



ACE Engineering College

(An Autonomous Institution)

Ankushapur(V), Ghatkesar(M), Medchal.Dist - 501301

B.TECH I YEAR COURSE STRUCTURE & SYLLABUS

(Common to ECE, CSE (AI&ML) & CSE (IoT))

| IYear | | | | | I Semester | | | |
|--------------|-------------|-------------|-------------------------------------|----------------|------------------|----------|-----------|-----------|
| S.No. | Course Type | Course Code | Course Title | % of Deviation | Periods Per Week | | | Credits |
| | | | | | L | T | P | |
| 1 | BSC | MA101BS | Mathematics – I | 0 | 3 | 1 | 0 | 4 |
| 2 | BSC | PH102BS | Applied Physics | 8 | 3 | 1 | 0 | 4 |
| 3 | ESC | CS103ES | Programming for problem Solving | 8 | 3 | 1 | 0 | 4 |
| 4 | ESC | ME104ES | Engineering Graphics | 0 | 1 | 0 | 4 | 3 |
| 5 | BSC | PH105BS | Applied Physics Lab | 0 | 0 | 0 | 3 | 1.5 |
| 6 | ESC | CS106ES | Programming for problem Solving Lab | 2 | 0 | 0 | 3 | 1.5 |
| 7 | MC | MC107ES | Environmental Science | 0 | 3 | 0 | 0 | 0 |
| 8 | MC | MC108 | Business English | - | 2 | 0 | 0 | 0 |
| | | | Induction Programme | - | | | | |
| Total | | | | | 15 | 3 | 10 | 18 |

| IYear | | | | | II Semester | | | |
|--------------|-------------|-------------|---|----------------|------------------|----------|-----------|-----------|
| S.No. | Course Type | Course Code | Course Title | % of Deviation | Periods Per Week | | | Credits |
| | | | | | L | T | P | |
| 1 | BSC | MA201BS | Mathematics – II | 20 | 3 | 1 | 0 | 4 |
| 2 | BSC | CH202BS | Engineering Chemistry | 15 | 3 | 1 | 0 | 4 |
| 3 | ESC | EE203ES | Basic Electrical Engineering | 2 | 3 | 0 | 0 | 3 |
| 4 | ESC | ME205ES | Engineering Workshop | 0 | 1 | 0 | 3 | 2.5 |
| 5 | HSMC | EN205HS | English | 0 | 2 | 0 | 0 | 2 |
| 6 | ESC | CH206BS | Engineering Chemistry Lab | 0 | 0 | 0 | 3 | 1.5 |
| 7 | HSMC | EN207HS | English Language and Communication Skills Lab | 0 | 0 | 0 | 2 | 1 |
| 8 | ESC | EE208ES | Basic Electrical Engineering Lab | 10 | 0 | 0 | 2 | 1 |
| 9 | MC | MC209 | Python Programming | - | 1 | 0 | 2 | 0 |
| 10 | MC | MC210 | Aptitude & Reasoning | - | 3 | 0 | 0 | 0 |
| Total | | | | | 16 | 2 | 12 | 19 |

MA101BS: MATHEMATICS – I

(Linear Algebra and Calculus)

(Common to CE, EEE, ME, ECE, CSE, IT, CSE(IoT), CSE(AI&ML), CSE(DS))

