ELECTRICAL AND ELECTRONICS ENGINEERING (EEE)
FOUR YEAR B.TECH DEGREE COURSE
Scheme of Instruction and Examination

I SEM EEE **Scheme-2020**

S. No	Category	Course Title	Credits	Scheme of Instruction periods/week			Scheme of Examination Maximum Marks		
				L	T	P/D	End Exam Marks	CIA Marks	Total Marks
I		**Theory**							
1.	BSC	Differential Equations and Linear Algebra	3	2	1	-	60	40	100
2.	BSC	Engineering Chemistry	3	3	-	-	60	40	100
3.	HSSC	English	3	3	-	-	60	40	100
4.	ESC	Engineering Drawing	3	1	-	4	60	40	100
5.	ESC	Programming for Problem Solving	3	3	-	-	60	40	100
6	Audit	English Proficiency Course	-	-	-	3	-	-	-
II		**Practicals**							
7	BSL	Engineering Chemistry Lab	1.5	-	-	3	60	40	100
8.	HSSL	Phonetics & Communication Skills Lab	1.5	-	-	3	60	40	100
9	ESL	Programming for Problem Solving Lab	1.5	-	-	3	60	40	100
		Total	**19.5**						

II SEM EEE **Scheme-2020**

S. No	Category	Course Title	Credits	Scheme of Instruction periods/week			Scheme of Examination Maximum Marks		
				L	T	P/D	End Exam Marks	CIA Marks	Total Marks
I		**Theory**							
1.	BSC	Advanced Calculus and Transforms	3	2	1	-	60	40	100
2.	BSC	Applied Physics	3	3	-	-	60	40	100
3.	ESC	Electric Circuit Theory	3	3	-	-	60	40	100
4.	ESC	Electronic Devices and Circuits	3	3	-	-	60	40	100
5.	ESC	Data Structures	3	3	-	-	60	40	100
6	MC	Environmental Studies	-	2	-	-	-	100	100
II		**Practicals**							
7.	BSL	Applied Physics Lab	1.5	-	-	3	60	40	100
8	ESL	Electronic Devices and Circuits Lab	1.5	-	-	3	60	40	100
9	ESL	Data structures Lab	1.5	-	-	3	60	40	100
		Total	**19.5**						

DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA (DELA)

I Semester : Common for **ECE & EEE**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
		L	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
BS102	BSC	**2**	**1**	**-**	**3**	**40**	**60**	**100**

Sessional Exam Duration : 1 ½ Hrs **End Exam Duration: 3 Hrs**

Course Outcomes: At the end of the course the student able to

CO1: Find the solution for system of linear equations by matrix methods.

CO2: Find Eigen values and Eigen vectors of matrices.

CO3: Solve ordinary differential equations of first order and its applications.

CO4: Solve ordinary differential equations of higher order and its applications.

CO5: Solve partial differential equations of first order.

UNIT – I

Matrices

Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method. System of linear equations – Rouche's Theorem (Statement only), Consistency of a systems of Homogeneous and Non-Homogeneous linear equations, Gauss elimination method, Gaussian Jordan method and LU Decomposition. Complex Matrices - Hermitian, Skew-Hermitian and Unitary matrices and simple examples.

UNIT - II

Eigen values and Eigen vectors

Linear Transformation and Orthogonal Transformation. Eigen values and Eigen vectors and their properties, Diagonalization of a matrix, Cayley-Hamilton Theorem (without proof), Finding inverse and power of a matrix by Cayley-Hamilton Theorem. Quadratic form – Reduction of Quadratic form to canonical form by Orthogonal Transformation

UNIT – III

Ordinary differential equations of first order

Formation of differential equations, Solution of differential equations of the first order and first degree – variables separable, homogeneous equations, reducible to homogeneous form, linear equations , Bernoulli's equations, exact differential equations, equations reducible to exact equations. Applications of first order differential equations (simple electric circuits e.g., R - L and R - C series circuits with dc source)

UNIT – IV

Ordinary differential equations of higher order

Homogeneous linear differential equations of second and higher order with constant coefficients, Non-homogeneous term of the type $f(x)=e^{ax}$, $\sin ax, \cos ax$, x^n, $e^{ax}v(x)$, $x\,v(x)$ and General case, Method of variation of parameters, Method of undetermined coefficients. Cauchy's homogeneous linear equation, Legendre's linear equation, applications to R-L-C circuits. (oscillatory electrical circuits e.g., L – C and R-L-C series circuits with and without ac source)

UNIT - V

Partial differential equations

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions, linear equations of first order –Lagrange's linear equation, solutions of non linear equations of first order, method of separation of variables.

Text Books

1. B.S. Grewal, “Higher Engineering Mathematics”, Khanna Publishers, 42nd Edition, 2012.
2. T.K.V.Iyengar and others, “A Text Book of Engineering Mathematics”, Vol I & II - S.Chand & Company, 13th Edition 2014.

Reference Books

1. B.V. Ramana, “Higher Engineering Mathematics”, TMH Publishers, 2nd Edition, 2006.
2. N.P.Bali and others, “A Text Book of Engineering Mathematics”, Lakshmi publishers, 7th Edition, 2009.
3. Erwyn Kreyszig, “Advanced Engineering Mathematics”, John wiley, 8th Edition 2006.

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

ENGINEERING CHEMISTRY (EC)

I / II Semester : CE,EEE,ME /ECE						Scheme: 2020		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
		L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
BS109	BSC	3	-	-	3	40	60	100
Sessional Exam Duration : 1 ½ Hrs						End Exam Duration: 3 Hrs		

Course Outcomes : At the end of the course students are able to

CO1: Understand the concept of electrochemistry distinguishes primary and secondary cell, energy storage devices and explains the concept of corrosion with preventing methods.

CO2: Describes the water quality issues for steam generation in the boilers and problems associated with treatment.

CO3: Understand the basic concepts of phase rule and refractories.

CO4: Judge the quality of coal, petrol, diesel and lubricants. Understand the efficiency of combustion.

CO5: Understand the chemistry of polymers and composites.

UNIT – I

Electrochemistry & Corrosion

Single electrode potential- Determination. EMF of a cell and its measurement, Nernst equation, numerical problems. Electrochemical series & its applications. Electrochemical energy systems – primary batteries – dry cell, secondary batteries- lithium ion battery, Fuel cells-H_2-O_2 Fuel cell. Conductometric titrations.

