

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR****Course structure for B.Tech. (Regular) I year (2009-10) for affiliated Engineering Colleges.****For Branches: E.C.E., E.E.E., E.I.E., C.S.E., I.T., C.S.S.E., E.Cont.E., E.C.M.**

S.No	Subject	Theory	Tutorial	Drg.	Lab.	Credits
1.	English	2				4
2.	Engineering Physics	2				4
3.	Engineering Chemistry	2				4
4.	Mathematics – I	3	1			6
5.	Programming in C and Data Structures	3	1			6
6.	Mathematical Methods	3	1			6
7.	Engineering Drawing *			6		6
8.	C Programming & Data Structures Lab				3	4
9.	Engineering & I.T. Workshop				3	4
10.	Engineering Physics and Engineering Chemistry Lab **				3	4
11.	English Language & Communication Skills Lab				3	4
	contact periods/week	15	3	6	12	52
		Total contact periods/week			36	

**For Branches: M.E., C.E, Bio-Tech.\*\*\*, Aero.E.**

Sl.No	Subject	Theory	Tutorial	Drg.	Lab.	Credits
1.	English	2				4
2.	Engineering Physics	2				4
3.	Engineering Chemistry	2				4
4.	Mathematics – I	3	1			6
5.	Programming in C and Data Structures	3	1			6
6.	Engineering Mechanics	3	1			6
7.	Engineering Drawing *			6		6
8.	C Programming & Data Structures Lab				3	4
9.	Engineering & I.T. Workshop				3	4
10.	Engineering Physics and Engineering Chemistry Lab **				3	4
11.	English Language & Communication Skills Lab				3	4
	contact periods/week	15	3	6	12	52
		Total contact periods/week			36	

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- \* Engineering Drawing will have University external Exam.
- \*\* The Students attend the Physics lab and Chemistry lab in alternate week that is 3/2 per week.
- \*\*\* Students with MPC stream admitted to Bio-Tech. will have to take “Essentials of Biotechnology ” as Audit Course with no end exam or credits

## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR

**I Year B.Tech. (common to all branches)**

<b>T</b>	<b>C</b>
<b>2</b>	<b>4</b>

### ENGLISH

#### 1. INTRODUCTION :

The sweeping changes in the world have elevated English to the status of a tool of global communication and transformed it into e-English. The syllabus has been drafted to improve the competence of students in communication in general and language skills in particular. The books prescribed serve as students' handbooks.

The teacher should focus on the skills of reading, writing, listening and speaking while using the prescribed text and exercises. The classes should be interactive. The students should be encouraged to participate in the classroom proceedings and also to write short paragraphs and essays. The main aim is to encourage two way communications in place of the one-sided lecture.

The text for non-detailed study is meant for extensive reading by the students. They may be encouraged to read some select topics on their own, which could lead into a classroom discussion. In addition to the exercises from the texts done in the class, the teacher can bring variety by using authentic materials such as newspaper articles, advertisements etc.

#### 2. OBJECTIVES:

- a. To improve the language proficiency of the students in English with an emphasis on LSRW skills.
- b. To equip the students to study academic subjects with greater facility through theoretical and practical components of the syllabus.
- c. To develop study skills as well as communication skills in formal and informal situations.

#### 3. SYLLABUS :

##### Listening Skills:

Objectives

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

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*Students should be given practice in listening and identifying the sounds of English language and to mark stress , right intonation in connected speech.*

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

### **Speaking Skills :**

Objectives

1. To make students aware of the role of ability to speak fluent English and its contribution to their success.
2. To enable students to express themselves fluently and appropriately in social and professional contexts.

- Oral practice
- Role play – Individual/Group activities  
(Using exercises from all units of the prescribed text)
- Describing objects/situations/people
- Just A Minute (JAM) Sessions.

### **Reading Skills:**

Objectives

1. To develop an awareness in the students about the significance of silent reading and comprehension.
2. To develop the ability to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.