| B.Tech. I Year I Semester | | | | | | | | |
|---|---------------------------------------|-------------------------------|---|---|--------------------------|---------------|-----|-------|
| Course Code | Category | Hours/Week | | | Credits | Maximum Marks | | |
| MA101BS | BSC | L | T | P | C | CIA | SEE | Total |
| | | 3 | 1 | - | 4 | 30 | 70 | 100 |
| Contact Classes: 45 | Tutorial Classes: 15 | Practical Classes: Nil | | | Total Classes: 60 | | | |
| Prerequisite: Mathematical Knowledge of 12 th / Intermediate level | | | | | | | | |
| <p>Course Objectives: To learn</p> <ul style="list-style-type: none"> • Types of matrices and their properties. • Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations. • Concept of Eigen values and eigenvectors and to reduce the quadratic form to canonical form. • Concept of Sequence. • Concept of nature of the series. • Geometrical approach to the mean value theorems and their application to the mathematical problems. • Evaluation of surface areas and volumes of revolutions of curves. • Evaluation of improper integrals using Beta and Gamma functions. • Partial differentiation, concept of total derivative • Finding maxima and minima of function of two and three variables. | | | | | | | | |
| <p>Course Outcomes: After learning the contents of this paper the student must be able to</p> <ul style="list-style-type: none"> • Write the matrix representation of a set of linear equations and to analyse the solution of the system of equations • Find the Eigen values and Eigen vectors • Reduce the quadratic form to canonical form using orthogonal transformations. • Analyse the nature of sequence and series. • Solve the applications on the mean value theorems. • Evaluate the improper integrals using Beta and Gamma functions • Find the extreme values of functions of two variables with/ without constraints. | | | | | | | | |
| Unit - 1 | Matrices | | | | | | | |
| Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method; Gauss Seidel Iteration Method. | | | | | | | | |
| Unit - 2 | Eigen values and Eigen vectors | | | | | | | |
| Eigen values and Eigen vectors: Linear Transformation and Orthogonal Transformation: Eigen values and Eigenvectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation | | | | | | | | |
| Unit - 3 | Sequences & Series | | | | | | | |
| Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences. Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D-Alembert's ratio test; Raabe's test; Cauchy's Integral test; Cauchy's root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence. | | | | | | | | |
| Unit - 4 | Calculus | | | | | | | |

Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem. Taylor's Series. Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and their applications.

| | |
|---------------------|--|
| Unit - 5 | Multivariable calculus (Partial Differentiation and applications) |
|---------------------|--|

Definitions of Limit and continuity. 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.

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.

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. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

Web References:

- 1) SWAYAM Online Courses <https://storage.googleapis.com/uniquecourses/online.html>
- 2) Directory of Open Access Journals <https://doaj.org/>
- 3) Springer Open Journals <https://www.springeropen.com/journals>
- 4) UG/PG MOOCs http://ugcmoocs.inflibnet.ac.in/ugcmoocs/moocs_courses.php

E-Text Books:

- 1) National Digital Library: <https://ndl.iitkgp.ac.in/>
- 2) NCERT Text Books <http://ncert.nic.in/textbook/textbook.htm>
- 3) Directory of Open Access Books <https://www.doabooks.org/>

PH102BS/PH202BS : APPLIED PHYSICS

| B. TECH- I YEAR I SEMESTER | | | | | | | | |
|---|--------------------------------|-------------------------------|----------|----------|--------------------------|----------------------|------------|--------------|
| Course Code | Category | Hours/Week | | | Credits | Maximum Marks | | |
| PH102 BS | BSC | L | T | P | C | CIA | SEE | TOTAL |
| | | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| CONTACT CLASSES:45 | TUTORIAL CLASSES:15 | PRACTICAL CLASSES: NIL | | | TOTAL CLASSES :60 | | | |
| PREREQUISITES: Intermediate level Physics and Mathematics | | | | | | | | |
| COURSE OBJECTIVES | | | | | | | | |
| To make the student | | | | | | | | |
| <ol style="list-style-type: none"> 1. Understand the basic concepts of Quantum Physics 2. Learn the basics of semiconductors and operation of devices PN Diode, Zener Diode, BJT. 3. Understand basics of direct band gap semiconductors and operation of Opto-Electronic devices. 4. Gain knowledge on different ways of production of lasers and the basics of fiber optics 5. Get familiarized with the nature of different dielectric and magnetic materials and electromagnetic theory | | | | | | | | |
| COURSE OUTCOMES: | | | | | | | | |
| After completion of this course the student will be able to | | | | | | | | |
| <ol style="list-style-type: none"> 1. Explain the wave-particle duality of both radiation and matter 2. Explain the different types of semi-conductors and the operation & characteristics of PN Diode, Zener diode and BJT 3. Describe the operation & characteristics of Opto- Electronic devices 4. Illustrate the features of a laser beam and its applications and explain fiber optic communication 5. Classify various dielectric and magnetic materials and explain the basics of electromagnetic theory | | | | | | | | |
| UNIT 1: | QUANTUM MECHANICS | | | | | | | |
| Introduction to quantum physics, de-Broglie's hypothesis, Wave-particle duality, Davisson-Germer experiment, Heisenberg's Uncertainty principle, Born's interpretation of the wave function, Schrodinger's time independent wave equation, Particle in one dimensional box, Bloch's Theorem-Electron motion in a periodic potential- Kronig-Penney Model-Effective Mass-Origin of Energy Bands in solids-Classification of materials into conductors, semiconductors and insulators. | | | | | | | | |
| UNIT 2: | SEMICONDUCTOR PHYSICS | | | | | | | |
| Intrinsic and Extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature, Carrier generation and recombination, Carrier transport: diffusion and drift, Hall effect, p-n junction diode, Zener diode and their V-I Characteristics, Bipolar Junction Transistor (BJT): Construction, Principle of operation. | | | | | | | | |
| UNIT 3: | 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 4: | LASERS AND FIBER OPTICS | | | | | | | |
| Lasers: Introduction to interaction of radiation with matter, Coherence, Principle and working of Laser, Population inversion, Pumping, Types of Lasers: Ruby laser, Carbon dioxide (CO ₂) laser, He-Ne laser, Applications of laser. Fiber Optics: Introduction, Optical fiber as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, Step and Graded index fibers, Losses associated with optical fibers, Applications of optical fibers | | | | | | | | |