Process of chemical & electrochemical corrosion and their mechanisms. Galvanic series- Galvanic corrosion, stress corrosion. Concentration cell corrosion- differential aeration corrosion, metal ion concentration corrosion and pitting corrosion. Factors influencing corrosion. Corrosion control methods - Cathodic protection and corrosion inhibitors. Protective coatings - Metallic coatings - Hot dipping – Galvanization and Tinning, Organic coatings - Paints.

UNIT – II

Water Chemistry

Hardness of water- Types, expression, units and numerical problems. Analysis of water-Determination of hardness of water by EDTA method, alkalinity and dissolved oxygen by Winkler's method. Disadvantages of hard water-boiler troubles-scale and sludge, caustic embrittlement, priming & foaming and boiler corrosion. Water softening methods – internal conditioning - calgon process, colloidal conditioning & external conditioning – zeolite process and ion exchange process.

Desalination – reverse osmosis.

UNIT – III

Phase rule & Refractories

Terms involved in phase rule equation, definition, explanation with examples. Application to one component system - water and sulphur systems. Condensed phase rule-Two component alloy systems - Pb-Ag system.

Refractory-classification. Properties- refractoriness, refractoriness under load, thermal spalling, porosity and thermal conductivity. Reasons for failure of refractory.

UNIT – IV

Fuel Technology & Lubricants

Fuels-Classification. Calorific value-types, units and its determination by Bomb calorimeter. Solid fuels- Coal-proximate and ultimate analysis. Liquid fuels – Petroleum-refining, cracking-catalytic cracking. Synthetic petrol-Fischer-Tropsch's & Bergius process, Reforming of petrol, knocking-octane number, diesel- cetane number. Preparation of biodiesel. Gaseous fuels-Composition & uses of Natural gas, LPG & CNG. Combustion- numerical problems - calculation of volume and mass of oxygen and

air. Flue gas Analysis by Orsat's Apparatus.

Lubricants- Classification of lubricants with examples. Definition and significance of the following characteristics of a good lubricating oil- viscosity, viscosity index, flash & fire point, acid number, saponifaction value, pour point and cloud point.

UNIT – V

Polymers & Composites

Fundamentals of addition & condensation polymerization with examples. Thermoplastic and Thermosetting plastics. Preparation, properties and uses of PVC, Teflon, Nylons, Bakelite, Polyurethane. Rubber – Processing of latex. Drawbacks of natural rubber, vulcanization, properties of vulcanized rubber. Synthetic rubber- Buna S, Buna N, Silicone and Butyl Rubbers. Polymer composites – definition and uses of FRP - laminar composites.

Text Books :

1. P.C. Jain and Monika Jain, Engineering Chemistry, Dhanpat Rai and Sons, New Delhi 2010,15th edition.

Reference Books :

1. Shashi Chawla, A Reading of Engineering Chemistry, Dhanpat Rai and Co., New Delhi, 2011,3rd edition.

2. Gowariker et al., Polymer Science and Technology, Prentice Hall of India Pvt. Ltd., New Delhi, 2004, 10th reprint.

3. Puri, Sharma and Pathania "Principles of Physical Chemistry". Vishal Publishing Co., Jalandhar, 1991, 31st edition.

4. Kuriacose, J.C and Rajaram, J, Engineering Chemistry, Volume I/II, Tata McGraw – Hill Publishing Co. Ltd. New Delhi, 2010, 2nd edition.

5. S.S.Dara, A Textbook of Engineering Chemistry, S. Chand & Co.Ltd. New Delhi, 2007, 10th Edition

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

ENGLISH (ENG)

I/II Semester : Common for CE, EEE, ME/ ECE, CSE & CST						Scheme: 2020		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
HU101	HSSC	L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
		3	-	-	3	40	60	100
Sessional Exam Duration : 1 ½ Hrs						End Exam Duration: 3 Hrs		

Course Outcomes : At the end of the course the students are able to

CO1: Use grammatically acceptable English in oral and written communication.

CO2: Use appropriate vocabulary in technical and general contexts.

CO3: Comprehend general and technical content using various reading skills like skimming and scanning.

CO4: Write letters, summaries and essays of topical, narrative, descriptive, analytical and persuasive nature.

CO5: Write job applications, resumes, memos and e-mails.

UNIT – I

I Have a Dream: An Independent, Development and Strong India – Dr. A.P.J. Abdul Kalam

Vocabulary: Synonyms and Antonyms

Grammar: Parts of speech, types of nouns, Pronouns and Adjectives

Reading: Reading with a Purpose: Reading for Understanding, Note - Making

Writing: Punctuation, Writing notes and Paragraphs, Note – Taking

UNIT - II

The Doctor's Word – R.K. Narayan

Vocabulary: One-word Substitutes, Idioms and Idiomatic Phrases

Grammar: Adverbs, Verbs –Verb forms, Types of Verbs, Prepositions, Conjunctions and Articles, Word Order

Reading: Skimming and Scanning, Reading Comprehension

Writing: Business Letters & E-mail Writing

UNIT – III

Stay Hungry, Stay Foolish - Steve Jobs

Vocabulary: Prefixes and Suffixes, Homophones and Homonyms Grammar: Tenses, Concord, Voices and Reported Speech

Reading: Use of Dictionary, Thesaurus, Library and Internet for Information

Writing: Writing Cover Letters for Job Applications and Resume Preparation

UNIT – IV

Once there was a King – Rabindranath Tagore

Vocabulary: Words often Confused and Collocations

Grammar: Question Tags, Degrees of Comparison, Transformation of Sentences and Correction of Sentences

Reading: Précis Writing

Writing: Memo Writing

Text Books

1. The Enriched Reading by D. Sudha Rani, Pearson India Education Services Pvt. Ltd, Second Impression, 2017.

Reference Books

1. Michael Swan, “Practical English Usage”, Third Edition, OUP, 2006.
2. David Green, “Contemporary English Grammar”, “Structure and Composition”, Second Edition, Lakshmi Publications, 2015.
3. Oxford Advanced Learner’s “Dictionary of Current English”, OUP, 2015.
4. Meenakshi Raman and Sangeetha Sarma, “Technical Communication Principles and Practice”, 3rd Edition, OUP, 2015.
5. Raj N Bakshi, “English Grammar Practice”, Orient BlackSwan, 2005.
6. Sangeeta Sharma & Binod Mishra, “Communication Skills for Engineers and Scientists”, PHI Learning Private Limited.
7. M. Ashraf Rizvi, “Effective Technical Communication”, Tata McGraw-Hill Publishing Company Ltd. 2005.
8. Dr A. Ramakrishna Rao, Dr G. Natanam & Prof S.A. Sankaranarayanan, “English Language Communication: A Reader cum Lab Manual”, Anuradha Publications, Chennai, 2006.