- Skimming the text
- Identifying the topic sentence
- Understanding discourse features
- Understanding the gist of an argument
- Inferring lexical and contextual meaning
- Recognizing coherence/sequencing of sentences

*The students shall be trained in reading skills using the prescribed text for detailed study. They shall be examined in reading and answering questions using 'unseen' passages which may be taken from the non-detailed text or other authentic texts, such as magazines/newspaper articles.*

### **Writing Skills:**

Objectives

1. To develop an awareness in the students the skill to write exact and formal writing
2. To equip them with the components of different forms of writing.

- Writing sentences
- Paragraph writing
- Narration / description
- Formal and informal letter writing
- Use of appropriate vocabulary
- Coherence and cohesiveness
- Note Making
- Editing a passage

### **4. TEXTBOOKS PRESCRIBED:**

In order to improve the proficiency of the student in the acquisition of the four skills mentioned above, the following texts and course content, divided into **Eight Units**, are prescribed:

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**For Detailed study: ENJOYING EVERYDAY ENGLISH**, Sangam Books (India) Pvt Ltd  
Hyderabad, 2009

**For Non-detailed study: INSPIRING LIVES**, Maruti Publications, Guntur, 2009

**Unit -I**

- a. Heaven's Gate from **ENJOYING EVERYDAY ENGLISH**
- b. Mokshagundam Visvesaraya from **INSPIRING LIVES**

**Unit -II**

- a. Sir C.V.Raman from **ENJOYING EVERYDAY ENGLISH**
- b. Mother Teresa from **INSPIRING LIVES**

**Unit -III**

- a. The Connoisseur from **ENJOYING EVERYDAY ENGLISH**
- b. Dr. Amartya Kumar Sen from **INSPIRING LIVES**

**Unit -IV**

- a. The Cuddalore Experience from **ENJOYING EVERYDAY ENGLISH**
- b. Gertrude Elion from **INSPIRING LIVES**

**Unit -V**

- a. Bubbling Well Road from **ENJOYING EVERYDAY ENGLISH**
- b. Vishwanathan Anand from **INSPIRING LIVES**

**Unit-VI**

- a. Odds Against Us from **ENJOYING EVERYDAY ENGLISH**
- b. Charlie Chaplin from **INSPIRING LIVES**

**Unit – VII**

Exercises on  
Reading and Writing Skills, Reading Comprehension, Letter writing, Report writing

**Unit – VIII**

Exercises on

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Remedial Grammar covering Common errors in English, Subject-Verb agreement, Use of Articles and Prepositions, Active/Passive Voice, Reported speech, Tenses

Vocabulary development covering  
Synonyms & Antonyms, one-word substitutes, prefixes & suffixes, Idioms & phrases, words often confused.

**Evaluation:** The question paper shall contain two parts, Part A containing questions from Units I- VI and Part B containing questions from units VII & VIII. The student is required to answer five full questions choosing at least one from Part B.

#### REFERENCES:

1. Technical Communication , Principle and Practice, Meenakshi Raman and Sangita Sharma, OUP, 2009
2. Essential Grammar in Use, (with CD) 3<sup>rd</sup> edn, Cambridge University Press, 2009
3. Resumes and Interviews, M.Ashraf Rizvi, Tata – Mcgraw Hill, 2009
4. Everyday Dialogues in English by Robert J. Dixson, Prentice-Hall of India Ltd., 2006.
5. Communication Skills for Technical Students, T.M.Farhathullah, Orient Blackswan, 2008
6. Developing Communication Skills, 2<sup>nd</sup> edn. by Krishna Mohan & Meera Banerji , Macmillan, 2009
7. English for Technical Communication, Vol. 1 & 2, by K. R. Lakshmi Narayanan, Sci tech. Publications.
8. Basic Communication Skills For Technology, Andrea J Ruthurford, Pearson Education , Asia.
9. Longman Dictionary of Contemporary English with DVD, Pearson Longman

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**I Year B.Tech. (common to all branches)**

<b>T</b>	<b>C</b>
<b>2</b>	<b>4</b>

#### ENGINEERING PHYSICS

##### UNIT I

**OPTICS:** Interference - Interference in thin films by reflection - Newton's rings - Diffraction - Fraunhofer diffraction at a single slit - Fraunhofer diffraction at a double slit - Diffraction grating

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- Grating spectrum - polarization - Nicol prism -Theory of circular and elliptical polarized light
- Quarter and half wave plates.

