### J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
AUTONOMOUS

COMMON TO EEE, ECE, CST, IT, BME

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In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of Engineering students. The prescribed books and the exercises are meant to serve broadly as students’ handbooks.

In the English classes, the focus should be on the skills of reading, writing, listening and speaking and for this the teachers should use the text prescribed for detailed study. For example, the students should be encouraged to read the texts/selected paragraphs silently. The teachers can ask comprehension questions to stimulate discussion and based on the discussions students can be made to write short paragraphs/essays etc.

The text for non-detailed study is for extensive reading/reading for pleasure by the students. Hence, it is suggested that they read it on their own with topics selected for discussion in the class. The time should be utilized for working out the exercises given after each section, as also for supplementing the exercises with authentic materials of a similar kind for example, from newspaper articles, advertisements, promotional material etc. However, the stress in this syllabus is on skill development and practice of language skills.

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

3. SYLLABUS:
   Listening Skills:
   Objectives
   1. To enable students to develop their listening skill 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 can comprehend the speech of people of different backgrounds and regions.

   Students should be given practice in listening to the sounds of the language to be able to recognise them, to distinguish between them to mark stress and recognise and use the right intonation in sentences.
   • Listening for general content
   • Listening to fill up information
   • Intensive listening
   • Listening for specific information

   Speaking Skills:
   Objectives
   1. To make students aware of the role of speaking in English and its contribution to their success.
   2. To enable students to express themselves fluently and appropriately in social and professional contexts.

   • Oral practice
   • Describing objects/situations/people
   • Role play – Individual/Group activities (Using exercises from all the nine units of the prescribed text: Learning English: A Communicative Approach.)
   • 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 of students to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.

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

   NOTE : The students will be trained in reading skills using the prescribed text for detailed study. They will 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 about writing as an exact and formal skill
2. To equip them with the components of different forms of writing, beginning with the lower order ones.

• Writing sentences
• Use of appropriate vocabulary
• Paragraph writing
• Coherence and cohesiveness
• Narration / description
• Note Making
• Formal and informal letter writing
• 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:

For Detailed study
1 First Text book entitled “Enjoying Everyday English”, Published by Sangam Books, Hyderabad

For Non-detailed study
1. Second text book “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

A. STUDY MATERIAL:
Unit –I
1. Chapter entitled Heaven’s Gate from “Enjoying Everyday English”, Published by Sangam Books, Hyderabad
2 Chapter entitled Haragovind Khorana from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Unit –II
1. Chapter entitled Sir CV Raman: A Pathbreaker in the Saga of Indian Science from “Enjoying Everyday English”, Published by Sangam Books, Hyderabad
2 Chapter entitled Sam Petroda from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Unit –III
1 Chapter entitled The Connoisseur from “Enjoying Everyday English”, Published by Sangam Books, Hyderabad
2 Chapter entitled Mother Teresa from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Unit –IV
1. Chapter entitled The Cuddalore Experience from “Enjoying Everyday English”, Published by Sangam Books, Hyderabad
2 Chapter entitled Dr Amartya Kumar Sen from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Unit –V
1. Chapter entitled Bubbling Well Road from “Enjoying Everyday English”, Published by Sangam Books, Hyderabad
2 Chapter entitled I Have a Dream by Martin Luther King from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Unit –VI
1. Chapter entitled Odds Against Us from “Enjoying Everyday English”, Published by Sangam Books, Hyderabad
2 Chapter entitled Ask Not What Your Country can do for you by John F Kennedy from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

* Exercises from the lessons not prescribed shall also be used for classroom tasks.