Question Paper Pattern:

Sessional Exam

I Sessional Examination : 25 Marks

1. Short Answer Questions – 4 Marks
2. Vocabulary – 4 Marks
3. Grammar – 4 Marks
4. Reading Comprehension – 5 Marks
5. Business Letter – 4 Marks
6. E-mail Writing – 4 Marks

II Sessional Examination : 25 Marks

1. Short Answer Questions – 4 Marks
2. Vocabulary – 4 Marks
3. Grammar – 4 Marks
4. Précis Writing – 4 Marks
5. Memo Writing – 4 Marks
6. Job Application Letter – 5 Marks

End Exam :

1. Short Answer Questions – 8 Marks
2. Vocabulary – 8 Marks
3. Grammar – 12 Marks
4. Reading Comprehension –5 Marks
5. Précis Writing – 5 Marks
6. Job Application Letter – 10 Marks
7. E-mail Writing – 6 Marks
8. Memo Writing – 6 Marks

ENGINEERING DRAWING (ED)

I / II Semester : Common to **CE, ECE,ME/ CSE,CST, EEE**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
ME101	ESC	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		1	**-**	**4**	**3**	**40**	**60**	**100**

Sessional Exam Duration : 1 ½ Hrs **End Exam Duration: 3 Hrs**

Course Outcomes : At the end of the course the students are able to

CO1: Understand the concept of projections of an object and draw the projection of points, straight lines and planes.

CO2: Draw projection of regular solids.

CO3: Draw the sectional views of regular solids and their surface developments.

CO4: Draw the orthographic views from given isometric view.

CO5: Draw the isometric views from the orthographic views.

UNIT – I

Introduction to Engineering Drawing

Drawing instruments and their uses, Lettering and Dimensioning. Introduction to polygons and conics. Introduction to scales (not for End examinations)

Orthographic projections

Introduction, planes of projections, projections of points. First angle projection- Projections of straight lines- parallel to one and inclined to other plane- Inclined to both the planes, traces of lines (treatment is limited to simple problems only)

Projection of planes

Regular planes- perpendicular, parallel to one reference plane and inclined to other reference planes - Inclined to both the reference planes

UNIT - II

Projections of solids:

Projections of right regular solids- prism, pyramid, cylinder and cone with axis inclined to one plane and inclined to both planes.

UNIT – III

Sections of Solids:

Sectional views of right regular solids - prism, pyramid, cylinder and cone. True shapes of Sections (Treatment is limited to simple problems only)

Development of Surfaces:

Development of surfaces of right regular solids and their sections - prism, pyramid, cylinder and cone.

UNIT – IV

Orthographic projections:

Conversion of pictorial views into orthographic views (treatment limited to simple blocks)

UNIT – V

Isometric Projections:

Principle of Isometric projection, Isometric scale. Isometric projections of simple planes, regular solids and compound solids.

Text Books

1. K.L.Narayana and P.Kannaiah“ Text book on Engineering Drawing,” Second Edition Scitech Publications, Chennai.,2006
2. N.D.Bhatt and V.M.Panchal,“ Elementary Engineering Drawing “, 45 th Edition , Charotar Publishing house , Anand, India., 2002.

Reference Books

1. K.Venugopal, “ Engineering Drawing and Graphics with Auto CAD” , Fourth Edition,2001, New Age International(P) Limited, Publishers, New Delhi, 2001.
2. Dhananjay A Jolhe,“ Engineering Drawing with an introduction to Auto CAD”, Tata Mc Graw-Hill Publishing Company Ltd. , New Delhi , 2008.
3. M.B.Shaw & B.C.Rana “ Engineering Drawing” Second Edition Pearson Education , New Delhi, 2009

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

PROGRAMMING FOR PROBLEM SOLVING (PPS)

I Semester : Common for **CE,CSE,CST,ECE,EEE & ME**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
CS101	ESC	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		3	**-**	**-**	**3**	**40**	**60**	**100**
Sessional Exam Duration : 1 ½ Hrs						**End Exam Duration: 3 Hrs**		

Course Outcomes : At the end of the course the students are able to

CO1: Understand fundamentals of problem solving concepts with various data types and operators

CO2: Apply conditional and iterative statements for solving a given problem

CO3: Illustrate the applications of functions and storage classes.

CO4: Apply the concepts of pointers and dynamic memory management in problem solving.

CO5: Understand the purpose of structures, unions and files.

UNIT – I

General Problem Solving Concepts

Algorithm, Flowchart for problem solving with Sequential Logic Structure, Decisions and Loops**.**

Imperative Languages

Introduction to imperative language; syntax and constructs of a specific language (ANSI C) – Types Operator and Expressions with discussion of variable naming and Hungarian Notation: Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations, Arithmetic Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operators, Bitwise Operators, Assignment Operators and Expressions, Precedence and Order of Evaluation, Formatted input/output.

UNIT – II

Control Flow with discussion on structured and unstructured programming

Statements and Blocks, If-Else-If, Switch, Loops – while, do, for, break and continue, goto labels, structured and un- structured programming.

UNIT - III

Functions and Program Structure with discussion on standard library

Basics of functions, parameter passing and returning type, C main return as integer, External, Auto, Local, Static, Register Variables, Scope Rules, Block structure, Initialization, Recursion, Pre-processor, Standard Library Functions and return types.