## UNIT II

**CRYSTAL STRUCTURES AND X-RAY DIFFRACTION:** Introduction -Space lattice - Basis - Unit cell - Lattice parameter - Bravais lattices - Crystal systems - Structure Simple cubic - Body Centered Cubic – Face Centered Cubic crystals - Miller indices of planes and directions in crystals – Separation between successive (h k l) planes - X-ray diffraction by crystal planes - Bragg's law – Laue and Powder methods.

## UNIT III

**PRINCIPLES OF QUANTUM MECHANICS & ELECTRON THEORY:** Waves and Particles - de- Broglie's hypothesis – Heisenberg's uncertainty principle - Schroedinger's one dimensional wave equation (Time Independent) - Particle in a one dimensional potential box – Energy levels - Fermi-Dirac distribution and effect of Temperature(qualitative treatment only) – Scattering - Source of electrical resistance - Kronig-Penney model (qualitative treatment only) - energy bands – metals, semi conductors & insulators.

## UNIT IV

**SEMICONDUCTORS:** Intrinsic and extrinsic semiconductors – Law of mass action – Continuity equation – Drift & diffusion - Einstein's relation – Hall effect – Direct & indirect band gap semiconductors – p-n junction - Band diagram of p-n junction diode – Diode Equation-LED, LCD & Photo diode.

## UNIT V

**MAGNETIC PROPERTIES:** Introduction - Origin of magnetic moment – Classification of magnetic materials - Dia, Para , Ferro, anti-Ferro and Ferri magnetism - Hysteresis - Soft and hard magnetic materials – Magnetic bubbles memory.

**DIELECTRIC PROPERTIES:** Introduction - Dielectric constant - Electronic, Ionic and Orientation polarizations (qualitative treatment only) - Local field - Clausius-Mossotti equation – Frequency dependence of polarisability (qualitative treatment only) – Ferro electricity- BaTiO<sub>3</sub>.

## UNIT VI

**SUPERCONDUCTIVITY:** General properties - Meissner effect - Penetration depth - Type I and Type II superconductors - Flux quantization – Josephson effects – BCS theory - Applications of superconductors.

**LASERS:** Introduction – Characteristics of laser - Spontaneous and stimulated emission of radiation - Einstein's coefficients - Population inversion - Ruby Laser - Helium-Neon Laser – GaAs 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 – Optical fiber communication systems - Application of optical fibers.

#### UNIT VIII

**NANOMATERIALS :** Introduction - Basic principles of nano materials – Fabrication of nano materials - ball milling –plasma arching – Chemical vapour deposition method – sol-gel methods – properties of nano materials – carbon nanotubes – properties and applications of carbon nano tubes - Applications of nano materials.

#### TEXT BOOKS:

1. Engineering Physics by V. Rajendran & K.Thyagarajan, Tata McGraw-Hill Publishing Co. Ltd.
2. Engineering Physics by M.R.Srinivasan New Age Publications
3. Engineering Physics by P.K.Palanisamy, Scitech Publications

#### REFERENCES:

1. Physics Volume 2, by Halliday, Resnick and Krane; John Wiley India
2. Solid State Physics by C.Kittel, Wiley India
3. Engineering Physics by Mittal, I.K.International
4. Introduction to Nanoscience & Nano Technology by K.K Chattopadhyay & A.N. Banarjee , Prentice – Hall of India Pvt. Ltd

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**ENGINEERING CHEMISTRY****UNIT I:**

**Water:** Sources of Water, Types of impurities in Water, Hardness of Water – Temporary and Permanent hardness. Units. Estimation of hardness by EDTA Method. Analysis of Water - Dissolved Oxygen. Disadvantages of Hard Water. Problems on hardness of water. Methods of Treatment of Water for Domestic Purpose – Sterilisation: Chlorination, Ozonisation.

