tools to Measure Attainment of CO
CO1: Read, draw and interpret the machine drawings and related	√	√	√							√	√	√	Understandi ng		Minor Exams, Class and Home Assignments, End Term Exams

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CO2: Use standards used in machine drawings of machine	√	√	√			✓	√		Applying	Yes	Minor Exams, Class and Home Assignments, End Term Exams
components and assemblies. CO3: Learn the concept of limits, fits and tolerances in	√	√	√			√	√		Understandi ng	Yes	Minor Exams, Class and Home Assignments, End Term Exams
various mating parts. CO4: Visualize and generate different views of a	√	√	√	√		√	√	√	Applying	Yes	Minor Exams, Class and Home Assignments, End Term Exams
CO5: Use CAD tools for making drawings of machine components and assemblies.	√	→	√	√		√	√	. ✓	Applying	Yes	Minor Exams, Class and Home Assignments, End Term Exams

BTME304-18 STRENGTH OF MATERIALS-I

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Assessment Tools to Measure Attainment of CO
CO1: Understand the concepts of stress and strain at a point, in the members subjected to axial, bending,	√	V	√			√			√	√	√	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams

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CO 2: Determine principal stresses, maximum shearing stress and their angles, and the stresses acting on any	√	√	V		√	✓	√	√	√	Understandi ng and Analysing	Yes	Minor Exams, Assignments, End Term Exams
arbitrary plane within a CO 3: Find bending moment and shear force over the span of various beams subjected to different kinds	√	√	✓	√	√	✓	V	√	√	Analysing	Yes	Minor Exams, Assignments, End Term Exams
of loads. CO 4: Calculate load carrying capacity of columns and struts and their buckling	√	√	√	✓	√	√	√	√	√	Analysing	Yes	Minor Exams, Assignments, End Term Exams
CO 5: Evaluate the slope and deflection of beams subjected to loads.	√	√	√	√	√	√	√	√	√	Analysing	Yes	Minor Exams, Assignments, End Term Exams

BTME305-18 Basic Electronics Engineering

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Assessment Tools to Measure Attainment of CO
Understand construction of diodes and their rectifier applications.	√	√	√			√			√	√	√	V	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams

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Appreciate the construction and working bipolar junction transistors and MOSFETs.	√	√	✓		✓	✓	√	V	√	Understandi ng and Analysing	Yes	Minor Exams, Assignments, End Term Exams
Design Op-Amp IC based fundamental applications.	V	√	✓	√	√	√	√	· √	√	Analysing	Yes	Minor Exams, Assignments, End Term Exams

Paper Basic Thermodynamics BTME 305-18

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Attainment of CO
CO1: Apply energy balance to Systems and Control Volumes in situations involving heat		√	√		√		V	√	√	√	√		Applying	Yes	Minor Exams, Quiz, demonstrations through videos/ lab, End Term Exams
and work interactions. CO2: Evaluate changes in thermodynamic properties of substances		√	√	√	√				√		V	√	Applying	Yes	Minor Exams, Quiz, demonstrations through videos/ lab End Term Exams
CO3:Evaluate performance of energy conversion devices		✓	√	√	√				√		V	√	Applying	Yes	Minor Exams, Quiz demonstrations through videos/ lab End Term Exams

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CO4:Explain and apply various gas power and vapor power cycles	√	✓	√	√	✓		V	√	√	Understandi ng	Yes	Minor Exams, Quiz, demonstrations through videos/ lab, End Term Exams
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BTME306-18 Strength of Material Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	***************************************	Focus on Employ ability / Entrepr	Attainment of CO
CO1: Measure the various mechanical properties such as tensile and compressive strength, impact strength, torsion strength and fatique	√	√	√	√	52	√			√	V	√	V	Understandi ng	Yes	Quiz, Viva
CO 2: Calculate load carrying capacity of long columns and their buckling strength.	√ ,	√	√	√		√			√	√	√	√	Understandi ng and Analysing	Yes	Quiz, Viva

BTME307-18 Theory of Machines Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Attainment of CO
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CO1: Understand constructional and working features of important machine elements.	√	√	✓	√	V	√		√	√	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
CO2: Design belt, rope and chain drives for transmission of motion from one shaft to										-			
another	√	√	√	√	√	√		✓	√	V	Designing	Yes	Minor Exams, Assignments, End Term Exams
CO3: Identify different Cam and follower pairs for different applications and construct cam													
profile for required follower motion.	V	V	v	√	√	√		√	✓	✓	Designing	Yes	Minor Exams, Assignments, End Term Exams
CO4: Understand the function of brakes, dynamometers, flywheel and governors.	√	√	√	√	√	√		√	√	√	Understandi ng, Applying		Minor Exams, Assignments, End Term Exams

Paper BTME308-18 Fluid Mechanics Lab



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Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Employ	Assessment Tools to Measure Attainment of CO
CO1: Distinguish various type of flows and flow measurement methods and concept of					-				280						
statics and dynamics of liquids.	√				√		√		√	√		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 2: Determine discharge and head loss, hydraulic and friction coefficient, for different											1155				
types of flow in pipe and open channels.							√		√	✓		V	Analyse	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

BMPD301-18 Mentoring and professional Development

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Employ	Attainment of CO
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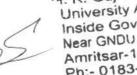
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CO1: The student will be able to effectively communicate and present technical	√	√	√	√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO2: Ability to think critically and creatively to generate innovative and optimum	√	√	√	√	√	√	√	√	V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
cO3:The student will be able to identify, evaluate and synthesise information from a range of sources to optimise	√	√	✓	√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
process engineering design CO4: Engage in continuous education, training and research, and take control of their own learning and overall	√	✓	√	√	√		√		V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

BTME401-18 APPLIED THERMODYNAMICS

Course Outcome	PO 1 (Engin eering Knowle	em	(Desi gn/D	PO 4 (Cond uct)	Tool	(The Engine er and	nt	8 (Et hic	(Indi vidua	(Comm unicati on)	PO 11 (Proje ct Manag ement	(Life long Learnin	Skill	Employ	Assessment Tools to Measure Attainment of CO
CO1: Explain the functioning and performance evaluation of reciprocating air compressors.		sis)	opm	√	usage	Societ √	and	5)	√	√		√	Understandi ng, Applying and Designing		Minor Exams, Assignments, End Term Exams



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CO 2: Analyze the combustion phenomenon in boilers and I.C. engines.	√	√		√	√	√	√	√	V	√	√	√	Understandi ng, Applying	Yes	Minor Exams, Assignments, End Term Exams
CO 3: Use of Steam Tables and MollierChart to solve vapour power cycle problems.	V	√	√	√	√	√	V	V	√	V	√	√	Understandi ng, Applying	Yes	Minor Exams, Assignments, End Term Exams
CO 4: Demostrate the constructional features and working of steam power plants and to evaluate their performance.	√	V	√	√	√	√	√		V	√	✓	√	Understandi ng, Applying	Yes	Minor Exams, Assignments, End Term Exams

Paper BTME 402-18 Fluid Machines

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Determine discharge and head loss, hydraulic and friction coefficient, for different types of flow in pipe	√	√	√			√	√		√	√		√	Knowledge	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
and open channels. CO 2:Know about constructional details, working and design aspects of runner/wheel and evaluate the performance of various	-√	√	√			√	√		√	√		√	Knowledge	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.



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CO 3: Know about constructional details, working and evaluate the performance of centrifugal	√	√	√	√	√	✓	V	✓	Knowledge	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
pump under different vane CO 4: Know about											
constructional details,									1		
working and evaluate the performance of reciprocating									4		
pump and evaluate the effect								-			Lectures, Tutorials,
CO5: Know about					1						Assignments,
constructional details and								1	Knowledge	Yes	Powerpoint
working of hydraulic devices like fluid coupling,					1	1		1			Presentations, Numericals etc.
accumulator and intensifier.											Numericals etc.

BTME403-18 STRENGTH OF MATERIALS-II

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Understand the concepts of stress and strain at a point, in the members subjected to axial, bending,	√	√	√			√			√	√	V	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
torsional loads and CO 2: Determine principal stresses, maximum shearing stress and their angles, and the stresses acting on any arbitrary plane within a	√	√	V			√			√	√	√	✓	Understand ng and Analysing	Yes	Minor Exams, Assignments, End Term Exams

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CO 3: Find bending moment and shear force over the span of various beams subjected to different kinds	√	√	√	√	✓	✓	√	√	√	Analysing	Yes	Minor Exams, Assignments, End Term Exams
of loads. CO 4: Calculate load carrying capacity of columns and struts and their buckling	√	√	√	√	√	√	√	√	√	Analysing	Yes	Minor Exams, Assignments, End Term Exams
CO 5: Evaluate the slope and deflection of beams subjected to loads.	√	√	√	√	√	√	√	√	√	Analysing	Yes	Minor Exams, Assignments, End Term Exams

BTME404-18 MATERIALS ENGINEERING

Course Outcome	PO 1 (Engin eering Knowle	em Analy	(Desi	PO 4 (Cond uct)	Tool	Engine er and	(Envir onme nt	8 (Et hic	PO 9 (Indi vidua I and Team	(Comm unicati on)	PO 11 (Proje ct Manag ement	(Life long Learnin	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Illustrate the significance of structure-property-correlation for engineering materials	dge) √	sis) √	opm	√	usage	Societ √	and	31	√	√	√		Understandi ng, Applying and Designing		Minor Exams, Assignments, End Term Exams
including ferrous and CO 2: Explain the use and importance of various heat treatment processes used for engineering materials and their practical applications.	√		√	√	√	V	√	√	√	√	√	✓	Understandi ng, Applying	1 125	Minor Exams, Assignments, End Term Exams



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CO 3: Identify the various structural changes occurred in metals with respect to time	v	√	✓	√	√	√	✓		√	√	√	√	Understandi ng, Applying	Yes	Minor Exams, Assignments, End Term Exams
temperature transformations.															Minor Exams,
CO 4: Interpret the significance of Fe-C and TTT diagram for controlling the desired structure and properties of the materials.	√	√		✓	✓	√	✓	√	√	√	√	√	Understandi ng, Applying	Yes	Assignments, End Term Exams

BTME405-18: Theory of Machines -II

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Understand the basic concepts of inertia forces & couples applied to	√	√	√	√							√	√	Understandi ng & Applying	Yes	Minor Exams, Assignments, End Term Exams
reciprocating parts of a machine. CO2: Understand balancing of rotating and reciprocating	✓	√	√	√	√						√	√	Understandi ng & Applying	Yes	Minor Exams, Assignments, End Term Exams
parts of machines. CO3: Select suitable type of gears for different application and analyse the motion of different elements of gear	\ \ \	✓	√	√	√						. ✓	√	Understand ng & Applying	i Yes	Minor Exams, Assignments, End Term Exams



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CO4: Understand the concept and application of gyroscopic effect.	√	√	√	√	√	√		Understandi ng & Applying	Yes	Minor Exams, Assignments, End Term Exams
CO5: Gain knowledge of kinematic synthesis.	√	√	√	√	√	√	√	Understandi ng & Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams

EVS101-18 ENVIRONMENTAL SCIENCE

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Attainment of CO
Students will enable to understand environmental problems at local and national level through	V	√	√	√							√	√	Understandi ng & Applying	Yes	Minor Exams, Assignments, End Term Exams
literature and general The students will gain practical knowledge by visiting wildlife areas, environmental institutes and	√	√	√	√	√						√	√	Understandi ng & Applying	Yes	Minor Exams, Assignments, End Term Exams
various personalities who The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to	√	√	√	√	V						√	√	Understand ng & Applying	Yes	Minor Exams, Assignments, End Term Exams

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Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected	√	√	✓	✓	✓		✓	Understandi ng & Applying	Yes	Minor Exams, Assignments, End Term Exams
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BTME406-18 APPLIED THERMODYNAMICS Lab

Course Outcome	eering Knowle	Analy	(Desi gn/D evel	PO 4	PO 5 (Mode rn Tool		nt	(Et hic	(Indi vidua	PO 10 (Comm unicati on)	PO 11 (Proje ct Manag ement	long Learnin	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Explain the functioning and performance evaluation of reciprocating air	dge) √	sis)	opm	√	√	√	√		V	√		✓	Understandi ng, Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
CO 2: Analyze the combustion phenomenon in boilers and I.C. engines.	√	V		√	√	√	√	√	√	√	√	✓	Understandi ng, Applying	1 1 1 1 1 1	Minor Exams, Assignments, End Term Exams
CO 3: Use of Steam Tables and MollierChart to solve vapour power cycle problems.	√	√	√	√	√	√	√	√	√	√	√	V	Understand ng, Applying	1 1 1 2	Minor Exams, Assignments, End Term Exams
CO 4: Demostrate the constructional features and working of steam power plants and to evaluate their performance.	√	√	√	√	√	√	√	chai	V	√	√	√	Understand ng, Applyin	1 165	Minor Exams, Assignments, End Term Exams



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Paper BTME407-18 Fluid Machines Lab

	DO 1	20.2	DO 3	DO 4	PO 5	PO 6	P07	PO	PO9	PO10	PO11	PO12	Skill	Employ	Assessment Tools to Measure
Course Outcome	PO 1	PO 2	PUS	PU 4	703	100	102	8						ability / Entrepr	Attainment of CO
CO1: Conduct experiments on scaled down models or on actual size hydraulic machines and evaluate	√	√	V		V	√	√		√	√	√	√	Applying	Yes	Case Study, Group Discussions etc.
results in terms of unit or CO 2: Understand the working of various hydraulic machines (turbines and pumps) and can suggest remedial solutions for various	√	V	√		√	√	√		√	√	√	✓	Understandi ng	Yes	Case Study, Group Discussions etc.