UNIT - IV

Pointers and Arrays

Pointers and address, dynamic memory management, Pointers and Function Arguments, Pointers and Arrays, Address Arithmetic, character Pointers and Functions, Pointer Arrays, Pointer to Pointer, Multi-dimensional array and Row/column major formats, Initialization of Pointer Arrays, Command line arguments, Pointer to functions, complicated declarations and how they are evaluated.

UNIT - V

Structures and Unions

Basic Structure, Structures and Functions, Array of structures, Pointer of structures, Self-referral structures, Table look up, typedef, Unions, Bit-fields.

Files

Introduction to Files, Opening and Closing files, Reading and Writing files, File I/O functions, Error

Handling in files.

Text Books

1. The C Programming Language, B. W. Kernighan and D. M. Ritchie, Second Edition, PHI.
2. Programming in C, B. Gottfried, Second Edition, Schaum Outline Series.

Reference Books

1. C: The Complete Reference, Herbert Schildt, Fourth Edition, McGraw Hill.

2. Let Us C, Yashavant Kanetkar, BPB Publications.

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

ENGINEERING CHEMISTRY LAB (CHP)

I/II Semester : Common for **CE, EEE, ME / ECE**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
BS113	BSL	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		-	**-**	**3**	**1.5**	**40**	**60**	**100**

End Exam Duration: 2 Hrs

Course Outcomes : At the end of the course, students are able to

CO1: Understand and appreciate various analytical methods including instrumentation that acts as a tools in analysis of water.

CO2: Understand various analytical methods in analysis of an alloy.

CO3: Understand various analytical methods including instrumentation that acts as tools in analysis of different fuels.

List of Experiments

Note : At least 12 of the following experiments shall be conducted

Volumetric Analysis

1. Demonstration of analytical balance.
2. Preparation of standard sodium carbonate solution.
3. Estimation of magnesium by EDTA titration.
4. Estimation of copper by EDTA titration.
5. Estimation of total and permanent hardness of water by EDTA titration method.
6. Estimation of copper in brass alloy.
7. Estimation of dissolved oxygen by Winkler's method.

Instrumentation

8. Determination of calorific value of a solid fuel using Bomb calorimeter.
9. Determination of viscosity of lubricating oil using Engler's viscometer.
10. Determination of viscosity of lubricating oil using Redwood viscometer.
11. Determination of strength of mixture of acids (HCl and CH_3COOH) by conductometric titrations.
12. Verification of Beer-Lamberts law using colorimeter.
13. Potentiometric titrations.
14. Determination of simple eutectic of two component system.

PHONETICS AND COMMUNICATION SKILLS LAB (PCSP)

I/II Semester : Common for CE, EEE, ME/ ECE, CSE & CST					Scheme: 2020			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
HU103	HSSL	L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
		-	-	3	1.5	40	60	100

End Exam Duration: 2 Hrs

Course Outcomes : At the end of the course, Students are able to

CO1: Speak Internationally intelligible English without mother tongue accent.

CO2: Adopt appropriate intonation patterns for effective oral communication.

CO3: Identify International phonetic symbols to find the pronunciation of new words.

CO4: Integrate listening skills and speak in English confidently, fluently and effectively.

CO5: Exhibit team playing and leadership skills.

List of Experiments

Phonetics Laboratory

Focus in the lab is on accent neutralization for International Intelligibility

1. Introduction to English phonetic symbols and associated sounds.
2. Practice in consonant sounds
3. Practice in vowel sounds
4. Practice in accent, rhythm and intonation
5. Practice sessions on listening for general information, specific information & comprehension

Communication Skills Laboratory

Focus in the lab is more on fluency than on accuracy

1. Inter-Personal communication
   a) Self introduction
   b) Introducing others
   c) Non-Verbal communication
   d) Posture, Gait and Body language
2. Communication in Formal Situations
   a) Public Speaking – Extempore, Prepared Speech
   b) Role-play
   c) Situational Dialogues
   d) Giving Directions
   e) Sell-out
   f) JAM
   g) Telephone Etiquette

Reference Books :

1. "Exercises in Spoken English Part – I, Part – II & Part – III", Published by EFLU, Hyderabad.
2. Dhamija Sethi, "A Course in Phonetics and Spoken English", Prentice Hall of India, Pvt Ltd.
3. T. Balasubramanyam, "A.Text Book of English Phonetics for Indian Students", Macmillan India Ltd.
4. Krishna Mohan and Meera Benerjee , "Developing Communication Skills", Macmillan India Ltd.
5. D.Souza Eunice and Shahani. G, "Communication Skills in English", Noble Publishing House.

PROGRAMING FOR PROBLEM SOLVING LAB [PPS (P)]

I Semester : Common for **CE, CSE, CST, ECE, EEE & ME**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
CS107	ESL	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**Total**
		-	**-**	**3**	**1.5**	**40**	**60**	**100**

End Exam Duration : 3 Hrs

Course Outcomes : At the end of the course students are able to

CO1: Implement programs using conditional and loop statements in C.

CO2: Develop programs using 1-Dimensional and 2-Dimensional arrays.

CO3: Perform Call by value, Call by reference and Recursion through functions.

CO4: Implement programs using pointers.

CO5: Develop programs using structures and file concepts.

List of Experiments

1. Conditional Statements: Quadratic equations, usage of switch statement.
2. Loop Statements : Adam Number, Cosine series
3. Arrays: Max Min problem, standard deviation and variance.
4. Character Arrays: Palindrome, implementation of string handling functions.
5. Functions and Recursion : Matrix operations, Towers of Hanoi, GCD
6. Pointers: Interchanging problem, implementation of dynamic memory allocation.
7. Structures: Usage of structures in various applications.
8. Files: Reading contents from files and writing contents to files.

Reference Books :

1. Yashavanth P.Kanetkar , “Let us C” , BPB Publications, 7th Edition,2007.

2. B.W. Kernignan and Dennis M.Ritchie, The C Programming Language, (PHI), 2nd Edition 2003.

ADVANCED CALCULUS AND TRANSFORMS (ACT)

II Semester : Common for **ECE & EEE**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
BS105	BSC	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		2	**1**	**-**	**3**	**40**	**60**	**100**
Sessional Exam Duration : 1 ½ Hrs						**End Exam Duration: 3 Hrs**		

Course Outcomes : At the end of the course the student are able to

CO1: Understand mean value theorems, find maxima & minima and areas & volumes by multiple integrals.

