COURSE OUTCOMES (COs) – PROGRAMME OUTCOMES (POs) – PROGRAMMME SPECIFIC OUTCOMES (PSOs) MAPPING

COURSE – ELECTRONICS & TELECOMMUNICATION ENGINEERING

CUMMINS COLLEGE OF ENGINEERING FOR WOMEN, NAGPUR

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

COURSE ARTICULATION MATRIX

(Mapping of Course Outcomes of Courses with Program Outcomes and Program Specific Outcomes)

UG Program of Electronics and Telecommunication Engineering

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BSE 1-1T	FIRST	MATHEMATICS - I	BES1-1.1	*Analyze real world scenarios to recognize when derivatives or integrals are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) to solve the problems using multiple Approaches, judge if the results are reasonable, and then interpret and clearly communicate the results.*	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES1-1.2	*Appreciate ODE and system of ODEs concepts that are encountered in the real world, understand and be able to communicate the underlying mathematics involved to help another person gain insight into the situation.*	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES1-1.3	*Apply knowledge of mathematics, physics, and modern computing tools to scientific and engineering problems.*	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES1-1.4	*Develop an ability to identify, formulate and/or solve real world problems.*	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES1-1.5	*Understand the impact of scientific and engineering solutions in a global and societal context.*	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2	2	-	-	-	-	-	-	-	-	-	-	-	-	-

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BSE 1-2T	FIRST	APPLIED PHYSICS	BES1T2.1	Apply concepts in interference and diffraction to solve relevant numerical problems and to relate to relevant engineering applications	1	2	-	-	-	-	-	-	-	-	-	1	-	-	-
			BES1T2.2	Learn the basic concepts of dual nature of matter and wave packet and apply them to analyze various relevant phenomena and to solve related numerical problems	1	2	-	-	-	-	-	-	-	-	-	1	-	-	-
			BES1T2.3	Recall the basic concepts of crystal structure and apply them in solving numerical problems based on them and in relating to applications for determination of crystal structure	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-
			BES1T2.4	Relate the basic idea of total internal reflection to the propagation of light in an optical fiber and make use of the fiber concepts to solve numerical problems and relate to applications in engineering	1	2	-	-	-	-	-	-	-	-	-	1	-	-	-
			BES1T2.5	Find how to extend the basic concepts of motion of charged particles in electric magnetic fields to solve numerical problems and to relate to applications in electron optic devices and CRO	1	2	-	-	-	-	-	-	-	-	-	1	-	-	-
					1	2	-	-	-	-	-	-	-	-	-	1	-	-	-
BSE 1-3T	FIRST	ENERGY AND ENVIRONMENT	BESI-3T.1	To obtain the knowledge of solid and gaseous fuels and their Calorific Value determination	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			BESI-3T.2	To recognize the type of liquid fuels and their uses in IC engines.	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			BESI-3T.3	To apply the knowledge about the use of alternative sources of energy & utilize solid waste as energy source	-	-	-	-	-	3	3	-	-	-	-	-	-	-	-