Paper BTME408-18 Material Engineering Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	P09	PO10	P011	PO12	Škill	Employ	Assessment Tools to Measure Attainment of CO
Analyse the microstructure of different ferrous and non-ferrous samples.	√	√	√		√	√	V		V	√	√	√	Applying	Yes	Case Study, Group Discussions etc.

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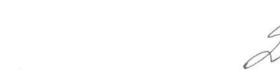


Explore the effect of heat treatment on various engineering materials by analysing its microstructure and hardness	√	√	√	√	√	✓	√	V	√	√	Understandi ng	Yes	Case Study, Group Discussions etc.
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BMPD401-18 Mentoring and professional Development

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: The student will be able to effectively communicate and present technical material.	√	√	√		√		√	V	√	V	V	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO2: Ability to think critically and creatively to generate innovative and optimum		√	√		√		√	V	V	√	V	V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
solutions. CO3:The student will be able to identify, evaluate and synthesise information from a range of sources to optimise		√	√		√		√	√	√	√	√	√	Understand ng	i Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
process engineering design CO4: Engage in continuous education, training and research, and take control of their own learning and overall development.		√	√		V		√	√		√		√	Understand ng	di Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

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BTME501-18 Heat Transfer

Course Outcome	PO 1 (Engin eering Knowle	em Analy	(Desi gn/D evel		PO 5 (Mode rn Tool	PO 6 (The Engine er and Societ	nt	(Et hic	PO 9 (Indi vidua I and Team	PO 10 (Comm unicati on)	PO 11 (Proje ct Manag ement	PO 12 (Life long Learnin q)		Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
To teach students the basic principles of conduction, radiation, and convection heat transfer. Students will	dge) √	sis)	opm	√	√	√	√		√	√		√	Understandi ng, Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
demonstrate an To extend the basic principle of conservation of energy to systems that involve conduction, radiation, and heat transfer. Students will	√	√		√	√	√	√	√	√	√	V	√	Understandi ng, Applying	Yes	Minor Exams, Assignments, End Term Exams
To train students to identify, formulate, and solve engineering problems involving conduction heat	√	V	V	√	√	√	√	✓	√	✓	√	V	Understandi ng, Applying	1 165	Minor Exams, Assignments, End Term Exams
transfer. Students will To train students to identify, formulate, and solve engineering problems involving forced convection	√	√	√	√	√	√	√		√	√	√	√	Understandi	7 1-3	Minor Exams, Assignments, End Term Exams
heat transfer, natural To train students to identify, formulate, and solve engineering problems involving radiation heat transfer among black	√	V	V	V	√	√ ab Teci	V		√	√	√	√	Understand ng, Applyin	1 765	Minor Exams, Assignments, En Term Exams

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BTME502-18: Design of Machine Elements

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Demonstrate recalling and applying knowledge of Basic Sciences, Graphics & Drawing, Basic Manufacturing	√	V	√	√	√	√				√	√	√	Understandi ng, Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
Processes and Material CO2: Comprehend the effect of different stresses and strains under various loading conditions on the mechanical	√ √	√	√	√	√	V				√	V	√	Understandi ng and Applying	Yes	Minor Exams, Assignments, End Term Exams
components and identify the CO3: Examine and solve design problems involving machine elements on the basis of various theories of	√	√	v	√	√	√				√	√	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
failure. CO4: Synergize forces, moments and strength information to develop ability to analyze, design and/or select machine elements	√	→	√	√	√	V	√			√	√	√	Understand ng, Applyin and Designing	g Yes	Minor Exams, Assignments, End Term Exams

Paper BTME 503-18 Manufacturing Processes

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Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Attainment of CO
CO1: Understand the different conventional manufacturing methods employed for making	√	√	V		√	V	V			√	√	~	Understandi ng	Yes	Minor Exams, Quiz, Assignments, End Term Exams
different products. CO 2: Understand the different unconventional manufacturing methods employed for making different products.	√	V	√		√	√	√			√	√	√	Understand ng	i Yes	Minor Exams, Quiz, Assignments, End Term Exams

Paper BTME 503-18 Management & Engineering Economics

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	P012	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Explain the development of management and the role it plays at different levels in an	√						√	V	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
organization. CO 2: Comprehend the process and role of effective planning, organizing and staffing for the development of an organization.							√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

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CO 3: Understand the necessity of good leadership, communication and coordination for establishing							√	√	√	√	√	· √	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
effective control in an CO 4: Understand engineering economics demand supply and its importance in economics							√	√		√		√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
decision making and problem CO 5: Calculate present worth, annual worth and IRR for different alternatives in	√	√	√	√	√	√	√	V	√	√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
economic decision making. CO 6: Understand the procedure involved in estimation of cost for a simple component, product costing and depreciation, its	√	√	V	√	√	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams							

Paper BTME 503-18 Heat Transfer Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Employ	Assessment Tools to Measure Attainment of CO
Design and fabricate the experimental setups related to heat transfer phenomena.	√	√	√		√	√	√			√	√	V	Understandi ng	Yes	Minor Exams, Quiz, Assignments, End Term Exams

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Measure and analyse different heat transfer parameters.	√	√	√		✓	√	√		√	√	✓	Understandi ng	Yes	Minor Exams, Quiz, Assignments, End Term Exams
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Paper BTME 506-18 Manufacturing Processes Laboratory

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Determine/calculate the clay content, moisture content, hardness, permeability and grain	√	√	V	√	√	V	√	11		√	✓	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
fineness number of moulding CO 2: Use oxy-acetylene gas welding, manual arc welding, MIG, TIG and spot-welding processes to make various	√	√	√	√	√	V	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
ioints. CO 3: Use machine tools such as lathe, shaper and milling machine for machining/cutting various	√	√	✓	√	√	V	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
profiles on work pieces. CO 4: Learn about the constructional features and working of grinding machines, hydraulic press, draw bench, rolling mills,	√	√	✓	√	√	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams



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Paper BTME 507-18 Numerical Methods Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
Understand different implementation modes of numerical methods.	i √	√	√	√	√ .	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Use the numerical methods with the understanding of limitations of these methods for solving problems.	√	√	√	√	√	√	V			√	V	V	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Develop and implement their own computer programs.	√	√	V	√	√	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Solve problems more accurately and efficiently in low computational time.	√	√	√	√	√	V	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Handle the problems conveniently which are difficult to deal with manually	√	√	√	- 1	√	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams



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Paper BTMC102-18 ESSENCE OF INDIAN KNOWLEDGE TRADITION

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	P012	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
Understand the Philosophy of Indian Knowledge system and and its Basic Structure.	√	√	√	√	√	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Understand the Ancient India Culture, Society and Religion.	√	V	√	√	√	√	√	,		√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Examine the areas of Indian Linguistic Tradition.	√			√	√	V	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams						
Know the contrubtion of scientists of different eras.	√	√	√	V	√	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Handle the problems conveniently which are difficult to deal with manually	√	V	V	V	√	√	√	9		√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams

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Paper BTME 409-18 4 weeks industrial training

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	P09	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
Capability to acquire and apply fundamental principles	√	√	√	√	√	√	✓			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Become master in one's specialized technology	√	√	√	V	√	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Become updated with all the latest changes in	✓	✓	√	√	√	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Ability to communicate efficiently.	√	→	√	√	✓	√	√			√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, En Term Exams
Knack to be a multi-skilled engineer with good technical knowledge, management, leadership and	√	√	\ \ \ \	√	\ \ \ \ \	✓	\ \ \			✓	√	√	Applying	y Yes	Minor Exams, Buisness Quiz, E Term Exams

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Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	√	√	√	√	√	✓	√		V	√	V	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Capability and enthusiasm for self-improvement through continuous professional development and life-long learning	√	√	√	√	V	√	√		√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
Awareness of the social, cultural, global and environmental responsibility as an engineer.	√	V	V	√	√	√	√		√	. 1	✓	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams

BTME601-18 REFREGERATION AND AIR CONDITIONING

								T						Focus	
Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	on Employ	Attainment of CO
CO1: Understand the fundamental principles and applications of refrigeration and air conditioning system	√	√	√	√	√		√	√	√	√	√	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
CO2: The students will be able to obtain cooling capacity and coefficient of performance by conducting test on refrigeration systems	√	V	V	V	V		√		√		√	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams

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CO3: The students will develop ability to calculate the energy requirements of cooling and heat equipment	√		√	√	√	√	√		√	√	√	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
for air conditioning CO4: The students will be able to Explain the properties, applications and enironmental issues of	√	√		√	√	✓		V	√	√		V	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
different refrigerants. CO5: The students can demonstrate an ability to analysis psychrometric processes and cycles of air conditioning systems.	V	√	√	√	√		√		√	√	✓	✓	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams

Paper BTME602-18 Mechanical Measurements & Metrology

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Employ	Assessment Tools to Measure Attainment of CO
CO1: To provide a knowledge about measurement systems and their components	√	√	√	√	√ ×	√			√	√	√	√	Knowledge	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
CO 2: To learn about various sensors and transducers used for measurement of mechanical quantities	√	V	✓	V	V	√			√	V	V	√	Understand ng	i Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.

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CO 3: To learn about usage of various measuring instruments.	√	√	√	√	✓	√	20	√ ·	√	√	√	Understandi ng	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
CO 4: To learn metrology of screw, gear and surface texture.	√	√	√	√	√	√		√	√	√	√	Understandi ng	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.

