TKR COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

B.TECH. COMPUTER SCIENCE & ENGINEERING-R18

B.TECH I SEMSTER COURSE STRUCTURE

B. Tech - I Semester

S. No	Course Code	Course Title	L	T	P	Credits
1	**BBSM1**	Engineering Mathematics-I	3	1	0	3
2	**BBSP2**	Applied Physics-I	3	0	0	3
3	**BBSC1**	Engineering Chemistry	4	1	0	4
4	**BBSED**	Electronics Devices and Circuits	3	0	0	3
5	**DBSCP**	Computer Programming using C	3	1	0	3
6	**BEDCL2**	Electronics Devices and Circuits Lab	0	0	3	1.5
7	**BCPL2**	Computer Programming using C Lab	0	0	3	1.5
8	**BCH2**	Engineering Chemistry Lab	0	0	3	1.5
TOTAL						20.5

TKR COLLEGE OF ENGINEERING & TECHNOLOGY
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B.TECH. COMPUTER SCIENCE & ENGINEERING-R18

ENGINEERING MATHEMATICS – I - BBSM1

B.Tech. I Semester **L/T/P C**
3/1/0 3

Course Objective:
To learn:

1. Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations
2. Concept of eigen values and eigen vectors and to reduce the quadratic form to canonical form.
3. Concept and nature of the series.
4. Partial differentiation and finding maxima and minima of function of two and three variable.
5. Evaluation of multiple integrals

Course Outcomes:
After learning the contents of this paper the student must be able to:

1. Write the matrix representation of a set of linear equations and to analyses the solution of the system of equations. L4
2. Applying the concept of matrices to reduce the quadratic form to canonical form using orthogonal transformations. L3
3. Analyze the nature of sequence and series. L4
4. Utilize the concept of functions of several variables to find the extreme values of functions of two variables with / without constraints. L3
5. Ability to solve double and triple integrals. L3

UNIT-1:
Matrices & system of equations
Types of matrices - rank of a matrix by Echelon form and normal form- Inverse of Nonsingular matrices by Gauss-Jordan method - System of linear equations- solving system of Homogeneous and Non homogeneous equations- Gauss elimination method - LU Decomposition method.

UNIT –II:
Eigen values and Eigen Vectors
Eigen values and Eigen vectors and their properties - Cayley-Hamilton theorem(without proof) finding inverse and powers of a matrix by Cayley-Hamilton theorem- Diagonalization of a matrix- Linear transformation and Orthogonal transformation - Quadratic forms and nature of the

Quadratic forms- Reduction of Quadratic form to Canonical forms by Orthogonal Transformation.

UNIT –III:

Sequences & Series:

Sequence - Series- Series of Non negative terms- Comparison test- p- test- D-Alembert's ratio test- Raabe's test- Logarithmic test - Cauchy's root test - Cauchy's Integral test. Alternating series- Leibnitz test- Absolute and conditionally Convergence.

UNIT-IV:

Functions of Several Variables

Partial Differentiation- Euler's Theorem- Total derivative- Jacobian- Functional dependence & independence- Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers

UNIT-V:

Multiple Integrals

Evaluation of Double Integrals (Cartesian and polar coordinates) - change of order of integration (only Cartesian form)- Evaluation of Triple Integrals- Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals.

Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (only in Cartesian Coordinates).

Textbooks:

1. B.S.Grewal- Higher Engineering Mathematics- Khanna Publishers-36th Edition-2010.
2. Erwin Kreyszig- Advanced Engineering Mathematics- 9th Edition- John Wiley & Sons- 2006.
3. G.B.Thomas and R.L.Finney- Calculus and Analytic Geometry - 9th Edition -Pearson- Reprint-2002.

Reference Books:

1. N.P.Bali and Manish Goyal- A text book of Engineering Mathematics Laxmi Publications- Reprint-2008.
2. Ramana B.V. - Higher Engineering Mathematics- Tata McGraw Hill New Delhi- 11th Reprint- 2010.
3. Michael Green Berge -Advanced Engineering Mathematics -Second Edition - Pearson Education.

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APPLIED PHYSICS-I –BBSP2

B.Tech. I Semester **L/T/P C**
3/0/0 3

Course Objective:
1. To understand interaction of light with matter through interference, Diffraction and polarization.
2. To able to distinguish ordinary light with a laser light
3. Realize propagation of light through optical fibers.
4. To understand the behavior of a particle quantum mechanically.

Course Outcomes:
After completion of this course the student is able to:

1.	Demonstrate the importance of interference in light phenomenon in the thin films.	L3
2.	Applying the knowledge of resolving power of grating for Polaroids.	L3
3.	Illustrate the working of various types of laser systems.	L3
4.	Demonstrate the fundamental concepts on Quantum behavior of matter in its microstate.	L3
5.	Distinguish various types of optical fiber cables for their applications in communication systems.	L4

UNIT-I:
Interference: Coherence, division of amplitude and division of wave front, interference in thin films (transmitted and reflected light), Newton's rings experiment and its applications.Michelson's interferometer, Mach-Zehnder interferometer.

UNIT-II:
Diffraction: Distinction between Fresnel and Fraunhoffer diffraction, diffraction due to single slit, N-slits,.circular aperture, Diffraction grating- resolving power. Diffraction grating experiment**Polarization:** Introduction,Types of polarizations, Malus's law, Brewster's law ,double refraction, Nicol prism, Polaroids and its applications, Quarter wave and half wave plates.

UNIT-III:
Lasers: Introduction to interaction of radiation with matter, Coherence, Principle and working of Laser, Population inversion, Components of lasers, Types of Lasers: Ruby laser, Carbon dioxide (CO_2) laser, He-Ne laser, Semiconductor laser, Applications of laser

UNIT-IV:

Fibre Optics: Introduction, Optical fibre as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, Step and Graded index fibres, Losses associated with optical fibres, applications of optical fibers in medicine and sensors. Optical fibres in communication system.