**Water for Industrial purpose** - Water for Steam Making, Boiler Troubles – Carry Over (Priming and Foaming), Boiler Corrosion, Scales and Sludges, Caustic Embrittlement. Water Treatment: - Internal Treatment – Colloidal, Phosphate, Calgon, Carbonate, Sodium aluminates Conditioning of Water. External Treatment - Ion- Exchange Process; Demineralization of Brakish Water – Reverse Osmosis.

**UNIT II:**

**Science of Corrosion:** Definition, Types of corrosion: Dry Corrosion, (Direct Chemical attack), Wet Corrosion, Theories of Corrosion and Mechanism, Electro Chemical Theory of Corrosion. Galvanic Series, Galvanic Corrosion, Concentration Cell Corrosion, Oxygen absorption type. Factors Influencing Corrosion. Control of Corrosion – Cathodic Protection – Sacrificial anode and Impressed Current. Uses of Inhibitors. Electro Plating, and Electro less plating (copper and nickel)

**UNIT III:**

**Polymers:** Polymerization Reactions – Basic concepts. Types of Polymerization – Addition and Condensation Polymerization. Plastics –Thermosetting and Thermoplastics. Composition, Properties and Engineering Uses of the Following:Teflon, Bakelite, Nylon. Rubber – Processing of Natural Rubber and Compounding. Elastomers – Buna S, Buna N, Polyurethane Rubber; Silicone Rubber.

Conducting Polymers, Synthesis and applications of Polyacetylene and Poly aniline  
Liquid Crystals definition, properties, suitable examples and Engineering Applications

**UNIT IV:**

**Chemistry of nano materials:** Nano materials definition, properties and applications;

**Explosives and Propellants:** Explosives, Classification, precautions during storage, blasting fuses, important explosives.

Rocket propellants, classification of propellants.

**Lubricants** :Principles and function of lubricants - Classification and properties of lubricants – Viscosity, flash and fire points, cloud and pour points, aniline point, Neutralisation Number and Mechanical Strength.

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**UNIT V:**

**Electro Chemistry:** Conductance – Equivalent Conductance – Molecular Conductance, Conductometric Titrations – Applications of Conductivity Measurements.

**Electrochemical Cells:** Measurement of EMF, Standard electrode potential, concentration cells, batteries (Ni–Cd cell), Lithium batteries. Fuel cell: hydrogen oxygen fuel cell and methanol fuel cell

**Insulators** – Definition, Properties and Characteristics of Insulating Materials; Engineering Applications.

**UNIT VI:**

**Phase rule:** Definition, Terms involved in Phase Rule and Phase rule equation. Phase diagrams – one component system (water system), two component system (lead- silver system) Eutectics, heat treatment based on iron-carbon phase diagram, hardening, annealing.

**UNIT VII:**

**Fuels and Combustion:** Definition and Classification of fuels. Solid, liquid & gaseous fuels, Characteristics of a good fuel. Metallurgical Coke – Characteristics & Manufacture ( Otto-Halfmann). Petroleum – Refining - Synthetic Petrol . Calorific Value & its determination ( Bomb Calorimeter – Junker’s Gas Calorimeter). Combustion: Flue gas analysis by Orsat’s apparatus.

**VIII:****Building Materials:**

Cement: composition of Portland cement, analysis, setting & hardening of cement (reactions).

**Refractories :** Definition, Classification With Examples; Criteria of a Good Refractory Material; Causes for the failure of a Refractory Material

**TEXT BOOKS:**

1. Chemistry for Engineers Prof. K.N.Jayaveera, Dr.G.V.Subba Reddy and Dr. C. Ramachandraiah, McGraw Hill Higher Education Hyd., 2009
2. A text book of Engineering Chemistry by S.S. Dara, S.Chand & Co, New Delhi (2008)
3. Text book of Engineering Chemistry by Jain & Jain, Dhanpat Rai Publishing Company, 15th edition New Delhi (2008).