BTME603-18 AUTOMOBILE ENGINEERING

Course Outcome	PO 1 (Engin eering Knowle	(Probl em	gn/D	PO 4 (Cond uct)	Tool	PO 6 (The Engine er and Societ	nt	(Et hic	(Indi vidua	PO 10 (Comm unicati on)	PO 11 (Proje ct Manag ement	PO 12 (Life long Learnin g)	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Identify the different parts of the automobile.	dge) √	5157	√	√	√	√	√	J,	√	√	√	=	Understandi ng, Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
CO 2: Demostrate the working of various parts like engine, transmission, clutch, brakes, steering and the suspension systems.	√		√	√	√	V	V	√	✓	√	V	√	Understandi ng, Applying	1 165	Minor Exams, Assignments, End Term Exams
CO 3: Explain the need of vehicle safety systems and future developments in the automobile industry.	√	√	√	✓	√	√	✓	✓	√	√	V	✓	Understand ng, Applying	165	Minor Exams, Assignments, End Term Exams

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Paper BTME 604-18 Introduction to Industrial Management

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO9	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: 1.Understand the complexities associated with management in the organizations and integrate	V	√	√		√	v	√	V	√	√	√	V	Understandi ng	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
the learning in handling these CO 2: 2.Demonstrate the roles, skills and functions of management.	√	√	√		√	√	√	√	√	√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams
CO 3: 3.Understand the concepts related to industrial management.	√	√	V	√		V	√	√	√	√	√	√	Applying	Yes	Minor Exams, Buisness Quiz, Assignments,End Term Exams

BTME605-18 REFREGERATION AND AIR CONDITIONING LAB

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Attainment of CO
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CO1: Understand the fundamental principles and applications of refrigeration and air conditioning system	√	√	√	√	√		√	V	√	√	√	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
CO2: The students will be able to obtain cooling capacity and coefficient of performance by conducting	√	√	√	√	√		V		√		V	V	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
test on refrigeration systems CO3: The students will develop ability to calculate the energy requirements of cooling and heat equipment	√		√	√	√	V	V		✓	√	√	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
for air conditioning CO4: The students will be able to Explain the properties, applications and enironmental issues of	√	√		. ✓	V	V		V	√	√		√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
different refrigerants. CO5: The students can demonstrate an ability to analysis psychrometric processes and cycles of air conditioning systems.	√	√	V	√	√		✓		√	√	√	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams

Paper BTME606-18 Mechanical Measurements & Metrology Lab

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Employ	Attainment of CO
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CO1: Demonstrate the use of instruments for measuring linear (internal and external), angular dimensions and	√	√	√	V	√	√		√	√	√	√	Understandi ng	Yes	Case Study, Group Discussions, etc
surface roughness. CO 2: Identify proper measuring instrument and know requirement of calibration, errors in	√	√	√	√	√	√		√	√	√	√	Knowledge	Yes	Case Study, Group Discussions, etc
measurement etc. CO 3: Apply analytical and experimental methods to make measurements and to find and correct defects in measurement systems.	√	√	√	√	V	√		√	√	✓	√	Applying	Yes	Case Study, Group Discussions, etc

BTME603-18 AUTOMOBILE ENGINEERING LAB

Course Outcome	PO 1 (Engin eering Knowle	em Analy	(Desi gn/D evel	(Cond uct)	Tool	PO 6 (The Engine er and Societ	nt	8 (Et hic	PO 9 (Indi vidua I and Team	unicati	PO 11 (Proje ct Manag ement	PO 12 (Life long Learnin g)	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Identify the different parts of the automobile.	dge) √	sis)	opm	√	√	√	. √		√	V	✓	√	Understandi ng, Applying and Designing		Minor Exams, Assignments, End Term Exams
CO 2: Demostrate the working of various parts like engine, transmission, clutch, brakes, steering and the suspension systems.			V	V	V	√	V	√	✓	√	√	✓	Understandi ng, Applying	1 165	Minor Exams, Assignments, End Term Exams

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CO 3: Explain the need of vehicle safety systems and future developments in the automobile industry.	√	√	√	√	√	√	√	√	√	√	√	✓	Understandi ng, Applying	Yes	Minor Exams, Assignments, End Term Exams
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BTME-608-18: Minor Project

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1:Identify an open ended problem in area of mechanical engineering which requires further investigation.	√		√		√	√	√	√	√	√	V	V	Understandi ng	Yes	Reports, Project Presentations and Final Viva
CO2: Identify the methods and materials required for the project work.	√	√	√	√	√	V	√	√	√	√	✓	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
CO3: Manage the work with team members.	√		√	√	V	√	V	V	√	√	√	✓	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
CO4: . Formulate and implement innovative ideas for social and environmental benefits.	√	V	√	√	√	V	Applying and Designing	Yes	Reports, Project Presentations and Final Viva						

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CO5: Write technical report of the project apart from	✓	✓	✓	✓	√	√	√	✓	√	√	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
developing a presentation.														

Paper: Internal Combustion Engines 609-18

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO6	P07	PO 8	PO9	PO10	PO11	P012	Skill	Focus on Employ ability / Entrepr	Attainment of CO
CO1:Knowledge about the basics of IC engines	√	√	√	√			√		√	√		V	Understandi ng	Yes	Minor Exams, Quiz, demonstrations through videos/ lab End Term Exams
CO2:Ability to evaluate operational characteristics of	√	\ \ \	\ \ \	√		√	· V		V	V	√	V	Understandi ng	Yes	Minor Exams, Quiz demonstrations through videos/ lab End Term Exams
IC Engines CO3:Ability to ascertain the effects of fuel/supply systems on emission from an engine.		✓	✓	√	√		√				√	V	Understand ng	li Yes	Minor Exams, Quidemonstrations through videos/ la End Term Exam
CO4:Ability to test engine performance		→	\ \	\ \	√		√	V		√		√	Applying		

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BTME-610-18 Mechatronics Systems

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12		Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Design mux, demux, flip- flops, and shift registers.		√	√	√	V		V	V	√	√	✓		Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
CO2:Describe the block diagram, registers, ALU, bus systems, timing & control signals, instruction cycles,	✓	√			√		√	V	~	√	√	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
and interrupts of 8085 CO3: Apply the concept of 8085 microprocessor instruction sets and addressing modes in writing	√	√	√		√	✓	✓	√	√	√	√		Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
assembly language program CO4: Describe the interfacing of memory, 8255 PPI, ADC, DAC, 7-segment LED system, stepper motor, 8251 and 8253 ICs with 8085	\		√	V	√	,	✓			√		✓	Applying and Designing	Yes	Minor Exams, Assignments, En Term Exams

BTME-611-18 Microprocessor in automation

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Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
Student is able to describe the architecture and different modes of operations of a typical microprocessor.		√	√	√	√		✓	√	√	√	√		Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
Student is able to understand different addressing modes and instructions of 8086 design and develop assembly	V	√			√		√	√	√	√	✓	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
Student is able to interface memory, I/O devises and interrupt controller with 8086 microprocessors.	√	✓	√		✓	√	√	√	√	√	-√		Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
Student is able to describe the internal architecture and different modes of operations of a typical microcontroller	√		√	√	√		✓			√		√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
Student is able to design and develop assembly language programs using 8051 microcontroller	√		√	√	√		✓			√		√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
CS 305.6 Student is able to analyze and compare the features of microprocessors and microcontrollers.	√		√	✓	√		√			√		√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams



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BTME612-18 COMPOSITE MATERIALS

Course Outcome	PO 1 (Engin eering Knowle dge)	(Probl em	PO 3 (Desi gn/D evel opm	PO 4 (Cond uct)	Tool	PO 6 (The Engine er and Societ	nt	(Et hic	(Indi vidua	on)	PO 11 (Proje ct Manag ement	PO 12 (Life long Learnin g)	Skill	Focus on Employ ability / Entrepr	
CO1: Explain the concept, need and applications of composite materials.	√	√ √	√	V	√	√	√		√	√		√	Understandi ng, Applying and Designing		Minor Exams, Assignments, End Term Exams
CO 2: Suggest/select optimum combination of Matrix/Reinforcement for various engineering applications.	√	√	V	√	√	V	√	V	V	√	√	V	Understandi ng, Applying	1 165	Minor Exams, Assignments, End Term Exams
CO 3: Analyze the effects of influencing factors on the strength of composite materials.	√	✓	✓	√	V	✓	✓		✓		✓	✓	Understand ng, Applying	1 155	Minor Exams, Assignments, End Term Exams

BTME-613-18 Computer Aided Design

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Attainment of CO
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CO1: Create the different wireframe primitives using parametric representations	√	√	√		. ✓	#5	√	√		v	√		Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
CO2: Create surface primitives using parametric modeling.		√		√	V		√	. √	√ ′	# # # # # # # # # # # # # # # # # # #	V	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
CO3: Create the different solid primitives using the different representation schemes	√		√	√	✓		√	√	√	V	V		Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams
CO4: Apply geometric transformations on the created wireframe, surface and solid models.	√	√	V	11	√	√	✓		√	V	is a	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams

Paper BTME 614-18 Product Design & Development

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO9	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Understand desirable design aspects considering various production processes and also understand the economic factors of design.	√	√	V	√	√	√	√	√	√	V	√	V	Understandi ng	Yes	Minor Exams, Quiz, Assignments, End Term Exams

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CO 2: Employ engineering, scientific, and mathematical principles to execute a design from concept to finished	√	√	√	√	√	√	√	√	√	√	✓	√	Applying	Yes	Minor Exams, Quiz, Assignments, End Term Exams
product. CO 3: Apply the modern approaches to product design considering concurrent	√	✓	√	√	√	√	√	V	√	V	√	√	Applying	Yes	Minor Exams, Quiz, Assignments, End Term Exams
design, quality function deployment and various rapid CO 4: Apply innovative process techniques in synthesizing information, problem-solving and critical thinking.	√	✓	✓	√	√	√	√	√	V	√	✓	√	Applying	Yes	Minor Exams, Quiz Assignments, End Term Exams

BTME 615-18: Non Conventional Energy Resources

Course Outcome	PO 1	PO 2	PO3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Employ	Assessment Tools to Measure Attainment of CO
CO1: To Explain renewable energy sources & systems.	√	√				V						√	Understandi ng	Yes	Minor Exams, Buisness Quiz, End Term Exams
CO2: To Apply engineering techniques to build solar, wind, tidal, geothermal, biofuel, fuel cell, Hydrogen and sterling engine	√		√		Designing	Yes	Minor Exams, Buisness Quiz, End Term Exams								

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CO3: To Analyze and evaluate the implication of renewable energy. Concepts	√	√	✓	√	√	V	√				√		Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
in solving numerical problems pertaining to solar radiation CO4: To Demonstrate self - learning capability to design & establish renewable energy	√	√	√	√	√	√	√	√	√		√	√	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
cO5: To Conduct experiments to assess the	√	✓	✓	√	√	√	√	√	√		√	V	Applying	Yes	Minor Exams, Buisness Quiz, End Term Exams
performance of solar PV, solar thermal and biodiesel systems	√	√	✓	√	√	√	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V	38.	V		7,47,775		Term Exams

BTME616-18: OPERATION RESEARCH

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Explain various mathematical deterministic operation research models.	√	√	√	√	√			V	V	√ _	√	√	Understandi ng, Applying	1 165	Minor Exams, Class and Home Assignments, End Term Exams
CO2: Describe the problems of probabilistic and simulation models.	✓	√	√	√	√			√	V	- √	√	√	Understanding, Applying	1 5	Minor Exams, Class and Home Assignments, End Term Exams

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CO3: Demonstrate the queuing, inventory and replacement models etc.	√	√	√	. ✓	√		√	√	√	V	√	Applying and Designing	Yes	Minor Exams, Class and Home Assignments, End Term Exams
CO4: Formulate and analyze the network models.	√	√	√	√	√	9	√	√	√	V	V	Applying and Designing	Yes	Minor Exams, Class and Home Assignments, End Term Exams

BTME617-18: MAINTENANCE & RELIABILITY

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Understand the concepts of reliability and maintainability	√	V	√	√	√	√	√	V	√	√	√	V	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
CO2: The students will be able to use statistical tools to characterise the reliability of an item and determine the	√	V	√	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams									
reliability of a system, and CO3: The students will develop ability in formulating suitable maintenance strategies to enhance system reliability of a manufacturing	√	√	√	√	V	√	√	√	V	V	√	V	Applying and Designing	Yes	Minor Exams, Assignments, End Term Exams

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Paper BTME701-18 Mechanical Vibrations

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	P09	PO10	PO11	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: Formulate mathematical models of problems in vibrations using Newton's	√	√	√	√	√	√	√		√	✓	V	√	Understandi ng	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
second law or energy CO 2: Understand the need and measurement of vibration in mechanical	√	√	√	√	√	✓	√		V	V	√	V	Understandi ng	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
CO 3: Calculate principal modes of vibration.	√	√	√	√	√	.√	√		V	√	√	√	Applying	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
CO4: Explore the suitable methods of vibration reduction and absorption.	✓	√	→	√	√	√	√		√	√	√	√	Applying	Yes	Assignments, Powerpoint Presentations, Numericals etc.
CO5: Ability to determine vibratory responses of SDOF and MDOF systems.	√	√	√	√	\ \	√	√		√	√	√	√	Analyse	Yes	Lectures, Tutorial Assignments, Powerpoint Presentations, Numericals etc.

