JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

COURSE STURUCTURE - R10

COMMON TO BRANCHES

(ECE, IT, ME, CHEM, BME, ECom E, PCE, MM)

I Year

	I Semester	P	C		II Semester	P	C
1	English – I	3	2	1	English – II	3	2
2	Mathematics - I	3+1	2	2	Mathematics – II	3+1	2
3	Engineering Physics – I	3+1	2	3	Engineering Physics – II	3+1	2
4	Engineering Chemistry I	3	2	4	Engineering Chemistry-- II	3	2
5	C Programming	3	2	5	Engineering Drawing	1+3	2
6	Environmental Studies	3	2	6	Mathematical Methods	3+1	2
7	Engineering Physics & Engineering Chemistry Laboratory -I	3	2	7	Engineering Physics & Engineering Chemistry Laboratory -II	3	2
8	Engineering Workshop (Carpentry, Fitting, House wiring,)	3	2	8	English - Communication Skills Lab	3	2
9	C Programming Lab	3	2	9	IT Workshop	3	2
10	English Proficiency Lab	3	2				
		32	**20**			**31**	**18**

COURSE STURUCTURE - R10
COMMON TO BRANCHES

(CSE, EEE, CE, EIE, AE, BT, AME,)

I Year

	I Semester	P	C		II Semester	P	C
1	English – I	3	2	1	English – II	3	2
2	Mathematics - I	3+1	2	2	Mathematics – II	3+1	2
3	Engineering Physics – I	3+1	2	3	Engineering Physics – II	3+1	2
4	Engineering Chemistry I	3	2	4	Engineering Chemistry-- II	3	2
5	C Programming	3	2	5	Engineering Drawing	1+3	2
6	Mathematical Methods	3+1	2	6	Environmental Studies	3	2
7	Engineering Physics & Engineering Chemistry Laboratory -I	3	2	7	Engineering Physics & Engineering Chemistry Laboratory -II	3	2
8	Engineering Workshop (Carpentry, Fitting, House wiring,)	3	2	8	English - Communication Skills Lab	3	2
9	C Programming Lab	3	2	9	IT Workshop	3	2
10	English Proficiency Lab	3	2				
		33	**20**			**30**	**18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
Syllabus effective from 2010-2011

ENGLISH SYLLABUS FOR SEM. 1 & 2 of JNTU-K

Introduction

The major challenge of a language teaching in a technical institution is to prepare the student for employability through imparting language skills to develop communicative competence. The proficiency in English language is closely linked to 'good communication skills' more so in the recent times when employability is at stake for want of communication skills on the part of the students. Since skills and personal attributes are revealed through communication, the responsibility of grooming students in life skills is also emphasized as part of language teaching and learning.

The core key skills needed are:

- Communication
- Team Work
- Problem Solving
- Learning Skills

The personal attributes to be groomed are:

- Adaptability
- Commitment
- Enthusiasm
- Stress Management
- Integrity
- Sense of Humour
- Self-Motivation
- Reliability
- Self-esteem
- Personal Presentation

Since the inception of the Board of Studies for English, effort to design a Course Structure that would cater to the needs of a wide range of learner groups has been made. It was felt by the Board that the Course Structure has to take into consideration the above criteria and therefore the objectives of the Language course ought to be much focused.

Objectives

1: To improve the language proficiency of technical under graduates in English with emphasis on LSRW skills.

1.1: To provide learning environment to practice *listening*, *speaking*, *reading*, and *writing* skills within and beyond the classroom environment.

1.2: To assist the students to carry on the tasks and activities through guided instructions and materials.

2: To effectively integrate English language learning with employability skills and training.

2.1: To design the main course material and exercises with authentic materials drawn from everyday use to cater to everyday needs.

The material may be culled from newspaper articles, advertisements, promotional material etc.

2.2: To provide hands-on experience through case-studies, mini-projects, group & individual presentations.

Each chapter will be structured with a short passage or collage of passages for reading. All further exercises and activities will draw upon the broad subject of the passage(s), and use f**unctional and situational approach**