UNIT-V:

Quantum Mechanics

Introduction to quantum physics, Black body radiation, Planck's law, Photoelectric effect, Compton effect, de-Broglie's hypothesis, Wave-particle duality, Davisson&Germer and G. P. Thompsonexperiment, Heisenberg's Uncertainty principle, Born's interpretation of the wave function, Schrodinger's time independent wave equation, Particle in one dimensional box extension to three dimension.

Text Books:

1. Physics Vol. 2, Halliday, Resnick and Kramer John wiley and Sons, Edition 4.
2. Modern Engineering Physics, K. Vijaya Kumar and S. Chandra Lingam, S. Chand and Co. Pvt. Ltd.
3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S. Chan.

Reference Books:

1. Engineering Physics–I & II, P.K.Palanisamy, Scitech Publications (INDIA) PVT LTD.
2. Richard Robinett, QuantumMechanics
3. Waves, Frank S Crawford Jr, Berkeley Physics course, Volume 3

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

ENGINEERING CHEMISTRY – BBSC1

B.Tech. I Semester **L/T/P C**
4/1/0 4

Course Objective:

1. To know the atomic molecular structure of compounds which makes the student tounderstand technology based on them.
2. To bring the knowledge of batteries, nature of metals with respect to corrosion.
3. To acquire the knowledge of water treatment this is essential in industries.
4. To the able to know the structures of compounds by Spectroscopic techniques.
5. To be able to Know the types of organic reactions
6. To Understand Stereochemistry of Compounds.

Course Outcomes:

1.	To develop the deep understanding of molecular structures, magnetic properties and bond order of complexes, conductivity in solids.	L3
2.	Build knowledge of water treatment process and also grasps analytical skills in water quality assessment.	L3
3.	Outline the basics of electrochemistry which helps to construct a battery and its mechanism.	L5
4.	Understanding the various reactions and isomerism of reaction mechanism in organic chemistry.	L3
5.	Interpretation of spectral data by using various principles of spectroscopy.	L3

UNIT - I:

Molecular structure and Theories of Bonding:

Atomic and Molecular orbitals. Linear Combination of Atomic Orbital's (LCAO), homo nucleus diatomic molecules, molecular orbital energy level diagrams of N_2, O_2 and F_2 molecules.Hetero Nucleus Diatomic molecules CO&HF .π molecular orbital's of butadiene and benzene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition

metal ion d- orbital's in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping on conductance.

UNIT - II:

Water and its treatment:

Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and UNITs of hardness – Estimation of hardness of water by complexometric method. Potable water and its specifications. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization.

Boiler troubles –biolercorrosion.Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numericalproblems.

UNIT - III:

Electrochemistry and corrosion:

Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – calomel, Quinhydrone and glass electrode. Nernst equation Determination of pH of a solution by using quinhydrone and glass electrode.Electrochemical series and its applications.Numerical problems.Potentiometric titrations. Batteries – Primary (Lithium cell) and secondary batteries (Lead – acid storage battery and Lithium ion battery).Fuel cells-hydrogen-oxygen fuel cell and its applications.

Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Catholic protection – Sacrificial anode and impressed current catholic methods. Surface coatings – metallic coatings – methods of application.

UNIT - IV:

Stereochemistry, Reaction Mechanism and synthesis of drug molecules:

Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation analysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of S_N1, S_N2 reactions. Electrophilic and nucleophilic addition reactions: Addition of HBrto propene. Markownikoff and anti Markownikoff's additions.Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule.

Rearrangement reactions and types.Pinakolpinacolone rearrangement wagnermeerwein rearrangementOxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromicacid.

Reduction reactions: reduction of carbonyl compounds using $LiAlH_4$& $NaBH_4$. Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol andAspirin.

UNIT - V:

Spectroscopic techniques and applications:

Introduction of spectroscopy, selection rules and applications of electronic spectroscopy. Vibrational and rotational spectroscopy of diatamicmoleculs and its applications. Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift. Introduction to Magnetic resonance imaging.

Text Books:

1. Physical Chemistry, by P.W.Atkins
2. Engineering Chemistry by P.C.Jain&M.Jain; DhanpatRai Publishing Company (P) Ltd., NewDelhi.
3. Fundamentals of Molecular Spectroscopy, by C.N.Banwell
4. Organic Chemistry: Structure and Function by K.P.C. Volhardt and N.E.Schore, 5th Edition.
5. University Chemistry, by B.M. Mahan, Pearson IVEdition.
6. Engineering Chemistry (NPTEL Web-book), by B.L. Tembe, Kamaluddin and M.S. Krishnan
7. Text book of Engineering chemistry by Dr.AJayashree, Wiley Publications New delhi(2018).

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

ELECTRONIC DEVICES AND CIRCUITS - BBSED

B.Tech. I Semester **L /T /P C**
3/ 0 /0 3

Pre-requisite: Basic Concepts of Physics.

Course Objective:

1. To introduce the concepts of various semiconductor devices like Diodes, Transistors, FET's and MOSFET'S .
2. To impart the knowledge of various configurations, characteristics and applications of electronic circuits .

Course Outcomes:

After this course, the student will be able:

1. Apply knowledge in semiconductor materials to comprehend the internal structure of PN junction. L3
2. Demonstrate the special purpose devices for various applications. L3
3. Analyze the working principle of rectifier circuits and filters. L4
4. Design and analyze the operation of a Bipolar Junction Transistor (BJT), considering its configuration and impact on device performance. L5
5. Demonstrate the FET and MOSFET characteristics. L3

UNIT – I:

Introduction to semiconductor physics, formation of p-type and n-type semiconductors, principle and operation of Diode, Current components in a p-n Diode, Diode equation, Volt-Ampere characteristics, Temperature dependence, Ideal versus practical, Static and dynamic resistances, Equivalent circuit, Load line analysis, Diffusion and Transition Capacitances.

UNIT – II:

Special Purpose Devices: Breakdown Mechanisms in Semi-Conductor Diodes, Zener diode characteristics, Use of Zener diode as simple regulator, Principle of operation and Characteristics of Tunnel Diode (With help of Energy band diagram) and Varactor Diode, Principle of Operation of SCR.