CO2: Understand vector differentiation & integration and its applications.

CO3: Determine the Fourier series of a function and its applications.

CO4: Learn Laplace transform of a function and solve the differential equations using Laplace transform.

CO5: Understand the Fourier transforms and Z-transforms.

UNIT – I

Differential Calculus

Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, Taylor's theorem (Statements only), Increasing and decreasing functions, Maxima and Minima of functions of two or three variables.

Integral Calculus

Multiple Integrals- Double and Triple integrals, change of order of integration, double integrals in polar coordinates, change of variables in double integrals, Applications - Area enclosed by plane curves, Volume by double and triple integrals.

UNIT - II

Vector Calculus

Scalar and Vector point functions. Divergence, curl, gradient, Solenoidal and Irrotational vectors. Repeated operations by del. Green's theorem, Stoke's theorem and Gauss - Divergence theorem (Statements only). Applications to theorems.

UNIT – III

Fourier series

Euler's formulae, Dirichlet's conditions. Fourier series of Even and Odd functions. Functions having points of discontinuity. Change of interval. Half–Range Fourier Sine and Cosine series, Practical harmonic analysis.

UNIT – IV

Laplace Transforms

Definitions, Laplace transforms of elementary functions, properties of Laplace transforms, Laplace transforms of derivatives, integrals, multiplication by t, division by t, Laplace transforms of periodic functions, Inverse transforms, Convolution theorem. Applications of Laplace transforms to ordinary differential equations.

UNIT - V

Fourier Transforms

Infinite Fourier Transforms, Fourier Sine and Cosine transforms. Finite Fourier Sine and Cosine Transforms, Inverse Fourier Transforms.

Z-Transforms

Z-Transforms, Inverse Z-Transformation, Properties, Damping rule, Shifting rule- Application of Z-Transforms to Difference equations.

Text Books

1. B.S. Grewal- Higher "Engineering Mathematics", Khanna Publishers, 42nd Edition, 2012.
2. T.K.V.Iyengar and others –"A Text Book of Engineering Mathematics", Vol I & II - S.Chand & Company, 13th Edition 2014.

Reference Books

1. B.V. Ramana –"Higher Engineering Mathematics", TMH Publishers, 2nd Edition, 2006.
2. N.P.Bali and others –"A Text Book of Engineering Mathematics", Lakshmi publishers, 7th Edition, 2009.
3. Erwyn Kreyszig –"Advanced Engineering Mathematics", John Wiley, 8th Edition 2006.

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

APPLIED PHYSICS (AP)

I /II Semester : Common for CSE,CST,ECE / CE,ME,EEE						Scheme: 2020		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
BS110	BSC	L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
		3	-	-	3	40	60	100
Sessional Exam Duration : 1 ½ Hrs.						End Exam Duration: 3 Hrs.		

Course Outcomes: At the end of the course students are able to

CO1: Understand the origin of magnetism, hysteresis, soft and hard magnetic materials; Dielectrics and their characteristics; superconductivity, types, characteristics, Meissner, Josephson effects.

CO2: Understand the phenomenon of interference, diffraction of light and their applications.

CO3: Understand the Production, detection, properties and applications of ultrasonic waves, determination of velocity of ultrasonic waves in liquids. Principles of quantum mechanics, Schrodinger's equation and its applications.

CO4: Understand the theory and different production methods of lasers and their applications, different types of optical fibers, losses in fibers and applications of optical fibers.

CO5: Understand the Properties, synthesis, applications of Nanomaterials and Carbon Nanotubes.

UNIT – I

Magnetic Materials:

Introduction – Basic definitions in Magnetism, their relations – Origin of permanent magnetic moment, Bohr magneton – Classification and properties of magnetic materials (Dia, Para, Ferro, Antiferro and Ferri)– Hysteresis, Soft and Hard magnetic materials, Applications.

Dielectrics:

Introduction - Dielectric polarization, Dielectric Polarizability, Susceptibility and Dielectric constant – Types of Polarizations: Electronic, Ionic, Orientation polarizations – Derivation of Expression for Electronic polarizability – Dielectric Loss – Applications of dielectrics.

***Superconductivity*:**

Introduction – Critical Temperature, Critical magnetic field, Critical Current , Meissner effect, Flux quantization – Type – I & Type – II Superconductors, Josephson's effect – Applications of Superconductors – SQUID.

UNIT – II

Interference:

Introduction - Conditions for interference - Interference due to thin uniform film (Reflected light), wedge shaped film, Newton's rings. Applications of interference: Testing of flatness, determination of wavelength, radius of curvature, refractive index of liquid - Non-reflective coatings.

Diffraction:

Introduction - Differences between Interference and Diffraction - Types of Diffraction - Fraunhoffer diffraction due to single slit, double slit, circular aperture, N-Slits (grating) (qualitative analysis only) - Determination of wavelength using grating - Resolving power, Rayleigh's criterion for resolution, Resolving power of grating and telescope.

UNIT – III

Ultrasonics:

Introduction - Properties of ultrasonics - Production of ultrasonics by Magnetostriction method, Piezoelectric method - Detection of ultrasonics - Determination velocity of ultrasonics in liquids. Applications: SONAR, NDT, general applications.

Quantum Mechanics:

Wave – Particle duality; de Broglie Concept of Matter Waves – Properties of Matter Waves –

Heisenberg's Uncertainty Principle. Schrödinger's Time Independent and Time Dependent Wave equation, Significance of Wave Function - Application of Schrodinger's equation for : particle in a box (one dimensional problem)

UNIT –IV

Lasers:

Spontaneous and Stimulated emission of radiation – Einstein coefficients and their relation - Characteristics of Lasers – Pumping mechanisms – Components of Laser – Ruby, He-Ne and Semiconductor lasers - Applications of Lasers.

Fibre Optics:

Principle and propagation of light in Optical fibers – Structure of optical fibres – Acceptance angle – Numerical aperture – Classification of optical fibres – Applications of Optical fibres: Fibre optic communication system, Fibre optic sensors(Temperature, Pressure, Displacement and Water level indicator)– Losses in optical fibres.