**REFERENCE:**

1. Engineering Chemistry Dr. K. B. Chandrasekhar, Dr. U.N. Dash, Dr. Sujatha Mishra, Scitech Publications(India) Pvt. Limited, Hyderabad. 2009
2. Fuel Cells principles and applications by B.Viswanath,M.Aulice Scibioh-Universities press
3. Chemistry of Engineering Materials by C.V. Agarwal, Tara Publication, Varanasi.2008
4. Physical Chemistry - Glasston & Lewis.
5. Engineering Chemistry (Vol.1&2) by J C Kuriacose and J. Rajaram, Tata McGraw-Hill Co, New Delhi (2004)
6. Applied Chemistry: A Text Book for chemistry for Engineers & Technologists, G.D. Gesser, Springer, 2000

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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR****I Year B.Tech. (common to all branches)**

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<b>3+1</b>	<b>6</b>

**MATHEMATICS – I****UNIT – I**

Differential equations of first order and first degree – Exact, linear and Bernoulli equations. 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  $x$ ,  $e^{ax} V(x)$ ,  $xV(x)$ , method of variation of parameters.

**UNIT – III**

Rolle's Theorem – Lagrange's Mean Value Theorem – (excluding proof). Simple examples of Taylor's and Maclaurin's Series - Functions of several variables – Jacobian – Maxima and Minima of functions of two variables, Lagrangian method of Multipliers with three variables only.

**UNIT – IV**

Radius of Curvature – Curve tracing – Cartesian, polar and parametric curves. Applications of integration to lengths, volume and surface area of solids of revolution in Cartesian and polar coordinates

**UNIT – V**

Multiple integral: – Double and triple integrals – Change of Variables – Change of order of integration.

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### UNIT – VI

Laplace transform of standard functions – Inverse transform – First shifting Theorem, Transforms of derivatives and integrals – Unit step function – Second shifting theorem – Dirac's delta function – Convolution theorem – Laplace transform of Periodic function.

### UNIT – VII

Differentiation and integration of Laplace transform – Application of Laplace transforms to ordinary differential equations of first and second order.

### UNIT – VIII

Vector Calculus: Gradient – Divergence – Curl and Their properties; Vector integration – Line integral - Potential function – Area, Surface and volume integrals. Vector integral theorems: Green's theorem – Stoke's and Gauss's Divergence Theorem (excluding their proof). Verification of Green's – Stoke's and Gauss's Theorems.

### TEXT BOOKS:

1. A Text Book of Engineering Mathematics, Vol – 1, T.K.V. Iyengar, B. Krishna Gandhi and Others S. Chand & Company.
2. A Text Book of Engineering Mathematics, C. Sankaraiah, V.G.S. Book Links.
3. A Text Book of Engineering Mathematics-1, E. Rukmangadachari, E. Keshava Reddy, Pearson Education.

### REFERENCES:

1. A Text Book of Engineering Mathematics, B.V. Ramana, Tata Mc Graw Hill.
2. A Text Book of Engineering Mathematics, Thomson Book Collection.
3. A Text Book of Advanced Engineering Mathematics – A Computer Approach, N.Bail, M.Goyal & C. Watkins.
4. Engineering Mathematics, Sarveswara Rao Koneru, Universities Press.

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<b>6</b>	<b>6</b>

**ENGINEERING DRAWING****UNIT – I**

**INTRODUCTION TO ENGINEERING DRAWING:** Principles of Engineering Graphics and their Significance – Drawing Instruments and their Use – Conventions in Drawing – Lettering – BIS Conventions.

Curves used in Engineering Practice:

- Conic Sections including the Rectangular Hyperbola – General method only.
- Cycloid, Epicycloids and Hypocycloid
- Involutes.
- Helices

**UNIT – II**

**PROJECTION OF POINTS AND LINES:** Principles of Orthographic Projection – Conventions – First and Third Angle Projections. Projections of Points, Lines inclined to one or both planes, Problems on projections, Finding True lengths & traces only.