Chapter / ***Grammar & vocabulary***	***Reading & comprehension***	***Listening & speaking***	***Core skills and personal attributes developed through the exercises***	***Objectives achieved through the exercises***	***Plan of evaluation***	
	Reading comprehension based on the passage(s): multiple-choice questions asking students to derive sense of a word from the context provided by a sentence, short questions asking students to sum up the key points of a passage, encouraging students to address not only explicit statement but also implied meaning.	Dialogues from situations related to what ***Writing and analysis*** has been encountered in the reading passages.; the dialogues may now be Instructions on how to lay out a piece of used in a role-play, and in groups, writing, and exercises where students may analyze them for meaning are asked to generate their own write-and implications, and ultimately engage in ups dialogues of their own making.			A three-tier system, allowing the student to work through self-assessment, assessment by peers, and finally, assessment by the teacher.	
Chapter – 1 .Read & Proceed The importance of the language used for communication: • Understanding the need for English in the wider world, and the opportunities afforded by a strong command of the language • Assessing one's level within the language, and understanding the ways in which grasp of the language can be bettered • Understanding the basic structure of the sentence. **English: subject – verb – object** - ***Functional grammar exercise:*** Students may discuss in groups or pairs when, why and where English is used. What, for example, if they have to face a job interview? Or make an official presentation in a State that does not use Telugu? Or even find their way in an unfamiliar city? **Possible areas of focus and evaluation:** • Making sentences from given keywords • Correcting the order of words to make sentences, noting how change in word order can affect meaning.	Short extracts from: 1.An interview with Arundhati Roy 2.Jawaharlal Nehru's 'Tryst with Destiny' speech 3.Albert Einstein's essay 'The World As I See It'	Sentences Understanding and using the basic structure of the sentence in English (subject – verb – object); creating sentences; understanding the different kinds of sentences (whether a statement, or a question, or an exclamation, and so on)	**Small conversations between :** 1.A student and a hostel warden 2.An interviewer and an interviewee 3.Two friends together preparing for an oral examination at college	Communication teamwork, problem solving, learning skills	Enhanced learner-participation, development of linguistic proficiency	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 2. Travel Nouns, pronouns, and adjectives: • Understanding the kinds and uses of nouns • Understanding the use of pronouns to replace nouns • Understanding the ways in which nouns are qualified through adjectives • Understanding the kinds of adjectives, their degrees and their uses ***Functional grammar exercise:*** Students may be asked, in pairs, to plan a trip to a place of mutual interest. Each pair would then be encouraged to explain how and why they arrived at this choice. What words are used to identify – and distinguish – the proposed destination? What naming words are used? How those words are then qualified? How do the nouns (the naming words) and adjectives (the qualifiers) help to create a character and atmosphere for the place or site to be visited? Is it possible to build anticipation through such evocation? ***Potential areas of focus and evaluation:*** • Changing nouns to the related adjectives • Changing adjectives to the related nouns • Replacing nouns with pronouns while retaining the meaning of the sentence	Reading and analysis of short extracts from two or more of the following: 1.Vikram Seth, *From Heaven Lake* 2.Ruskin Bond, *Landor Days* 3.Rabindranath Tagore, *The Europe Traveller's Diary* 4.Pankaj Mishra, *Butter Chicken in Ludhiana*	**Paragraphs** Understanding the structure of a paragraph; retaining the thread of an argument; introducing the subject of the paragraph in the initial sentence; developing the argument in the next few sentences; drawing to a conclusion by reinforcing what has already been stated, but without introducing any new ideas towards the end; being brief and concise, but carrying all the information that needs to be conveyed	**Snippets of exchanges between:** 1.A tour guide and a tourist 2.A local inhabitant of a city and a visitor 3.A photographer and her friend, with the photographer telling about the places of interest she has been to in her recent travels	Communication, adaptability, sense of humour, reliability,	Functional approach to finding solutions, enhanced learner-participation, development of linguistic proficiency	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 3. Gender Verbs and adverbs: • Understanding the placement of a verb within a sentence • Understanding tenses • Understanding the use of adverbs to describe verbs *Functional grammar exercise:* Students may be asked to consider recent news headlines for remarkable stories involving women. How are either the events or the women remarkable? What have these women done, or what do they do? What words of action are used to talk about the accomplishments of the women? How are actions of the past differentiated from actions of the present and actions yet to be performed? How (using what adverbs) are those actions qualified? ***Potential areas of focus and evaluation:*** • Changing verbs to the related adverbs • Changing adverbs to the related verbs •Using verbs in their correct tenses, deriving the sense from the rest of the sentence	Reading and analysis of short extracts from four newspaper/journal pieces: 1. *The Telegraph* report on the 20-year old Burdwan girl who walked out of her marriage in revolt of her in-laws' demands for dowry 2. A perspective on astronaut Kalpana Chawla's achievement 3.The inspirational story of a young woman who survived child-marriage 4.Sudha Murthy's write on what it is possible for women to achieve	Essays and arguments Understanding that an essay or argument is a descriptive or persuasive piece of writing that needs to be organized as a succession of paragraphs; introducing the chief concerns in the first paragraph, and providing a layout of how the argument is going to be structured; developing the main thrust of the argument in the succeeding paragraphs; making smooth transitions between ideas and paragraphs(using appropriate connecting words or phrases); winding to a conclusion by drawing the various strings of the argument together	**Short exchanges between:** 1. Two friends, on an issue of contemporary interest 2. A reporter and a talk-show guest 3. A teacher and a student in school	Communication, teamwork, commitment, integrity, self-motivation, self-esteem	Enhanced learner-participation, development of linguistic proficiency, development of critical thinking	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 4. Disaster Management Articles and punctuation: • Understanding the uses of 'a', 'an', and 'the' • Understanding the uses of words/phrases expressing quantity, like 'some', 'a bit of', 'more', etc. • Understanding and using correct punctuation to convey meaning ***Functional grammar exercise:*** Students may be asked to imagine that in the aftermath of a natural disaster, they are part of a relief team effort. When asked to effectively identify the needs of the situation, how do they plan to go about providing necessary aid? Is *an* ambulance to be arranged for? Or *a* medical tent set up? Are *adequate* first-aid supplies available? Do *more* rations need to be fetched? Could there be a tie-up with *an* overseas relief organization?	Reading and analysis of a short piece on the tsunami	Official letters and emails Effectively using the format of official communication: providing one's own address and contact details, documenting the date and place from which the communication is sent, the salutation used for the addressee, the main body of the letter or email (keeping it comprehensive but to the point), and signing off	Dialogues between: 1.a social worker and an earthquake victim 2.two doctors working in an area afflicted by natural disaster 3.two school students campaigning to raise relief money	Communication, teamwork, problem solving, adaptability, stress management, reliability, integrity	Enhanced learner-participation, development of linguistic proficiency, functional approach to problem solving, enabling group work	[Both Teacher's Manual and Sample Test Questions will be provided]
Chapter 5 –Health Prepositions, conjunctions and exclamations: • Understanding the use of prepositions – words that connect verbs with their objects • Understanding that certain verbs use certain prepositions • Understanding the uses of common prepositions: to, for, at, by, of, and so on • Understanding the uses of conjunctio and exclamations ***Functional grammar exercise:*** Students may be asked to propose ways which healthier living might be attained eating better *and* exercising, drinking plenty *of* water, partaking fre vegetables *from* the Market, and so on. Possible exercises may be framed around: • Filling in blanks within sentences • Distinguishing between different meanings possible through the use of different prepositions with the same verbs	Reading and analysis of three different kinds of writing, and comparisons between them: 1. A Government of India report on the success of nationwide campaigns for polio vaccination 2. A vegetarian's perspective on what makes for healthy living 3. An athlete's say on the benefits of lifelong exercise	**Reports** Learning the difference between an essay, for example, and a report; learning to identify the key points of an event or incident, and documenting them briefly but in a manner that conveys both the temper and the unfolding of the event; understanding what is meant by a 'target readership', and learning to tailor the piece to the needs of that readership	**Brief exchanges between:** 1. A father and his son/daughter, as he explains the importance of staying fit 2. A friends discussing the ideal diet 3. A campus counsellor and a student	Personal presentation, stress-management, commitment, enthusiasm,, self-motivation	Development of linguistic proficiency, functional approach to problem solving	[Both Teacher's Manual and Sample Test Questions will be provided]