UNIT 5: ELECTROMAGNETISM & MAGNETIC PROPERTIES OF MATERIALS

Laws of electrostatics, Electric current and the continuity equation, Ampere's and Faraday's laws, Maxwell's equations, Polarization, Permittivity and Dielectric constant, Internal fields in a solid, Clausius-Mosotti equation, Ferroelectrics and Piezoelectric materials. Magnetization, permeability and susceptibility, Classification of magnetic materials, Ferromagnetism and ferromagnetic domains, Hysteresis, Applications of magnetic materials

Text Books:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learning
2. Integrated Electronics by J. Millman and C. Halkias, TMH

Reference Books:

1. Richard Robinett, "Quantum Mechanics" 2nd ed. -Oxford.
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, MGH (1995).
3. Halliday and Resnick, Physics - Wiley.
4. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S. Chand

Web References:

1. web.mit.edu/6.732
2. <https://learnabout-electronics.org/semiconductors>
3. www.Aip.org/history/Heisenberg/p08.html
4. <https://www.youtube.com/watch?v=wpAA3qeOYil>
5. <https://www.youtube.com/watch?v=OyC02DWq3mI>
6. <https://www.youtube.com/watch?v=KFCgeI4j-Ig>
7. <http://www.infocobuild.com/education/audio-video-courses/materials-science/optoelectronic-materials-and-devices-iit-kanpur.html#:~:text=Instructors%3A%20Prof.-,Deepak%20Gupta%20and%20Prof.,in%20optoelectronics%20and%20semiconductor%20devices.>
8. <https://circuitglobe.com/light-emitting-diode-led.html>
9. <https://solarlove.org/how-solar-cells-work-components-operation-of-solar-cells/>

E-Text Books:

1. <https://www.e-booksdirectory.com/details.php?ebook=11931>
2. <https://www.e-booksdirectory.com/details.php?ebook=5855>
3. <https://www.e-booksdirectory.com/details.php?ebook=5302>