UNIT – V

Nanomaterials:

Introduction - Significance and Properties of Nano particles - Synthesis Methods: Ball Milling method, Sol-Gel method, CVD method, its applications - PVD method, its applications - Pulsed Laser Deposition method - Wire explosion method - Applications of Nano materials.

Carbon Nano tubes:

Properties of Graphene - Classification of CNTs – properties - Synthesis methods: Ball Milling method, CVD method, Arc method, Sputtering - Applications of carbon Nano tubes - Effect of nanotechnology on Environment.

Text Books :

1. M.N.Avadhanulu and P.G.Kshirsagar, A text Book of Engineering Physics, S.Chand & Company
2. V.Rajendran, Engineering Physics, McGraw Hill Education (India) Pvt. Limited.
3. Dr. K.Vijaya Kumar, Engineering Physics, S.Chand & Company
4. S.L.Gupta & S.G.Gupta, Unified Physics (Vol. 3) – Electricity, Magnetism and Electronics, Jai Prakash nath Publications, Meerut.

Reference Books :

1. Hitendra K. Malik & A.K. Singh, Engineering Physics, Tata McGraw Hill Education Pvt. Ltd.
2. P.K Palaniswamy, Engineering Physics, SCITECH Publications (India) Pvt. Ltd.
3. R. Murugashan and Er.K.Siva Prasanth, Modern Physics, S. Chand& Company

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

ELECTRIC CIRCUIT THEORY (ECT)

II Semester : EEE						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
EE103	ESC	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		3	**-**	**-**	**3**	**40**	**60**	**100**

Sessional Exam Duration : 1 ½ Hrs **End Exam Duration: 3 Hrs**

Course Outcomes : At the end of the course the students are able to

CO1: Understand fundamental concepts of circuit elements, circuit reduction techniques, mesh and nodal analysis.

CO2: Understand the fundamentals of single phase AC circuits and sinusoidal steady state analysis of series and parallel circuits.

CO3: Understand the concepts series resonance, parallel resonance and magnetic circuits.

CO4: Understand the concepts of network topology, duality networks and locus diagrams.

CO5: Understand the concepts of applying network theorems to electrical circuits.

UNIT – I

Introduction to Electrical Circuits

Circuit Concept, R-L-C Parameters, Voltage and Current Sources, Independent and Dependent Sources, Source Transformation, Voltage – Current relationship for Passive Elements, Kirchhoff's Laws, Network Reduction Techniques – Series, Parallel, Series Parallel, Star-to-Delta or Delta-to-Star Transformations, Nodal Analysis, Mesh Analysis, Super node and Super mesh analysis for DC Excitations.

UNIT - II

Single Phase A.C. Circuits

Generation of single phase AC supply, R.M.S. and Average values and form factor, Steady State Analysis of R, L and C (in Series, Parallel and Series Parallel Combinations) with Sinusoidal Excitation, Concept of Reactance, Impedance, Susceptance and Admittance, Phase and Phase difference, Concept of Power Factor, Real and Reactive powers, J-notation, Complex and Polar forms of representation, Complex power.

UNIT – III

Locus diagrams

Locus diagrams - series R-L, R-C, R-L-C and parallel combination with variation of various parameters.

Resonance

Series & Parallel resonance, Resonant frequency, Voltage magnification, Q-Factor, Band-Width, Half-Power frequencies.

UNIT – IV

Network Topology

Definitions, Graph, Tree, Incidence matrix, Cutset and Tie set Matrices for Planar Networks, Duality & Dual Networks.

Magnetic circuits

Magnetic circuits-Faraday's laws of electromagnetic induction, concept of self and mutual inductance, dot convention, coefficient of coupling.

UNIT – V

Network Theorems

Tellegen's, Superposition, Reciprocity, Thevinin's, Norton's, Maximum Power Transfer, Milliman's and Compensation theorems for AC and DC excitations.

Text Books

1. Hayt & Kimmerly, "Engineering Circuit Analysis", 8th Edition, TMH, 2004.
2. Joseph Edminister , "Electric Circuits", 2nd Edition, Schaum's Series , TMH, 1983.
3. Ajith Chakravarthy, "Circuit Theory", 5th Edition, Dhanpat Rai & Sons, 2006.
4. R.P.Punagin , "Electrical Circuit Analysis", 2nd Edition, Interline Publishers, Bangalore,1994.
5. Sivanaga Raju, G. Kishor and C. Srinivasa Rao, "Electrical Circuit Analysis", 1st Edition, Cengage Learning India Publishers, 2010.
6. Charles K. Alexander, Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", Fifth Edition, McGraw Hill, 9th Reprint 2015.

Reference Books

1. Vanvalken Berg, "Network Analysis", 3rd Edition, PHI, 2004.
2. Sudhakar & Shyam Mohan, "Circuits & Network", 5th Edition, TMH, 2007.
3. Roy Chowdary, "Networks & Systems", 3rd Edition, New Age international publishers, 2007.
4. R.L.Boylstad, "Introductory Circuit Analysis", 7th Edition, McMillan Publishers.1994.

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

ELECTRONIC DEVICES AND CIRCUITS (EDC)

I/II Semester : ECE,CSE,CST/EEE						Scheme: 2020		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
EC101	ESC	L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
		3	-	-	3	40	60	100

Sessional Exam Duration : 1 ½ Hrs **End Exam Duration: 3 Hrs**

Course Outcomes : At the end of the course the students are able to

CO1: Understand the concepts of energy band diagrams and semiconductors.

CO2: Apply the concept of diode in rectifiers, filter circuits and wave shaping.

CO3: Analyze the operation and configurations of BJT.

CO4: Analyze the operation and characteristics of JFET.

CO5: Analyze the operation and characteristics of MOSFET and special devices.

UNIT – I

Review of Semiconductor materials

Classification of materials based on Energy Band Diagrams, mobility & conductivity of Charge carriers in Semiconductors, Continuity equation, Intrinsic and Extrinsic semiconductors, Mass-action law, Charge densities in semiconductors, Drift current & diffusion current, Hall-effect.

UNIT - II

Semiconductor Diodes And Applications

p-n junction Diode - Construction and V-I Characteristics ,Current components in p-n diode, Diode resistance, Diode as a Rectifier-HWR,FWR and Bridge Rectifier With and Without Filters, Clipping and Clamping circuits without biasing, Break down mechanisms, Zener diode characteristics and its Applications.