Chapter 6 Sports : Revision of all elements of grammar handled thus far, through evocative descriptions of State or national or international level sports stories, and discussion of them. ***Functional grammar exercise:*** Students may, in pairs, be asked to present an account of a memorable sports meet or game. The use of nouns pronouns, and adjectives should help to clarify exactly what event is being talked about. Judicious use of adjective will help provide the context: how important the game or match was, where it was held, and so on. In a brief account of the game, verbs and adverbs will be necessary to report exactly what happened. If the account has to be detailed and lively, students will be obliged to use the correct forms and tenses. Of course, throughout, not only will the right inflections and articles be necessary, so too will the precise use of prepositions.	Reading and analysis of two of four short pieces in depiction of: 1. Opportunities for men and women in sports 2. A decisive moment in a game 3. Expectation and failure 4. The attitude of sportsmanship	Presentations Learning to identify the key elements of any issue and putting them down as succinct points; structuring the points so that they may be elaborated on according to necessity; understanding the progression of points so that no important element is missed out, but also, repetitions are avoided	Small conversations between: 1. A fitness instructor and a trainee 2. Two friends discussing a possible career in sports 3. Two friends discussing their favorite game	Teamwork, integrity, self-motivation, self-esteem, commitment	Development of linguistic proficiency, functional approach to problem solving	[Both Teacher's Manual and Sample Test Questions will be provided]

Test Book: *Step by Step : Learning Language and Life Skills by* Pearson Longman; Pearson Publishers
Lab Manual: Strengthen your Steps (A Multimodal course in communication skills) by Maruthi Publications

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICS-I *(Common to All Branches)*

Syllabus effective from 2010-2011

UNIT – I

Differential equations of first order and first degree – exact, linear and Bernoulli. Applications to Newton's Law of cooling, Law of natural growth and decay, orthogonal trajectories.

UNIT – II

Non-homogeneous linear differential equations of second and higher order with constant coefficients with RHS term of the type e^{ax} , Sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)

UNIT-III

Generalized Mean Value theorem (without proof) Functions of several variables – Functional dependence- Jacobian- Maxima and Minima of functions of two variables with constraints and without constraints.

UNIT-IV

Curve tracing – Cartesian - Polar and Parametric curves.

UNIT – V

Applications of Integration to Lengths, Volumes and Surface areas of revolution in Cartesian and Polar Coordinates.

UNIT – VI

Multiple integrals - double and triple integrals – change of variables – Change of order of Integration.

UNIT – VII

Vector Differentiation: Gradient- Divergence- Curl and their related properties of sums-products- Laplacian and second order operators.

UNIT-VIII

Vector Integration - Line integral – work done – Potential function – area- surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence Theorems (Without proof) and related problems.

Text Books: 'A Text Book of Engineering Mathematics – I' by U. M. Swamy, P. Vijaya Lakshmi, Dr. M. P.K.Kishore and Dr. K.L. Sai Prasad – Excel Books, New Delhi

References:

1. Engineering Mathematics, Vol- 1, Dr. D. S.C. Prism Publishers

2. Engineering Mathematics, B. V. Ramana , Tata Mc Graw Hill

3. "Advanced Engineering Mathematics", Erwin Kreszig, 8 Ed. Wiley Student Edition

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS -1 *(Common to all branches)*
Syllabus effective from 2010-2011

UNIT-1

INTERFERENCE: Superposition of waves - Young's double slit experiment - Coherence - Interference in thin films by reflection -Newton's rings.

UNIT-II

DIFFRACTION: Fresnel and Fraunhofer diffractions - Fraunhofer diffraction at a single slit - Double slit - Diffraction grating - Grating spectrum - Resolving power of a grating - Rayleigh's criterion for resolving power.

UNIT-III

POLARIZATION: Types of Polarization - Double refraction - Nicol prism - Quarter wave plate and Half wave plate..

UNIT-IV

CRYSTAL STRUCTURE: Introduction - Space lattice - Basis - Unit cell - Lattice parameters - Bravais lattices - Crystal systems - Structure and packing fractions of simple cubic, Body centered cubic, Face centered cubic crystals.

UNIT-V

X-RAY DIFFRACTION: Directions and planes in crystals - Miller indices - Separation between successive [h k 1] planes - Diffraction of X - rays by crystal planes - Bragg's law - Laue method -Powder method.

UNIT-VI

LASERS: Introduction - Characteristics of lasers - Spontaneous and Stimulated emission of radiation - Einstein's coefficients - Population inversion - Ruby laser - Helium -Neon laser - Semiconductor laser - Applications of lasers in industry, scientific and medical fields.

UNIT-VII

FIBER OPTICS: Introduction - Principle of optical fiber - Acceptance angle and acceptance cone -Numerical aperture - Types of optical fibers and refractive index profiles - Attenuation in optical fibers -Application of optical fibers.

UNIT-VIII

NON-DESTRUCTIVE TESTING USING ULTRASONICS: Ultrasonic Testing - Basic Principle - Transducer - Couplant and Inspection Standards - Inspection Methods - Pulse Echo Testing Technique -Flaw Detector - Different Types of Scans - Applications.

Text Books :

1.Perspective of Engineering Physics by Dr.M.Sri Rama Rao (Retd Prof. in Physics, Andhra University, Visakhapatnam), Dr.N.Chaudhary and D.Prasad, Pub: Acme Learning.

Reference books:

1. Engineering Physics by S. Mani Naidu (Pearson publishers)
2. Engineering Physics by Sanjay D Jain and Girish G Sahasrabudhe(University press)
3. Engineering Physics by alik and A K Singh(Tata Mc Graw-Hill Publishing company Limited)

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING CHEMISTRY – I (*Common to all branches)*
Syllabus effective from 2010- 2011

CONCEPTS IN CHEMISTRY –ENGINEERING APPLICATIONS

UNIT-I

1. JOULE THOMSON EFFECT

Definitions of Enthalpy, Free Energy, Entropy, Principle and explanation of Joule Thomson Effect, application to Air Conditioning , Refrigeration (WORKING PRINCIPLE AND FLOW DAIGRAMS)

2. OSMOSIS &REVERSE OSMOSIS

Principles of Osmosis& Reverse Osmosis, application to Desalination process-Types of Membranes used in desalination process-Limitations

3. LECHATELIERS PRINCIPLE ---

Definition of Chemical Equilibrium, Factors influence the Chemical Equilibrium, Statement and explanation of Lechateliers principle- Industrial applications for the production of Sulphuric Acid and Ammonia

4. SOLUBILITY PRODUCT& COMMON ION EFFECT--

Definition of Solubility & Ionic products, Industrial applications

UNIT-II

1.CATALYSIS

Explanation of Catalysis, Criteria of Catalysts, Few Industrial Catalysts

2. COLLOIDS

Explanation of Colloids- Properties of Colloids, Industrial applications of Colloids

3.FERMENTATION

Explanation of Fermentation with examples-Industrial applications

4.VISCOSITY:

Definition of Viscosity -Factors influence the Viscosity- Kinematic Viscosity-Determination of Molecular Weight of any one compound-Applications to fluids in motion –Type of flow.