CS103ES/CS203ES: PROGRAMMING FOR PROBLEM SOLVING

| B. Tech I Year I Semester | | | | | | | | |
|--|--|-------------------------------|----------|----------|--------------------------|----------------------|------------|--------------|
| Course Code | Category | Hours/Week | | | Credits | Maximum Marks | | |
| CS103ES/CS203ES | Core | L | T | P | C | CIA | SEE | Total |
| | | 3 | 1 | - | 4 | 30 | 70 | 100 |
| Contact Classes: 45 | Tutorial Classes: 15 | Practical Classes: Nil | | | Total Classes: 60 | | | |
| Prerequisite: Basic knowledge of Computer | | | | | | | | |
| Course Objectives: <ul style="list-style-type: none"> To understand the various steps in program development. To learn the syntax and semantics of C programming language. To learn the usage of structured programming approach in solving problems. To learn modular programming approach in programming To understand and learn the concept of derived data types. | | | | | | | | |
| Course Outcomes: <ul style="list-style-type: none"> To write algorithms and to draw flowcharts for solving problems. To convert the algorithms/flowcharts to C programs. To code and test a given logic in C programming language. To decompose a problem into module (functions) and to develop modular reusable code. To use derived data type to write advanced C programs. | | | | | | | | |
| Unit-1 | COMPUTER FUNDAMENTALS AND INTRODUCTION TO C LANGUAGE No. of Classes: 15 | | | | | | | |
| Introduction to components of a computer system: disks, primary and secondary memory, processor, operating system, compilers, creating, compiling and executing a program etc., Number systems Introduction to Algorithms: steps to solve logical and numerical problems. Representation of Algorithm, Flowchart/Pseudo code with examples, Program design and structured programming Introduction to C Programming Language: variables (with data types and space requirements), Syntax and Logical Errors in compilation, object and executable code, Operators, expressions and precedence, Expression evaluation, Storage classes (auto, extern, static and register), type conversion, The main method and command line arguments Bitwise operations: Bitwise AND, OR, XOR and NOT operators Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, goto, Iteration with for, while, do while loops I/O: Simple input and output with scanf and printf, formatted I/O, Introduction to stdin, stdout and stderr. | | | | | | | | |
| Unit-2 | Derived Data Types | | | | | | | |
| Arrays: one and two dimensional arrays, creating, accessing and manipulating elements of arrays Strings: Introduction to strings, handling strings as array of characters, basic string functions available in C (strlen, strcat, strcpy, strstr etc.), arrays of strings Structures: Defining structures, initializing structures, unions, Array of structures Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, Use of Pointers in self-referential structures, usage of self-referential structures in linked list (no implementation) Enumeration data type | | | | | | | | |
| Unit-3 | Files | | | | | | | |
| Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, ifdef, ifndef Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data to existing files, Writing and reading structures using binary files, Random access using fseek, ftell and rewind functions. | | | | | | | | |
| Unit-4 | Functions | | | | | | | |
| Functions: Designing structured programs, Declaring a function, Signature of a function, Parameters and | | | | | | | | |

return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries
Recursion: Simple programs, such as Finding Factorial, Fibonacci series etc., Limitations of Recursive functions
Dynamic memory allocation: Allocating and freeing memory, Allocating memory for arrays of different data types

Unit-5

Applications of Arrays & Analysis of algorithms

Algorithms for finding roots of a quadratic equations, finding minimum and maximum numbers of a given set, finding if a number is prime number, etc.
Basic searching in an array of elements (linear and binary search techniques),
Basic algorithms to sort array of elements (Bubble, Insertion, Selection, **Quick and Merge** sort algorithms)

Stack using Arrays and Queue using Arrays

Basic concept of order of complexity through the example programs

Text Books:

1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
2. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rd Edition)

Reference Books:

1. 'C Programming: A Modern Approach (2nd Edition)' by K. N. King
2. Let us c by Yawant Kanetkar
3. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
4. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India
5. R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)
6. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
7. Herbert Schildt, C: The Complete Reference, Mc Graw Hill, 4th Edition

Web References:

1. <https://github.com/EbookFoundation/free-programming-books/blob/master/free-programming-books.md#c>
2. https://publications.gbdirect.co.uk//c_book/

E-Text Books:

1. <https://books.goalkicker.com/CBook/>
2. <http://www2.cs.uregina.ca/~hilder/cs833/Other%20Reference%20Materials/The%20C%20Programming%20Language.pdf>
3. <https://www.stormingrobots.com/prod/tutorial/pdf/kingBook-ch1to10.pdf>