**UNIT – III**

**PROJECTIONS OF PLANES:** Projections of regular Plane surfaces, Projection of lines and planes using auxiliary planes.

**UNIT – IV****PROJECTIONS OF SOLIDS**

Projections of Regular Solids inclined to one or both planes – Auxiliary Views.

**UNIT – V****SECTIONS & DEVELOPMENTS OF SOLIDS**

Section Planes and Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid and Cone – True shapes of sections.

Development of Surfaces of Right Regular Solids – Prisms, Cylinder, Pyramid, Cone and their Sectional parts.

**UNIT – VI**

**ISOMETRIC & ORTHOGRAPHIC PROJECTIONS:** Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non-isometric lines. Isometric Projection of Spherical Parts.

Conversion of Isometric Views to Orthographic Views – Conventions.

**UNIT – VII**

**INTERPENETRATION OF RIGHT REGULAR SOLIDS:**

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Intersection of Cylinder Vs Cylinder, Cylinder Vs Prism, Cylinder Vs Cone, Square Prism Vs Square Prism.

**UNIT – VIII**

PERSPECTIVE PROJECTIONS: Perspective View: Plane Figures and Simple Solids, Vanishing Point Methods (General Method only).

**TEXT BOOKS:**

- 1.Engineering Drawing, N.D. Bhat / Charotar
2. Engineering Drawing, Johle /Tata McGraw-Hill
- 3.Engineering Drawing, Shah and Rana, 2/e Pearson education

**REFERENCES:**

1. Engineering Drawing and Graphics, Venugopal/ New age
2. Engineering Drawing, B.V.R. Guptha, J.K. Publishesrs
3. Engineering Drawing, K.L. Narayana, P. Khanniah, Scitech Pub
4. Engineering Drawing, Venkata Reddy, B.S.Publishers.

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR****I Year B.Tech. (common to all branches)****P      C**  
**3/2    2****ENGINEERING PHYSICS LAB****Any TEN of the following experiments are to be performed during the Academic year.**

<b>Sl.No.</b>	<b>Name of the Experiment</b>
1.	Determination of wavelength of given source – spectrometer – normal incidence method.
2.	Dispersive power of the prism – Spectrometer.
3.	Determination of wavelength of a laser source - Diffraction Grating.
4.	Determination of particle size by using a laser source .
5.	Determination of thickness of a thin wire using parallel fringes.
6.	Newton's Rings.
7.	Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.
8.	Numerical aperture of an optical fiber.
9.	Hall effect.
10.	B – H Curve.
11.	Energy gap of a material of p-n junction
12.	Determination of rigidity modulus of a wire material – Torsional pendulum
13.	Determination of dielectric constant.
14.	Verification of laws of stretched string – Sonometer.
15.	Melde's experiment – Transverse & Longitudinal modes.

**Equipment required:**

Spectrometer, Grating, Prism, Mercury vapour lamp, Sodium vapour lamp, Travelling Microscope, Wedge arrangement, Newton rings setup, Stewart-Gee's apparatus, He-Ne laser source, Optical fiber, Hall effect kit, B-H loop kit, Energy gap kit (four probe method), Torsional pendulum, Dielectric constant kit, Sonometer, Melde's apparatus

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR****I Year B.Tech. (common to all branches)****P**  
**3/2****C**  
**2****ENGINEERING CHEMISTRY LAB**

1. Preparation of Standard Potassium Dichromate and Estimation of Ferrous Iron.
2. Preparation of Standard Potassium Dichromate and Estimation of Copper, by Iodometry.
3. Preparation of Standard EDTA solution and Estimation of Hardness of Water.
4. Preparation of Standard EDTA and Estimation of Copper
5. Determination of Manganese in Steel and Iron in Cement.
6. Determination of strength of the given Hydrochloric acid against standard sodium hydroxide solution by Conductometric titration
7. Determination of viscosity of the oils through Redwood viscometer
8. Determination of calorific value of fuel using Bomb calorimeter
9. Estimation of dissolved oxygen
10. Determination of Eutectic Temperature of binary system (Urea – Benzoic Acid)

**BOOKS:**

1. Chemistry-lab manual by Dr K.N.Jayaveera and K.B. Chandra Sekhar, S.M. Enterprises Ltd.
2. Vogel's Book of Quantitative Inorganic Analysis, ELBS Edition.