UNIT-III

1.FLUORESENCE&PHOSPHORESENCE--- LUMINISCENT COMPOUNDS

Explanation of Fluorescence &Phosphorescence JOB s Diagram, Industrial applications of Chemiluminiscent compounds

2. PHOTO & LIGHT RESPONSIVE COMPOUNDS—SENSORS,BIOSENSORS

Explanation of Sensors & Biosensors-Principle –Few Applications

3. IONSELECTIVE ELECTRODES –

Principle- Chemistry &working of Electrode-applications to determination of Fluoride,Chloride and Nitrate

4. NUCLEAR MAGNETIC RESONANCE(NMR) : Principle –Few Electronic applications

UNIT-IV

1. SUPERCONDUCTIVTY – Definition-Preparation –Properties –Engineering Applications
2. SEMICONDUCTORS - Definition –Types of semiconductors (Stiochiometric,Non stichometric ,Organic, Controlled Valency Semiconductors, Doping)-applications
3. STORAGE DEVICES - Materials used and working of Floppy ,CD,Pendrive etc.
4. LIQUID CRYSTALS - Definition –Types - applications in LCD and Engineering Applications

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UNIT – V

THERMAL ENERGY- introduction to solid fuels – definition – calorific value (LCV, HCV) bomb calorimeter, pulverized coal – carbonization – analysis of coal (proximate and ultimate analysis) – working of thermal power station.

UNIT - VI

Chemical sources of energy – single electrode potential – Nernest Equation- reference electrodes – concentration cells-primary and secondary cells – fuel cells.

UNIT-VII

NUCLEAR ENERGY: Introduction to nuclear fuels – binding energy – nuclear fission and fusion reactions – nuclear reactions – disposal of nuclear wastes.

UNIT-VIII

SOLAR CELLS- introduction – harnessing solar energy – solar heaters – photo voltaic cells – solar reflection – green house concepts.

*Teachers Are Requested To Provide Information About National And International Status Of Conventional And Non Conventional Sources To The Students

Text Book :

A Text Book Of En Gineering Chemistry By N.Krishan Murty Anuradha , Maruthi Publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

C- Programming (Common to All Branches)

Syllabus effective from 2010- 2011

UNIT I:

INTRODUCTION: Computer systems, Hardware & software concepts.

PROBLEM SOLVING: Algorithm / pseudo code, flowchart, program development steps, Computer Languages: machine, symbolic, and high-level languages, Creating and running programs: Writing, editing, compiling, linking, and executing.

BASICS OF C: Structure of a C program, identifiers, basic data types and sizes. Constants, variables, arithmetic, relational and logical operators, increment and decrement operators, conditional operator, assignment operators, expressions, type conversions, conditional expressions, precedence and order of evaluation, Sample programs.

UNIT II:

BIT-WISE OPERATORS: logical, shift, rotation, masks.

SELECTION – MAKING DECISIONS: Two-way selection: if- else, null else, nested if, examples, Multi-way selection: switch, else-if, examples.

UNIT III:

STRINGS: concepts, c strings.

ITERATIVE: Loops - while, do-while and for statements, break, continue, initialization and updating, event and counter controlled loops, Looping applications: Summation, powers, smallest and largest.

UNIT IV:

ARRAYS: Arrays - concepts, declaration, definition, accessing elements, storing elements, Strings and string manipulations, 1-D arrays, 2-D arrays and character arrays, string manipulations, Multidimensional arrays , Array applications: Matrix Operations, checking the symmetricity of a Matrix,

UNIT V:

FUNCTIONS-MODULAR PROGRAMMING: Functions, basics, parameter passing, storage classes- extern, auto, register, static, scope rules, block structure, user defined functions, standard library functions, recursive functions, Recursive solutions for Fibonacci series, Towers of Hanoi, header files, C pre-processor, example c programs. Passing 1-D arrays, 2-D arrays to functions.

UNIT VI:

POINTERS: Pointers- concepts, initialization of pointer variables, pointers and function arguments, passing by address –dangling memory, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory management functions, command line arguments.

UNIT VII:

ENUMERATED, STRUCTURE AND UNION TYPES: Derived types- structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bit-fields, program applications.

UNIT VIII:

FILE HANDLING: Input and output – concept of a file, text files and binary files, Formatted I/o, file I/o operations, example programs.

Text Books : ‘ The C – Programming Language’ B.W. Kernighan, Dennis M. Ritchie, PHI

Reference :

1. C Programming : A Problem - Solving Approach, Forouzan, E. V. Prasad, Giliberg, Cengage, 2010.

2. Programming in C, Stephen G. Kochan, 3/e Pearson, 2007

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENVIRONMENTAL STUDIES (Common to all Branches)

Syllabus effective from 2010 -2011

UNIT - I

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Need for Public Awareness.

UNIT - II

Natural Resources : Renewable and non-renewable resources – Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest and tribal people – Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. – Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT - III

Ecosystems : Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of the following ecosystem:

a. Forest ecosystem
b. Grassland ecosystem
c. Desert ecosystem
d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT - IV

Biodiversity and its conservation : Introduction - Definition: genetic, species andecosystem diversity. - Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - . Biodiversity at global, National and local levels. - . India as a mega-diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT - V

Environmental Pollution : Definition, Cause, effects and control measures of :

a. Air pollution

b. Water pollution

c. Soil pollution

d. Marine pollution

e. Noise pollution

f. Thermal pollution

g. Nuclear hazards

Solid waste Management: Causes, effects and control measures of urban and industrial wastes. - Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.