ME104ES/ME204ES: ENGINEERING GRAPHICS

| B.Tech. I Year I Semester | | | | | | | | |
|---|--|------------------------------|---|---|--------------------------|----------------------|-----|-------|
| Course Code | Category | Hours/Week | | | Credits | Maximum Marks | | |
| ME104ES/ME204ES | ESC | L | T | P | C | CIA | SEE | Total |
| | | 1 | 0 | 4 | 3 | 30 | 70 | 100 |
| Contact Classes: 15 | Tutorial Classes: 0 | Practical Classes: 60 | | | Total Classes: 75 | | | |
| Prerequisite: Fundamental mathematical knowledge and thinking ability. | | | | | | | | |
| Course Objectives: | | | | | | | | |
| <ul style="list-style-type: none"> • To provide basic concepts in engineering drawing. • To impart knowledge about standard principles of orthographic projection of objects. • To draw sectional views and pictorial views of solids. | | | | | | | | |
| Course Outcomes: At the end of the course, the student will be able to: | | | | | | | | |
| <ul style="list-style-type: none"> • Preparing working drawings to communicate the ideas and information. • Read, understand and interpret engineering drawings. | | | | | | | | |
| Unit: I | Introduction to Engineering Drawing | | | | | | | |
| Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Scales – Plain & Diagonal. | | | | | | | | |
| Unit: II | Orthographic Projections | | | | | | | |
| Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures.—Auxiliary Planes. | | | | | | | | |
| Unit: III | Projections of Regular Solids | | | | | | | |
| Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views – Sections of Sphere. | | | | | | | | |
| Unit: IV | Development of Surfaces of Right Regular Solids | | | | | | | |
| Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Intersection of Solids: Intersection of – Prism vs Prism- Cylinder Vs Cylinder. | | | | | | | | |
| Unit: V | Isometric Projections | | | | | | | |
| Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa – Conventions | | | | | | | | |
| 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 | | | | | | | | |
| <ol style="list-style-type: none"> 1. Engineering Drawing N.D.Bhatt/Charotar. 2. Engineering Drawing / N. S. Parthasarathy and VelaMurali/Oxford. | | | | | | | | |
| Reference Books | | | | | | | | |
| <ol style="list-style-type: none"> 1. Engineering Drawing / Basant Agrawal and McAgrawal/McGrawHill. 2. Engineering Drawing/ M. B. Shah, B.C. Rane/Pearson. 3. Computer Aided Engineering Drawing – K Balaveera Reddy et al –CBS Publishers. | | | | | | | | |
| Web References: | | | | | | | | |
| <ol style="list-style-type: none"> 1. http://www.ndl.iitkgp.ac.in/ | | | | | | | | |
| E-Text Books: | | | | | | | | |
| <ol style="list-style-type: none"> 1. http://www.pdfdrive.com/engineering-drawing-books.html 2. http://www.examupdates.in/engineering-drawing-text-book/ | | | | | | | | |

**PH105BS/PH205BS:APPLIED PHYSICS
LAB**

| B. Tech I Year I Semester | | | | | | | | |
|----------------------------------|------------------------------|---------------------------|----------|----------|-------------------------|---------------|------------|--------------|
| Course code | Category | Hours/week | | | Credits | Maximum Marks | | |
| PH 105BS / PH205 BS | BS | L | T | P | C | CIA | SEE | Total |
| | | - | - | 3 | 1.5 | 30 | 70 | 100 |
| Contact Classes: Nil | Tutorial Classes: Nil | Practical Classes: | | | Total Classes:39 | | | |
| | | 39 | | | | | | |

Prerequisites: none

Course Objectives:

To make the student

1. To gain knowledge by applying the experimental methods to correlate with the theoretical concepts
2. To learn the usage of various electrical, magnetic and optical tools for measuring related parameters
3. To Apply the analytical techniques and graphical analysis to the experimental data
4. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group

Course Outcomes:

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

1. Operate different sets of measuring tools and techniques
2. Compute relevant physical quantities from the observed measurements and interpret through graphical methods in experiments using LCR, RC, LED, Solar Cell, Laser Diode circuit boards
3. Compare the experimental results with their theoretical counterparts
4. Demonstrate basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

List of Experiments:

- 1) Charging, discharging and time constant of an R-C circuit
- 2) L-C-R circuit – Resonance & Q-factor
- 3) Magnetic field along the axis of current carrying coil – Stewart and Gees method
- 4) Study the characteristics of a LED
- 5) Study the characteristics of a LASER diode
- 6) Bending losses of fibres & Evaluation of numerical aperture of a given fibre
- 7) Energy gap of a material of p-n junction
- 8) Hall Effect- Determination of Hall Coefficient
- 9) Solar Cell-I-V Characteristics and Fill Factor
- 10) Photoelectric Effect- Determination of Planck's Constant

(Any eight experiments to be mandatorily performed by the student)

List of Equipment Required:

Function
Generators
Battery
Eliminators
Ammeters
Rheostats
LCR
Circuit
Boards R-C
Circuit
Boards
Laser Characteristics-Circuit
Boards LED characteristics
Boards
Energy
Gap Kits

Optical
Fiber Kits
Hall Effect circuit Boards Photoelectric effect circuit Boards

Text Books:

1. C. L. Arora, "Practical Physics", S. Chand & Co., New Delhi, 3rd Edition, 2012.
2. Vijay Kumar, Dr. T. Radhakrishna, "Practical Physics for Engineering Students", S MEnterprises, 2nd Edition, 2014
- 3 Y. Aparna, K. Venkateswarao, "Engineering Physics Lab Manual", VGS Book links 2010

Reference Books:

1. C.F. Coombs, "Basic Electronic Instrument Handbook", McGraw-Hill Book Co.,1972.
2. C.H. Bernard and C.D. Epp, John Wiley and Sons, "Laboratory Experiments in College Physics" Inc., New York,1995.