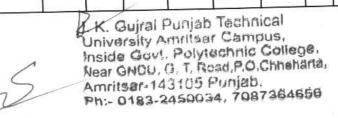
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CO6: Ability to determine vibratory responses of SDOF and MDOF systems.	√	V	✓	V	√	✓	V	√	V	√ ·	V	Analyse	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.	
and MDOI systems.														1.501.50	

Paper BTME702-18 Automation in manufacturing

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	P09	PO10	P011	PO12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
Illustrate the basic concepts of automation in machine tools.	V		1								2) P				H
Analyze various automated flow lines, Explain assembly systems and line balancing	√	√	✓	√	1 √ 1	√	√		√	V	√	√	Applying	Yes	Lectures, Tutorials, Assignments, Powerpoint Presentations, Numericals etc.
Describe the importance of automated material handling and storage systems.	√	√	√	√	√	√	√		V	√	√	√	Understand ng	Yes	Lectures, Tutorials Assignments, Powerpoint Presentations, Numericals etc.
Interpret the importance of adaptive control systems, automated inspection systems.	√	√	√	√	√	√	√		√	√	√	√	Applying	Yes	Lectures, Tutorials Assignments, Powerpoint Presentations, Numericals etc.





BTME703-18 Fundamentals of Management for Engineers

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: The students understand the significance of Management in their Profession	√					V		V	√	V	V	√	Understandi ng	Yes	Minor Exams, Assignments, End Term Exams
CO2: The various Management Functions like Planning, Organizing, Staffing, Leading, aspects are learnt in this course	√			- 1√	√	✓		√	√	√	√	√	Understandi ng, Applying	165	Minor Exams, Assignments, End Term Exams
CO3: Understand the complexities associated with management in the organizations and integrate the learning in handling these	√	√	√	√	√	√		√	✓	√	✓	√	Understandi ng, Applying	165	Minor Exams, Assignments, End Term Exams
CO4: Demonstrate the roles, skills and functions of management.	√			✓	√	√		✓	\ \	✓	√	✓	Applying	Yes	Minor Exams, Assignments, End Term Exams

BTME-704-18 : Project-II

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Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
CO1: To create an Industrial environment and culture within the institution.	√		√		√	√	√	V	√	√	√	√	Understandi ng	Yes	Reports, Project Presentations and Final Viva
CO2: To set up production lab utilizing the infrastructure of the institution.	√	√	V		√	V	V	V	V	√	V	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
CO3: To standardize laboratories to industrial standard, thereby giving exposure to industrial housekeeping standards.	√	√	. ✓		√	√	√	V	√ ·	√	√	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
CO4: Demonstrate an ability to present and defend their research work to a panel of experts.	√		√	V	√	√	✓	\ \	✓	✓	√	✓	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
CO5: Demonstrate knowledge of contemporary issues in their chosen field of research.	√	√	• •	√	√	√	√		√	√	√	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva

BTME-801 Software/Industrial Training

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Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	P07	PO 8	PO 9	PO 10	PO 11	PO 12	Skill	Focus on Employ ability / Entrepr	Assessment Tools to Measure Attainment of CO
Capability to acquire and apply fundamental principles of engineering.	√ √	e e	√		√	√	√	√	√	√	V	V	Understandi ng	Yes	Reports, Project Presentations and Final Viva
Become master in one's specialized technology	√	√	√		√	√	√	√	V	~	V	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
Become updated with all the latest changes in technological world.	√	√	V		√	√	√	V	√	√	V	V	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
Ability to communicate efficiently.	√		√	√	√	√	√	\ \	√	√	√	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
Knack to be a multi-skilled engineer with good technical knowledge, management, leadership and	√		√	√	√	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva						
entrepreneurship skills. Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	1	√	√	√	√	√			✓	√	√	√	Applying and Designing	Yes	Reports, Project Presentations an Final Viva

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Capability and enthusiasm for self-improvement through continuous professional development and life-long	√	√	✓	✓	√	· •	√	✓	√	✓	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva
Awareness of the social, cultural, global and environmental responsibility as an engineer	V	√	√	√	√	V	√	V	√ √	√	√	Applying and Designing	Yes	Reports, Project Presentations and Final Viva

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Program: B.Tech. (Computer Science and Engineering)
BTCS(type code): BTCS BTCS606-18UC (Network Security and Cryptography)

		The state of the s			
	roblems				
	olutions .		ability	finance	80

Engineering Knowledge
Problem Analysis
Design/development of so
Conduct investigations of
Modern tool usage
Modern tool usage
Ethics
Ethics
Communication
Project management and
Project management and
Honing Domain Knowledge
Innovation and design
Entrepreneurship Skills

CO No.	CO States	PO-a	PO-b	PO-c	PO-d	PO-6	PO-I	PO-g	PO-h	PO-I	PO-J	PO-k	PO-1	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus on	Assessment Tools to Measure Attainment of CO
CO1		3	3	2	2	3	3	2	1	2	3		2	3	3	2	1	2	3	MSTs, ESE, Class/Quiz Tests
CO2		3	1	3	3	3	3	3	1	2	3		3	3	2	2	1	2		MSTs, ESE, Class/Quiz Tests
соз		3	2	3	3	3	3	3	1	2	3	1	3	3	3	2	1	2	3	MSTs, ESE, Class/Quiz Tests
CO4		3		3	3	3	3	3	1	2	3		3	3	2	2	1	3		MSTs, ESE, Class/Quiz Tests

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Program : B.Tech. (Computer Science and Engineering)

BTCS (type code) : BTCS BTCS609-18UC (Network Security and Cryptography Lab is not provided in 2018 Syllabus)

duct investigations of complex problems and society and society and society and finance and design control and design a

CO No.	CO State	PO-a	РО-Ь	PO-c	PO∙d	PO-⊕	PO-f	PO∙g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning F	ocus on	Assessment Tools to Measure Attainment of CO
CO1		3	3	2	2	3	3	2	1	2	3		2	3	3	2	1	2	3	MSTs, ESE, Class/Quiz Tests
CO2		3	1	3	3	3	3	3	1	2	3		3	3	2	2	1	2	3	MSTs, ESE, Class/Quiz Tests
соз		3	2	3	3	3	3	3	1	2	3	1	3	3	3	2	1	2	3	MSTs, ESE, Class/Quiz Tests
CO4		3		3	3	3	3	3	1	2	3	. *	3	3	2	2	1	3	3	MSTs, ESE, Class/Quiz Tests



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Program : B.Tech. (Computer Science and Engineering)

Problem Analysis

Conduct investigations of complex problem Analysis

Conduct investigations of complex problem and society

Analysis

Conduct investigations of complex problems and society

If e-long Learning

Fitters values

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CO No.	CO State	PO-a	РО-Ь	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-1	PSO-m	PSO-n	PSO-o	PSO-p	Learning Fos	Assessment To is on to Measure Attainment of C
CO1		3	3	2	2	3	3	2	1	2	3		2	3	3	2	1	2	3 MSTs, ESE, Class/Quiz Tests
CO2		3	1	3	3	3	3	3	1	2	3		3	3	2	2	1	2	3 MSTs, ESE, Class/Quiz Tests
CO3		3	2	3	3	3	3	3	1	2	3	1	3	3	3	2	1	2	3 MSTs, ESE, Class/Quiz Tests
CO4		3	9	3	3	3	3	3	1	2	3		3	3	2	2	1	3	3 MSTs, ESE, Class/Quiz Tests



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Program : B.Tech. (Computer Science and Engineering)

BTCS : (Data minng Lab)

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	ndividual and team work	Communication	Project management and finance	ife-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	efrical values				
CO No.	CO States	PO-a	РО-Б	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	P0-i	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learnin	g Focus on	Assessment Tools to Measure Attainment of CO	
CO1	Apply data di	3	7,350	3	3	3	- M	F = 4/3	357	2	11117						347	0			
CO2	Execute algorit	3	3	3	3	3	3			2				3		2		Apply	Employab		
CO3	Extract know	3	3	3	3	3	3		1	2		-		3				Design	Employab	MSTs, ESE, Class	s/Quiz Tests
CO4	Explore recen	3	2	3	3	3	-	_	- '	2				3	2		1	Apply	Employab Employab	Value 12 - 22 C 12 C 22 C 24 C 24 C 24 C 24 C 24 C	



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Program : B.Tech. (Computer Science and Engineering)

BTCS(type code)	: BTCS-6	12-18 Clou	d Computi	ng Lab															
	CO States	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	4.04	Individual and team work	Communication	Project management and finance	Life-long Learning	Noring Domain Knowledge	imovation and design	OS Entrapreneurship Skills	PSO-be	Learning	Focus on	Assessm
CO NO.	Use the	PU-a	PU-0	PU-E	PU-G	PU-8	PO-I	PO-g	PO-0	PO-I	FV-3	FO-R		r ochii	, ocu	1000	100-	Controll	, , , , , , , , , , , , , , , , , , , ,	
CO1	cloud tool	1	1	2	1	3	1	1	1	1	1	1	3	3	1	1	1	Knowledg	Employab	Practicals
	Implemen																			
CO2	applicatio ns on the Cloud	1	3	3	3	3	2	2	1	3	3	3	3	3	2	3	1	Apply	Enterpren	Practicals
CO3	To install cloud computing environments	1	i	2	1	3	1	1	1	2	1	2	3	3	1	1	1	Knowledg	Employab	Practicals
CO4	To develop any one type of cloud To	1	2	3	1	3	2	2	1	3	3	2	3	3	2	3	1	Apply	Enterprer	Practicals
CO5	expiore future trends of cloud computin g	1	1	2	2	3	2	2	1	3	3	2	3	2	2	3	1	Understa	r Enterprer	Practicals

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University American Campus,
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Inside Govt. Polytechnic College,
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American 183105 Punjab.
Phr. 0183-2400001, 7087364656

partment Computer Science and Engineering Program : B.Tech. (Computer Science and Engineering) 12-18UC) : Information Theory and Coding

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO States	PO-a	PO-b	PO-c	PO-d	P0-e	PO-f	PO-g	PO-h	PO-I	PO-j	PO-k	PO-I	PSO-m	PSO-n	PSO-0	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1	Understa nd various entropies and Define the informati on theories.	3	2	2	2	1	1	1		1	2	2	1	2	1			Understar	Employab	MSTs, ESE, Class/Quiz Tests
CO2	Apply source coding techniqu es	3	3	3	3	3	2	2	1	2	2	2	. 3	3	3	2	1	Create	Entrepren	MSTs, ESE, Class/Quiz Tests
CO3	Compute the capacity of various types of channels	3	3	3	2	3	2	2		2	1	2	2	3	2	1		Design	Entrepren	MSTs, ESE, Class/Quiz Tests
CO4	Understa nd and Construc t codes using different error control techniqu es.	3	2	2	2	3	3	2	đ	2	2	2	3	3	3	3		Understar	Entrepren	MSTs, ESE, Class/Quiz Tests



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CO5	Apply various coding schemes for text, speech and audio.	3	2	3	3	-3	2	2		2	2	3	3	3	3	2	Understar	Entrepren	MSTs, ESE, Class/Quiz Tests
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partment Computer Science and Engineering
Program: B.Tech. (Computer Science and Engineering)

615-18UC : Information Theory and Coding Lab

919-1000	: Informate	on Theory	and Codin	g Lab																
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO States	PO-a	РО-Ь	PO-¢	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-1	PSO-m	PSO-n	PSO-o		Learning	Focus on	Assessment Tools to Measure Attainment of CO
CO1	Compare various capacity reduction based coding technique s for image and video type of data.	3	3	2	2	3	2	3		3	3	3	3	3	3	3		Understar	Employab	Practical Assignments
CO2	Impleme nt various error control technique s for Convoluti onal codes	3	3	3	3	3	2	2	2	3	2	2	3	3	3	3	2	Understan	Entrepren	Practical Assignments
CO3	Illustrate various security oriented coding technique s for Block codes	3	3	3	3	3		3 K. Gi Iniver			3 Tech r Can	3 nical ipus,	3	3	3	3	2	Understar	Entrepren	Practical Assignments



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	calculate e entropy, joint entropy, relative entropy, condition al entropy, and channel capacity of a system	3	3	3	3	3	3	3	3	3	3	3	3	3	3	Understar E	Intrepren Practical Assignments
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Department Computer Science and Engineering
Program: B.Tech. (Computer Science and Engineering)

	Control of the contro	Committee	CELLOR	THE PROPERTY OF THE PARTY OF TH
BTCS(type code)	: BTCS-617-18 Data	Science	Lab	