UNIT – III:

Rectifiers and Filters: P-N junction diode as a rectifier - Half Wave Rectifier, Ripple Factor, Full Wave Rectifier, Bridge Rectifier, Harmonic components in Rectifier Circuits, Filters – Inductor Filters, Capacitor Filters, L- section Filters, π- section Filters.

UNIT IV:

Bipolar Junction Transistor (BJT): Construction, Principle of Operation, Transistor current components, Transistor as an Amplifier, Common Emitter, Common Base and Common Collector configurations and their Characteristics,

Transistor Biasing and Stabilization - Operating point, DC & AC load lines, Biasing - Fixed Bias, Emitter Feedback Bias, Collector to Emitter feedback bias, Voltage divider bias, Bias stability, Stabilization against variations in V_{BE} and β, Bias Compensation using Diodes and Transistors.

UNIT – V:

Field Effect Transistor (FET): Construction, Principle of Operation, Pinch-Off Voltage, Volt-Ampere Characteristic, Comparison of BJT and FET.

Metal Oxide Semiconductor Field Effect Transistor (MOSFET): Different types of MOSFET's, Working operation and V-I Characteristics of different types of MOSFET's.

Text Books:

1. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Millman's Electronic Devices and Circuits – J. Millman and C. C. Halkias, Satyabratajit, TMH, 2/e, 1998.

Reference Books:

1. Electronic Devices and Circuits –S.Salivahanan, NSuresh Kumar & A.Vallavaraj
2. Electronic Devices and Circuits – Sanjeev Gupta & Santosh Gupta, Dhanpat Rai Publications
3. Principles of Electronics by V.K.Mehta & Rohit Mehta,S.Chand Publications

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

Computer Programming using C - BBSCP

B.Tech I Semester **L/T/P C**
3 /0 /0 3

Course Objective:
Learn the fundamentals of computers and C Programming language constructs.

Course Outcomes:
After learning the contents of this course, the student will be able to:

1. Apply number system concepts and implement basic algorithms for solving computational problems. L3
2. Make use of arrays and functions to write C programming. L3
3. Make use of pointers and strings in writing C programs. L3
4. Apply Enumerated data types and data structures to develop C programs. L3
5. Develop C programs for various applications using files and I/O functions. L3

UNIT – I:
Introduction to Computers: Data Representation, Number Systems, Computer Languages, Algorithms.
Introduction to C Language: Data types, Operators, Expressions, Statements-Selection Statements – if and Switch Statements, Repetition (Loop) statements.

UNIT – II:
Arrays: One and two dimensional arrays, multidimensional arrays, inter function communication Arrays applications- linear search, binary search, bubble sort, Implementation of stacks and queues.
Functions: Scope and Extent, storage classes, recursive functions.

UNIT – III:
Pointers: Introduction, Pointers for inter function communication, arrays of pointers, pointer arithmetic and arrays, passing an array to a function, memory allocation functions, pointers to functions, pointers to pointers.
Strings: Concepts, String Input/ Output functions, arrays of strings, string manipulation functions.

UNIT – III:

Pointers: Introduction, Pointers for inter function communication, arrays of pointers, pointer arithmetic and arrays, passing an array to a function, memory allocation functions, pointers to functions, pointers to pointers.

Strings: Concepts, String Input/ Output functions, arrays of strings, string manipulation functions.

UNIT – IV:

User Defined Datatypes Structure and Unions. Initialization, accessing structures, operations on structures. Complex structures-Nested structures, structures containing arrays, structures containing pointers, arrays of structures, structures and functions, Passing structures through pointers, self-referential structures, unions, bit fields, C programming examples, command–line arguments, pre-processor commands.

Fundamentals of Data structures: Linear and Non-Linear data structures, concepts of stacks and queues.

UNIT V:

Input and output: Concept of a file, streams, text files and binary files, file input/output functions (standard library input/output functions for files), error handling, positioning functions (fseek, rewind and ftell).

Case studies Scientific Calculator, student Information system, Employee information system, Search and Retrieval, Gaming.

Text Books:

1. Computer Science: A Structured Programming Approach Using C, B. A. Forouzan and R. F. Gilberg,Third Edition, Cengage Learning.
2. Programming in C. P. Dey and M Ghosh, Second Edition, Oxford University Press.

Reference Books:

1. The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition, Pearson education.
2. Programming with C, B. Gottfried, 3rd edition, Schaum's outlines, McGraw Hill Education (India) Pvt Ltd.
3. C From Theory to Practice, G S. Tselikis and N D. Tselikas, CRC Press.
4. Basic computation and Programming with C, SubrataSaha and S. Mukherjee, Cambridge University Press.

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

ENGINEERING CHEMISTRY LAB – BCH2

B.Tech. I Semester **L/T/P C**
0/0/3 1.5

Course Objective:

The course consists of experiments related to the principles of chemistry required for engineering student. The student will earn:

1. Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
2. To determine the rate constant of reactions from concentrations as a function of time.
3. The measurement of physical properties like adsorption and viscosity.
4. To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

Course Outcomes:

The experiments will make the student gain skills on:

1. Helps in Determine the conductivity of Electrolytes aiding in the study of solutions and ionic strengths. L5
2. To analyse the samples by using Chromatograhic techniques. L4
3. Distinguish the different titrimetric methods such as Permaganometry and Argentometry. L4
4. Applying Knowledge of Hardness and it's estimation in various Water samples. L3
5. Determine the physical properties of Lubricants & Organic solvents. L3

List of Experiments:

1. Determination of total hardness of water by complexometric method using EDTA
2. Determination of chloride content of water by Argentometry
3. Estimation of an HCl by Conductometrictitrations
4. Estimation of Acetic acid by Conductometrictitrations
5. Estimation of HCl by Potentiometrictitrations
6. Estimation of Fe^{2+} by Potentiometry using$KMnO_4$
7. Determination of rate constant of acid catalysed hydrolysis of methylacetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of R_f values. egortho and para nitrophenols
10. Determination of acid value of coconut oil

11. Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal
12. Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
13. Determination of partition coefficient of acetic acid between n-butanol and water.
14. Determination of surface tension of a give liquid using stalagmometer.
15. Determination of Mn Present in $KMnO_4$ by colorimetry.