Web References:

1. <https://www.scribd.com/doc/143091652/engineering-physics-lab>
2. https://www3.nd.edu/wzech/LabManual_0907c.pdf
3. <https://www.morebooks.de/store/gb/book/engineering-physics-lab-manual/isbn/978-3-330-34402>.

5. Write a C program that sorts the given array of integers using insertion sort in ascending order
6. Write a C program that sorts the given array of integers using merge sort and quick sort in ascending order

Pointers & Dynamic Memory Allocation

1. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.
2. Write a program for reading elements using pointer into array and display the values using array.
3. Write a program for display values reverse order from array using pointer.
4. Write a program through pointer variable to sum of n elements from array.

Strings:

1. Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.
2. Write a C program that converts a number ranging from 1 to 50 to Roman equivalent
3. Write a C program that uses functions to perform the following operations:
 - a. To insert a sub-string in to a given main string from a given position.
 - b. To delete n Characters from a given position in a given string.
4. Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)
5. Write a C program that displays the position of a character ch in the string S or – 1 if S doesn't contain ch.
6. Write a C program to count the lines, words and characters in a given text.
7. Write a C program that sorts a given array of names

Structures

1. Define a structure for Student with Sno, Sname, marks of three subjects, avg. Write a C program to read 4 students information and display grade of the student.
2. Define a structure called books with book name, author, price, pages, and edition. Write a C program to read and display a book information using pointer.
3. Define a structure for complex number. Write functions on complex numbers (addition, subtraction, multiplication, division, complex conjugate) and implement them in a menu driven style.

Files:

1. Write a C program to display the contents of a file to standard output device.
2. Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.
3. Write 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.
4. Write a C program that does the following:
It should first create a binary file and store 10 integers, where the file name and 10 values are given in the command line. (hint: convert the strings using atoi function) Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function) The program should then read all 10 values and print them back.
5. 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).
6. Write a C program to display first n characters of a file in reverse order.

List of Equipment/Software (with Specifications or Range) Required:

A Computer System with Ubuntu operating system and GCC Compiler

References

1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
2. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rd Edition)
3. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice
4. Hall of India
5. R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)
6. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
7. Herbert Schildt, C: The Complete Reference, Mc Graw Hill, 4th Edition

MC107ES/MC207ES: ENVIRONMENTAL SCIENCE

| B.Tech. I Year I Semester | | | | | | | | |
|--|---|-------------------------------|---|---|--------------------------|---------------|-----|-------|
| Course Code | Category | Hours/Week | | | Credits | Maximum Marks | | |
| MC107ES/MC207ES | MC | L | T | P | C | CIA | SEE | Total |
| | | 3 | - | - | 0 | 30 | 70 | 100 |
| Contact Classes: 45 | Tutorial Classes: Nil | Practical Classes: Nil | | | Total Classes: 45 | | | |
| Prerequisite: Nil | | | | | | | | |
| Course Objectives: <ul style="list-style-type: none"> • Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures. • Understanding the environmental policies and regulations | | | | | | | | |
| Course Outcomes: <ul style="list-style-type: none"> • Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development | | | | | | | | |
| Unit - 1 | Ecosystems | | | | | | | |
| Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits. | | | | | | | | |
| Unit - 2 | Natural Resources & Energy resources | | | | | | | |
| Natural Resources: Classification of Resources: Living and Non-Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land resources: Forest resources, Energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies. | | | | | | | | |
| Unit - 3 | Biodiversity And Biotic Resources | | | | | | | |
| Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act. | | | | | | | | |
| Unit - 4 | Environmental Pollution and Control Technologies | | | | | | | |
| Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. Water pollution: Sources and types of pollution, drinking water quality standards. Soil Pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management. | | | | | | | | |
| Pollution control technologies: Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. | | | | | | | | |
| Global Environmental Issues and Global Efforts: Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI Initiatives. | | | | | | | | |