Unit – VII
Exercises on
Reading and Writing Skills
Reading Comprehension
Situational dialogues
Letter writing
Essay writing

Unit – VIII
Practice Exercises on Remedial Grammar covering
Common errors in English, Subject-Verb agreement, Use of Articles and Prepositions,
Tense and aspect

Vocabulary development covering
Synonyms & Antonyms, one-word substitutes, prefixes & suffixes, Idioms & phrases, words often confused.
REFERENCES:
1. Innovate with English: A Course in English for Engineering Students, edited by T Samson, Foundation Books
2. English Grammar Practice, Raj N Bakshi, Orient Longman.
3. Effective English, edited by E Suresh Kumar, A RamaKrishna Rao, P Sreehari, Published by Pearson
6. Technical Communication, Meenakshi Raman, Oxford University Press
7. Objective English Edgar Thorpe & Showick Thorpe, Pearson Education
9. Murphy’s English Grammar with CD, Murphy, Cambridge University Press.
10. Everyday Dialogues in English, Robert J. Dixson, Prentice Hall India Pvt Ltd.,
12. Basic Vocabulary Edgar Thorpe & Showick Thorpe, Pearson Education
16. Enrich your English, Thakur K B P Sinha, Vijay Nicole Imprints Pvt Ltd.,
UNIT – I Sequences – Series
Basic definitions of Sequences and series – Convergences and divergence – Ratio test – Comparison test – Integral test – Cauchy’s root test – Raabe’s test – Absolute and conditional convergence

UNIT – II Functions of Single Variable
Rolle’s Theorem – Lagrange’s Mean Value Theorem – Cauchy’s mean value Theorem – Generalized Mean Value theorem (all theorems without proof) Functions of several variables – Functional dependence- Jacobian- Maxima and Minima of functions of two variables with constraints and without constraints

UNIT – III Application of Single variables
Radius, Centre and Circle of Curvature – Evolutes and Envelopes Curve tracing – Cartesian , polar and Parametric curves.

UNIT – IV Integration & its applications
Riemann Sums , Integral Representation for lengths, Areas, Volumes and Surface areas in Cartesian and polar coordinates multiple integrals - double and triple integrals – change of order of integration- change of variable

UNIT – V Differential equations of first order and their applications

UNIT – VI Higher Order Linear differential equations and their applications
Linear differential equations of second and higher order with constant coefficients, RHS term of the type f(X)= e^{ax} , Sin ax, Cos ax, and x^n, e^{ax} V(x), x^n V(x), method of variation of parameters. Applications bending of beams, Electrical circuits, simple harmonic motion.

UNIT – VII Laplace transform and its applications to Ordinary differential equations

UNIT – VIII Vector Calculus

TEXT BOOKS:

REFERENCES:
MATHEMATICAL METHODS

UNIT – I : Solution for linear systems

UNIT – II : Eigen Values & Eigen Vectors

UNIT – III : Linear Transformations

UNIT – IV : Solution of Non- linear Systems

UNIT – V : Curve fitting & Numerical Integration

UNIT – VI : Numerical solution of IVP's in ODE

UNIT – VII Fourier Series

UNIT – VIII Partial differential equations
Introduction and Formation of partial differential equation by elimination of arbitrary constants and arbitrary functions, solutions of first order linear (Lagrange) equation and nonlinear (Standard type) equations, Method of separation of variables for second order equations -Two dimensional wave equation.

TEXT BOOKS:

REFERENCES:
6. A text Book of KREYSZIG’S Mathematical Methods, Dr. A. Ramakrishna Prasad. WILEY publications.
UNIT-I

UNIT-II

UNIT-III

UNIT-IV

UNIT-V

UNIT-VI

UNIT-VII

UNIT-VIII

TEXT BOOKS:
REFERENCES:
4. Modern Physics by K. Vijaya Kumar, S. Chandralingam: S. Chand & Co.Ltd
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I Year B.Tech.  
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**ENGINEERING CHEMISTRY**

**UNIT I:**  
**Electrochemistry and Batteries:** Concept of Electro Chemistry, Conductance-Electrolyte in solution, Conductance-Specific, Equivalent and molar conductance, Ionic mobilities, Kolrausch’s Law. Application of conductance. EMF: Galvanic Cells, types of Electrodes, Reference Electrode (SCE, Quinhydrone electrode), Ion Selective Electrodes (Glass Electrode) Nernest equation, Concentration Cells, Galvanic series, Potentiometric titrations, Numerical problems.  