5.00	type code)	. 5765-6	Tr-10 Dat	a ouence		_	_													
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domein Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO States	PO-a	РО-Б	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-1	PO-k	PO4	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1	Plan the projects in the domain of data science.	1	3	2	3	2	2	1	1	3	3	3	3	3	3	3	1	Analyze	Enterprer	MSTs, ESE, Class/Quiz Tests
CO2	Use data analytics tools towards problem solving and solution analysis.	1	1	3	1	3	1	1	1	1	1	2	3	3	2	3	1	Knowledg	Employab	MSTs, ESE, Class/Quiz Tests
CO3	Apply Mathema tical sciences and recent technolog ies in Computer Science to solve real life problems	3	3	3	3	1	2	î	1	2	3	3	3	3	3	3	1	Apply	Enterpren	MSTs, ESE, Class/Quiz Tests

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Apply data science concepts and methods to solve p roblems in real-world context.	3	3	3	3	1	2	1	1	2	3	3	3	3	2	3	1	Apply	Employat	MSTs, ESE, Class/Quiz Tests
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Computer Science and Engineering

9	B. Tech	. (Computer	Science	and	Engir
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ring Knowledge	nalysis	relopment of solutions	vestigations of complex problems	tool usage	er and society	nt and sustainability		nd team work	stion	lagement and finance	aming	main Krowfedge	and design	Liship Skills				
Engineeri	Problem A	Design/de	Conduct ir	Modern to	The engine	Environme	Ethics	Individual	Communic	Project mar	Life-long Le	Honing Do	Innovation	Entreprene	Ethical valu		6.0	
O-a	PO-6	PO-c	PO-d	PO-e	POT	PO-g	PO-h	PO-I	PO-J	PO-k	P04	PSO-m	P\$0-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to If Measure Attainment of CO
3	2	1	3									3	1			undomto	r Employal	
- 8	2	3	3	2	1							3	2			Design	Employal	
	2	3	3	2	2							3	2					
	2	3	3	2	1							3	2			Apply	Employal	more, Loc, Olassiquiz rests

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Department Conjunior Science and Engineering
Program B Tech (Computer Science and Engineering)
BTCS(612-18UC) Soft Computing Lab

		Engineering Knowledge	Problem Analysis	Design/development af solution	Conduct Investigations of comp	Modern tool usage	The engineer and society	Invironment and sustainability	thica	ndividual and team work	ommunication	roject management and finance	fe-tong Learning	saling Domain Knowledge	movation and design	ntreprenaurship Skills	hicer vertices			
CO No.	CO Statements (Soft Computing Lab)	PO-e	PO-b	PO-c	POd	PO-e	PO-f	PO-g	PO-6	PO-J	PO-J	PO-k	P04	P80-m	PSO-n	PSO-o	PSO.p	Learning Level(understand/analys	Focus on	Assessment Tools to
CO1	Reveal different applications of these models to solve engineering and other problems.	3	3	3	- 1	2		-	Ť\$	167			7	#	. 8				Employability / Entreprensurahip	Measure Attainment of GD
CO2	Apply fuzzy logic and reasoning to handle uncertainty and solve		-		3	3	3	2	1	- 1	2	2	1	2	2			Estimate	Employability	MSTs, ESE, Class/Quiz Tests
CO3	engineering problems	3	3	3	3	3	3	2	1	1	2	2	3	3	2	4			V. 25.5.00005	
CO4	Apply genetic algorithms to combinatorial optimization problems	3	3	3	3	3	3	2	1	2	-	-			-		235	Apply	Employability	MSTs, ESE, Class/Quiz Tests
CO4	Effectively use existing software tools to solve real problems using a soft computing approach		3	3	3	3	2	4		- 1		2		3	2	- 1		Design	Employability	MSTs, ESE, Classs/Quiz Tests
CO5	Evaluate and compare solutions by various soft computing approaches for a given problem.	3	3	3	9	9	3		- 1		2	2	3	3	2	1	-1	Compute		MSTs, ESE, Class/Quiz Tests
- 12/11	The second of th		100		3	3	3	2	1	1	2	3	3	3	2	1		Evaluate	Employability	MSTs, ESE, Class/Quiz Tests

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Program : B.Tech. (Computer Science and Engineering)

BTCS(type code) : BTCS-619-18 Machine Learning Lab

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO Statemente (PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	РОЧ	PO-k	PO-I	PSO-m	PSO-n	PSO-o	РЅО-р	Learning	Focus on	Assessment Tools to Measure Attainment of CO
CO1	Solve problems using the machine learning models.	1	2	2	2	3	1	1	1	2	1	2	3	2	2	2	1	Apply	Employab	MSTs, ESE, Class/Quiz Tests
CO2	Apply various reinforcement algorithms to solve real time complex problems.	2	3	2	2	3	1	1	1	2	2	2	3	3	3	2	1	Apply	Enterpren	MSTs, ESE, Class/Quiz Tests
CO3	Identify the core components of deep neural network model.	1	2	2	1	3 1. Jk	1 (. Gu	1 Val Pu	, 1 njab j	2 Techn	1 ical	2	3	2	1	1	1	Knowledg	Employab	MSTs, ESE, Class/Quiz Tests



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	Implement unsupervised														(3)					MCTs FCF Class (Ouis	
CO4	models through programming language.	1	2	2	2	3	1	1	1	2	1	2	3	2	2	2	1	Apply	Employab	MSTs, ESE, Class/Quiz Tests	

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Department Computer Science and Engineering
Program : B.Tech. (Computer Science and Engineering)
BTCS(type code) Speech and Natural Language Processing

oo(type code	opecii.	and Natura	Languag	e Processi	ng	T	r			_							
	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problem	Modern tool usage	he engineer and society	invironment and sustainability	thics	idividual and team work	ommunication	Oject management and finance	e-long Learning	oning Domain Knowledge	novation and design	trepreneurship Skriis	iical values	
CO No. CO State	PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	Ш		Ü	- L	_ 5	Ĭ	드	ŭ	8	
CO1	3	2	3	2	3	2	-04	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	P80-n	PSO-0	PSO-p	p Learning Focus on Assessment Tools to Measure Attainment of CO
CO2	3	3	3	2	3	0	1	1	3	3	2	3	2	2	3	1	MSTe ESE Clean(Oute Tests)
CO3	2	3	3	3		3	1		3	3	2	3	1	2	2	1	MSTs, ESE, Class/Quiz Tests
CO4	2	3	3	3	3	3	1	Y-	3	3	2	2	2	2	2	1	MSTs, ESE, Class/Quiz Tests
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MSTs, ESE, Class/Quiz Tests MSTs, ESE, Class/Quiz Tests

Program B Tech. (Computer Science and Engineering)

713-18UC Block chain Technology Lab

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Horing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Efrical values			
CO No.	CO States	PO-a	PO-b	PO-c	PO-d	РО-е	PO-1	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o		Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1	Interact with a blockchai n system by sending and reading transactio ns.	3	3	2	2	3	3	3	2	3	2	2	3	3	3	2	2	Understal	r Employat	D Practical Assignments
CO2	Design, build, and deploy a distribute d applicatio n.	3	3	3	3	3	3	3		3	3	3	3	3	3	3		Design	Entrepren	Practical Assignments
	Evaluate security, privacy, and efficiency of a given blockchai n system.	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	Design	Entrepren	Practical Assignments

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Department Computer Science and Engineering
Program : B.Tech. (Computer Science and Engineering)
BTCS 614-18UC : (Software Defined Networks)

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Leaming	Honing Domein Knowledge	imnovation and design	Entrepreneurship Skills	Effical values			
CO No.	CO State	PO-a	РО-Ь	PO-c	PQ-d	PO-e	PO-f	PO-g	PO-h	PO-L	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learnin	g Focus on	Assessment Tools to Measure Attainment of CO
CO1	To define	3		57.5						105				-13%		- 5			1 24	及建筑的1000 (1200 1200 1200 1200 1200 1200 1200
CO2	To descrit	3		3										3				understa	er Employab	
CO3	To provide	3				- 1								3				Design	Employab	
CO4	To design	3	2	3		1	1							3				Apply	Employab	NOT: FOR OUR POLICE
	To develop	3	2	3		1	!			-		1		3	2			Design	Employab	
	To identify	3	2	-										3	2			Design	Employab	
																		Identify	Employab	

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Program : B.Tech (Computer Science and Engineering)

BTCS712-18UC : (Digital Image Processing)

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modem tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Leaming	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values.		
CO No.	CO States	PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning Fo	icus on Assessment Tools to Measure Attainment of CO
CO1	Understa nd the basic concepts of DIP	2	1	2	1	1	2	3		1		1	3	3	1	1		3	3 MSTs, ESE, Class/Quiz Tests
4,74,000	Improve the quality of digital images	3	2	3	3	2	1			1	1	1	2	3	3	1		2	2 MSTs, ESE, Class/Quiz Tests
CO3	Understa nd and De-noise Digital Images	2	3	3	2	1	1	1		1			2	3	3	î	1	2	2 MSTs, ESE, Class/Quiz Tests
CO4	Segment digital images and extract various features from digital images	2	2	2	2	3	1		1	1	1	1	2	3	2	1	1	2	3 MSTs, ESE, Class/Quiz Tests

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Understan d various image compressi on technique s and apply such technique s to compress digital images for reducing the sizes of digital images.	3	2	3	2	3	2	1	5	3	1	2	3	3	2	2	3 3 MSTs	s, ESE, Class/Quiz Tests
			! #					l :		l		l			l .		

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Program : B.Tech. (Computer Science and Engineering)

BTCS715-18UC) : (Digital Image Processing Lab)

E.V.	3. 13 13GG	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurahip Skills	Ethical values			
CO No	CO State	PO-a	PO-b	PO-c	PO-d	PO-e	PO-1	PO-g	PO-h	PO-i	PO-J	PO-k	PO-1	PSO-m	PSO-n	PSO-o		Learning	Focus o	Assessment Tools to Measure Attainment of CO
CO1	develop any image processin g applicatio n.	2	2	3	3	3	3	2	2	2	2	2	3	3	3	3	2	3	3	MSTs, ESE, Class/Quiz Tests
CO2	understa nd the rapid advances in Machine vision.	2	2	3	3	3	2	2	1	3	3	3	3	3	3	3	2	3	3	MSTs, ESE, Class/Quiz Tests
СО3	learn different technique s employe d for the enhance ment of images.	3	2	3	3	3	3	3	2	2	2	3	3	3	2	3	2	3	3	MSTs, ESE, Class/Quiz Tests

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CO4	Perform image enhance ment technique s in spatial and frequenc y domain	2	3	3	3	2	2	3	1	2	2	3	3	3	3	3	2	3	3
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Program : B.Tech. (Computer Science and Engineering)

	BTCS(type code)	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Leaming	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values	•	
CO No.	CO Statements (UC-BTEC	PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-i	PO-j	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning Focus	on Assessment Tools to Measure Attainment of C
CO1	For a given algorithm student will able to analyze the algorithms to determine the time and computation complexity and justify the correctness;	3	3	2	3	2	3	D	0	0	0	1	3	3	3	1	0		MSTs, ESE, Class/Quiz Tests
CO2	Student will be able to handle operation like searching, insertion, deletion, traversing on various Data Structures and determine time and computational complexity	3	3	2	2	1	2	0	0	1	0	1	3	3	3	1	0		MSTs, ESE, Class/Quiz Tests
CO3	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;	3	3	3	3	1	1	0	0	1	0	1	3	3	3	1	0		MSTs, ESE, Class/Quiz Tests
CO4	Students will be able to choose appropriate Data Structure as applied to specific problem definition	3	3	3	-3	2	2	0	0	3	0	3	3	3	3	1	0		
CO5	Demonstrate the reusability of Data Structures for implementing complex iterative problems	3	3	3	3	2	2	0	0	3	0	3	3	3	3	1	0		

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Near GNDU, G. T.