UNIT - VI

Social Issues and the Environment: From Unsustainable to Sustainable development -Urban problems related to energy -Water conservation, rain water harvesting, watershed management -Resettlement and rehabilitation of people; its problems and concerns. Case Studies -Environmental ethics: Issues and possible solutions. -Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. -Wasteland reclamation. – Consumerism and waste products. -Environment Protection Act. -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act -Issues involved in enforcement of environmental legislation. -Public awareness.

UNIT - VII

Human Population and the Environment: Population growth, variation among nations. Population explosion – Family Welfare Programme. -Environment and human health. -Human Rights. -Value Education. HIV/AIDS. -Women and Child Welfare. -Role of information Technology in Environment and human health. –Case Studies. Page 37 of 79

UNIT - VIII

Field work : Visit to a local area to document environmental assets River /forest grassland/hill/mountain - Visit to a local polluted site Urban/Rural/industrial/ Agricultural Study of common plants, insects, birds. - Study of simple cosystemspond, river, hill slopes, etc.

Text Books :

1. An Introduction to Environmental Studies by B. Sudhakara Reddy, T. Sivaji Rao, U. Tataji & K. Purushottam Reddy, Maruti Publications.

Reference :

1. Text Book of Environmental Studies by Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. Environmental Studies by K.V.S.G. Murali Krishna, VGS Publishers, Vijayawada
3. Text Book of Environmental Sciences and Technology by M. Anji Reddy, BS Publications.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICAL METHODS (*Common to ALL branches)*
Syllabus effective from 2010-2011

UNIT – I

Linear systems of equations: Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- Gauss Elimination - Gauss Jordon and Gauss Seidal Methods.

UNIT – II

Eigen values - Eigen vectors – Properties – Cayley-Hamilton Theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem.

UNIT-III

Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative definite - semi definite - index – signature.

UNIT – IV

Solution of Algebraic and Transcendental Equations: Introduction – The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method.

UNIT-V

Interpolation: Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences-Backward differences –Central differences – Symbolic relations and separation of symbols-Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unevenly spaced points - Lagrange's Interpolation formula.

UNIT – VI

Numerical Differentiation and Integration – Differentiation using finite differences - Trapezoidal rule – Simpson's 1/3 Rule –Simpson's 3/8 Rule.

UNIT – VII

Numerical solution of Ordinary Differential equations: Solution by Taylor's series-Picard's Method of successive Approximations-Euler's Method-Runge-Kutta Methods –Predictor-Corrector Methods- Milne's Method.

UNIT – VIII

Curve fitting: Fitting a straight line –Second degree curve-exponential curve-power curve by method of least squares.

Text Book : Ravindranath, V. and Vijayalaxmi, A., A Text Book on Mathematical Methods, Himalaya Publishing House, Bombay.

Reference Books :

1. Rukmangadachari, E. Mathematical Methods, Pearson Education, Delhi.
2. Kreszig, Erwin "Advanced Engineering Mathematics", 8 Ed. Wiley Student Edition.
3. Peter O' Neil, "Engineering Mathematics", Cengage Learning. Gordon, "Engineering Mathematics", Pearson Education

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS &CHEMISTRY LABORATORY-1 (*Common to all branches)*

Syllabus effective from 2010- 2011

PHYSICS-I

A. Mechanics

1. Determine the Rigidity Modulus of the material of the wire using Torsional Pendulum.
2. Determine the Frequency of vibration in Transverse and Longitudinal Mode using Melde's Apparatus.
3. Verify the Laws Transverse vibrations in stretched strings using Sonometer.
4. Determine the Velocity of Sound by Volume Resonator method.
5. Determine the Acceleration due to Gravity and Radius of Gyration using Compound Pendulum.

B. Optics:

6. Determine the Wavelength of a source by Normal Incidence method using Diffraction Grating.
7. Determine the Radius Curvature of a convex lens by forming Newton's Rings.
8. Determine the Refractive Index of the material of Prism (Minimum Deviation method) using Spectrometer.
9. Determine the Thickness of the Spacer used to form Parallel fringes due to Wedge shaped film.
10. Determination of Single slit diffraction using Lasers.

Manual/Record Books:

1. Manual cum Record for Engineering Phaysics Lab-1, by Prof.Sri M. Rama Rao, Acme Learning.

2. Lab manual – 1, of Engineering Physics by Dr. Y.Aparna and Dr. K.Venkateswara Rao (VGS Books links, Vijayawada)

CHEMISTRY LAB - 1

LIST OF EXPERIMENTS

1. Introduction to Chemistry Lab (the teachers are expected to teach fundamentals like Primary, Secondary Standard Solutions , Normality, Molarity, Molality etc and laboratory ware used, error ,accuracy, precision, Theory of indicators, use of volumetric titrations
2. **Introduction to Volumetric Analysis:**

The Teacher has to perform four types of volumetric titrations and will explain about the working of Indicators .(The Teacher has to call the students at random to perform the titrations)

2. ANALYSIS OF WATER

Estimation of :

a.**Calcium,Magnesium, ,Iron (111),Zinc (SEPERATELY)**

b.TOTAL HARDNESS BY EDTA METHOD

c..TURBIDITY

d.CONDUCTIVITY

e pH

f.TOTAL DISSOLVED SALTS

g.FLORIDES,CHLORIDES AND NITRATES (USING ION ANALYSER OR BY COLORIMETER)

h. DISSOLVED OXYGEN

i.BACTERIAL COUNT

The student has to get his water sample and the teacher has to explain the analysis and the results are to be compared with the INDIAN STANDRDS.

- All the teachers are requested to give top priority to water analysis as it is very useful for the students and society.complete water analysis may take couple of hours more but this has a unique influence on the system.

3.CONSTRUCTION OF GALVANIC CELL

Based on the position of the metals in the electrochemical series a model Electrochemical Cell is constructed and the values are determined and effect of metal ion concentration, Temprature etc. on emf are calculated.

Lab Manual :

Engineering chemistry laboratory manual &record By srinivasulu .d parshva publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING WORKSHOP (Common to all Branches)

Syllabus effective from 2010- 2011

I B.Tech – I Sem.

Note: At least two exercises to be done from each trade.