Reference Books:

1. Senior practical physical chemistry, B.D. Khosla, A. Gulati and V. Garg (R. Chand & Co.,Delhi)
2. An introduction to practical chemistry, K.K. Sharma and D. S. Sharma (Vikas publishing, N.Delhi)
3. Vogel's text book of practical organic chemistry 5^{th}edition
4. Text book on Experiments and calculations in Engineering chemistry – S.S.Dara

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

ELECTRONIC DEVICES AND CIRCUITS LAB – BEDCL2

B.Tech. I Semester **L/T/P C**
0/0/3 1.5

Course Objectives:
1. To impart the knowledge of various configurations, characteristics and applications of various electronic devices.
2. Acquires the knowledge of various biasing circuits of Transistor.

Course Outcomes:
After the completion of the lab student can be able to:
1. Apply the knowledge of semiconductor physics to analyze the characteristics of diodes and transistors in different operating conditions. L4
2. Analyze the parameters of various circuits that can convert AC to DC efficiently. L4
3. Design transistor biasing circuits to achieve specific performance objectives, demonstrating the application of theoretical knowledge. L5

List of Experiments:
PART A: Electronic workshop practice (in 3 lab sessions):

1. Familiarization of R,L,C, Components
2. Familiarization of Devices, Diodes, BJT's, and Low power JFET's MOSFET's, LED's, LCD's, SCR.
3. Study and operation of
   - Multimeters (Analog and Digital)
   - Function Generator
   - Regulated Power Supplies
   - CRO.
4. Introduction to Simulation Tools.

PART B: (For Laboratory Exam.-Minimum of 10 expts.)

1. Forward & Reverse Bias Characteristics of PN Jn. Diode.
2. Zener diode V-I Characteristics
3. Zener as a voltage Regulator.
4. Half Wave Rectifier with & without filters.

5. Full Wave Rectifier with & without filters.
6. I/P & O/P Characteristics of Transistor in CB Configuration.
7. I/P & O/P Characteristics of Transistor in CE Configuration
8. FET Characteristics in CS Configuration
9. Design of Fixed Bias Circuit
10. Design of Collector to Base Bias Circuit
11. Design of Self Bias Circuit.

SCR Characteristic

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

Computer Programming using C Lab-BCPL2

B.Tech. I Semester **L/T/P C**
0/0/3 1.5

Course Objective:
To write programs in C using structured programming approach to solve the problems
Course Outcomes:
After learning the contents of this course, the student must be able to:

1. **Develop** and **test** programs to solve mathematical and scientific problems. L3
2. **Develop** structured programs using C control structures and functions. L3

Recommended Systems/Software Requirements:

- Intel based desktop PC
- GNU C Compiler

1. a) Write a C program to find the factorial of a positive integer.
   b) Write a C program to find the roots of a quadratic equation.
2. **a)** Write a C program to determine if the given number is a prime number or not.
   b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1.Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
3. **a)** Write a C program to construct a pyramid of numbers.
   b) Write a C program to calculate the following
   Sum: Sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!
4. **a)** The Least Common Multiple (LCM) of two positive integers a & b is the smallest integerthat is evenly divisible by both a and b. Write a C program that reads two integers andcalls GCD (a, b) function that takes two integer arguments and returns their LCM. Thelcm (a, b) function should calculate the least common multiple by calling the GCD (a,b) function and using the following relation:
   LCM (a,b) = ab / GCD (a,b)
   b) Write a C program that reads two integers n and r to compute the ncr value using thfollowing relation:
   ncr (n,r) = n! / r! (n-r)! . Use a function for computing the factorial value of an integer.

5. **a)** Write C program that reads two integers x and n and calls a recursive function to compute x^n.
   b) Write a C program that uses a recursive function to solve the Towers of Hanoi problem.
   c) Write a C program that reads two integers and calls a recursive function to compute ncr value.
6. **a)** Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user using Sieve of Eratosthenes algorithm.
   b) Write a C program that uses non recursive function to search for a Key value in a given list of integers. Use linear search method.
7. **a)** Write a menu-driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.
   b) Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers. Use binary search method.
8. **a)** Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.
   b) Write a C program that reads two matrices and uses functions to perform the following:
   i) Addition of two matrices
   ii) Multiplication of two matrices
9. **a)** Write a C program that uses functions to perform the following operations:
   i) to insert a sub-string into a given main string from a given position.
   ii) to delete n characters from a given position in a given string
   b) Write a C program that uses a non-recursive function to determine if the given string is a palindrome or not.
10. **a)** Write a C program to replace a substring with another in a given line of text.
    b) Write a C program that reads 15 names each of up to 30 characters, stores them in an array, and uses an array of pointers to display them in ascending (ie. alphabetical) order.
11. **a)** 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.
    b) Write a C program to convert a positive integer to a roman numeral. Ex. 11 is converted to XI.
12. **a)** Write a C program to display the contents of a file to standard output device.
    b) Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.

13. **a)** Writ**e a C** program to count the number of times a character occurs in a text file. The file name and the character are supplied as command-line arguments.
    b) Write a C program to compare two files, printing the first line where they differ.
14. **a)** Write a C program to change the nth character (byte) in a text file. Use fseek function.
    b) Write a C program to reverse the first n characters in a file. The file name and n are specified on the command line. Use fseek function.
15. **a)** Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).
    b) Define a macro that finds the maximum of two numbers. Write a C program that uses the macro and prints the maximum of two numbers.

Reference Books:

1. Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publishers.
2. Computer Programming using C in C, V. Rajaraman, PHI.
3. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
4. C++: The complete reference, H. Schildt, TMH Publishers.