UNIT – III

Bipolar Junction Transistor (BJT)

Construction and operation of n-p-n and p-n-p transistors, Transistor current components, CB, CE and CC configurations, characteristics and their comparisons, Transistor Biasing, Transistor as an amplifier.

UNIT – IV

Field Effect Transistors (FET)

Construction, Types and operation of JFETs, Drain and Transfer characteristics, Parameters of JFET, JFET Biasing, Comparison of JFET and BJT, Applications of JFET.

UNIT - V

MOSFETs and Special Purpose Devices

MOSFETs: Introduction of MOSFETs, Types of MOSFETs. Characteristics of Depletion MOSFET and Enhancement MOSFET.

Special Purpose Devices: LED, Photo diode, UJT, SCR and working Principle of solar cell.

Text Books

1. Jacob Millman, Christos C Halkias, Satyabrata Jit, “Integrated Electronic”, 2nd Edition, TMH, 2012.
2. Ben G Streetman and Sanjay Banerjee, “Solid State Electronic Devices”, 5th Edition, Pearson Education Asia, 2002.

3. Robert L Boylestad, Louis Nashelsky, “Electronic devices and Circuit theory”, 8th Edition, PHI Pvt. Ltd., 2004.
4. Donald A Neamen and Dhrubes Biswas, “Semiconductor Physics and Devices”, 4th Edition TMH, 2012.
5. David A. Bell, “Electronic Devices and Circuits”, Oxford University Press, 5th edition,2008

Reference Books

1. N.N Bhargava, D.C. Kulshrestha, S.C Gupta, NITTTR – Chandigarh, Basic Electronics and Linear Circuits, McGraw Hill Education (India), Pvt. Ltd., 2nd Edition, 2017.
2. Adel S. Sedra and Kenneth C. Smith, Microelectronic Circuits, Oxford University Press, 7th Edition, 2018.
3. Jacob Millman and Arvin Gabriel, Microelectronics- 2nd Edition, McGraw Hill, 2013.
4. A S Sedra and K C Smith, Microelectronics, 7th Edition, Oxford University Press, 2018.
5. Albert Paul Malvino, Electronic Principles, McGraw Hill International edition.

Web References

1. http://www.electronics-tutorials.ws/
2. http://nptel.ac.in/courses/117103063/
3. www.electronicshub.org/tutorials/
4. engineering.nyu.edu/gk12/amps-cbri/pdf/Basic%20Electronics.pdf

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

DATA STRUCTURES (DS)

II Semester : Common for **CSE,CST,ECE & EEE**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
		L	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
CS104	ESC	**3**	**-**	**-**	**3**	**40**	**60**	**100**
Sessional Exam Duration : 1 ½ Hrs						**End Exam Duration: 3 Hrs**		

Course Outcomes : At the end of the course the students are able to

CO1: Understand the purpose of array data structure and its applications

CO2: Understand the linked list data structure and its operations.

CO3: Illustrate the operations performed on stack data structure.

CO4: Illustrate the operations performed on queue data structure

CO5: Understand the concepts of trees and operations on binary search trees.

UNIT – I

Introduction to Data Structures

Definition,Classification of Datastructures- Linear and Non Linear

Sequential Storage Representation

Arrays, Operations on Arrays- Insertion, Deletion, Traversing; Applications of arrays–Linear Search, Binary Search, Bubble Sort, Selection Sort, Insertion Sort, Merging of arrays.

UNIT – II

Linked Storage Representation –Linked Lists

Linked storage representation using pointers, Types of Linked Lists–Single linked list, Double linked list, Operations on linked lists-Traversing, Searching, Insertion and Deletion.

UNIT – III

Linear DataStructures – Stacks

Representation of Stack using sequential storage and linked allocation methods, Operations on Stacks- Push, Pop, and Display.

UNIT - IV

Linear DataStructures - Queues

Representation of Queue using sequential and linked allocation, Operations on Queues- Insertion, Deletion and Traversing, Circular queue.

UNIT - V

Non Linear Data Structures-Trees

Basic terminology, Binary trees, Representation of Binary tree in memory using arrays and linked lists, Binary Search Trees, Operations on binary search trees- Insertion, Deletion and Recursive Traversals- Preorder, Inorder and Postorder.

Text Books

1. Jean Paul Tremblay and Paul G.Sorenson[2007], An Introduction to DataStructures With Applications, TMH.

2. Debasis Samantha, Classic Data Structures Second Edition (2009), PHI.

Reference Books

1. Pradip Dey, Manas Ghosh and Reema Tereja, Computer Programming and DataStructures, Oxford University Press.
2. S.K.Srivatsava and Deepali Srivatsava, Data Structures through 'C' in depth, BPB Publications.

Web References

1. https://www.tutorialspoint.com/data_structures_algorithms
2. http://www.geeksforgeeks.org/data-structures

Question Paper Pattern:

Sessional Exam :

The question paper for sessional examination shall be for 25 marks, covering half of the syllabus for first sessional and remaining half for second sessional exam.The question paper shall consist of three sections with Two Questions (EITHER/ OR Type) in each section. The student shall answer one question from each section.

End Examination:

The question paper for End examination shall be for 60 marks. The Question paper shall contain Five Units with Two Questions (Either or Type) from each unit. Each of these questions may contain sub-questions. and the student should answer any one question from each unit. Each Question carries 12 marks.

ENVIRONMENTAL STUDIES (ES)

II Semester: Common for **ECE,CSE,CST,CE,EEE & ME**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
MC101	MC	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**Total**
		2	**-**	**-**	**-**	**100**	**-**	**100**

Course Outcomes : At the end of the course students are able to

CO1: Apply the knowledge of environmental issues and understands the need for the conservation of Natural resources for sustainable development.

CO2: Understands the importance of ecosystem and conservation of biodiversity

CO3: Understands the problems due to environmental pollution with remedial measures and issues related to environment.

CO4: Understands the disaster management in prevention of loss of life and property

CO5: Understands the use of IT & related technology to conserve environment & human health.