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BESI-3T.4	To analyze the impacts of Industrial pollution and its control.	-	3	-	-	-	-	3	-	-	-	-	-	-	-	-
			BESI-3T.5	To develop innovative ideas for use of advanced materials in sustainable development	-	-	3	-	-	-	3	-	-	-	-	-	-	-	-
					3	3	3	-	-	3	3	-	-	-	-	-	-	-	-
BSE 1-4T	FIRST	COMMUNICATIONS SKILLS	BSE1-4T.1	To Understand the importance of communication and overcome barriers of communication.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
			BSE1-4T.2	Acquire public speaking skills and handle group situation professionally.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
			BSE1-4T.3	To comprehend passages and compose paragraph.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
			BSE1-4T.4	To construct error free and meaningful sentence in English.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
BSE 1-5T	FIRST	ENGINEERING GRAPHICS	BSE 1-5T.1	Understand basic knowledge of Engineering Graphics such as instruments, lines etc, and construct various engineering curves and basic of orthographic projection through drawing the projection of point and line	2	-	2	-	--	-	-	-	-	1	-	1	-	-	-
			BSE 1-5T.2	Understand different types of projection of planes (2D) & solid (3D) and will be able to draw different views of planes and solids	2	-	2	-	--	-	-	-	-	1	-	1	-	-	-
			BSE 1-5T.3	Understand concept of sectioning and development of lateral surfaces of solid and able to represent it.	2	-	2	-	--	-	-	-	-	1	-	1	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BSE 1-5T.4	Apply visualization skill to draw a simple isometric projection views from given orthographic views precisely using drawing instruments	2	-	2	-	--	-	-	-	-	1	-	1	-	-	-
					2	-	2	-	--	-	-	-	-	1	-	1	-	-	-
BSE 1-6T	FIRST	BASICS OF CIVIL AND MECHANICAL ENGINEERING	BSE 1-6T.1	Understand role of Civil Engineering specializations in development of nation and Society.	-	-	-	-	-	1	-	2	-	-	-	1	-	-	-
			BSE 1-6T.2	Explore the Civil Engineering aspects of different ancient monuments and recently constructed marvelous monuments	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-
			BSE 1-6T.3	Understand basic manufacturing processes and working principle of different mechanisms with its application.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			BSE 1-6T.4	Analyze the various renewable and non-renewable energy sources.	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-
			BSE 1-6T.5	Explore various types of road vehicles and their specifications.	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-
					2	-	-	-	-	1	-	2	-	-	-	2	-	-	-
BSE 1-2P	FIRST	APPLIED PHYSICS	BES1-2P.1	Experiment with spectrometer to understand optical phenomenon such as interference and diffraction	-	2	-	-	-	-	-	-	-		-	1	-	-	-
			BES1-2P.2	Get Acquaint of CRO and its use for engineering Applications	-	-	-	-	-	-	-	-	-		-	1	-	-	-
					-	2	-	-	-	-	-	-	-		-	1	-	-	-
BSE 1 -3P	FIRST	ENERGY AND ENVIRONMENT	BESI-3P.1	To gain the practical knowledge of handling chemicals.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			BESI-3P.2	Analyzing a broad foundation in energy and environment that stresses scientific reasoning and analytical problem solving with a molecular perspective	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BESI-3P.3	Experimental techniques using modern instrumentation	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
					3	3	-	-	3	-	-	-	-	-	-	-	-	-	-
BSE 1-4P	FIRST	COMMUNICATIONS SKILLS	BSE1-4P.1	Understand the importance of listening and overcome listening barriers of communication.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
			BSE1-4P.2	Enhance and apply the knowledge of comprehending skills and speaking skills.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
			BSE1-4P.3	Apply the knowledge of effective presentations and handle group situations professionally.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
			BSE1-4P.4	To apply figurative language in their formal as well as informal communication	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
BSE 1-5P	FIRST	ENGINEERING GRAPHICS	BSE1-5P.1	Draw the fundamental engineering objects using basic rules and able to construct lines, simple geometries. Construct the various engineering curves using the drawing instruments.	2	-	2	-	-	-	-	-	-	1	-	1	-	-	-
			BSE1-5P.2	Draw two dimensional and three dimensional objects, precisely using drawing instruments.	2	-	2	-	-	-	-	-	-	1	-	1	-	-	-
			BSE1-5P.3	Draw the development of lateral surfaces for cut section of geometrical solids precisely using drawing instruments.	2	-	2	-	-	-	-	-	-	1	-	1	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BSE1-5P.4	Draw simple isometric projection from given orthographic views precisely using drawing instruments.	2	-	2	-	-	-	-	-	-	1	-	1	-	-	-
					2	-	2	-	-	-	-	-	-	1	-	1	-	-	-
BSE2-1T	SECOND	MATHEMATICS - II	BSE2.1T.1	Analyze real world scenarios to recognize when integrals are appropriate, formulate. problems about the scenarios, creatively model these scenarios (using technology, if appropriate) to solve the problems using multiple approaches, judge if the results are reasonable, and then interpret and clearly communicate the results.	2	2	-	-	-	-	-	-	-	--	-	-	-	-	-
			BSE2.1T.2	Define and understand the geometry of vector differential operators and line and surface integrals.	2	2	-	-	-	-	-	-	-	--	-	-	-	-	-
			BSE2.1T.3	Explain and apply principles of study design and data collection.	2	2	-	-	-	-	-	-	-	--	-	-	-	-	-
			BSE2.1T.4	Develop an ability to identify, formulate and/or solve real world problems.	2	2	-	-	-	-	-	-	-	--	-	-	-	-	-
			BSE2.1T.5	Understand the impact of scientific and engineering solutions in a global and societal context.	2	2	-	-	-	-	-	-	-	--	-	-	-	-	-
					2	2	-	-	-	-	-	-	-	--	-	-	-	-	-
BSE2-2T	SECOND	ADCANCED ENGINEERING MATERIALS	BSE2-2T.1	Learn the concept of formation of energy bands and to classify solids on its basis.	1	2	-	-	-	-	-	-	-	--	-	1	-	-	-
			BSE2-2T.2	Identify and explain different types of diodes, transistors and its applications	2	1	-	-	-	-	-	-	-	--	-	2	-	-	-
			BSE2-2T.3	Learn the concepts of magnetism and superconductivity, classify and analyze various types o fmagnetic and superconducting materials.	2	2	-	-	-	-	-	-	-	--	-	1	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BSE2-2T.4	Learn and explain quantum transitions and apply it to working of lasers.	2	2	-	-	-	-	-	-	-	--	-	1	-	-	-
			BSE2-2T.5	Learn the concept of nano materials and compare its properties with those of bulk materials.	2	2	-	-	-	-	-	-	-	--	-	2	-	-	-
					2	2	-	-	-	-	-	-	-	--	-	1	-	-	-
BSE2-3T	SECOND	APPLIED CHEMISTRY	BES2-3T.1	To understand the periodic properties and analyze the Microscopic Chemistry in terms of atomic and molecular orbital.	3	3	-	-	-	-	-	-	-	--	-	-	-	-	-
			BES2-3T.2	To understand the bulk properties and processes using thermodynamic processes & the causes of corrosion, its consequences and methods to minimize corrosion.	3	-	-	-	-	-	-	-	-	--	-	-	-	-	-
			BES2-3T.3	To distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.	3	3	-	-	-	-	-	-	-	--	-	-	-	-	-
			BES2-3T.4	Apply the principles of green chemistry in designing alternative reaction methodologies to minimize hazards and environmental degradation.	-	3	3	-	-	-	3	-	-	-	-	-	-	-	-
			BES2-3T.5	Apply the techniques of water treatment in industrial purposes.	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-
					3	3	3	-	-	-	3	-	-	-	-	-	-	-	-
BSE2-4T	SECOND	COMPUTATIONAL SKILLS	BSE2-4T.1	Understand the components of a Computer System and to remember different hardware and software used in Computer System.	3	3	-	-	-	-	-	-	-	--	-	3	-	-	-
			BSE2-4T.2	Design an algorithm and sketch the flowchart for any problem.	3	2	2	-	3	-	-	-	-	--	-	1	-	-	-