Department Computer Science and Engineering Program : B.Tech. (Computer Science and Engineering)

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BTCS(type code)	: (type course name)

	S(type code)	- (type co	ourse name	∍)																
	No. CO State	Engineering Knowledge	O Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	PO-h	Individual and team work	Communication	Project management and finance	O Life-long Learning	Honing Domain Knowledge	innovation and design	Entrepreheurship Skills	SO Ethical values	Learning	Focus o	n Assessment Tools to Measure Attainment of CO
со	classes, objects, members of a class	3	3	3	3	2	3	O	0	0	0	1	3	3	3	1	0			MSTs, ESE, Class/Quiz Tests
ĆO2	Demonst rate the concept of construct ors and destructors. And create new definition s for some of the operator s	3	3	3	3	1	2	0	0	1	0	1	3	3	3	1	0			MSTs, ESE, Class/Quiz Tests
CO3	Create function template s, overload function template s	3	3	3	3	1	· D	0	0	1	0	-1	3	3	3	1	0			MSTs, ESE, Class/Quiz Tests

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Amritsar-143 105 Punjab,
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Department Computer Science and Engineering
Program : B.Tech, (Computer Science and Engineering

	BTCS(type code)	: (type co	urse name	r Science s		ering)	T	_		_							12 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -			
CO No.	. CO Statements (UC-BTEC-	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	PO-h	olindividual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Exhepreneurship Skills	Ethical values			
					70-0	POW	PU4	PU-g	PO-n	P0-4	PO-J	PO-k	PO-I	PSO-m	PSO-n	P60-o	PSO-p	Learning	Focus o	Assessment Tools to Measure Attainment of CO
CO1	Improve practical skills in designing and implementing basic linear data structure algorithms	3	3	3	3	2	3	0	0	0	0	1	3	3	3	1	o		7.00	MSTs, ESE, Class/Quiz Tests
CO2	Improve practical skills in designing and implementing Non- linear data structure algorithms;	3	3	3	3	1	2	0	0	í	0	1	3	3	3	1	0			MSTs, ESE, Class/Quiz Tests
соз	Use Linear and Non-Linear data structures to solve relevant problems;	3	3	3	3	1	1	0	0	1	0	1	3	3	3	1	0			MSTs, ESE, Class/Quiz Tests
CO4	Choose appropriate Data Structure as applied to specific problem definition;	3	3	3	3	2	2	0	0	3	0	3	3	3	3	1	0			
CO5	Implement Various searching algorithms and become familiar with their design methods	3	3	3	3	2	2	0	0	3	0	3	3	3	3	1	0			

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Program : B.Tech. (Computer Science and Engineering)

S(401-18) : Discrete Mathematics

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and feam work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	imovation and design	Entrepreneurship Skills	Effical values			
CO No.	CO State	PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	P0-1	PSO-m	PSO-n	PSO-e	PSO-p	Leamin	g Focus o	Assess ment Tools to Measure Attainme
CO1	To be able to express logical sentence in terms of predicate s, quantifier s, and logical connectives	3	3	3	2		1	1		1				2				Understa	r mployabil	mt of CQ
O2 ocean	To derive the solution for a given problem using deductive e logic and prove the solution leased on orgical ofference	3	3	3	3		1			2			1	2				Design	mployabili	MSTs, ESE, Class/Quiz

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CO3	For a given a mathema tical problem, classify its algebraic structure	3	3	3	2					1				1	1			Design	imployabil	i MSTs, ESE, Class/Quiz Test
CO4	To evaluate Boolean functions and simplify expressions using the properties of Boolean algebra	3	3	3	3		2			2	2	1	1	1				Design	imployabili	MSTs, ESE, Class/Quiz Tests
CO5	To develop the given problem as graph networks and solve with techniques of graph theory.	3	3	3	3	1	2	ī	1	2	2	2	2	2	2	2	i	Design	:mployabili	MSTs, ESE, Class/Quiz Tests

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Department Computer Science and Engineering
Program : B.Tech. (Computer Science and Engineering)
BTCS(BTES401-18) : (Computer Organisation and Architecture)

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and leam work	Communication	Project management and finance	Life-long Learning	Haning Domain Knowlestye	Imovation and design	Entreprenieurusip Salis	Ethical values				
CO No	CO Statements (UC	PO-II	РО-Ь	PO-c	PO-d	20.4	PO	PO-g	PO-h	P0-1	PO-j	PO-k	P0-4	PSO-ni	PSO-n	PSO-o	PSOφ	Learning I	ocus or	Assessment Tools to Reasure Attainment of CO	
CO1	Understand functional block diagram of microprocessor	3	1	2	2	2	1			1	1	PT-3-	3	3		1	ie v	3	3	MSTs, ESE, Class/Quiz Tests	
CO2	Apply instruction set for Writingassembly language programs	3	2	3	3	2		1		3	2	2	3	3	1	3	1	3	3	MSTs, ESE, Class/Quiz Tests	
CO3	Design a memory module and analyze its operation by interfacing with the CPU;	3	3	3	3	2				3	2	1	3	3	3	2		3	3	MSTs, ESE, Class/Quiz Tests	
CO4	Classify hardwired and microprogrammed control units Understand the	3	1	2	2	3	1	1		1		1	3	3	1	1	1	2	2	MSTs, ESE, Class/Quiz Tests	
	concept of pipelining and its performance metrics	3	3	3	3	3	1:		1	3	2	1	3	3	2	3	1	3	3	MSTs, ESE, Class/Quiz Tests	

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Program

B.Tech. (Computer Science and Engineering)

BTCS(402-18) : Operating Systems

1 71		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Densan Knowledge	firmovation and design	Entreprendurship Skills	Ethical values			
CO No.	CO State	PO-a	РО-6	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-1	PO-J	PO-k	PO-1	PSO-m	PSO-n	PSO-o		Leamin	g Focus c	Assessment Tools to Measure Attainment of CO
CO1	Explain basic operating system concepts such as overall architect ure, system calls, user mode and kernel mode;	3	2	2	1	1	2	,		2	1	1	2	2	2			Understa	ar.mployabi	ii MSTs, ESE, Class/Qu
	Distingui sh concepts related to processe s, threads, process schedulin g, race condition s and critical sections;	3	3	3	3	3	2	2	1	2	2	2	3	3	3	2	1	Design	repreneur	≅MSTs, ESE, Class/Qui

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					_	1	-								1					
СОЗ	Analyze and apply CPU schedulin g algorithm s, deadlock detection and preventio n algorithm s;	3	3	3	3	3	3	2	1	2	2	2	3	3	3	2	1	Design	repreneu	n MSTs, ESE, Class/Quiz Tests
CO4	Examine and categoriz e various memory manage ment techniques like caching, paging, segment ation, virtual memory, and thrashing	3	3	3	3	3	3	1		2	2	2	3	3	2			Analyse	repreneur.	MSTs, ESE, Class/Quiz Tests
CO5	Design and impleme nt file manage ment system;	3	3	3	3	3	3	2		2	2	2	3	3	3	2		Design	repreneurs	MSTs, ESE, Class/Quiz Tests
	Appraise high-level operating systems concepts such as file systems, disk-schedulin 9 algorithm s and various file systems.	3	3	3	3	3	3	2	1	2	2	2	3	3	3	3	1 (Understan	epreneur; i	MSTs, ESE, Class/Quiz Tests

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Department Computer Science and Engineering Program : B.Tech. (Computer Science and Engineering) BTCS 403-18 : (Design& Analysis of Algorithms)

3

CO4 Demonstr

CO5 Examine th

Similar Simila		(a doig	rid rulalyala	T Algorit	nins)	_																
CO No. CO State PO-a PO-b PO-c PO-d PO-e PO-f PO-g PO-h PO-l PO-l PO-h PO-l PSO-m PSO-n PSO-p Learning Focus on Tools to Measure Attainment of CO CO1 For a give 3 3 1 3 2 Underty Found PSO-m		neering Knowle	Problem Analysis	Design/development of solutions	camplex proble	Modern tool usage	The engineer and society	sustainab	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Demain Knowledge	Innovation and design	trepreneurst	Efrical values					
CO2 Explain wi 3 3 3 2 Undoorly Feeling		a PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Leaming	Focus o	Tools to Measure		
CO3 Explain m 3 3 2 Understar Employab		e 3		1		H	mag.			A4	1			3	2		1000					
	O3 Explain n	n 3	3	3	3									3	2	 	-	Angluan	Employa	B		

Analyse Employab Analyse Employab

Design Employab

Design Employab

MSTs, ESE, Class/Quiz Tests

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Department Computer Science and Engineering
Program 18. Tech. (Computer Science and Engineering)
BTES(402-18) : (Computer Organisation and Architecture Lab)

<u> </u>		Engineerin	Problem A	Design/de	Conduct in	Modern for	The engine	Environme	Ethics	Individual	Communic	Project ma	Life-long L	Horiting Cle	Innovelbon	Entrepren	Elhical yall		
CO No.	CO Statements	PO4	PO-6	PO-c	P0-4	PO-e	104	PO-g	PO-h	PO-i	POJ	PO-L	PO-I	PSO-m	P80-n	PSO-o	PSO-p	Lauraing	Assessment Tools to Assessment Tools to OO OO
CO1	Assemble personal compuer	3	2	2	3	2	2	2	1	3	1	1	3	3	1	2	1	3	3 3 MSTs, ESE, Class/Quiz Tests
CO2	Implement the various assembly language problems for basic arithmetic and logical operations	3	3	3	3	2	1			3	2	3	3	3	1	E		3	3 3 MSTs, ESE, Classo/Quiz Tests
CO3	Demonstrate the functioning of microprocessor /microcontroller based systems with I/O interface	3	1	3	3	11	1			2	2	3	з	з	2	3	1	э	3 3 MSTs, ESE, Class/Quiz Teots

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Computer Science and Engineering : B.Tech. (Computer Science and Engineering) :Operating Systems Lab

		-				-													
	Engineering Knowledge	Problem Aralysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	invovation and design	Enthsprendurship Skills	Erical system			
CO Statements (UC-877EC-562-18: Digital Signal Processing)	PO-4	PO-6	PO-c	PO-d	PO-e	PQ-t	P0-9	PG-6	P04	PO-j	P04	PO4	PSO-m	PSO-41	PSO-0	P80-p	Learning Laveltu	Footie on Smithaus	Assessment Tools to Measure Attainment of
Understand and implement basic services and functionalities of the operating system;	3	3	3	3	3	2	2					Mile.			427			Locus on Engloyer	CO
Analyze and simulate CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority.	3	3	3	3	3		-		3	2	3	3	3	3	2		Understand	Employability	MSTs, ESE, Practical Assignments Tests
Implement commands for files and directories;	3	3		3	3	3	3	1	3	3	3	3	3	3	3	1	Analyse	Entrepreneurship	MSTs, ESE, Practical Assignments Tests
Understand and implement the concepts of shell programming:	3	2	3	-	3	2	2		2	2	2	2	3	3	2		Design	Entrepreneurship	MSTs, ESE, Prectical Assignments Tests
Simulate file altocation and organization techniques;	3	3	3	2	3	3	3		2	3	2	3	3	3	2		Understand & Design	Entrepreneurship	MSTs, ESE, Practical Assignments Tests
Understand the concepts of deadlock in operating systems and implement them in multiprogramming system.	3	3	3	3	3	2	2		3	2	2	2	2	2	2		Understand & Design	Entreoreneurship	MSTs, ESE, Practical Assignments Tests
Committee of the same of sales.		3	3	3	3	3	3	- 1	3	3	3	3	3	3	3	1	Design	Entragrapa makin	MSTs, ESE, Practical Assignments Tests

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لد نر Department Computer Science and Engineering Program: B.Tech. (Computer Science and Engineering)

	CONTRACTOR ASSESSED.	ш	-		O	2	F	ш	ш	<u>c</u>	ŭ	ă.	5	2000年	<u></u>	ш	77	1		
CO No.	CO Statements	PO-a	РО-Ь	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	P0-1	PSO-m	PSO-s	PSO-o	PSO-p	Level(under stand/analy se/ deisgn	ty / Entrepreneu	
CO1	Design and implement complex problems with different techniques	3	3	3	3	3	2			2				3	3			design	rship Employability	
CO2	Understand comparative performance of strategies and hence choose appropriate, to apply to specific	3	3	3	3	3	2			2		×		3	3			understand	Employability	MSTs, ESE, Class/Quiz
соз	Implement Various tree and graph based algorithms and become familiar with their design methods;	3	3	3	2	3	1							3	1	2		Apply	Employability	Tests
	Design and Implement heuristics for real world problems.	3	3	3	3	3	2							3	3	2		Design	Employability	

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Department Computer Science and Engineering Program : B.Tech. (Computer Science and Engineering)
BTCS(type code) : BTCS-501-18 Database Management System