**Equipment Required:**

1. **Glass ware: Pipettes, Burettes, Volumetric Flasks, Beakers, Standard flasks, Measuring jars, Boiling Test tubes, reagent bottles, (Borosil)**
2. **Analytical balance (keroy) (15 Nos)**
3. **Calorimeter**
4. **Bomb Calorimeter**
5. **Redwood viscometer No.1 & No.2**
6. **Conductometer/ Conductivity bridge**
7. **Wash bottles, test tube stands, burette stands**
8. **Gas cylinders with Bunsen burners**
9. **Chemicals: Hydrochloric acid, sodiumhydroxide, EDTA, EBT indicator, fast sulfon black-f, urea, benzoic acid, methanol, Mohr's salt, copper sulphate, magnesium sulphate, ammonia, ammonium sulphate, calcium sulphate etc.,**

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<b>P</b>	<b>C</b>
<b>3</b>	<b>4</b>

**ENGLISH LANGUAGE COMMUNICATION SKILLS LAB**

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

**Objectives:**

- 1. To train students to use language effectively in everyday conversations, to participate in group discussions, to help them face interviews, and sharpen public speaking skills**
- 2. To expose the students to a varied blend of self-instructional, learner-friendly modes of language learning**
- 3. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm**
- 4. To initiate them into greater use of the computer in resume preparation, report-writing, format-making etc.**
- 5. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required ability to face computer-based competitive exams such GRE, TOEFL, GMAT etc.**

**SYLLABUS :**

The following course content is prescribed for the **English Language Laboratory** sessions:

1. Introduction to the Sounds of English- Vowels, Diphthongs & Consonants.
2. Introduction to Stress and Intonation.
3. Situational Dialogues (giving directions etc.)

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4. Speaking on the mobiles and telephone conversation
5. Role Play.
6. Oral Presentations- Prepared and Extempore.
7. 'Just A Minute' Sessions (JAM).
8. Describing Objects / Situations / People.
9. Information Transfer
10. Debate

**Minimum Requirement:**

**The English Language Lab shall have two parts:**

- i) **The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
- ii) **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo –audio & video system and camcorder etc.

**System Requirement ( Hardware component):**

*Computer network with Lan with minimum 60 multimedia systems with the following specifications:*

- i) P – IV Processor
- a) Speed – 2.8 GHZ
- b) RAM – 512 MB Minimum
- c) Hard Disk – 80 GB
- ii) Headphones of High quality

**PRESCRIBED SOFTWARE: GLOBARENA**

**Suggested Software:**

- Cambridge Advanced Learners' English Dictionary with CD.
- The Rosetta Stone English Library
- Clarity Pronunciation Power – Part I
- Mastering English in Vocabulary, Grammar, Spellings, Composition
- Dorling Kindersley series of Grammar, Punctuation, Composition etc.
- Language in Use, Foundation Books Pvt Ltd with CD
  - Learning to Speak English - 4 CDs
- Microsoft Encarta with CD
- Murphy's English Grammar, Cambridge with CD
- English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

**Books Suggested for English Language Lab Library (to be located within the lab in addition to the CDs of the text book which are loaded on the systems):**

1. **English Pronouncing Dictionary** Daniel Jones Current Edition with CD.
2. **Spoken English-** R. K. Bansal and J. B. Harrison, Orient Longman 2006 Edn.
3. **Speaking English Effectively** by Krishna Mohan & NP Singh (Macmillan)
4. **A Practical Course in English Pronunciation**, (with two Audio cassettes) by J. Sethi, Kamlesh Sadanand & D.V. Jindal, Prentice-Hall of India Pvt. Ltd., New Delhi.