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BSE2-4T.3	Apply the knowledge of fundaments of C language to Develop a program.	2	3	-	-	-	-	-	-	--	-	-	1	-	-	-
			BSE2-4T.4	List and explain different searching and sorting techniques for a given set of data.	3	2	-	-	3	-	-	-	--	-	-	1	-	-	-
			BSE2-4T.5	Analyze how exactly the data is stored, organized in memory and extend this knowledge to perform operations on the stored data.	3	1	-	-	-	-	-	-	--	-	-	1	-	-	-
					3	2	2	-	3	-	-	-	--	-	-	1	-	-	-
BSE2-6T	SECOND	BASIC ELECTRICAL ENGINEERING	BSE2-6T.1	Understand the basics of electric circuits with reference to Ohms law, Superposition theorem, Types of sources	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BSE2-6T.2	Understand the Magnetic circuit	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BSE2-6T.3	Understand the AC circuit	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BSE2-6T.4	Understand the Single phase Transformer, SC-OC test on transformer with no load and on load performance	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
BSE2-7T	SECOND	ENGINEERING MECHANICS	BES2-7T.1	Find the effect of force and momentum on the body.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES2-7T.2	Analyze the effect of system of forces on a given body with the concept of equilibrium and Free body diagram	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BES2-7T.3	Calculate centroid/C.G. and moments of inertia.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES2-7T.4	Solve the problem of connected bodies by virtual work principle	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES2-7T.5	Solve the problem of connected bodies by work, energy and D Alembert's principle connected bodies.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES2-7T.6	Solve the problem of connected bodies by Impact and Impulse.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
BSE2-8T	SECOND	INDIAN CULTURE & CONSTITUTION	BSE2-8T.1	Student will become aware of Indian Culture and Civilization and their role in development of society	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
			BSE2-8T.2	Students will understand Industrial work culture	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-
			BSE2-8T.3	Students will be sensitized towards professional ethics	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-
			BSE2-8T.4	Students will understand Indian Constitution and Governance of the country	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
			BSE2-8T.5	Students will be able to understand the structure and system of work organization	-	-	-	-	-	1	-	2	--	-	-	-	-	-	-
					-	-	-	-	-	1	1	2	-	-	-	-	-	-	-
BSE2-5P	SECOND	WORKSHOP PRACTICES	BSE2-5P.1	Read and Interpret job drawing and plan operation.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			BSE2-5P.2	Identify and select proper material, tools ,machines and proper operational parameters	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BSE2-5P.3	Set tools, work piece and machines for desired operations.	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-
			BSE2-5P.4	Complete job of carpentry, Fitting, Welding and Smithy as per job drawing in allotted time.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			BSE2-5P.5	Inspect the job for confirm desired dimensions and shape	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2	2	-	2	-	-	-	-	-	-	-	-	-	-	-
BSE2-2P	SECOND	ADVANCED ENGINEERING MATERIALS	BES2-2P.1	Construct electronic circuit using various components.	-	2	-	-	-	-	-	-	-	-	1	-	-	-	-
			BES2-2P.2	Develop the experimental skills and make use of new instruments in Engineering studies.	-	2	-	-	-	-	-	-	-	-	2	-	-	-	-
					-	2	-	-	-	-	-	-	-	-	2	-	-	-	-
BSE2-3P	SECOND	APPLIED CHEMISTRY	BES2-3P.1	Measure molecular/system properties like, concentrations, surface tension, conductance of solutions etc.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			BES2-3P.1	Estimate the soluble impurities present in the given water sample.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
			BES2-3P.1	Handle the different instruments used in chemistry laboratory.	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
					3	-	-	3	3	-	-	-	-	-	-	-	-	-	-
BSE2-3P	SECOND	COMPUTATIONAL SKILLS	BSE2-4P.1	Understand the components of a Computer System and to remember different hardware and software used in Computer System.	3	3	-	-	-	-	-	-	-	-	3	-	-	-	-
			BSE2-4P.2	Demonstrate how to compile and run a program in C Language and Distinguish the compile time and run time errors and modify the code.	3	2	3	2	-	-	-	-	-	-	2	-	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BSE2-4P.3	Experiment with various concepts of programming like decision control, looping, strings, arrays, structure and inspect the execution of same.	3	2	3	3	-	-	-	-	-	-	-	1	-	-	-
			BSE2-4P.4	Apply the knowledge of fundaments of C language to Develop a program using pointers.	3	2	3	2	-	-	-	-	-	-	-		-	-	-
			BSE2-4P.5	Compare the performances of different sorting techniques and different data structures	3	2	3	3	-	-	-	-	-	-	-	1	-	-	-
					3	2	3	3	-	-	-	-	-	-	-	2	-	-	-
BEETC-301T	THIRD SEMESTER	MATHEMATICS-III	BEETE301T.1	Apply Laplace Transform to solve ordinary differential equations, Integral equations and Integro-differential Equations	3	3	-	1	-	-	-	-	-	-	-	-	1	-	-
			BEETE301T.2	Apply Fourier series in the analysis of periodic functions in terms sine and cosine encountered in engineering problems and Fourier Transform to solve integral equations	3	3	-	-	-	-	-	-	-	-	-	-	1	-	-
			BEETE301T.3	Learn the concept of differentiating, integrating and expanding of analytic functions in complex numbers and their applications such as evaluation of integrals of complex functions	3	3	-	-	-	-	-	-	-	-	-	-	1	-	-
			BEETE301T.4	Solve partial differential equations of first order, higher order with constant coefficients and of second order using method of separation of variables	3	3	-	1	-	-	-	-	-	-	-	-	1	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETE301T.5	Analyze real world scenarios to recognize when matrices are appropriate, formulate problems about the scenarios, creatively model these scenarios in order to solve the problems using multiple approaches	3	3	-	1	-	-	-	-	-	-	-	-	1	-	-
					3	3	-	1	-	-	-	-	-	-	-	-	1	-	-
BEETC-302T	THIRD SEMESTER	COMPONENETS FOR ELECTRONIC CIRCUIT DESIGN	BEETC302T.1	Understand the principles of semiconductor physics	3	3	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC302T.2	Understand the principles of semiconductor diode	3	3	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC302T.3	Understand and analyze the mathematical model of transistors	3	3	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC302T.4	Understand and analyze the mathematical model of unipolar transistors	3	3	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC302T.5	Understand the process of Integrated Circuit Fabrication	3	3	-	-	-	-	-	-	-	-	-	-	3	-	3
					3	3	-	-	-	-	-	-	-	-	-	-	3	-	3
BEETC-303T	THIRD SEMESTER	DIGITAL SYSTEM DESIGN	BEETC-303T.1	Demonstrate the knowledge of: Logic gates, Boolean algebra including algebraic manipulation/simplification and Application of DeMorgan's Theorem, Karnaugh map reduction method.	3	2	1	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-303T.2	Construct basic combinational circuits and verify their functionalities.	-	2	1	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-303T.3	Illustrate and apply the knowledge of different flip flops to build sequential digital circuits.	-	2	1	-	-	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC-303T.4	Interpret different logic families and their characteristics.	-	2	1	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-303T.5	Demonstrate and apply programming proficiency using the various addressing modes and instructions of the target microprocessor.	-	2	1	-	-	-	-	-	-	-	-	-	3	-	2
					3	2	1	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-303P	THIRD SEMESTER	DIGITAL SYSTEM DESIGN	BEETC-303P.1	Demonstrate the different Boolean Laws & basics of K-map to realize combinational & sequential circuits.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-303P.2	Identify the various digital ICs & understand their operation.	-	2	1	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-303P.3	Describe the operation & timing constraints for latches, registers, different sequential circuits.	-	2	1	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-303P.4	Solve basic binary math operations using microprocessor & explain the internal architecture & its operation within the area of manufacturing & performance.	-	2	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-303P.5	Select programming strategies & proper mnemonics & run their program on the training boards.	-	1	1	-	-	-	-	-	-	-	-	-	3	-	1
					3	2	1	-	-	-	-	-	-	-	-	-	3	-	1
BEETC-304T	THIRD SEMESTER	NETWORK THEORY	BEETC304T.1	Apply Node Voltage method and Analyze electrical circuits	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC304T.2	Apply Network theorems for the analysis of electrical network.	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC304T.3	Understand transient and steady state responses of electrical circuits	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC304T.4	Understand waveforms and apply laplace transform to analyze electrical network	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC304T.5	Evaluate different network function and analyze two port network behaviour	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
					2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-305T	THIRD SEMESTER	SIGNAL AND SYSTEM	BEETC305T.1	Classify different types of signals and systems	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC305T.2	Illustrate the concept of Linear Time Invariant (LTI) system and its properties.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC305T.3	Analyze continuous time periodic and aperiodic signals.	2	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC305T.4	Analyze continuous time systems using Laplace Transform.	2	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC305T.5	Analyze DT signals and systems in frequency domain using Fourier Transform.	2	3	-	-	-	-	-	-	-	-	-	-	3	-	2
					2	3	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-306T	THIRD SEMESTER	MEASUREMENTS AND INSTRUMENTATION	BEETC306T.1	Select and use precise/accurate instrument for measurement of various electricalParameters and to understand its technical specifications.	3	2	1	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC306T.2	Identify and minimize errors in electrical/electronic measurement.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC306T.3	Understand analog and digital measurement.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC306T.4	Measure power and frequency with the help of function generators and different analyzers.	2	2	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC306T.5	Understand modern trends in telemetry systems.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
					3	2	1	-	-	-	-	-	-	-	-	-	3	-	1
BEETC–307P	THIRD SEMESTER	ELECTRONICS WORKSHOP LAB	BEETC307P.1	Get the Basic Concepts Of Different Semiconductor Components With Their Usage Physically As Per their Types.	1	1	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC307P.2	Use of Semiconductor Devices In Different Electronic Circuits And Projects.	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC307P.3	Calculate Different Performance Parameters of Active and Passive Devices and their Datasheets.	1	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC307P.4	Plot and Study the Characteristics of Semiconductor Devices.	1	1	-	-	-	-	-	-	-	-	-	-	3	-	2
					1	2	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC–401T	FOURTH SEMESTER	MICROCONTROLLER AND APPLICATIONS	BEETC401T.1	Demonstrate the programming model of various microcontrollers.	3	2	-	-	3	-	-	-	-	-	-	-	3	-	2
			BEETC401T.2	Design and implement 8051 microcontroller-based systems for various applications	3	3	3	-		-	-	-	-	-	-	-	3	-	2
			BEETC401T.3	Illustrate & program AVR / RISC microcontrollers in Integrated Development environment.	3	2	-	-	3	-	-	-	-	-	-	-	3	-	2
			BEETC401T.4	Design and implement advanced processor/controllers-based systems for various applications	3	3	-	-	2	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC401T.5	Design and develop Arduino based embedded system applications.	3	3	3	-	3	-	-	-	-	-	-	-	3	-	2
					3	3	3	-	3	-	-	-	-	-	-	-	3	-	2
BEETC-401P	FOURTH SEMESTER	MICROCONTROLLER AND APPLICATIONS LAB	BEETC401P.1	Demonstrate the concept of Assembly languages and higher level language programming.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC401P.2	Interface various peripherals with 8051,Atmega 32, MSP 430 and Arduino.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC401P.3	Simulate the programs on different software platforms.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-402T	FOURTH SEMESTER	ANALOG AND DIGITAL COMMUNICATION	BEETC-402T.1	Demonstrate a basic need of modulation and various types of amplitude and angle modulation techniques required for analog communication.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-402T.2	Analyze various AM-FM receivers, along with the effect of noise on analog communication systems.	3	-	-	-	-	1	-	-	-	-	-	-	3	-	1
			BEETC-402T.3	Apply knowledge of the various pulse modulation techniques	3	-	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-402T.4	Describe various digital modulation techniques and various parameters associated with it.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC-402T.5	Identify different types of channel coding techniques and analyze the different spread spectrum methods.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
					3	2	-	-	-	1	-	-	-	-	-	-	3	-	1
BEETC-403P	FOURTH SEMESTER	ANALOG AND DIGITAL ELECTRONICS	BEETC403P.1	Study practical aspects of linear & nonlinear applications of opamp	2	3	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC403P.2	Design various wave shaping circuits,oscillators,signal conditioners,application based circuits using op amp & transistors	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC403P.3	Study various concepts of analog communication	3	2	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC403P.4	Study various concepts of digital communication	-	-	-	-	2	-	-	-	-	-	-	-	3	-	3
			BEETC403P.5	Develop an application based project using industry based op amp	-	-	3	-	-	-	-	-	-	-	-	-	3	-	3
					2	2	3	-	2	-	-	-	-	-	-	-	3	-	3