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

B.TECH II SEMESTER COURSE STRUCTURE

B. Tech. II Semester

S. No	Course Code	Course Title	L	T	P	Credits
1	**BBSM2**	Engineering Mathematics-II	3	1	0	3
2	**BBSP3**	Applied Physics-II	3	0	0	3
3	**BHSEN**	Professional Communication Language	3	0	0	3
4	**BBSBE**	Basic Electrical Engineering	3`	0	0	3
5	**BBSEG**	Engineering Graphics	3	0	0	3
6	**BP113**	Applied Physics Lab	0	0	3	1.5
7	**BE22**	Professional Communication Language Lab	0	0	3	1.5
8	**BBEEL2**	Basic Electrical Engineering Lab	0	0	3	1.5
9	**BBSEW**	Engineering Workshop	0	0	3	1.5
					Total	**21.0**

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

ENGINEERING MATHEMATICS – II – BBSM2

B.Tech. II Semester **L/T/P C**
3/1/0 3

Course Objectives:
To learn:
1. Methods of solving the differential equations of first and higher order.
2. Concepts & properties of Laplace Transforms
3. Solving differential equations using Laplace transform techniques
4. The physical quantities involved in engineering field related to vector valued Functions.
5. The basic properties of vector valued functions and their applications to line- surface and volume integrals.

Course Outcomes:
After learning the contents of this paper the student must be able to:
1. Apply the knowledge of D.E to identify whether the given differential equation of first order is exact or not. L3
2. Solve higher differential equation and apply the concept of differential equation to real world problems. L3
3. Use Laplace transforms techniques for solving DE's. L3
4. Apply knowledge of gradient, divergence, curl to solve real world problems. L3
5. Evaluate the line- surface and volume integrals and converting them from one to another. L5

UNIT-I:
Ordinary Differential Equations
Exact- linear and Bernoulli's equations- Orthogonal Trajectories - Applications - Newton's law of cooling- Law of natural growth and decay.

UNIT-II:
Second order Ordinary Differential Equations
Second order linear differential equations with constant coefficients- Non-Homogeneous terms of the type e^{ax} - sin ax - cos ax- polynomials in x- $e^{ax}(x)$ and $xV(x)$ - method of variation of parameters- Equations reducible to linear ODE with constant coefficients- Legendre's equation- Cauchy-Euler equation.
parameters- Equations reducible to linear ODE with constant coefficients- Legendre's equation- Cauchy-Euler equation.

UNIT-III:

Laplace Transforms

Laplace transforms of standard functions- Shifting theorems- derivatives and integrals- properties- UNIT step function- Dirac's delta function- Periodic function- Inverse Laplace transforms- Convolution theorem (without proof).

Applications- Solving ordinary differential equations (initial value problems) using Laplace transforms

UNIT-IV:

Vector Differentiation

Vector point functions and scalar point functions- Gradient- Divergence and Curl. Directional derivatives- Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoid and Irrotational vectors.

UNIT-V:

Vector Integration

Line- Surface and Volume Integrals- Theorems of Green- Gauss and Stokes (without proofs) and their applications.

Text Books

1. B.S. Grewal- Higher Engineering Mathematics- Khanna Publishers- 36th Edition- 2010
2. Erwin kreyszig- Advanced Engineering Mathematics- 9th Edition- John Wiley & Sons-2006
3. G.B. Thomas and R.L. Finney- Calculus and Analytic geometry- 9th Edition- Pearson-Reprint- 2002.

Reference Books

1. Paras Ram- Engineering Mathematics- second Edition- CBS Publishes
2. S. L. Ross- Differential Equations- third Edition.- Wiley India- 1984.
3. R K Jain & S R K Iyengar - Advanced Engineering Mathematics -fifth Edition -Narosa Publications.

TKR COLLEGE OF ENGINEERING & TECHNOLOGY
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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

APPLIED PHYSICS-II – BBSP3

B.Tech. II Semester **L/T/P C**
3/0/0 3

Course Objective:

1. Students will demonstrate skills in modern scientific issues, problem solving and experimental techniques.
2. Students will be able to demonstrate competency and understanding of the concepts found in Semiconductor physics and Electromagnetic theory and a broad knowledge base in physics.
3. The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
4. To study applications in engineering like memory devices, transformer core and electromagnetic machinery.

Course Outcomes:
the student would be able to learn:

1. Building the knowledge of Semiconductor physics for various device applications. L3
2. Distinguish various types of optoelectronics devices for modern applications i engineering physics. L3
3. Apply the basic knowledge of electromagnetism for understanding the physics beyond EM devices.Build the basic knowledge in dielectric materials. L3
4. Differentiate various magnetic and superconductivity of materials for various engineering materials L4

UNIT-I: Semiconductor Physics

Intrinsic and Extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics), Carrier generation and recombination, Carrier transport: diffusion and drift, Hall effect and its applications, p-n junction diode,Zener diode and their V-I characteristics, Bipolar junction transistors(BJT):construction, principle of operation

UNIT-II: Optoelectronics

Radiative and non-radiative recombination mechanisms in semiconductors, LED and semiconductor lasers: Device structure, Materials, Characteristics and figures of merit,

Semiconductor photodetectors: Solar cell, PIN and Avalanche and their structure, Materials, working principle and Characteristics.

UNIT-III

Electromagnetism

Laws of electrostatics, Electric current and the continuity equation, Ampere's and Faraday's laws, Maxwell's equations (vacuum and non conducting medium).Biot's –sawarts law, divergence and curl of a static magnetic field.Vector potential and calculating it for a given magnetic field using Stoke's theorem.

UNIT-IV

Dielectric Properties

Electric dipole, dipole moment, dielectric constant, polarizability, electric susceptibility, displacement vector, electronic, ionic and orientation polarizations and calculation of their polarizabilitites, internal field, Clausius-Mossotti relation, Piezoelectricity, pyroelectricity and ferroelectricity-BaTiO3 structure.

UNIT-V

Magnetic Properties &Superconductivity:

Permeability, field intensity, magnetic field induction, magnetization, magnetic susceptibility, origin of magnetic moment, Bohr magneton, classification of dia, para and ferro magnetic materials on the basis of magnetic moment, hysteresis curve based on domain theory, soft and hard magnetic materials, properties of antiferro and ferri magnetic materials, Superconductivity phenomenon, Meissner effect, type-I and type-II super conductors applications of superconductivity.