UNIT – I

Introduction to Environmental studies and Natural resources

Definition, scope, importance and multidisciplinary nature of Environmental studies. Need for public awareness. Energy resources-Growing energy needs, nonrenewable and renewable energy resources: Hydroelectric, solar, wind and nuclear energy resources. Water resources- Use and over exploitation of surface and ground water. Dams and its effects on forest and tribal people. Forest resources- uses of forest, deforestation causes and its effects. Food resources- changes caused by agriculture and over grazing. Modern agriculture and its effects.

UNIT – II

Concepts of ecosystem

Structure and function of an ecosystem. Energy flow in an ecosystem (single channel energy flow model). Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristics and functions of grasslands, desert, pond and ocean ecosystems.

UNIT – III

Biodiversity and its conservation

Definition and levels of biodiversity. Values of biodiversity- consumptive, productive, social, ethical, aesthetic and ecological services. Hot spots of biodiversity. Biogeographical classification of India. Endangered and endemic species of India. Threats to biodiversity-Habitat loss, poaching of wild life and man-wild life conflict. Conservation strategies- In situ and ex situ conservation.

UNIT – IV

Environmental pollution

Air Pollution - sources, types, causes and Effects of air pollutants on humans, plants and animals. Global effects-global warming, acid rains and ozone layer depletion. Air Pollution control measures for suspended particulate matter (SPM) and gaseous pollutants. Water Pollution – sources, causes and effects of water pollution. Sewage water treatment. Disaster management- Floods, Earth quake and cyclone. Municipal solid waste management. Role of an individual in prevention of pollution.

UNIT – V

Social issues and the environment

From unsustainable development to sustainable development. Consumerism and waste products. Salient features of Air Act, water Act and Forest conservation act. Process involved in the enforcement of environmental legislation. Role of Information Technology in environment and human health.

Text books

1.C.P.KaushikandAnubhaKaushik,— "Environmental Studies" New Age International(p)Ltd.,NewDelhi

2. R.Rajagopalan— Environmental Studies, Oxford University press, Chennai

3. Y.Anjaneyulu— Introduction to Environmental sciences, BS Publications, Hyderabad

Reference books

1.BennyJoseph–EnvironmentalStudies,TataMcGrawHill,NewDelhi.

2.BaruchaErach–Environmentalstudies,University Press.

APPLIED PHYSICS LAB (AP(P))

I/II Semester : Common for **ECE,CSE, CST/ ME, CE,EEE**					**Scheme: 2020**			
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
BS114	BSL	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		-	**-**	**3**	**1.5**	**40**	**60**	**100**

End Exam Duration: 2 Hrs

Course Outcomes : At the end of the course, Students are able to

CO1: Apply the knowledge of physics laboratory in measuring the standard values.

CO2: Apply theoretical knowledge to experimental values.

List of Experiments

Note : At least 12 of the following experiments shall be conducted

1. Determination of size of small particles using a laser.
2. B-H curve to study the magnetic behavior of ferromagnetic materials.
3. Determination of Numerical Aperture of an Optical Fiber.
4. Verification of Faraday's Laws.
5. Determination of wavelength using a single slit.
6. Study of magnetic field along the axis of a circular coil (Steward Gees Apparatus).
7. LCR Series and Parallel Resonance.
8. Determination of wavelengths using a grating.
9. Hall Effect-determination of Hall coefficient and charge density.
10. Determination of radius of curvature of a plano-convex lens using Newton's rings.
11. Double refraction - determination of refractive indices of e-ray and o-ray.
12. Determination of small thickness by forming parallel fringes.
13. Determination of rigidity modulus by using torsion pendulum.
14. Determination of energy gap of a semiconductor by four probe method.

ELECTRONIC DEVICES AND CIRCUITS LAB (EDC (P))

I/II Semester : CSE,CST/ EEE						Scheme: 2020		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
EC103	ESL	L	T	P	C	Continuous Internal Assessment	End Exam	TOTAL
		-	-	3	1.5	40	60	100

End Exam Duration: 3 Hrs

Course Outcomes : At the end of the course, students are able to

CO1: Understand the operation of electronic equipments - CRO, CDS and FG.

CO2: Analyze the characteristics and applications of PN-diode and Zener diode.

CO3: Understand the characteristics of BJT.

CO4: Understand the characteristics of JFET.

List of Experiments

Note : At least 12 of the following experiments shall be conducted

1. Study of Electronic equipment - CRO, CDS and FG.
2. P-N Junction Diode V-I Characteristics.
3. Zener Diode V-I Characteristics.
4. Zener diode as a voltage regulator.
5. Performance characteristics of half wave rectifier.
6. Performance characteristics of full wave rectifier.
7. Performance characteristics of bridge rectifier.
8. Clipping circuits using diodes.
9. Clamping circuits using diodes.
10. Common emitter input-output characteristics.
11. Common base input-output characteristics.
12. JFET drain and transfer characteristics.
13. SCR characteristics.
14. UJT characteristics.
15. UJT as relaxation oscillator

DATA STRUCTURES LAB (DS (P))

II Semester : Common for **CSE,CST,ECE & EEE**						**Scheme: 2020**		
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
CS109	ESL	**L**	**T**	**P**	**C**	**Continuous Internal Assessment**	**End Exam**	**TOTAL**
		-	**-**	**3**	**1.5**	**40**	**60**	**100**

End Exam Duration: 3 Hrs

Course Outcomes : At the end of the course students are able to

CO1: Implement the operations on array data structure.

CO2: Implementation of searching and sorting techniques.

CO3: Implement stacks using static and dynamic allocation.

CO4: Implement queues using static and dynamic allocation.

List of Experiments

1. Array Data Structures:
   a) Array Operations
   b) Merging of two sorted arrays.
2. Applications of Array Data Structures:
   a) Linear Search
   b) Binary Search
   c) Bubble Sort
   d) Insertion Sort
   e) Selection Sort
3. Implementation of single linked list and its operations
4. Implementation of double linked lists and its operations
5. Implementation of stack operations using static allocation
6. Implementation of stack operations using dynamic allocation
7. Implementation of queue operations using dynamic allocation
8. Implementation of circular queue operations using static allocation

Reference Books

1. Yashavanth P.Kanetkar , “Let us C” , BPB Publications, 7th Edition,2007.
2. B.W. Kernignan and Dennis M.Ritchie, “The C Programming Language”, (PHI), 2nd Edition 2003.