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEETC–404T	FOURTH SEMESTER	ANALOG SYSTEM DESIGN	BEETC404T.1	Apply operations of opamp to solve applied problems,simplify & evaluate virtual ground concept,voltage transfer curve,inverting & noninverting configuration	2	2	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC404T.2	Determine domain of voltage follower circuit, identify integrator & differentiator circuit and find performance of peak detector and apply properties of log and antilog amplifier and analog multipliers	1	2	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC404T.3	Define comparators,Schmitt trigger, precision rectifier ,multivibrators and apply it for sample and hold circuit,555 timer	1	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC404T.4	Define the basic concept of unregulated DC power supplyand evaluate it with rectifiers and filters, apply concept for designing of regulators using IC78** and 79**,SMPS	1	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC404T.5	Determine the characteristics of wein bridge and phase shift oscillator and solve various circuits for LPF,HPF,BPF,BRF	2	3	-	-	-	-	-	-	-	-	-	-	3	-	2
					1	2	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC–405T	FOURTH SEMESTER	DATA STRUCTURE & ALGORITHMS	BEETC405T.1	To make students understand efficient storage structures of data for an easy access	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC405T.2	To teach the difference between linear & non-linear data structures and its respective benefits	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC405T.3	To design and implement various data structures	3	3	2	-	2	-	-	-	-	-	-	-	3	-	2
			BEETC405T.4	To develop application using data structures and algorithm and analysis	3	3	2	-	2	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC405T.5	To improve the problem solving efficiency	3	3	3	-		-	-	-	-	-	-	-	3	-	2
					3	3	2	-	2	-	-	-	-	-	-	-	3	-	2
BEETC-406T	FOURTH SEMESTER	Numerical Mathematics and Probability Using MATLAB	BEETC-406T.1	Learn and use MATLAB effectively in various applications as a simulation tool.	3	3	-	1	-	-	-	-	-	-	-	-	3	-	-
			BEETC-406T.2	Find an approximate solution of algebraic and transcendental equations, system of linear equations and first order ordinary differential equations by various numerical methods and MATLAB commands.	3	3	-	1	-	-	-	-	-	-	-	-	3	-	-
			BEETC-406T.3	Apply Z- transform to solve difference equations with constant coefficients.	3	3	-	1	-	-	-	-	-	-	-	-	3	-	-
			BEETC-406T.4	Analyze real world scenarios to recognize when probability is appropriate, formulate problems about the scenarios; creatively model these to solve the problems using multiple approaches.	3	3	-	1	-	-	-	-	-	-	-	-	3	-	-
			BEETC-406T.5	Understand the impact of scientific and engineering solutions in a global and societal context. Create the groundwork for post-graduate courses, specialized study, and research in mathematics.	3	3	-	1	-	-	-	-	-	-	-	-	3	-	-
					3	3	-	1	-	-	-	-	-	-	-	-	3	-	-
BEETC-407T	FOURTH SEMESTER	PROGRAMMIN AND PROBLEM SOLVING	BEETC-407T.1	Student will be able to understand the basic concepts of Object Oriented Programming and design simple java programs.	3	3	-	-	-	-	-	-	-	-	-	2	3	-	2
			BEETC-407T.2	Student will be able to apply the knowledge of Inheritance in program development.	3	3	-	-	-	-	-	-	-	-	-	2	3	-	2
			BEETC-407T.3	Student will able to develop programs using polymorphism and interfaces.	-	-	1	-	3	-	-	-	-	-	-	2	3	-	2