Text Books:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi–CengageLearing.
2. Halliday and Resnick, Physics -Wiley.
3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S. Chand
4. Engineering Physics–II, P.K.Palanisamy, Scitech Publications (INDIA) PVT LTD.

References:

1. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill inc. (1995).
2. P. Bhattacharya : Semiconductor Optoelectronic Devices, Prentice Hall of India(1997)
3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Guptha onNPTEL.

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

PROFESSIONAL COMMUNICATION LANGUAGE- BHSEN

B.Tech. II Semester. **L/T/P C**
3/0/0 3

Introduction:
In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students. In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Course Objectives:
The course will help to:
1. Improve the language proficiency of students in English with an emphasis on Vocabulary (Identify different types of words), Grammar (the structure and form of the language), Reading and Writing skills.
2. Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.
3. Develop study skills and communication skills in formal and informal situations.

Course Outcomes:
Students should be able to:
1. Develop English language effectively in spoken and written forms. L3
2. Build the skills to communicate confidently in formal and informal contexts. L3
3. Distinguish the given texts and respond appropriately. L4
4. Select the appropriate writing style in drafting letter, compiling resumes and reports. L5
5. Estimate the grammatical accuracy of a text and predicting and understanding the gist of facts. L5

UNIT –I:

'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes and root words.

Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions.

Reading: Reading and Its Importance- Techniques for Effective Reading.

Basic Writing Skills: Sentence Structures - Use of Phrases and Clauses in Sentences-Importance of Proper Punctuation- Techniques for writing precisely – **Paragraph writing** – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents.

UNIT –II:

Letter/Report writing Vocabulary: Synonyms, Antonyms.

Grammar: Identify Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb agreement. Tenses, Active and Passive Voice, Direct and Indirect Speech

Reading: Improving Comprehension Skills – Techniques for Good Comprehension **Writing:** Format of a Formal Letter-**Writing Formal Letters** E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III:

"Blue Jeans" from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Degrees of Comparison, Simple, Compound and Complex sentences.

Reading: Sub-skills of Reading- Skimming and Scanning

Writing: Nature and Style of Sensible Writing- **Defining- Describing** Objects, Places process/experiment and Events.

UNIT –IV:

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English, Idioms and phrases, one word substitutes.

Grammar: Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension- Intensive Reading and Extensive Reading

Writing: Writing Practices--Writing Introduction and Conclusion -Précis Writing.

UNIT –V:

'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Technical Vocabulary and their usage

Grammar: Common Errors in English,

Reading: Reading Comprehension-Exercises for Practice

Writing: Technical Reports- Introduction – Characteristics of a Report – Categories of Reports Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing aReport.

Textbooks:

1. **Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge University Press.**

Reference Books:

1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

BASIC ELECTRICAL ENGINEERING - BBSBE

B.Tech. II Semester. **L/T/P C**
3/0/0 3

Objectives:
Objectives of this course are:

1. To introduce the concept of DC and AC electrical circuits and its applications.
2. To study the concepts of different testing on DC Machines.
3. To determine the performance of single phase transformer
4. To acquire knowledge about various configurations for electrical installations and its applications

Course Outcomes:
After this course, the student will be able to:

1. Analyse and illustrate different magnetic, AC, and DC circuits. L4
2. Understand various fundamentals and analyse single-phase AC circuits with combinations of R, L, C, RL, RC, and RLC. L4
3. Examine a variety of theorems for both AC and DC circuits, including as Thevenin's, Norton's, Superposition, Reciprocity, Maximum Transfer, Tellgen's, and Millman's. L4
4. Analyse the characteristics and performance of DC Machines and Transformers. L4
5. Understand the basic concepts of wiring systems and Elementary calculations for energy consumption, power factor improvement and battery backup. L2

UNIT-I:
DC Circuits and Magnetic Circuits:

DC Circuits:

Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, Analysis of Resistive circuits-Mesh, Nodal Analysis and Star-Delta Transformations, Numerical problems.

Magnetic Circuits:

Magneto Motive force, Flux, Reluctance, Permeability, Faradays laws, Lenz's Law, Self and Mutual Inductance, coefficient of coupling, Magnetic materials, BH characteristics, Numerical problems.

UNIT - II:

AC Circuits:

A.C. Fundamentals: Sinusoidal voltage and currents, mathematical and graphical representation, concept of cycle period, frequency, instantaneous, peak, average, RMS values, peak factor, form factor, phase difference, lagging, leading and in phase quantities and phasor representation. Rectangular and polar representation of phasors. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC and RLC combinations (series and parallel), resonance. Three phase balanced circuits, voltage and current relations in star and delta connections.

UNIT -III:

Theorems:

Thevenin's, Norton's, Superposition, Reciprocity, Maximum Transfer, Tellgen's, Millman's, theorems for both AC & DC Circuits, Numerical Problems.

UNIT-IV:

DC Machines and Transformers

DC Machines:

Construction of DC machines, Armature windings – DC Generator – Principle of operation - EMF Equation – DC Motor – Principle of operation – Back EMF - Torque Equation.

Transformer: Ideal and Practical Transformer, Equivalent Circuit, Losses in Transformers, Regulation and Efficiency. Auto-Transformer.

UNIT -V:

Electrical Installations:

Basic concept of wiring systems, Service Mains, Meter board and Distribution board, Concept of Earthing. Switch Fuse UNIT (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

Textbooks:

1. S.K.Bhattacharya, “Basic Electrical & Electronics Engineering”, Pearson Publications
2. S.K.Bhattacharya, “Electrical installations and House Wiring”, Pearson Publications

Reference Books:

1. V. N. Mittal and Arvind Mittal;, “ Basic Electrical Engineering” McGraw Hill
2. Edward Hughes, “ Electrical Technology,”, Pearson Education
3. Edminister.J., “Electrical Circuits” Schaum’s Outline Series, Tata McGrawHill
4. Sudhakar and Shyam Mohan, “Circuits and Networks Analysis and Synthesis, Tata McGrawHill
5. D. P. Kothari and I. J. Nagrath, “Basic Electrical Engineering”, Tata McGraw Hill, 2010.