*Any change in syllabus will be at the behest of Board of Studies confirmation from the Board of Studies, Syllabus would be altered.*

5. **Body Language , Your Success Mantra , Dr Shalini Verma, S.Chand & Co, 2008**
6. **English Dictionary for Advanced Learners, ( with CD ) International edn. Macmillan 2009**
7. **A Handbook for English language Laboratories, E.Sureshkumar, P.Sreehari, Foundation Books, 2009**
8. **DELTA's key to the Next Generation TOEFL Test, 6 audio CDS, New Age International Publishers, 2007**

## **DISTRIBUTION AND WEIGHTAGE OF MARKS**

### ***English Language Laboratory Practical Paper:***

1. The practical examinations for the English Language Laboratory shall be conducted as per the University norms prescribed for the core engineering practical sessions.
2. For the Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 year-end Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year- end Examination shall be conducted by the teacher concerned with the help of another member of the staff of the same department of the same institution.

## **JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR**

**I Year B.Tech. (E.C.E., E.E.E., E.I.E., C.S.E., I.T., C.S.S.E., E.Cont.E., E.C.M.)**

<b>P</b>	<b>C</b>
<b>3+1</b>	<b>6</b>

## **MATHEMATICAL METHODS**

### **UNIT – I**

**Matrices:** Elementary row transformations – Rank – Echelon form, normal form – Solution of Linear System of Homogenous and Non Homogeneous equations – Direct Methods – Gauss Elimination, Gauss Jordan methods.

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Eigen Values, Eigen vectors – Properties. Cayley – Hamilton Theorem – Inverse and powers of a matrix by Cayley–Hamilton theorem – Diagonalization of matrix. Calculation of powers of matrix.

## UNIT – II

Real matrices – Symmetric, skew – Symmetric, orthogonal matrices Linear Transformation – Orthogonal Transformation. Complex matrices: Hermitian, Skew-Hermitian and Unitary matrices – Eigen values and Eigen vectors and their properties. Quadratic forms – Reduction of quadratic form to canonical form and their nature.

## UNIT – III

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

**Interpolation:** Introduction – Finite differences – Forward Differences – backward Differences – Newton's forward and backward difference formulae for interpolation – Lagrange's Interpolation formula.

## UNIT – IV

Curve fitting: Fitting a straight line – Second degree curve – Exponential curve-Power curve by method of least squares. Numerical Differentiation and Integration – Trapezoidal rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule.

## UNIT – V

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

## UNIT – VI

Fourier Series: Determination of Fourier coefficients – Fourier series of Even and odd functions – Fourier series in an arbitrary interval – Even and odd periodic continuation – Half-range Fourier sine and cosine expansions. Fourier integral theorem (statement only) – Fourier sine and cosine integrals. Fourier transform – Fourier sine and cosine transforms – Properties – Inverse transforms – Finite Fourier transforms.

## UNIT – VII

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – Method of separation of variables – Solutions of one dimensional wave equation, heat equation and two-dimensional Laplace equation under initial and boundary conditions.

## UNIT – VIII

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

## TEXT BOOKS:

*Any change in syllabus will be at the behest of Board of Studies confirmation from the Board of Studies, Syllabus would be altered.*

1. Mathematical Methods, T.K.V. Iyengar, B. Krishna Gandhi and Others, S. Chand & Company.
2. Mathematical Methods, C. Sankaraiah, V.G.S. Book Links.
3. Mathematical Methods, G. Shanker Rao, E. Keshava Reddy, I. K. International Publishing House Pvt. Ltd.

**REFERENCES:**

1. Numerical Methods for Scientific and Engineering Computation , M.K. Jain, S.R.K. Iyengar & R.K. Jain, New Age international Publishers.
2. Mathematical Methods – Pal – Oxford.
3. Introduction to Numerical Analysis – S.S. Sastry Printice Hall of India
4. Mathematical Methods, S.K.V.S. Sri Ramachary, M. Bhujanga Rao, P.B. Bhaskar Rao & P.S. Subramanyam, BS Publications.