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC-407T.4	Student will be able to handle various exceptions using concepts of exception handling.	-	-	1	-	3	-	-	-	-	-	-	2	3	-	2
			BEETC-407T.5	Student will able to use multithreading concepts to develop inter process communication.	-	-	1	-	3	-	-	-	-	-	-	2	3	-	2
					3	3	1	-	3	-	-	-	-	-	-	2	3	-	2
BEETC-407P	FOURTH SEMESTER	PROGRAMMIN AND PROBLEM SOLVING LAB	BEETC-407P.1	Student will be able to understand the basic concepts of Object Oriented Programming and design simple java programs.	3	3	-	-	-	-	-	-	-	-	-	2	3	-	2
			BEETC-407P.2	Student will able to use multithreading concepts to develop inter process communication.	-	-	1	-	3	-	-	-	-	-	-	2	3	-	2
			BEETC-407P.3	Apply the knowledge of Inheritance in program development.	-	-	1	-	3	-	-	-	-	-	-	2	3	-	2
			BEETC-407P.4	Develop programs using polymorphism and interfaces.	-	-	1	-	3	-	-	-	-	-	-	2	3	-	2
			BEETC-407P.5	Handle various exceptions using concepts of exception handling.	-	-	1	-	3	-	-	-	-	-	-	2	3	-	2
					3	3	1	-	3	-	-	-	-	-	-	2	3	-	2
BEETC-409A	FOURTH SEMESTER	UNIVERSAL HUMAN VALUES	BEETC-4T.1	become more aware of themselves, and their surroundings (family, society, nature)	-	-	-	-	-	-	-	-	-	3	-	-	-	3	2
			BEETC-4T.2	Become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC-4T.3	understand values in relationship	-	-	-	-	-	-	-	-	-	3	-	-	-	3	2
			BEETC-4T.4	understand the role of a human being in ensuring harmony in society and nature.	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
			BEETC-4T.5	distinguish between ethical and unethical practices at workplace and would contribute for making a value-based society	-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
					-	-	-	-	-	-	-	-	-	2	-	-	-	3	2
BEETC501T	FIFTH SEMESTER	EMBEDDED SYSTEM DESIGN	BEETC505T.1	To describe and analyze the requirements & design issues of embedded systems design.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505T.2	To apply knowledge of architecture and programming of for development of simple applications.	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505T.3	To describe and demonstrate the interfacing of various peripherals with ARM processor.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505T.4	To explain the concept of Real Time Operating System for embedded system design	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC501P	FIFTH SEMESTER	EMBEDDED SYSTEM DESIGN LAB	BEETC505P.1	Apply the knowledge of Instruction sets & skills for the development of simple and complex programs	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505P.2	Apply the programming skill for the Development of simple application	3	2	3	-	-	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC505P.3	Apply and demonstrate the concept of Interfacing (hardware and RTOS) for development of embedded system	3	2	3	-	3	-	-	-	-	-	-	-	3	-	2
					3	2	3	-	3	-	-	-	-	-	-	-	3	-	2
BEETC-502T	FIFTH SEMESTER	ELECTROMAGNETICS WAVES	BEETC502T.1	Understand different coordinate system and analyse theorems of electric field	3	-	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC502T.2	Understand magnetic fields,apply maxwell's equations to solve problems in em theory	2	-	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC502T.3	Analyse propagation of wave in different transmission media	3	2	-	-	-	-	-	-	-	-	-	-	3	-	3
			BEETC502T.4	Understand & analyse various parameters and characteristics of rectangular waveguide	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC502T.5	To understand principle of radiation and radiation characteristics of an antenna	2	3	-	2	-	-	-	-	-	-	-	-	3	-	3
					3	2	-	2	-	-	-	-	-	-	-	-	3	-	3
BEETC-503T	FIFTH SEMESTER	DIGITAL SIGNAL PROCESSING	BEETC503T.1	Analyze discrete time signals and system.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC503T.2	Process the signal in z domain for various discrete time systems.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC503T.3	Draw the structures of various discrete time systems in DFI, DFII, cascade and parallel form.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC503T.4	Apply discrete Fourier transform, its properties & Analyze the discrete time systems in frequency domain.	3	3	1	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC503T.5	Understand the filter design techniques for IIR and FIR digital filters and will be able to determine parameters affecting its response.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
					3	3	1	-	-	-	-	-	-	-	-	-	3	-	1

