

K. D. K. College of Engineering, Nagpur
Department of Electronics & Telecommunication
Engineering

Course
Objective &
Course Outcomes

B.Tech. Third Semester CBCS

Session: 2021-22

R.T.M. Nagpur University, Nagpur

SCHEME OF EXAMINATION

B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING/ ELECTRONICS ENGINEERING (SEMESTER – III)

Code	Subject	Teaching Scheme				Crediti				MARKS				
		L	Practical	Tutorials/Activity	Total	L	P	T/A	Total	Theory		Practical		Total Marks
										Internal	Univ.	Internal	Univ.	
BEETC-301	Applied Maths-III	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC-302T	Components for Electronic circuit design	3	-		3	3	-	-	3	30	70	-	-	100
BEETC-302P	Components for Electronic circuit design Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-303T	Digital System Design	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC-303P	Digital System Design Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-304P	Network Theory	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC-305T	Signal & System	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC-306T	Measurement and Instrumentation	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC-307P	Electronics Workshop I Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-308T	Consumer affairs	2	-		2							-	-	Audit
	Total	20	6	2T	28	18	3	2	23	180	420	75	75	750



COURSE OUTCOMES
B. TECH. THIRD SEMESTER

BEETC-301T

Applied Maths- III

Upon completion of this course, students will demonstrate the ability to:

- C301T.1** Apply Laplace Transform to solve ordinary differential equations, Integral Equations and Integro-differential Equations.
- C301T.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.
- C301T.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.
- C301T.4** Solve partial differential equations of first order, higher order with constant coefficients and of second order using method of separation of variables.
- C301T.5** Reduce matrix to diagonal form, apply iteration to find largest eigen value and vector, use Sylvester theorem and singular values decomposition.



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-302T	COMPONENTS FOR ELECTRONIC CIRCUIT DESIGN
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Upon completion of this course, students will demonstrate the ability to:

- C302T.1:** Understand the principles of semiconductor physics
- C302T.2:** Understand the principles of semiconductor diode.
- C302T.3:** Understand and analyze the mathematical model of transistors.
- C302T.4:** Understand and analyze the mathematical model of unipolar transistors.
- C302T.5:** Understand the process of Integrated Circuit Fabrication.



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-302P	COMPONENTS FOR ELECTRONIC CIRCUIT DESIGN (Practical)
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After completion of the practical students will be able to:

- C302P.1:** Explain the basic concepts of different semiconductor components.
- C302P.2:** Understand the use of semiconductor devices in different electronic circuits.
- C302P.3:** Calculate different performance parameters of transistors
- C302P.4:** Plot and study the characteristics of semiconductor devices.



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-303T	DIGITAL SYSTEM DESIGN
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Upon completion of this course, students will demonstrate the ability to:

- C303T.1:** Demonstrate the knowledge of: Logic gates, Boolean algebra including algebraic manipulation/simplification and Application of DeMorgan's Theorem, Karnaugh map reduction method.
- C303T.2.** Construct basic combinational circuits and verify their functionalities.
- C303T.3.** Illustrate and apply the knowledge of different flip flops to build sequential digital circuits.
- C303T.4.** Apply the fundamental knowledge about digital electronics so as to construct and analyze digital circuits like counters and sequence generators.
- C303T.5.** Demonstrate and apply programming proficiency using the various addressing modes and instructions of the target microprocessor



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-303P	DIGITAL SYSTEM DESIGN (Practical)
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After the completion of practical, the students will be able to:

- C303P.1.** Demonstrate the different Boolean Laws & basics of K-map to realize combinational & sequential circuits.
- C303P.2.** Identify the various digital ICs & understand their operation.
- C303P.3.** Describe the operation & timing constraints for latches, registers, different sequential circuits.
- C303P.4.** Solve basic binary math operations using microprocessor & explain the internal architecture & its operation within the area of manufacturing & performance.
- C303P.5.** Select programming strategies & proper mnemonics & run their program on the training boards.



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-304T	Network Theory
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Upon completion of this course, students will demonstrate the ability to:

- C304T.1.** Apply mesh and node voltage method to model and analyze electrical circuits.
- C304T.2.** Apply network theorems for the analysis of networks.
- C304T.3.** Obtain the transient and steady-state response of electrical circuits.
- C304T.4.** Synthesize waveforms and apply Laplace transforms to analyze networks.
- C304T.5.** Evaluate different Network Functions and Analyze two port network behaviors.