| Unit - 5 | Environmental Policy, Legislation & EIA |
|--|---|
| <p>Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP).</p> <p>Towards Sustainable Future: Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.</p> | |
| <p>TextBooks:</p> <p>1 Textbook of Environmental Studies for Undergraduate Courses by ErachBharucha for University Grants Commission. 2 Environmental Studies by R. Rajagopalan, Oxford UniversityPress.</p> | |
| <p>Reference Books:</p> <p>1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi. 2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt.Ltd. 3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIAedition. 4. Environmental Studies by Anubha Kaushik, 4th Edition, New age internationalpublishers. 5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BSPublications. 6. Introduction to Environmental Science by Y. Anjaneyulu,BS.Publications.</p> | |
| <p>Web References:</p> <p>1.Fundamental concepts in Environmental Studies by Dr.D.DMishra 2.Basis of Environmental Science by MichealAllaby</p> | |
| <p>E-Text Books:</p> <p>1.[ebook] A Text Book of environmental studies by Shashi Chawla - Meripustak.com 2. [ebook] A Text Book of environmental studies by Dr.D.K.Asthana https://books.google.co.in</p> | |

MC108/MC208:BUSINESS ENGLISH

| B.Tech. I Year I Semester | | | | | | | | |
|--|---------------------------------|------------------------|----------|----------|-------------------|---------------|------------|--------------|
| Course Code | Category | Hours/Week | | | Credits | Maximum Marks | | |
| MC108/MC208 | MC | L | T | P | C | CIA | SEE | Total |
| | | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| Contact Classes: 30 | Tutorial Classes: - | Practical Classes: Nil | | | Total Classes: 30 | | | |
| Prerequisite: Knowledge of functional English, basics in grammar, understanding of LSRW skills | | | | | | | | |
| <p>Course Objectives: To teach students how to apply the knowledge of grammar in everyday usage, illustrate the significance of communication in professional life and emphasize the need to be a continuous learner in the context of globalization.</p> | | | | | | | | |
| <p>Course Outcomes: Students should be able to</p> <ol style="list-style-type: none"> 1. Use English Language effectively in spoken and written forms. 2. Comprehend the given texts and respond appropriately in formal and informal situations. 3. Communicate confidently in various contexts and different cultures. 4. Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills to perform effectively in personal and professional contexts. | | | | | | | | |
| Unit - 1 | COMMUNICATION | | | | | | | |
| <p>Reading: Goal of Reading, General Strategies for Reading Comprehension, Previewing, Predicting, Identifying the main Idea, Questioning, Making Inferences, Visualizing Listening: A conversation on phone, Listening to a travel anecdote Writing: Filling in an application form, Writing emails Speaking: Breaking the Ice, JAM sessions Vocabulary: Word Formation : Homophones, Homonyms, Homographs</p> | | | | | | | | |
| Unit - 2 | DEVELOPMENT AND TRAINING | | | | | | | |
| <p>Reading: Reading between the Lines, Reading and answering a quiz Listening: Listening to an Interview on Radio, A conversation between colleagues Writing: Letters- responding to an invitation, letter of enquiry, letter of apology Speaking: Role Play: How to make decisions, Giving the summary of an article, Descriptions Vocabulary: Synonyms and Antonyms, One-word substitutes</p> | | | | | | | | |
| Unit - 3 | CORPORATE CULTURE | | | | | | | |
| <p>Reading: Reading beyond the lines, An article on the power of customers' opinions online Listening: Working in Teams, Talking about Meetings Writing: A memo asking for suggestions, Minutes of the meetings Speaking: Discussion- How to make work place more ecofriendly? Vocabulary: Technical or business vocabulary, emails and website terms</p> | | | | | | | | |

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| Unit - 4 | BEING PERSUASIVE |
| <p>Reading: Reading for Negative Facts, The art of agreeing and disagreeing Listening: What makes people persuasive, People negotiating a sale at a tradefair Writing: A survey report, Completing a businessreport Speaking: Things that are important when making a presentation, shortpresentations Vocabulary: Cohesive Devices or Linkers, Collocations</p> | |
| Unit - 5 | THINKING GLOBALLY |
| <p>Reading: Thinking outside the box, Reading and comparing two articles, Ways of using social media Listening: Thinking Globally, Social Media and Customers, Netiquette Writing: Mail for a Job application Speaking: How to use social media for your professional enhancement Vocabulary: Avoiding Clichés, Idioms and Phrases</p> | |
| <p>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.</p> | |
| <p>Web References: 1. elt.oup.com/learningresources 2. www.cambridgeenglishonline.org 3. www.eslcafe.com 4. bbc.co.uk/worldservice/learningenglish 5. www.manythings.org</p> | |
| <p>E-Text Books: 1. The secret to perfecting your grammar - Bloomsbury International</p> | |