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote
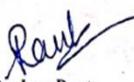
Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEETC-503P	FIFTH SEMESTER	DIGITAL SIGNAL PROCESSING LAB	BEETC503P.1	Analyze and process the signals in the discrete domain.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC503P.2	Analyze different properties of Z-transform.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC503P.3	Analyze different properties of discrete Time Fourier transform.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC503P.4	Design the filters to suit requirements of specific applications.	3	3	1	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC503P.5	Apply the techniques, skills, and modern engineering tools like MATLAB.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	3
					3	3	1	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-504T	FIFTH SEMESTER	INDUSTRIAL ECONOMICS & ENTREPRENEURSHIP DEVELOPMENT	BEETE504T.1	Understand different types of business structure	-	-	-	-	-		-	-	-	-	3	-	-	3	1
			BEETE504T.2	Acquire the knowledge of different market structure and new economic policy	-	-	-	-	-	2	-	-	-	-	3	-	-	3	1
			BEETE504T.3	Grasp the functions of banks, taxations and implications of inflation	-	-	-	-	-	2	-	-	-	-	3	-	-	3	1
			BEETE504T.4	Identify the various sources of finance	-	-	-	-	-		-	-	-	-	3	-	-	3	1
			BEETE504T.5	Analyze the problems of Small Scale Industries and Government Policies to them	-	-	-	-	-	2	-	-	-	-	3	-	-	3	1
					-	-	-	-	-	2	-	-	-	-	3	-	-	3	1
BEETC-505PE	FIFTH SEMESTER	OPERATING SYSTEM	BEETC:505PE.1	Explain basic concepts of operating system	3	3	3	-	-	-	-	-	-	-	-	-	3	2	-
			BEETC:505PE.2	Understand the process management policies and scheduling algorithms	3	3	-	3	-	-	-	-	-	-	-	-	3	2	-
			BEETC:505PE.3	Design various memory management techniques	3	3	-	3	-	-	-	-	-	-	-	-	3	2	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC:505PE.4	Analyze process synchronization techniques.	3	3	3		-	-	-	-	-	-	-	-	3	2	-
			BEETC:505PE.5	Evaluate deadlock detection and prevention mechanism	3	3	-	3	-	-	-	-	-	-	-	-	3	2	-
					3	3	3	3	-	-	-	-	-	-	-	-	3	2	-
BEETC-505PE	FIFTH SEMESTER	SENSORS AND SYSTEM	BEETC505PE.1	Explain fundamental physical and technical base of sensors and actuators.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505PE.2	Describe basic laws and phenomena that define behavior of sensors and actuators.	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505PE.3	Analyze various approaches, procedures and results related to sensors and actuators.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505PE.4	Create analytical design and development solutions for sensors and actuators.	3	3	3	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC505PE.5	Interpret the acquired data and measured results.	2	1	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	2	3	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-506P	FIFTH SEMESTER	ELECTRONICS WORKSHOP-II	BEETC-506P.1	Understand the various PCB design steps and design PCB for an electronic circuits	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-506P.2	Understand the simulation software to design electronic circuit	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC-506P.3	Apply basic electronics circuits to Arduino	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-506P.4	Apply Rasberry Pi to implement various electronic projects	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-506P.5	Design a mini project based on Arduino and raspberry-Pi	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
					2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-601T	SIXTH SEMESTER	COMPUTER COMMUNICATION NETWORK	BEETC601T.1	Describe the basics of Computer Network, Data Communication, Network topologies, transmission media and switching techniques.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC601T.2	Analyze the services and features of various protocols of Data Link Layer and MAC sub-layer	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC601T.3	Apply the concept of IP Addressing techniques and its various protocols of Network Layer.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC601T.4	Describe the transport layer, Application Layer services and its protocol Headers and analyze the congestion control protocols.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC601T.5	Explain the function of Application Layer and Presentation layer paradigm and protocols.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	1

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
					3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
BEETC-601P	SIXTH SEMESTER	COMPUTER COMMUNICATION NETWORK LAB	BEETC601P.1	To analyze and select various cables and Connectors used for networking with computer network security.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC601P.2	To verify the implementation results on software like NS2 and simulate different networking models and implement different networking protocols.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC601P.3	To understand different data transmission techniques using TCP and UDP Protocol for evaluating the different IP addresses for various systems.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-602T	SIXTH SEMESTER	INTERNET OF THINGS	BEETC-602T.1	Analyze different design levels of IoT.	-	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-602T.2	Analyse IoT Architecture.	-	-	2	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-602T.3	Understand network and communication aspects.	3	-		-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-602T.4	Design a portable IoT using Rasperry Pi and Aurdino.	-	-	3	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-602T.5	Analyze applications of IoT in real time scenario.	-	3	-	-	-	-	-	-	-	-	-	-	3		2
					3	3	3	-	-	-	-	-	-	-	-	-	3	##	2
BEETC-602P	SIXTH SEMESTER	INTERNET OF THINGS LAB	BEETC-602P.1	Analyze different design levels of IoT.	-	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-602P.2	Analyse IoT Architecture.	-	-	2	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-602P.3	Understand network and communication aspects.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC-602P.4	Design a portable IoT using Rasperry Pi and Aurdino.	-	-	3	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-602P.5	Analyze applications of IoT in real time scenario.	-	3	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	3	3	-	-	-	-	-	-	-	-	-	3	-	2
BEETC-603T	SIXTH SEMESTER	WIRELESS SENSOR NETWORK	BEETC-603T.1	Understand the Wireless sensor network and its applications	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
			BEETC-603T.2	Understand Wireless Transmission Technology and Medium Access Control Protocols,Radio technology primer, Available wireless technologies, Fundamentals of Medium Access Control Protocols for Wireless Sensor Networks	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
			BEETC-603T.3	Understand and analyze knowledge of transport control protocols in Wireless sensor network	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
			BEETC-603T.4	Remember the concept of Middleware and Network Management and apply in the field of Wireless Sensor Networks.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
			BEETC-603T.5	Explain the concept of Operating Systems .	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
					3	3	-	-	-	-	-	-	-	-	-	-	3	-	-
BEETC-603P	SIXTH SEMESTER	WIRELESS SENSOR NETWORK LAB	ETE603P.1	Able to perform Installation of Network Simulator (NS-2 & NS-3).	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			ETE603P.2	Able to perform practical's on Network Simulators NS-2 & NS-3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			ETE603P.3	Able to create topology and channel creation in WSN using NS-2 & NS-3.	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

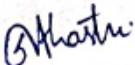| Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
					3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
BEETC604PE	SIXTH SEMESTER	Data Base Management System	BEETC-604PE.1	Understands basic database concepts and data modeling techniques used in data base design.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-604PE.2	Study the concept of functional dependency and perform the calculus with design database by using different normalization techniques.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-604PE.3	Study query processing and perform optimization on query processing.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-604PE.4	Understand the concept of transaction processing and different recovery techniques used in RDBMS.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC-604PE.5	Study and Implement advanced database which are used in real time system.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC604PE	SIXTH SEMESTER	CONTROL SYSTEM ENGINEERING	BEETC604PET.1	Understand the basic linear feedback principles and find out the transfer function using various methods	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC604PET.2	Understand the root locus and determine the location of the closed loop poles	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC604PET.3	Understand the time response applied to electrical circuits	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC604PET.4	Understand the different types of controller applied to control system	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC604PET.5	Apply of state space model	2	2	-	-	-	-	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