Trade:

Carpentry	1. T-Lap Joint
	2. Cross Lap Joint
	3. Dovetail Joint
	4. Mortise and Tennon Joint
Fitting	1. Vee Fit
	2. Square Fit
	3. Half Round Fit
	4. Dovetail Fit
Black Smithy	1. Round rod to Square
	2. S-Hook
	3. Round Rod to Flat Ring
	4. Round Rod to Square headed bolt
House Wiring	1. Parallel / Series Connection of three bulbs
	2. Stair Case wiring
	3. Florescent Lamp Fitting
	4. Measurement of Earth Resistance
Tin Smithy	1. Taper Tray
	2. Square Box without lid
	3. Open Scoop
	4. Funnel

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

C PROGRAMMING LAB (Common to all Branches)

Syllabus effective from 2010 -2011

Objectives:

- To learn/strengthen a programming language like C, To learn problem solving techniques

Recommended Systems/Software Requirements:

- Intel based desktop PC, ANSI C Compiler with Supporting Editors, IDE's such as Turbo C, Bloodshed C,
- Linux with gcc compiler

Exercise l

Solving problems such as temperature conversion, student grading, income tax calculation, etc., which expose students to use basic C operators

Exercise 2

2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.

Exercise 3

a) Write a C program to find the sum of individual digits of a positive integer.

b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

d) Write a program which checks a given integer is Fibonacci number or not.

Exercise 4

a) Write a C program to calculate the following Sum:

$$Sum=1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$$

b) Write a C program to find the roots of a quadratic equation.

Exercise 5

a) The total distance travelled by vehicle in't' seconds is given by distance = $ut+1/2at^2$ where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec^2). Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.

b) Write a C program, which takes two integer operands and one operator form the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

Exercise 6

a) Simple programming examples to manipulate strings.

b) Verifying a string for its palindrome property

Exercise 7

Write a C program that uses functions to perform the following operations:

i. To insert a sub-string in to given main string from a given position.
ii. To delete n Characters from a given position in a given string.
iii. To replace a character of string either from beginning or ending or at a specified location

Exercise 8

Write a C program that uses functions to perform the following operations using Structure:

i) Reading a complex number ii) Writing a complex number

iii) Addition of two complex numbers iv) Multiplication of two complex numbers

Exercise 9

a) Addition of Two Matrices

b) Calculating transpose of a matrix in-place manner.

c) Matrix multiplication by checking compatibility

Exercise 10

a) Write C programs that use both recursive and non-recursive functions for the following

i) To find the factorial of a given integer.
ii) To find the GCD (greatest common divisor) of two given integers.
iii) To solve Towers of Hanoi problem.

Exercise 11
a) Write a C functions to find both the largest and smallest number of an array of integers.

b) Write a C function that uses functions to perform the following:

i) that displays the position/ index in the string S where the string T begins, or –1 if S doesn't contain T.

ii) to count the lines, words and characters in a given text.

Exercise 12

a) Write a C function to generate Pascal's triangle.
b) Write a C function to construct a pyramid of numbers.
Exercise 13

Write a C function to read in two numbers, x and n, and then compute the sum of this geometric progression:

$1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$

Write a C function to read in two numbers, x and n(no. of terms), and then compute sin(x) and cos(x).

Exercise 14

a. Pointer based function to exchange value of two integers using passing by address.
b. Program which explains the use of dynamic arrays.
c. Program to enlighten dangling memory problem (Creating a 2-D array dynamically using pointer to pointers approach.

Exercise 15

Examples which explores the use of structures, union and other user defined variables

Exercise 16

a) Write a C program which copies one file to another.
b) Write a C program to reverse the first n characters in a file. (Note: The file name and n are specified on the command line)

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICS-II *(Common to All branches)*
Syllabus effective from 2010-2011

UNIT – I

Laplace transforms of standard functions –Shifting Theorems, Transforms of derivatives and integrals – Unit step function –Dirac's delta function.

UNIT – II

Inverse Laplace transforms– Convolution theorem - Application of Laplace transforms to ordinary differential equations Partial fractions.

UNIT – III

Fourier Series: Determination of Fourier coefficients – Fourier series – even and odd functions – Fourier series in an arbitrary interval– Half-range sine and cosine series.

UNIT – IV

Fourier integral theorem (only statement) – Fourier sine and cosine integrals - Fourier transform – sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

UNIT – V

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – solutions of first order linear (Lagrange) equation and nonlinear (standard type) equations.

UNIT – VI

Method of Separation of Variables - Applications to wave equation, heat equation and Laplace Equation.

UNIT – VII

Z-transform – properties – Damping rule – Shifting rule – Initial and final value theorems -Inverse z-transform -Convolution theorem – Solution of difference equation by z-transforms.

UNIT – VIII

Gamma and Beta Functions – Properties – Evaluation of improper integrals.

TEXT BOOK:

1. Swamy,U.M., Vijayalaxmi, P.,Ravikumar, R.V.G., and Phani Krishna Kishore., Mathematics II, Excel Books, New Delhi.

BOOKS:

1. B.V.Ramana, Engineering Mathematics, Tata Mc Graw Hill.
2. Iyengar,T.K.V, Krishna Gandhi, et.al Engineering Mathematics Vol-II, S.Chand Co. New Delhi.
3. Erwin Kreszig, "Advanced Engineering Mathematics", 8 Ed Wiley Student Edition.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS - II (*Common to all branches)*
Syllabus effective from 2010- 2011

UNIT-I

QUANTUM MECHANICS & QUANTUM COMPUTING: Introduction - Schrodinger Time Independent and Time Dependent wave equations - Particle in a box - Operator version -Suitability of Quantum system for Information Processing - Classical Bits and Qu-Bits - Bloch's Sphere - Quantum Gates - Multiple Qu-Bits - Advantages of Quantum Computing over classical Computation.

UNIT-II

ELECTRON THEORY OF METALS: Classical free electron theory - Mean free path - Relaxation time and drift velocity - Quantum free electron theory - Fermi - Dirac (analytical) and its dependence on temperature - Fermi energy - Electron scattering and resistance.

UNIT-HI

BAND THEORY OF SOLIDS: Bloch theorem (qualitative) - Kronig - Penney model - Origin of energy band formation in solids - Classification of materials into conductors, semi- conductors & insulators -Concept of effective mass of an electron.