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-305T	SIGNALS AND SYSTEMS
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Upon completion of this course, students will demonstrate the ability to:

- C305T.1:** Classify different types of signals and systems
- C305T.2:** Illustrate the concept of Linear Time Invariant (LTI) system and its properties.
- C305T.3:** Analyze continuous time periodic and aperiodic signals.
- C305T.4:** Analyze continuous time systems using Laplace Transform.
- C305T.5:** Analyze DT signals and systems in frequency domain using Fourier Transform.



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-306T	MEASUREMENTS AND INSTRUMENTATION
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Upon completion of this course, students will demonstrate the ability to:

- C306T.1:** Select and use precise/accurate instrument for measurement of various electrical Parameters and to understand its technical specifications.
- C306T.2:** Identify and minimize errors in electrical/electronic measurement.
- C306T.3:** Understand analog and digital measurement.
- C306T.4:** Measure power and frequency with the help of function generators and different analyzers.
- C306T.5:** Understand modern trends in telemetry systems.



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COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-307P	ELECTRONICS WORKSHOP I (Practical)
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After completion of the practical the students will be able to

- C307P.1.** Explain the Basic Concepts Of Different Semiconductor Components With Their Usage Physically As Per Their Types
- C307P.2.** Use of Semiconductor Devices In Different Electronic Circuits And Projects.
- C307P.3.** Calculate Different Performance Parameters of Active and Passive Devices and their Datasheets.
- C307P.4.** Plot and Study the Characteristics of Semiconductor Devices.



COURSE OUTCOMES
B. E. THIRD SEMESTER

BEETC-308T	CONSUMER AFFAIRS
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After completion of the practical the students will be able to

- C308T.1.** Demonstrate consumer buying process and the procedure of filing a complaint.
- C308T.2.** Learn how to pursue the consumer rights under consumer protection act 1986.
- C308T.3.** Comprehend the hearings, enquiry and appeal provisions.
- C308T.4.** Analyze the role of industry regulators in consumer protection.

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B.Tech. Fourth Semester CBCS

**SCHEME OF EXAMINATION FOR
B.E. ELECTRONICS & TELECOMMUNICATION / ELECTRONICS & COMMUNICATION ENGINEERING/ ELECTRONICS
ENGINEERING
(SEMESTER – IV)**

Code	Subject	Teaching Scheme				Credit				MARKS				
										Theory		Practical		Total Marks
		L	Practical	Tutorial / Activity	Total	L	P	T/A	Total	Internal	University	Internal	Univ.	
BEETC-401T	Microcontrollers & Applications	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC-401P	Microcontrollers & Applications Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-402T	Analog & Digital Communications	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC-403P	Analog and Digital Electronics Lab	-	2	-	2	-	1	-	1	-	-	25	25	50
BEETC-404T	Analog System Design	3	-	1T	4	3	-	1	4	30	70	-	-	100
BEETC-405T	Data structure & Algorithm	3	-	-	3	3	-	-	3	30	70	-	-	100
BEETC-406T	HSC: Numerical Analysis with MATLAB	2	-	-	2	2	-	-	2	15	35	-	-	50
BEETC-407T	Programming for problem solving	2	-	-	2	2	-	-	2	15	35	-	-	50
BEETC-407P	Programming for problem solving Lab	-	4	-	4	-	2	-	2			25	25	50
BEETC-408I	Internship								1			50	-	50
BEETC-409A	Audit Course HSC: Universal human values	1			1									AUDIT
	Total	17	8	3T	28	16	4	3	24	150	350	125	75	700

- L- Lecture , P-Practical, T- Tutorial , A- Activity
- Audit course marks are not counted in total marks



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B. E. FOURTH SEMESTER

BEETC-401T	MICROCONTROLLER AND APPLICATIONS
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Upon completion of this course, students will demonstrate the ability to:

- C401T.1:** Demonstrate the programming model of various microcontrollers.
- C401T.2:** Design and implement 8051 microcontroller-based systems for various applications
- C401T.3:** Illustrate & program AVR / RISC microcontrollers in Integrated Development environment.
- C401T.4:** Design and implement advanced processor/controllers-based systems for various applications
- C401T.5:** Design and develop Arduino based embedded system applications.



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COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-401P	MICROCONTROLLER AND APPLICATIONS LAB
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After the completion of practicals, the students will be able to:

- C401P.1.** Demonstrate the concept of Assembly languages and higher level language programming.
- C401P.2.** Interface various peripherals with 8051, Atmega 32, MSP 430 and Arduino.
- C401P.3.** Simulate the programs on different software platforms.