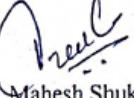Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
					2	2	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC605OE	SIXTH SEMESTER	INDUSRIAL ELECTRONICS (OE-I)	BEETC605OE.1	Explain the working principles of Electronic and Electromechanical Sensors and their industrial applications.	3	1	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC605OE.2	Describe the working and functions of smart sensors and transducers.	3	1	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC605OE.3	Explain various types of Actuators, Hydraulic systems and Pneumatic Systems.	3	1	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC605OE.4	Describe analog process control devices and functions of its each components.	3	1	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC605OE.5	Understand and elaborate basic building blocks of PLCs, SCADA and its industrial applications.	3	1	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	1	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC606T	SIXTH SEMESTER	Effective Technical Communication	BEETC606T.1	Acquire knowledge of structure of language.	-	-	-	-	-	-	-	-	-	3	-	-	-	3	1
			BEETC606T.2	Build vocabulary and face interview process and can become employable.	-	-	-	-	-	-	-	-	-	2	-	-	-	3	1
			BEETC606T.3	Develop construct and apply business writing skills.	-	-	-	-	-	-	-	-	-	3	-	-	-	3	1
			BEETC606T.4	Understand develop and apply technical and scientific writing skills.	-	-	-	-	-	-	-	-	-	2	-	-	-	3	1

Dr. Sanjivani Shashtri   Dr. Jaya Raut   Dr. Mahesh Shukla   Prof. Sharayu Deote   Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
					-	-	-	-	-	-	-	-	-	3	-	-	-	3	1
BEETC701PE	SEVENTH SEMESTER	WEB TECHNOLOGY (PE)	BETC701T.1	Create web pages using PHP, identify the difference between the HTML, PHP and XML documents	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701T.2	Identify the engineering structural design of XML and parse tree, Analyze the difference between PHP and XML	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701T.3	Understand the concept of Java Scripts	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701T.4	Identify the difference between JSP and Servlet	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701T.5	Design web application using MVC architecture, Understand the JSP & Servlet concepts	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
					2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
BEETC701PE-P	SEVENTH SEMESTER	WEB TECHNOLOGY	BETC701PEP.1	Create web pages using PHP, identify the difference between the HTML, PHP and XML documents	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701PEP.2	Identify the engineering structural design of XML and parse tree, Analyze the difference between PHP and XML	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701PEP.3	Understand the concept of Java Scripts	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701PEP.4	Identify the difference between JSP and Servlet	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
			BETC701PEP.5	Design web application using MVC architecture, Understand the JSP & Servlet concepts	2	2	1	-	3	-	-	-	-	-	-	-	3	2	2
					2	2	1	-	3	-	-	-	-	-	-	-	3	2	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEETC701PE-T	SEVENTH SEMESTER	AUDIO AND VIDEO ENGINEERING (PE)	BEETC701PE-T.1	Understand the analysis of T.V system.	3	-	-	-		-	-	-	-	-	-	-	3	-	1
			BEETC701PE-T.2	Analyze and compare different T.V standards.	-	2	2	-		-	-	-	-	-	-	-	3	-	2
			BEETC701PE-T.3	Analyze audio and video recordings, display and relevant consumer applications.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	2
					3	2	2	-	3	-	-	-	-	-	-	-	3	-	2
BEETC701PE-P	SEVENTH SEMESTER	AUDIO AND VIDEO ENGINEERING LAB (PE)	BEETC701PE-P.1	Understand the types of Televisions and recognize its pattern.	2	-	-	-	-	2	-	-	-	-	-	-	3	-	1
			BEETC701PE-P.2	Understand the basic concepts of HDTV system and its fault finding.	2	-	-	-	-	2	-	-	-	-	-	-	3	-	1
					2	-	-	-	-	2	-	-	-	-	-	-	3	-	1
BEETC702PET	SEVENTH SEMESTER	Data Science and Cloud Computing	BEETC702PET.1	Identify the Basic concepts and technologies involved in dealing with Data science process.	3	2	-	-	-	-	-	-	-	-	1	3	-	1
			BEETC702PET.2	Implement the data management methods for exploring and fixing data.	3	2	-	-	2	-	-	-	-	-	1	3	-	1
			BEETC702PET.3	Understand different types of statistical data analysis.	3	2	2	-	2	-	-	-	-	-	1	3	-	1
			BEETC702PET.4	Apply and use different technologies for data visualization.	3	2	2	-	3	-	-	-	-	-	1	1	3	-	1