UNIT-IV

MAGNETIC PROPERTIES: Permeability - Magnetization - Orgin of magnetic moment - Classification of Magnetic materials - Dia, para and ferro- magnetism -Domain and Weiss field theory - Hysteresis Curve - Soft and Hard magnetic materials.

UNIT-V

SUPERCONDUCTIVITY: General properties - Meissner effect - Penetration depth - Type I and type II superconductors - Flux quantization - DC and AC Josephson effect - BCS Theory - Applications of superconductors.

UNIT-VI

DIELECTRIC PROPERTIES: Introduction - Dielectric constant - Electronic, ionic and orientational polarizations - Internal fields in solids - Clausius-Mossotti equation - Dielectrics in alternating fields - frequency dependence of the polarizability - Ferro and Piezo electricity.

UNIT-VII

SEMICONDUCTORS: Introduction - Intrinsic semiconductor and carrier concentration - Equation for conductivity - Extrinsic semiconductor and carrier concentration - Drift and diffusion - Einstein's equation - Hall effect - Direct & indirect band gap semiconductors.

UNIT-VIII

PHYSICS OF NANO MATERIALS: Introduction - Properties and prepation of Nano Materials -Surface occupancy - Reduction of Dimensionality - 4D -Force vector - Quantum wires - Quantum dots and Quantum wells - Density of states and Energy spectrum - Nanotubes - Applications of nanomaterials.

Text book: Perspective of Engineering Physics - II by M Sri Ramarao, Nityananda Choudary, Daruka Prasad, ACME Learning.

Refernce books: 1. Solid State Physics – by A J Dekker , Mcmilan India Ltd.
2. A Text Book of Engineering Physics , by Bhattacharya & Bhaskara , Oxford University Press
3. Engineering Physics by K Shiva Kumar, Prism Books Pvt. Ltd

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING CHEMISTRY – II (*Common to all branches)*
Syllabus effective from 2010- 2011

UNIT-I

POLYMERS: Introduction - Types of polymers – Classification - Methods of polymerisation – Stereo specific polymers - Ziegler Natta catalysis - Properties of polymers –Conducting Polymers- Engineering applications – Biodegradable polymers - Individual polymers(Preparation ,Properities,Uses of Poly Styrene, PVC, PTFE, Bakelite's, Cellulose derivatives, Poly Carbonates)

UNIT-II

PLASTICS – Types –Compounding of plastics- Moulding(Four types)- Fiber reinforced , Glass fibre reinforced plastics –Bullet Proof Plastics– Properties of plastics – Engineering applications

UNIT-III

RUBBERS & ELASTOMERS: Introduction – Preparation – Vulcanization – Properties - Engineering applications.

Buna-S,Buna-N, - Poly Urethane - Engineering applications of Elastomers

UNIT-IV

NANO MATERIALS

Introduction to Nano materials-preparation of few Nano materials(Carbon Nano Tubes,Fullerenes etc)-Properities of Nano materials- Engineering applications.

UNIT-V

BUILDING MATERIALS(CEMENT,REFRACTORIES,CRAMICS):

CEMENT

Introduction, Manufacturing of Portland Cement(Dry &We Process)-Chemistry of Setting and Hardening of Cement-Effect of Carbon dioxide,Sulphur Dioxide ,Chloride on Cement concrete.

REFRACTORIES

Introduction-Classification –Properties-Applications

CERAMICS

Introduction-Classification – Glazed &Unglazed Ceramics -Properties-Engineering Applications.

UNIT-VI

FUEL TECHNOLOGY

Introduction to Liquid Fuels-Classification of Crude Oil-Fractional Distillation-Cracking (Thermal &Catalytic), Polymerization-Refining &Reforming –Working of Internal Combustion Engine, Heated Chambers-Knocking –AntiKnocking Agents-Octane &Cetane Number.

LUBRICANTS

Definition and Explanation of Lubrication-Mechanism of Lubrication –Types of Lubricants-Properties of Lubricants-Engineering applications

UNIT-VII

CORROSION – Mechanism- Factors influence the rate of corrosion - Types of Corrosion -Protection methods (Anodic & Cathodic protection), - Metallic Coatings - Paints, Varnishes, Enamels , Special paints.

UNIT-VIII

GREEN CHEMISTRY

Introduction-Concepts- Engineering Applications

Text Book : A Text book of engineering chemistry by Srinivasulu D. Parshva publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING DRAWING (Common to all Branches)

Syllabus effective from 2010- 2011

I B.Tech – II Semester

Unit-I

Polygons-Construction of Regular Polygons using given length of a side; Ellipse- Arcs of Circles and Oblong Methods; Scales-Vernier and Diagonal Scales.

Unit-II

Introduction to Orthographic Projections; Projections of Points; Projections of Straight Lines parallel to both planes; Projections of Straight Lines-Parallel to one and inclined to other plane.

Unit-III

Projections of Straight Lines inclined to both planes, determination of true lengths, angle of inclinations and traces.

Unit-IV

Projections of Planes; Regular Planes Perpendicular / Parallel to one Reference Plane and inclined to other Reference Plane; inclined to both the Reference Planes.

Unit-V

Projections of Solids-Prisms and Cylinders with the axis inclined to one Plane.

Unit-VI

Projections of Solids- Pyramids and Cones with the axis inclined to one plane.

Unit-VII

Conversion of Isometric Views to Orthographic Views.

Unit-VIII

Conversion of Orthographic Views to Isometric Projections and Views.

TEXT BOOK:

1. Engineering Drawing by N.D. Bhat, Chariot Publications

REFERENCE BOOKS:

1. Engineering Drawing by M.B. Shah and B.C. Rana, Pearson Publishers
2. Engineering Drawing by Dhananjay A. Jolhe, Tata McGraw Hill Publishers
3. Engineering Graphics for Degree by K.C. John, PHI Publishers

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENVIRONMENTAL STUDIES (Common to all Branches)

Syllabus effective from 2010 -2011

UNIT - I

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Need for Public Awareness.