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO Statements (U	PO-a	РО-Б	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-j	PO-k	PO4	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus on	Assessment Tools to Measure Attainment of
CO1	write relational algebra expressions for a query and optimize the Developed expressions	1	3	3	2	0	0	0	0	3	3	2	2	3	2	1	0	understan	employab	MSTs ESE
CO2	design the databases using ER method and normalization.	1	3	3	2	2	1	1	1	3	3	2	2	3	3	3	1	Analyse	enterpren	MSTs, ESE, Class/Quiz Tests
CO3	construct the SQL queries for Open source and Commercial DBMS- MYSQL, ORACLE, and DB2.	1	2	2	2	2	1	1	1	2	2	2	2	3	2	3	1	design	enterprend	MSTs, ESE, Class/Quiz Tests
	determine the transaction atomicity, consistency, isolation, and durability	1	2	1	1	1	0	O	0	3	3	2	2	3	1	ī	0	understan	employabi	MSTs, ESE, Class/Quiz Tests
CO5	Implement the isolation property, including locking, time stamping based on concurrency control and Serializability of scheduling	1	2	2	2	1	1	1	1	3	3	2	2	3	2	2	1	design	employabi	MSTs, ESE, Class/Quiz Tests

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Program : B.Tech. (Computer Science and Engineering)

BTCS(502-18) :Formal Language & Automata Theory

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skilis	Ethical values			
CO No.	CO Statements	PO-a	РО-ь	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO4	PO-j	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1	Write a formal notation for strings, languages and machines.	3	2	2	1	1				1		96.15	2	1	1		<u> </u>	Understal	r Employat	MSTs, ESE, Class/Quiz Tests
CO2	Design finite automata to accept a set of strings of a language.	3	3	3	2	1	1	1		1		1	2	2	2			Design	Employat	MSTs, ESE, Class/Quiz Tests
CO3	For a given language determine whether the given language is regular or not.	3	3	3	3	2	2	1 Gujra ersity e Gov	1 Donje	2 ib Tec	1 hnica	2	2	3	3	2	3	Analyse	Entrepren	MSTs, ESE, Class/Quiz Tests

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CO4	Design context free grammars to generate strings of context free language.	3	2	3	2	1		1		2	ii.	2	1	2	2	2		Design	Entreprer	MSTs, ESI Class/Quiz Tests
CO5	Determine equivalence of languages accepted by Push Down Automata and languages generated by context free grammars	3	3	3	3	2	1	2	1	2	1	1	3	3	3	2	1	DEsign	Entrepren	MSTs, ESI Class/Quiz Tests
CO6	Write the hierarchy of formal languages, grammars and machines.	2	1	1	ī		1	1			1	1	1	1				Understar	Employab	MSTs, ESI Class/Quiz Tests
CO7	Distinguish between computability and non-computability and Decidability and undecidability.	2	1	1	î		1 .	- 1		1		1	1	2	. 1			Understan	Employab	MSTs, ES Class/Quiz Tests

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Program : B.Tech. (Computer Science and Engineering)

BTCS(503-18) : Software Engineering

	CO Statements	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Leaming	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skiils	Ethical values			
CO No.	(UC-BTEC-502- 18: Digital Signal Processing)	PO-a	РО-Ь	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1	Students should be able to identify the need for engineering approach to software development and various processes of requirements analysis for software engineering problems.	3	2	2	2	1	2 K Gu	2	2	2 Techr	3 nical	3	3	3	2		2	Understar	Employab	MST's, ESE, Class/Quiz Tests





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		_	T	T		_		r											
Analyze various software engineering models and apply methods for design and development of software projects.	3	3	3	2	3	3	2	1	3	2	3	3	3	2	3	1	Analyse	Entrepren	MSTs, ESE, Class/Quiz Tests
Work with various techniques, metrics and strategies for testing software projects.	3	3	3	2	3	2	1	1	2	2	2	3	3	3	2	1	Create	Entrepren	MSTs, ESE, Class/Quiz Tests
Identify and apply the principles, processes and main knowledge areas for Software Project Management	3	3	3	3	3	3	2	ā	3	í	ď	3	3	3	3	1	Design	Entrepren	MSTs, ESE, Class/Quiz Tests
Proficiently apply standards, CASE tools and techniques for engineering software projects	3	3	3	3	3	3	3		2	2	. 2	3	3	3	3		Design	Entrepren	MSTs, ESE, Class/Quiz Tests
	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software Proficiently apply standards, CASE tools and techniques for engineering software	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software progenties and techniques for engineering software projections.	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and 3 3 3 2 3 2 3 2 strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software gengineering software	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software e	software engineering models and apply methods of design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software software projectine.	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software software software	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrica and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for engineering software software progeniques for engineering software progenities for engineering software software engineering software so	software engineering models and apply methods for design and development of software projects. Work with various techniques, metrics and strategles for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for an analyse of the construction of the cons	software engineering models and apply methods for design and development of software projects. Work with Various techniques, metrics and strategies for testing software projects. Identify and apply the principles, processes and main knowledge areas for Software Project Management Proficiently apply standards, CASE tools and techniques for angineering software projects.	Software engineering models and apply methods of or design and development of software projects.	Software emplained Software Software	Software emplacering models and apply methods for design and development of software projects.	Software engineering models and lapply methods for design and development of software projects. 3 3 2 3 2 1 3 2 3 3 2 3 1 Work with various end startagies for testing software projects. 3 3 3 2 3 2 1 1 2 2 2 3 3 2 1 Identify and apply the principles, processes and main knowledge areas for Software Project Management 3 3 3 3 3 3 3 3 3 3 3 1 Proficiently apply the principles, processes and main knowledge areas for Software Project Management 3	Software engineering modes and lapty methods 3 3 3 2 3 3 2 1 3 2 3 3 3 2 3 1 Analyse engineering modes and lapty methods 3 3 3 2 3 3 2 1 1 2 2 2 3 3 3 2 1 Create engineering modes and lapty methods 3 3 3 3 2 3 2 1 1 2 2 2 2 3 3 3 2 1 Create engineering modes and lapty methods 3 3 3 3 3 3 3 2 1 1 2 2 2 2 3 3 3 3 2 1 Create engineering modes and manufactured modes and lapty methods 3 3 3 3 3 3 3 3 3	Software engineering Software engineering

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3

Department Computer Science and Engineering
Program: B.Tech. (Computer Science and Engineering)
BTCS(type code): BTCS 504 -18UC (Computer Network)

	Di Col type code	DICS	XU4 -18UC	Computer	Network)															
	ICO Statements	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innevation and design	Entrepreneurship Skills	Ethical values			
CO No.	(UC-BTEC-502- 18: Digital Signal Processing)	PO-a	РО-Ь	РО-с	PO-d	PO-6	PO-f	PO-g	PO-h	P04	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1		3	3	3	2	3	3	3	2	2	3	1	3	3	2	2	2	2		MSTs, ESE, Class/Quiz Tests
CO2		3	2	3	2	3	3	3	2	3	3	2	3	3	3	1	1	2	2	MSTs, ESE, Class/Quiz Tests
CO3		3	3	3	3	3	3	3	2	3	3	1	3	3	2	2	1	3	3	MSTs, ESE, Class/Quiz Tests
CO4	>	3	3	3	3	3	3	3	3		3	1	3	3	3	2	2	2	3	MSTs, ESE, Class/Quiz Tests

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Program : B.Tech. (Computer Science and Engineering)
BTCS 512-18 : (Web and Open Source Technologies Lab)

	BTCS 512-18	: (Web ar	nd Open So	ource Tech	nologies L	ab)													
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values		
	CO Statements (UC-BTES-402- 18: Computer Organisation and Architecture Lab)	PO-s	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-1	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o		Learning	Assessment Tools to Focus on Measure Attainment of CO
CO1	develop web based application using suitable client side and server side web technologies	3	2	2	3	3	3	2	2	3	2	3	3	3	3	3	2	3	MSTs, ESE, 3 Class/Quiz Tests
	develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management	3	3	3	3	2	1	1	1	3	2	3	3	3	3	3	2	3	MSTs, ESE, 3 Class/Quiz Tests

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Department Computer Science and Engineering
Program: B.Tech. (Computer Science and Engineering)

BTCS(612-18UC)	Programming in Python Lab	
123 72	Programming in Python Lab	

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex pro	Modem tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovetion and design	Entrepreneurship Skills	Ethical values			
CO No.	CO Statements (Programming in Python Lab)	PO-a	PO-8	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO4	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	РЅО-р	Learning Lavel(understand/analyse/ deison etc)	Focus on	Assessment Tools to Measure Attainment of CO
CO1	Write, Test and Debug Python Programs	3	3	3	3	3	3	2	1	1	2	2	1	2	1	2		Test and Evaulate	Employab	MSTs, ESE, Class/Quiz Tests
CO2	Implement Conditionals and Loops for Python Programs	3	3	2	3	2	3	2	2	1	1	1	3	2	2	2		Implement	Employab	MSTs, ESE, Class/Quiz Tests
CO3	Use functions and represent Compound data using Lists, Tuples and Dictionaries	3	2	2	3	2	3	2	1	2	4	2	2	3	1	2	1	Арріу	Employab	MSTs, ESE, Class/Quiz Tests
CO4	Read and write data from & to files in Python and develop Application using Pygame	3	3	3	3	3	3	1	2	10 T	2	1	2	2	2	2		Design	Employab	MSTs, ESE, Class/Quiz Tests

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4

Program : B.Tech. (Computer Science and Engineering)

BTCS

	2	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Imovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO Statements	PO-a	РО-Б	РО-с	PO-d	РО-ө	PO-f	PO-g	PO-h	PO-1	PO-j	PO-k	PO-I	PSO-m	PSO-n	PSO-o	РЅО-р	Learning	Focus on	Attainment
CO1	Describe those aspects of mobile programming that make it unique from programming for other platforms	3	3	3	3	3				2				3	3			design	Employa bility	of CO
CO2	Critique mobile applications on their design pros and cons	3	3	3	3	3	2			2				3	3			understa nd	Entrpren eurship	
СОЗ	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces,	3	3	3	2	3	1			2				3	1	2		Apply	Employa bility	MSTs, ESE Class/Quiz Tests
CO4	Program mobile applications for the Android operating system that use basic and advanced phone features,	3	3	3	3	3	2							3	3				Employa bility	
CO5	Deploy applications to the Android marketplace for distribution	3	3	3	3	3	2			2				3	3	2		Design Design	Employa bility	



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Program : B.Tech. (Computer Science and Engineering)

BTCS(type code) Mobile Application Development Lab

	TCS(type code)	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	individual and team work	Communication	project management and finance	Life-long Learning	Honing Domain Knowledge	fenovation and design	Entrepreneurship Skilis	Ethical values		9
CO No.	CO Statements (UC-BTEC-502- 18; Digital Signal Processing)	PO-a	PO-b	PO-c	PO-d	≥ PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	, was	Learning Fo	Assessment Tools to cus on Measure Attainment of CO
CO1	15	3	3	3	3	3	2	2	1	3	3	3	3	3	3	3	2		MSTs, ESE, Class/Quiz Tes
CO2		3	3	3	3	3	3	3		3	3	2	3	3	3	3	1		MSTs, ESE, Class/Quiz Tes
CO3		2	1	1	2	1	2	1	1	. 3	3	1	2	1	2	1	1		MSTs, ESE, Class/Quiz Te
CO4		3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	2		MSTs, ESE, Class/Quiz Te

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Department Computer Science and Engineering
Program: B.Tech. (Computer Science and Engineering)
BTCS(type code) Internet of Things

5.000	S(type code)	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO Statements (UC-BTEC- 502-18: Digital Signal Processing)	PO-4	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	POH	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus of	Assessment Tools to Measure Attainment of CO
CO1	PARK :	1	1	1	2	1	1	1		1	3	1	3	2	1	1	10.00	year-		MSTs, ESE, Class/Quiz Tests
CO2		3	3	3	3	3	3	2		3	3	2	3	3	2	2	1			MSTs, ESE, Class/Quiz Tests
CO3		3	3	3	3	3	3	1	1	3	3	2	3	3	3	1	1			MSTs, ESE, Class/Quiz Tests
CO4	>	3	2	2	3	3	3	3		3	1	2	3	3	3	3	1			MSTs, ESE, Class/Quiz Tests

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Department Computer Science and Engineering
Program : B.Tech. (Computer Science and Engineering)
BTCS : (Computer Graphics Lab)