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC702PET.5	Demonstrate the of use different data types and libraries of Python.	3	2	2	-	3	-	-	-	-	-	1	1	3	-	1
					3	2	2	-	3	-	-	-	-	-	1	1	3	-	1
BEETC702PEP	SEVENTH SEMESTER	Data Science and Cloud Computing LAB	BEETC702PEP.1	Study Basic concepts and technologies involved in Data science process.	3	2	-	-	-	-	-	-	-	-	1		3	-	1
			BEETC702PEP.2	Apply and use SQL for data management for exploring and fixing data.	3	2	-	-	2	-	-	-	-	-	1		3	-	1
			BEETC702PEP.3	Understand different data analysis method using R programming language.	3	2	2	-	3	-	-	-	-	-	1		3	-	1
			BEETC702PEP.4	Design dashboard using Power BI tool and use different technologies for data visualization.	3	2	2	-	3	-	-	-	-	-	2	1	3	-	1
			BEETC702PEP.5	Perform real time programs by using different data types and libraries of Python.	3	2	2	-	3	-	-	-	-	-	2	1	3	-	1
					3	2	2	-	3	-	-	-	-	-	2	1	3	-	1
BEETC702PE-T	SEVENTH SEMESTER	MICROWAVE AND RADAR ENGINEERING	BEETC701PE-T.1	Analize different UHF components with the help of scattering parameters.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC701PE-T.2	Illustrate and elaborate the use of active and passive microwave devices.	3	-	-	-	-	2	-	-	-	-	-	-	3	-	2
			BEETC701PE-T.3	Analize and measurement of different power distribution Tees	3	-	-	-			-	-	-	-	-	-	3	-	2
			BEETC701PE-T.4	Define and explain the radar system used in a wide spectrum of applications	3	-	-	-		-	-	-	-	-	-	-	3	-	2
			BEETC701PE-T.5	Classify and compare specialized areas of RADAR Engineering.	3	-	-	-	-	3	-	-	-	-	-	-	3	-	2
					3	-	-	-	-	3	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri Dr. Jaya Raut Dr. Mahesh Shukla Prof. Sharayu Deote Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
BEETC702PE-P	SEVENTH SEMESTER	MICROWAVE AND RADAR ENGINEERING LAB	BEETC702PE-P.1	Define and explain working of microwave bench.	3	-	-	-	-		-	-	-	-	-	-	3	-	1
			BEETC702PE-P.2	Evaluate and measure power & VSWR of microwave component	3	-	-	-	-	3	-	-	-	-	-	-	3	-	3
			BEETC702PE-P.3	Design a graph of V-I characteristics of Gunn and Klystron amplifier.	3	-	-	-	-		-	-	-	-	-	-	3	-	1
			BEETC702PE-P.4	Find the distance of target from RADAR	3	-	-	-	-	3	-	-	-	-	-	-	3	-	3
					3	-	-	-	-	3	-	-	-	-	-	-	3	-	2
BEETC703PE-T	SEVENTH SEMESTER	Fundamentals of Machine Learning	BECME703PE.1	Describe machine learning and its types.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BECME703PE.2	Discuss Bayesian Decision Theory and Parametric Methods.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BECME703PE.3	Illustrate Multivariate and Dimensionality Reduction methods.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BECME703PE.4	Categorize Non- Parametric methods.	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
			BECME703PE.5	Justify discrimination techniques in Machine learning	3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
					3	3	-	-	-	-	-	-	-	-	-	-	3	-	2
BEETC703PE-T	SEVENTH SEMESTER	OPTICAL COMMUNICATION	BEETC-703PE-1	Understand the basic elements and behavior of optical fiber	3		-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-703PE-2	Analyze the diffeent kinds of losses, signal distortion in optical wave	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-703PE-3	Classify various optical source materials, LED structures, LASER diodes	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC-703PE-4	*Explore the fiber optic receivers such as PIN, APD diodes, receiver operation & performance.*	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC-703PE-5	*Understand the operational principle of WDM, SONET and optical amplifiers*	3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
					3	2	-	-	-	-	-	-	-	-	-	-	3	-	1
BEETC703PE-T	SEVENTH SEMESTER	Finance and Cost Management	BEME504T.1	*Apply the knowledge of basics of Financial Management concepts and Time Value of Money*	3	2	-	-	-	-	-	-	-	-	-	-	3	3	-
			BEME504T.2	*Select, classify, analyze and plan the sources of finance, types of capital, various elements of costs, cost control and evaluate equipment replacement policy, make or buy decisions.*	-	3	-	-	2	-	-	-	-	-	-	-	3	3	-
			BEME504T.3	*Develop and interpret books of Accounts, Trial Balance, balance Sheet, P&L account, cash flow statement in business*	-	3	2	-	-	-	-	-	-	-	-	-	3	3	-
			BEME504T.4	*Evaluate and examine various Cost of Capital, opportunity cost of capital, Cost of different sources of finance*	-	3	-	-	-	-	-	-	-	-	-	-	3	3	-
			BEME504T.5	*Evaluate, select and determine various techniques of capital budgeting, profitability index.*		3	2										3	3	
					3	3	2	##	2	##	##	##	##	##	##	##	3	3	##
BEETC703PE-T	SEVENTH SEMESTER	BIO-ENGINEERING (OE-II)	BEETC704T.1	*Understand the biomedical signal acquisition and analysis*	3	2	3	-	3	-	-	-	-	-	-	-	3	-	3
			BEETC704T.2	*Understand x-ray,MRI, CT,VR technologies & infrared imaging*	3	3	3	-	3	-	-	-	-	-	-	-	3	-	3
			BEETC704T.3	*Understand biomedical sensors*	3	3	3	-	3	-	-	-	-	-	-	-	3	-	3

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BEETC704T.4	To have through understanding of medical instruments & devices	3	3	3	-	3	-	-	-	-	-	-	-	3	-	3
			BEETC704T.5	To understand medical informatics & new training & simulation technologies	2	2	3	-	2	-	-	-	-	-	-	-	3	-	3
					3	3	3	-	3	-	-	-	-	-	-	-	3	-	3
BTCME704.1T	SEVENTH SEMESTER	Joy of Computing Using Python	BTCME704T.1	Develop proficiency in Python programming language and apply it to solve computational problems.	2	1	1	2	2	1	-	2	2	1	-	2	3	2	-
			BTCME704T.2	Use data structures and libraries in Python to manage data and perform advanced data analysis tasks.	2	1	2	2	2	1	-	2	2	1	-	2	3	2	-
			BTCME704T.3	Design and analyze algorithms to solve problems efficiently and effectively.	2	1	2	2	2	1	-	2	2	1	-	2	3	2	-
			BTCME704T.4	Apply problem-solving strategies and techniques using Python to solve real-world problems.	2	1	2	2	2	1	-	2	2	1	-	2	3	2	-
			BTCME704T.5	Demonstrate knowledge of advanced Python topics and their applications in various domains.	2	1	2	2	2	1	-	2	2	1	-	2	3	2	-
					2	1	2	2	2	1	-	2	2	1	-	2	3	2	-
BEETC801PE	EIGHTH SEMESTER	CMOS VLSI Design	BECME801PE.1	Design PMOS and NMOS Transistor.	-	-	3	-	-	-	-	-	-	-	-	-	3	-	3
			BECME801PE.2	Implementation different combinational logic circuits.	-	3	-	2	3	-	-	-	-	-	-	-	3	-	3
			BECME801PE.3	Design layout for various circuits.	-	-	3	-	-	-	-	-	-	-	-	-	3	-	3

Course Code	Semester	Course Title	CO No.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			BECME801PE.4	Design cmos transistor.	-	-	3	2	-	-	-	-	-	-	-	-	3	-	3
			BECME801PE.5	Experiment on cmos logic design.	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3
					-	3	3	2	3	-	-	-	-	-	-	-	3	-	3
BEETC802PE-T	EIGHTH SEMESTER	VLSI SIGNAL PROCESSING	BEETC802PE-T.1	Define and explain the advances in DSP application and in scaled VLSI technology.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC802PE-T.2	Analyze various methodologies to optimize power delay .	3	3	-	-	-	-	-	-	-	-	-	-	3	-	1
			BEETC802PE-T.3	Build Real Time processing system.	3		3	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC802PE-T.4	Design of algorithm structure for DSP algorithms based on algorithm transformation	-	-	3	-	-	-	-	-	-	-	-	-	3	-	2
			BEETC802PE-T.5	Illustrate and elaborate different algorithm to reduced the power consumption.	3	-	-	3	-	-	-	-	-	-	-	-	3	-	3
			BEETC802PE-T.6	Analyze various methodologies to optimize area of VLSI design.	3	-	-	-	-	2	-	-	-	-	-	-	3	-	3
					3	3	3	3	-	2	-	-	-	-	-	-	3	-	2

Dr. Sanjivani Shashtri

Dr. Jaya Raut

Dr. Mahesh Shukla

Prof. Sharayu Deote

Prof. Pravin Gorantiwar

Dr. Milind Khanapurkar
Principal
Maharshi Karve Stree Shikshan Sanstha's
Cummins College of Engineering for Women
Hingna, Nagpur-441110.