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

ENGINEERING GRAPHICS - BBSEG

B.Tech. II Semester **L/T/P C**
3/0/0 3

Course Objective:
1. To provide basic concepts in engineering drawing.
2. To impart knowledge about standard principles of orthographic projection of objects.

3. To draw sectional views and pictorial views of solids.

Course Outcomes:
1. Evaluate and synthesize the BIS standards and conventions employed in engineering graphics, showcasing a comprehensive understanding and proficiency in their Practical application. L5
2. Compile advanced skills by sketching diverse engineering curves like ellipses, parabolas, cycloids, and involutes. Moreover, produces varied reduced scales, encompassing plain, diagonal, and Vernier scales, demonstrating a high-level Synthesis and execution of knowledge. L6
3. Compare and evaluate the underlying principles of first-angle and third angle methods of projection, while critically discerning the nuances between parallel and perspective projection techniques. L4
4. Integrate complex visual depictions of multiple views, including elevation and plan, in correlation with a designated line, plane figures, or solid objects. This involves advanced synthesis and application skills in the realm of visual representation. L4
5. Apply sophisticated drafting techniques and skillfully utilize 2D software, like AutoCAD to generate detailed sketches of 2D plane figures, showcasing proficiency. L4

UNIT-I:
Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance, Usage of Instruments, Conic Sections--Ellipse, Parabola, Hyperbola and Rectangular Hyperbola ; General method only. Cycloid, Epicycloid and Hypocycloid, Involute.

UNIT-II:
Orthographic Projections: Principles of Orthographic Projections – Conventions – Projections of Points and Lines inclined to both principal planes.. Projections of Plane regular geometric figures inlined to both principal planes, Regular planes such as square, rectangle, Rhombus, triangle, pentagon,Hexagon, Circle, Semi circle—Auxiliary Plane method in drawing projection of lines and plane figures (which are given above) may be followed.

UNIT-III:
Projections of Regular Solids, axis parallel, perpendicular and inclined to reference Planes. The regular solids are cube, Rhomboid, Square pyramid, Rectangular prism and pyramids,

Pentagonal Prism and Pyramid, Hexagonal Prism and Pyramid, Cylinder Cone . Solving by using auxiliary plane method may be followed.

UNIT-IV:

Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views – Development of Surfaces of Right Regular Solids – Rectangular and Triangular Prism , Pentagonal and Hexagonal Pyramid, Cylinder and Cone.

UNIT-V:

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Conversion of Isometric Views to Orthographic Views and Vice-versa.

Introduction to CAD: (For Internal Evaluation Weightage only): Introduction to CAD Software Package Commands.- Free Hand Sketches of 2D- Creation of 2D Sketches by CAD Package.

Text Books:

1) Engineering Drawing / Basant Agrawal and Mc Agrawal/ Mc Graw Hill

2) Engineering Drawing: Gopala Krishna, Subhas Stores

Reference Books

1) Engineering Drawing / N.S. Parthasarathy and Vela Murali/ Oxford
2) Engineering Drawing N.D. Bhatt / Charotar
Engineering Drawing/ M.B. Shah, B.C. Rane / Pearson

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

APPLIED PHYSICS LAB – BP1

L/T/P	C
0/0/3	1.5

Course Objective:

1. To study the band gap energy of a semiconductor diode, Light Emitting Diode and LASER diode V-I and P-I characteristics respectively.
2. To understand I-V characteristics of solarcell and its efficiency
3. To determine the Hall coefficient of a given semiconductor.
   To understand the input and out put characteristics of Bipolar Junction Transistor (BJT)
4. To understand Interference and diffraction concepts through experiements also to determine the numerical aperture and understand the attenuation, bending losses in optical fibers.

Course Outcomes:

On completion of the course student will be able to:

1. Illustrate the V-I characteristics of Laser diod. L3
2. Evaluate the numerical and bending loss of given optical Fiber. L3
3. Analyse the V-I characteristics of LED and photodiode devices. L3
4. Illustrate the type of semiconductor by using Hall Effect experiment. L3
5. Calculate the Planck's constant using Photocell. L3

List Of Experiments:

All experiments compulsory

1. **Energy gap of a P-N junction diode**:
   To determine Energy gap of a semiconductor diode.
2. **Solar Cell**:
   To study the V-I characteristics of a Solar cell and to find out its Fill factor
   Light Emitting diode, LASER diode:
   Plot V-I and P-I characteristcs of the diodes.
3. **Hall Effect**:
   To determine Hall coeffient of a given semiconductor.
4. **Diffraction Grating**:
   Determination of wave length of light source- Diffraction Grating:

5. **Newton's rings**:
   To determine the radius of curvature of the lens by forming Newton's rings.
6. **BJT Charactersitics**:
   To study input and output characterstics of a Bipolar JunctioTransistor.
7. **Optical fibre**:

To determine the bending losses and Numerical aperture of a given Optical fibre.

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

PROFESSIONAL COMMUNICATION LANGUAGE LAB- BE22

B.Tech. II Semester **L/T/P C**
0/0/3 1.5

The **Language Lab** focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

Course Objective:

1. To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
2. To sensitize students to the nuances of English speech sounds, word accent, intonation and rhythm
3. To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportUNITy for practice in speaking
4. To improve the fluency of students in spoken English and neutralize their mother tongue influence
5. To train students to use language appropriately for public speaking and interviews

Course Outcomes: Students will be able to attain

1. Develop an understanding of the nuances of English language through audio- visual experience and group activities. L3
2. Building speaking skills with clarity and confidence which in turn enhances their employability skills. L3
3. Distinguish the various speech sounds in English and how it helps in improving pronunciation. L4
4. Choosing appropriate accent for intelligibility. L5
5. Adapting to communicate in formal and informal situations. L6

English Language and Communication Skills Lab (ELCS) shall have two parts:

a. Computer Assisted Language Learning (CALL) Lab

b. Interactive Communication Skills (ICS) Lab

Listening Skills

Objectives:

1. To enable students develop their listening skills so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation
2. To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions

should Students be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.

- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

Speaking Skills:

Objectives:

1. To involve students in speaking activities in various contexts
2. To enable students express themselves fluently and appropriately in social and professional contexts
   - Oral practice: Just A Minute (JAM) Sessions
   - Describing objects/situations/people
   - Role play – Individual/Group activities
   - Activities to develop speaking skills: Picture Description, Exposure to structured talk and Extempore mock interviews.

The following course content is prescribed for the English Language and Communication Skills Lab based on UNIT-6 of AICTE Model Curriculum 2018 for B.Tech First English. As the syllabus is very limited, it is required to prepare teaching/learning materials by the teachers collectively in the form of handouts based on the needs of the students in their respective colleges for effective teaching/learning and timesaving in the Lab).

Exercise – I

CALL Lab:

Understand*:* Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening.

Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab:

Understand: Communication at Work Place- Spoken vs. Written language.
Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

Exercise – II

CALL Lab:
Understand*:* Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context.
Practice*:* Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

ICS Lab:
Understand*:* Features of Good Conversation – Non-verbal Communication.
Practice*:* Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise – III

CALL Lab:
Understand*:* Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).
Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.
ICS Lab:
Understand*:* How to make Formal Presentations, Describing a picture
Practice*:* Formal Presentations-individual and team.

Exercise – IV

CALL Lab:
Understand: Listening for General Details.
Practice: Listening Comprehension Tests. **ICS Lab**:
Understand: Public Speaking – Exposure to Structured Talks.
Practice*:* Making a Short Speech – Extempore.

Exercise – V

CALL Lab:
Understand: Listening for Specific Details.
Practice: Listening Comprehension Tests.
ICS Lab:
Understand: Introduction *to* Interview Skills**.**
Practice*:* Mock Interviews-Role Play.

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

BASIC ELECTRICAL ENGINEERING LAB – BEEL2

B.Tech. II Semester **L/T/P C**
0/0/3 1.5

Course Objective:

1. Students will gain the basic knowledge of electrical circuits using various laws.
2. Identify and apply different theorems for electrical circuits.
3. Understand the power and power factor in single phase ac circuits using 3 voltmeter.
4. Assess the performance of different DC machines and single phase transformer.
5. Apply basic electrical engineering knowledge for house wiring practice.

Course Outcomes:

After the completion of this laboratory course, the student will be able to:

1. Examine a variety of theorems for both AC and DC circuits, including as Thevenin's, Norton's Superposition, Reciprocity, Maximum Transfer, Tellgen's, and Millman's. L4
2. Measure power and power factor in a single-phase ac circuits using 3 voltmeters and 3 ammeter metho. L5
3. Evaluate the transformer's performance using both open and short circuit tests. L5
4. Evaluate electrical installations using various wiring connections, stair case wiring, and amp-controlled techniques. L5

List of Experiments: (Any 10 Experiments):

1. Verification of Kirchhoff’s current and voltage laws.
2. To study and verify Thevenin’s and Nortons theorems.
3. To study and verify reciprocity and Superposition theorem
4. To verify maximum power transfer theorem
5. To study and verify Tellgen’s, and Millman’s, theorem
6. To measure power and power factor in a single phase ac circuits using 3 voltmeters and 3 ammeter method
7. Magnetization characteristics of DC shunt generator.
8. Conduct brake test on dc shunt motor.
9. Conduct load test on transformer.
10. To perform open circuit and short circuit test on single phase transformer
11. Make circuit for series and parallel connection of lamps

12. Make a circuit for one lamp controlled by one switch with PVC surface conduit system
13. Make a circuit for two lamps controlled by two switches with PVC surface conduit system
14. Make a circuit for stair case wiring
15. Make a circuit for Godown wiring
16. Make a circuit for electrical bell connection
17. Plot BH loop and obtain hysteresis loss

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B.TECH. COMPUTER SCIENCE & ENGINEERING –R18

Engineering Work shop - BBSEW

B.Tech. I Semester **L/T/P C**
0/0/3 1.5

Course Objective:

1. To Study of different hand operated power tools, uses and their demonstration.
2. To gain basic working knowledge required for the production of engineering products.
3. To provide hands on experience about use of different engineering materials, tools, equipments and processes those are common in the engineering field.
4. To develop a right attitude, team working, precision and safety at work place.
5. It explains the construction, function, use and application of different working tools, equipment and machines.
6. To study commonly used carpentry joints.
7. To have practical exposure to various welding and joining processes.
8. Identify and use marking out tools, hand tools, measuring equipment and to work to Prescribed tolerances.

Course Outcomes:

At the end of the course, the student will be able to:

1. Conduct an intensive examination and hands-on application of machine tools, emphasizing advanced understanding and mastery of their operations. L4
2. Apply knowledge through hands-on practice in the manufacturing of components using various workshop trades, encompassing house wiring, welding, plumbing, fitting, carpentry, and foundry work. L3
3. Analyze and implement suitable tools for various trades within Engineering processes, incorporating skills in drilling, material removal, measuring, and chiseling. L4
4. Utilize basic electrical engineering knowledge in the context of house wiring practices. L3
5. Create different basic prototypes in the trade of Tin smithy and black smithy, including items like rectangular trays and scoops. L6

TRADES FOR EXERCISES:
At least two exercises from each trade:
1) Machine shop

2) Carpentry shop

3) Fitting shop

4) Electrical

5) Electronics

6) Welding shop (Arc welding and Gas welding)

7) Casting

8) Black Smithy, Tin-Smithy and Development of jobs carried out and soldering

9) Plastic molding

10) Gas Cutting

Trades For Demonstration & Exposure:
Plumbing, Metal Cutting (Power Hack saw machine), Metal Cutting (Water Plasma), Power tools in construction, Foundry.

Textbooks:

1. Workshop Practice /B. L. Juneja / Cengage
2. Workshop Manual / K. Venugopal / Anuradha.