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B. E. FOURTH SEMESTER

BEETC-402T	ANALOG AND DIGITAL COMMUNICATION
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Upon completion of this course, students will demonstrate the ability to:

- C402T.1:** Demonstrate a basic need of modulation and various types of amplitude and angle modulation techniques required for analog communication.
- C402T.2:** Analyze various AM-FM receivers, along with the effect of noise on analog communication systems.
- C402T.3:** Explain the designing of digital communication systems by applying knowledge of the various pulse modulation techniques.
- C402T.4:** Describe various digital modulation techniques and various parameters associated with it.
- C402T.5:** Identify different types of channel coding techniques and analyze the different spread spectrum methods.



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COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-402P	ANALOG AND DIGITAL COMMUNICATION LAB
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After the completion of practical, the students will be able to:

- C402P.1:** Explain the practical aspects of linear and non-linear applications of OP-AMP.
- C402P.2:** Design the various wave-shaping circuits, oscillators, signal conditioners and various application based circuits using OP-AMP and Transistors
- C402P.3:** Demonstrate various concepts of analog communication
- C402P.4:** Explain various concepts of digital communication.
- C402P.5:** Develop an application based project using industry based OPAMP



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B. E. FOURTH SEMESTER

BEETC-404T	ANALOG SYSTEM DESIGN
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Upon completion of this course, students will demonstrate the ability to:

- C404T.1:** Describe and explain the basic concepts of OPAMP.
- C404T.2:** Demonstrate and analyze various linear applications of OPAMP
- C404T.3:** Demonstrate and analyze various non-linear applications of OPAMP
- C404T.4:** Examine and design DC Power Supply.
- C404T.5:** Examine and design various types of oscillators and filters.



COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-405T	DATA STRUCTURE & ALGORITHMS
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Upon completion of this course, students will demonstrate the ability to:

- C405T.1.** Choose appropriate data structure based on the specified problem definition and analysis the algorithm.
- C405T.2.** Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- C405T.3.** Apply concepts learned in various domains like Operating Systems, DBMS etc.
- C405T.4.** Use linear and non-linear data structures like stacks, queues, linked list, trees etc.



COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-406T

**Numerical Mathematics and Probability Using
MATLAB**

After completing the course, students will be able to

- C406T.1:** Learn and use MATLAB effectively in various applications as a simulation tool.
- C406T.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.
- C406T.3:** Apply Z- transform to solve difference equations with constant coefficients.
- C406T.4:** Analyze real world scenarios to recognize when probability is appropriate, formulate problems about the scenarios; creatively model these in order to solve the problems using multiple approaches
- C406T.5:** Understand the impact of scientific and engineering solutions in a global and societal context.
- C406T.6:** Create the groundwork for post-graduate courses, specialized study, and research in mathematics.



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COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-407T	Programming for Problem Solving
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Upon completion of this course, students will demonstrate the ability to:

- C407T.1:** Describe the basic concepts of Object Oriented Programming and design simple java programs.
- C407T.2:** Apply the knowledge of Inheritance in program development.
- C407T.3:** Develop programs using polymorphism and interfaces.
- C407T.4:** Handle various exceptions using concepts of exception handling.
- C407T.5:** Describe multithreading concepts to develop inter process communication.
- C407T.6:** Implement the concepts on file streams and operations in java programming for a given application programs.



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COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-407P	Programming and Data Structure LAB
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After the completion of practicals, the students will be

- C407T.1:** Choose appropriate data structure based on the specified problem definition and analysis the algorithm.
- C407T.2:** Handle operations like searching, insertion, deletion and traversing mechanism etc. on various data structures.
- C407T.3:** Apply the knowledge of Inheritance in program development.
- C407T.4:** Develop programs using polymorphism and interfaces.
- C407T.5:** Handle various exceptions using concepts of exception handling.



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COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-408I	Internship
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After the completion of Internship, the students will be

- C408I.1:** Explore career alternatives prior to graduation.
- C408I.2:** Assess interests and abilities in their field of study by using Integrate theory and practice.
- C408I.3:** Develop work habits and attitudes necessary for job success.
- C408I.3:** Demonstrate effective management of personal behavior, ethics and attitudes.



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COURSE OUTCOMES
B. E. FOURTH SEMESTER

BEETC-409T	Universal Human Values (Theory)
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By the end of the course, the students will be able to

- C0409T.1:** Become more aware of themselves, and their surroundings (family, society, nature)
- C0409T.2:** Become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
- C0409T.3:** Understand values in relationship.
- C0409T.4:** Understand the role of a human being in ensuring harmony in society and nature.
- C0409T.5:** Distinguish between ethical and unethical practices at work place and would contribute for making a value based society