UNIT - II

Natural Resources : Renewable and non-renewable resources – Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest and tribal people – Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. – Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT - III

Ecosystems : Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of the following ecosystem:

a. Forest ecosystem
b. Grassland ecosystem
c. Desert ecosystem
d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT - IV

Biodiversity and its conservation : Introduction - Definition: genetic, species andecosystem diversity. - Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - . Biodiversity at global, National and local levels. - . India as a mega-diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT - V

Environmental Pollution : Definition, Cause, effects and control measures of :

a. Air pollution

b. Water pollution

c. Soil pollution

d. Marine pollution

e. Noise pollution

f. Thermal pollution

g. Nuclear hazards

Solid waste Management: Causes, effects and control measures of urban and
industrial wastes. - Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.

UNIT - VI

Social Issues and the Environment: From Unsustainable to Sustainable development -Urban problems related to energy -Water conservation, rain water harvesting, watershed management -Resettlement and rehabilitation of people; its problems and concerns. Case Studies -Environmental ethics: Issues and possible solutions. -Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. -Wasteland reclamation. –Consumerism and waste products. -Environment Protection Act. -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act -Issues involved in enforcement of environmental legislation. -Public awareness.

UNIT - VII

Human Population and the Environment: Population growth, variation among nations. Population explosion –Family Welfare Programme. -Environment and human health. -Human Rights. -Value Education. HIV/AIDS. -Women and Child Welfare. -Role of information Technology in Environment and human health. –Case Studies. Page 37 of 79

UNIT - VIII

Field work : Visit to a local area to document environmental assets River /forest grassland/hill/mountain -Visit to a local polluted site Urban/Rural/industrial/ Agricultural Study of common plants, insects, birds. -Study of simple cosystemspond, river, hill slopes, etc.

Text Books :

1. An Introduction to Environmental Studies by B. Sudhakara Reddy, T. Sivaji Rao, U. Tataji & K. Purushottam Reddy, Maruti Publications.

Reference :

1. Text Book of Environmental Studies by Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. Environmental Studies by K.V.S.G. Murali Krishna, VGS Publishers, Vijayawada
3. Text Book of Environmental Sciences and Technology by M. Anji Reddy, BS Publications.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

MATHEMATICAL METHODS (*Common to ALL branches)*
Syllabus effective from 2010-2011

UNIT – I

Linear systems of equations: Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- Gauss Elimination - Gauss Jordon and Gauss Seidal Methods.

UNIT – II

Eigen values - Eigen vectors – Properties – Cayley-Hamilton Theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem.

UNIT-III

Quadratic forms- Reduction of quadratic form to canonical form – Rank - Positive, negative definite - semi definite - index – signature.

UNIT – IV

Solution of Algebraic and Transcendental Equations: Introduction – The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method.

UNIT-V

Interpolation: Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Symbolic relations and separation of symbols-Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unevenly spaced points - Lagrange's Interpolation formula.

UNIT – VI

Numerical Differentiation and Integration – Differentiation using finite differences - Trapezoidal rule – Simpson's 1/3 Rule –Simpson's 3/8 Rule.

UNIT – VII

Numerical solution of Ordinary Differential equations: Solution by Taylor's series-Picard's Method of successive Approximations-Euler's Method-Runge-Kutta Methods –Predictor-Corrector Methods- Milne's Method.

UNIT – VIII

Curve fitting: Fitting a straight line –Second degree curve-exponential curve-power curve by method of least squares.

Text Book : Ravindranath, V. and Vijayalaxmi, A., A Text Book on Mathematical Methods, Himalaya Publishing House, Bombay.

Reference Books :

1. Rukmangadachari, E. Mathematical Methods, Pearson Education, Delhi.
2. Kreszig, Erwin "Advanced Engineering Mathematics", 8 Ed. Wiley Student Edition.
3. Peter O' Neil, "Engineering Mathematics", Cengage Learning. Gordon, "Engineering Mathematics", Pearson Education

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

ENGINEERING PHYSICS&CHEMISTRY LABORATORY- II

PHYSICS:

Electro-Magnetism and Electronics:

1.Determine the Planck's constant using Photo-Ceil.
2.Study the variation of Magnetic Field along the axis of a solenoid coil using Stewart - Gee's apparatus.
3.Draw the Frequency Response curves of L-C-R Series and Parallel Circuits.
4.Determine the Time Constant for a C-R Circuit.
5.Determine the Band Gap of a Semi conductor using a p-n junction diode.
6.Study of Characteristic curves (l/V) of a Zener diode to determine its Breakdown voltage.
7.Determine the Hall Coefficient of a Semiconductor.
8.Draw the characteristic curves and determine the Thermoelectric coefficient of a Thermistor
9.Study the Seebeck and Peltier - Thermoelectric Effects and to determine Coefficients and Thermo Electric Effect using Thermocouple.

10.Draw the Characteristic curves of a p-i-n and Avalanche Photo Diodes.
11.Determination of Numerical Aperture and Bending losses of an Optical Fiber.

Manual Cum Record Books :

1. Manual cum Record for Engineering Phaysics Lab- II, by Prof.Sri M. Rama Rao, Acme Learning.. .
2. Lab manual - II, of Engineering Physics by Dr. Y.Aparna and Dr. K.Venkateswara Rao (VGS Books links, Vijayawada)

CHEMISTRY LAB – II

1.PRODUCTION OF BIODIESEL.
INTRODUCTION TO BIO FUELS
The teacher has to perform the transesterfication reaction of FATTY ACID and the Biodiesel thus produced can be used for analysis.(Please give priority to production of Biodiesel from waste cooking oil)

2. Estimation of properties of oil:
a. Acid Number
b. Viscosity
c. Saponification value
d. Aniline point
e. Flash and Fire points
f. Pour and Cloud point

3.. PREPARATION OF PHENOL –FORMALDEHYDE RESIN

4. SOIL ANALYSIS:
pH, Determination of Zinc, Iron, Copper.

5.FOOD ANALYSIS:
Determination Saturated and Unsaturated Fatty Acids, pH,etc.

All the teachers are requested to focus on bio fuels ,soil analysis and food analysis as these are the need of 21 st century and these experiments are so desigened to encourage students to carry out lab to land process.

Lab Manual : Engineering chemistry laboratory manual &record By Srinivasulu . D. Parshva publications

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IT WORKSHOP (Common to all Branches)
Syllabus effective from 2010- 2011

Syllabus Preparation under progress

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