	BTCS	: (Comput	ter Graphic	a Lab)																
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	individual and team work	Communication	Project management and finance	Life-long Learning	Honing Comain Knowledge	Innovation and design	Entregreenstration Stalle	Ethical values			
CO No.	CO Statements	PO-a	РО-Б	PG-6	P0-d	PO-e	PO-1	PO-9	PO-h	PO-I	PO4	PO-k	PO-I	PSO-m	P80-n	P80-o	РЅО-р	Level(unders	Focus on Employability / Entrapreneurs htp	Assessment Tools to Measure Attainment of CO
CO1	To implement various algorithms to som, convert the havie geometrical prumitives, transformations, Area filling, clipping.	3	3	3	3	3	2			2				3	3	2	6	design	Employability & Entrpreneurahip	MSTs, ESE, Class/Quiz Tests
CO2	To demonstrate the importance of viewing and projections.	3	3	3	2	3				2				3	2			understand	Entrpreneurship	
CO3	To apply the fundamentals of animation, virtual reality and its related technologies	3	3	3	3	3				2				3	3	2		Apply	Employability & Entrpreneurship	
CO4	To implement a typical graphics pipeline	3	3	3	3	3				2				3	2			Design	Employability	

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Department Computer Science and Engineering Program : B.Tech. (Computer Science and Engineering) BTCS(type code) : BTCS-505-18 Database Management System Lai

	BTCS(type code)	: BTCS-5	05-18 Dat	abase Man	agement S	ystem Lab									り 屋思え	AT ELECT						
					oples									102								1
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex pr	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	ndividual and team work	communication	Project management and finance	lfe-long Learning	Honing Domein Knowkedge	innevation and design	Entrepreneurship Skills	shicel values			.0		
CO No.	CO Statements (UC-BTCS-805- 18; Database Management Bystem Lab)	PO-4	PO-b	P0-c	PO-d	P0-e	P04	PO-g	PO-h	P0-1	P0-j	P0-k	P0-1	PSO-m	PSO-n	P80-o	PSO-p	Learning Level(understand/analys e/ deisgn etc)	Focus on Employability / Entreprenourship	Assessment Tools to Measure Attainment of CO		
CO1	retrieve data from relational databases using SQL	1	3	2	2	1	1	1	1	3	2	3	3	2	2	2	,	Analyse	employability	Practicals	Viva	Assignments
CO2	implement generation of tables using datatypes	1	2	2	2	1	1	1	1	3	3	3	3	2	2	2	1	Design	enterpreneurship	Practicals	Viva	Assignments
соз	design and execute the various data manipulation queries.	1	2	2	2	1	1	1	1	3	2	3	3	2	2	2	1	Design	employability	Practicals	Viva	Assignments
CO4	execute triggers, cursors, stored procedures etc.	1	3	3	3	2	1	1	:1	3	3	3	3	2	2	2	1	Design	enterpreneurship	Practicals	Viva	Assignments
															ļ							

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Program : B.Tech. (Computer Science and Engineering)

BTCS(506-18) : Software Engineering Lab

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	intovetion and design	Entrepreneurship Skille	Ethical values		
CO No.	CO Statements (UC-BTEC- 502-18: Digital Signal Processing)	PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-1	POJ	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning Focus of	Assessment Tools to Measure Attainment of CO
CO1					4.0			J-1-2											MSTs, ESE, Class/Quiz Tests
C02																			MSTs, ESE, Class/Quiz Tests
СОЗ																			MSTs, ESE, Class/Quiz Tests

Note *: CO's are not defined in Syllabus

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Department Computer Science and Engineering
Program: B.Tech. (Computer Science and Engineering)
BTCS(type code): BTCS 507 -18UC (Computer Network Lab)

	осы (уре code)	Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Efrical values		
	CO Statements (UC-BTEC-502: 18: Digital Signal Processing)	PO-a	РО-ь	PO-c	PO-d	PO-e	PO-1	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus on Assessment Tools to Measure Attainment of CO
CO1		3	1	3	2	3	3	3	2	2	3	1	3	3	3	2	2	3	3 MSTs, ESE, Class/Quiz Tests
CO2		3		2	2	3	3	3	1	2	3	1	3	3	2	2	1	2	2 MSTs, ESE, Class/Quiz Tests
СОЗ		3	1	3	1	3	3	3	1	2	3	2	3	3	3	2	1	3	2 MSTs, ESE, Class/Quiz Tests
CO4		3		2	2	3	3	3	1	2	3	3	3	3	2	1	1	3	3 MSTs, ESE, Class/Quiz Tests

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Program : B.Tech. (Computer Science and Engineering)

01-18UC) : Compiler	Design	1		1 60										1		The state of the s	£		
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Impovation and design	Entrepreneurship Skills	Ethical values.			
CO No.	CO States	PO-a	РО-Ь	PO-¢	PO ₄ d	PO-e	P04	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1	Understa nd the major phases of compilati on including front-end and back- end.	3	1	1	1	3	2	2		2	1	1	1	2	1			Understa	r Employat	MSTs, ESE, Class/Quiz Tests
CO2	Develop the parsers and experime nt the knowledg e of different parsers design	3	3	3	2	3	3	2	1	3	1	2	2	3	2	3	1	Create	Entreprer	MSTs, ESE, Class/Quiz Tests
CO3	Construc t the intermedi ate code represent ations and generatio n	3	2	2	2	2	2	1	1	2		2	2	3	2	2	1	Create	Entreprer	MSTs, ESE, Class/Quiz Tests

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CO4	Convert source code for a novel language into machine code for a novel computer	3	3	3	3	3	3	2	1	3	1	1	3	3	3	3	1	Create	Entrepren	MSTs, ESE, Class/Quiz Tests
CO5	Apply for various optimizati on techniqu es for dataflow analysis	3	2	4	2	2	3	3		2	2	2	2	2	2	3		Create	Entrepren	MSTs, ESE, Class/Quiz Tests

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Program : B.Tech. (Computer Science and Engineering)

BICS(B	04-18UC)	: Compile	r Design Li	ab	1 07										Too see the second		Personal Marie S						
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problem	Modern tool usage	The engineer and society	environment and sustainability	Ethics	ndividual and team work	Sommunication	Project management and finance	ife-long Learning	Honing Domain Knowledge	imposation and design	Entraprenaurship Skills	citrical values						
	CO State	PO-a	PO-b	PO-c	PO-d	РО-е	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o		Learning	Focus o	Assessment To	ols to Measu	re Attainm	ent of C
CO1																				MSTs, ESE, Cla			
CO2																				MSTs, ESE, Cla			
CO3											P .							1		MSTs, ESE, Cla			
CO4																			_	1		-	

Note * : CO's are not defined in Syllabus

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Program : B.Tech. (Computer Science and Engineering)

04-18UC)	: Compile egpejwory	r Design L	doment of solutions	estigations of complex problems	əßesn	r and society	and sustainability		nd team work	lon	agement and finance	guiming	iain Knowledge	nd design	rship Skilis	在 一					
	Engineering	Problem An	Design/deve	Conduct inv	Modern tool	The enginee	Environment	Ethics	Individual an	Communicat	Project mans	Life-long Les	Honing Don	Innovation 8	Entrepreneu	Ethical value					
							Ī				<u>1</u> 67-1-11										
CO State	PO-4	РО-ь	PO-a	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-1	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus o	Assessment Tools n to Measure Attainment of CO		
																			MCTo ESE Close/Outs Toete		
													-		-		-	-	MSTs, ESE, Class/Quiz Tests MSTs, ESE, Class/Quiz Tests		-
															_			+	MSTe ESE Class/Ouiz Tasts	-	

CO's are not defined in Syllabus

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Program : B.Tech. (Computer Science and Engineering)
02-18UC) : Artificial Intelligence

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skilis	Ethical values			
CO No.	CO State	PO-a	РО-Б	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-J	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus on	Assessment Tools to Measure Attainment of CO
CO1	Understa nd different types of AI agents.	3	2	2	2	1	1	1		1	2	2	2	2	1			Understar	Employab	MSTs, ESE, Class/Quiz Tests
CO2	Develop different types of various Al search algorithm s.	3	3	3	3	3	2	2	1	2	2	2	3	3	3	3	1	Create	Entrepren	MSTs, ESE, Class/Quiz Tests
CO3	Construc t simple knowledg e-based systems and to apply knowledg e represent ation.	3	3	3	3	ु 3	2	2		2	2	2	3	3	3	1		Design	Entrepren	MSTs, ESE, Class/Quiz Tests



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CO4	Convert intermedi ate represent ation in contest to understa nd learning.	3	2	2	2	3	3	2	4	2	3	3	3	3	3	3	Understal	Entrepren	MSTs, ESE, Class/Quiz Tests
CO5	Apply for various techniqu es for Expert Systems.	3	2	2	3	3	2	2		2	2	3	3	3	3	2	Understal	Entrepren	MSTs, ESE, Class/Quiz Tests

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Program B.Tech. (Computer Science and Engineering) 305-18UC : Artificial Intelligence Laboratory

05-18UC		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	Innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO State	PO-a	РО-Ь	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	РОН	PO-j	PO-k	P0-1	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
	Explain artificial intelligen ce, its character istics and its application areas.	3	2	2	1	2	2	3	2	2	2	2	3	3	3	1	2	Understa	Employal	Practical Assignments
	Formulat e real-world problems as state space problems . optimizati on problems or constrain t satisfacti on problems	3	3	3	3	3	2	2	2	3	2	2	3	3	3	3	2	Design	Entreprer	Practical Assignments



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Inside Govt. Polytechnic College,
Near GNDU. G. T. Road, P.O.Chheharta,
Amritsar-1431011 Punjab.
Phr: 0103-2430034, 7087364656

CO3	Select and apply appropriate algorithm s and Al techniques to solve complex problems	3	3	3	3	3	3	2		3.	3	3	3	3	3	3		Design	Entrepren	Practical Assignments
CO4	Design and develop an expert system by using appropria te tools and techniques.	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	Design	Entreprer	Practical Assignments

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University Amritsar Campus,
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Program . B Tech. (Computer Science and Engineering)

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Honing Domain Knowledge	innovation and design	Entrepreneurship Skills	Ethical values			
CO No.	CO States	PO-a	РО-Ь	PO-c	PO-d	PO-e	PO-1	PO-g	PO-h	PO-1	PO-J	PO-k	PO-I	P80-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1	Explain artificial intelligen ce, its character istics and its applicatio n areas.	3	2	2	1	2	2	3	2	2	2	2	3	3	3	1	2	Understar	Employat	Practical Assignments
CO2	Formulat e real- world problems as state space problems , optimizati on problems or constrain t satisfacti on problems	3	3	3	3	3	2	2	2	3	2	2	3	3	3	3	2	Design	Entreprer	Practical Assignments



1. K. Cojral Punjah Technical
University An intear Campus,
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Inside Govt. Polytichnic College,
Near GNDU, S. T. Fand P.O. Chheharta,
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Amritsar-14 + this Funjab.
Amritsar-14 + this Funjab.

CO3	Select and apply appropria te algorithm s and AI techniqu es to solve complex problems	3	3	3	3	3	3	2		3	3	3	3	3	3	3		Design	Entrepren	Practical Assignments
CO4	Design and develop an expert system by using appropria te tools and techniqu es.	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	Design	Entreprer	Practical Assignments

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Program : B.Tech. (Computer Science and Engineering)

BTCS(type code) BTCS BTCS606-18UC (Network Security and Cryptography)

		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The engineer and society	Environment and sustainability	Ethics	Individual and team work	Communication	Project management and finance	Life-long Learning	Horing Domain Knowledge	Innovertion and design	Entreprenautship Skills	Ethical values			
CO No.	CO State	PO-a	PO-b	PO-c	PO-d	PO-e	PO-f	PO-g	PO-h	PO-I	PO-j	PO-k	PO-I	PSO-m	PSO-n	PSO-o	PSO-p	Learning	Focus or	Assessment Tools to Measure Attainment of CO
CO1		3	3	2	2	3	3	2	1	2	3		2	3	3	2	1	2	3	MSTs, ESE, Class/Quiz Tests
CO2		3	ī	3	3	3	3	3	1	2	3		3	3	2	2	1	2	. 3	MSTs, ESE, Class/Quiz Tests
CO3		3	2	3	3	3	3	3	1	2	3	1	3	3	3	2	1	2	:	MSTs, ESE, Class/Quiz Tests
CO4		3		3	3	3	. 3	3	1	2	3		3	3	2	2	1	3	3	MSTs, ESE, Class/Quiz Tests

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