**UNIT II:**  

**UNIT III:**  

**UNIT IV:**  

**UNIT V:**  
**Surface Chemistry:** Solid surfaces, types of adsorption, Longmuir adsorption isotherm, BET adsorption equip. Calculation of surface area of solid & application adsorption, classification of colloids, Electrical & optical properties micelles, applications of colloids in industry. Nano materials: Introduction, preparation and applications of nano materials

**UNIT VI:**  

**UNIT VII:**  
**Phase rule:** Definitions – phase, component, degree of freedom, phase rule equitation. Phase diagrams – one component system: water system. Two component system lead- silver system, heat treatment based on iron-carbon phase diagram, hardening, annealing.

**UNIT VIII:**  

**TEXT BOOKS:**

**REFERENCE BOOKS**
UNIT - I

UNIT - II
Selection Statements – if and switch statements, Repetition statements – while, for, do-while statements, Loop examples, other statements related to looping – break, continue, goto, Simple C Programming examples.

UNIT - III
Designing Structured Programmes, Functions, basics, user defined functions, inter function communication, Standard functions, Scope, Storage classes-auto, register, static, extern, scope rules, type qualifiers, recursion- recursive functions, Preprocessor commands, example C programmes
Arrays – Concepts, using arrays in C, inter function communication, array applications, two – dimensional arrays, multidimensional arrays, C programme examples.

UNIT - IV
Pointers – Introduction (Basic Concepts), Pointers for inter function communication, pointers to pointers, compatibility, memory allocation functions, array of pointers, programming applications, pointers to void, pointers to functions, command --line arguments.
Strings – Concepts, C Strings, String Input / Output functions, arrays of strings, string manipulation functions, string / data conversion, C programme examples.

UNIT - V
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, enumerated types, C programming examples.

UNIT - VI
Input and Output – Concept of a file, streams, standard input / output functions, formatted input / output functions, text files and binary files, file input / output operations, file status functions (error handling), C programme examples.

UNIT – VII
Searching and Sorting – Sorting- selection sort, bubble sort, insertion sort, quick sort, merge sort, Searching-linear and binary search methods.

UNIT - VIII
Data Structures – Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Stacks-Operations, array and linked representations of stacks, stack application-infix to postfix conversion, postfix expression evaluation, recursion implementation, Queues-operations, array and linked representations.

TEXT BOOKS :


REFERENCES:

2. The C Programming Language, B.W. Kernighan and Dennis M.Ritchie, PHI/Pearson Education
7. C Programming & Data Structures, E. Balagurusamy, TMH.
8. C Programming & Data Structures, P. Dey, M Ghosh R Thereja, Oxford University Press
UNIT – I
a) Conic Sections including the Rectangular Hyperbola – General method only.
b) Cycloid, Epicycloid and Hypocycloid
c) Involute.
d) Scales: Different types of Scales, Plain scales comparative scales, scales of chords.

UNIT – II
DRAWING OF PROJECTIONS OR VIEWS ORTHOGRAPHIC PROJECTION IN FIRST ANGLE
PROJECTION: Principles of Orthographic Projections – Conventions – First and Third Angle, Projections of Points and Lines inclined to both planes, True lengths, traces.

UNIT – III
PROJECTIONS OF PLANES & SOLIDS: Projections of regular Planes, auxiliary planes and Auxiliary projection inclined to both planes. Projections of Regular Solids inclined to both planes – Auxiliary Views.

UNIT – IV
SECTIONS AND SECTIONAL VIEWS:- Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views.
DEVELOPMENT AND INTERPENETRATION OF SOLIDS: Development of Surfaces of Right, Regular Solids – Prisms, Cylinder, Pyramid Cone and their parts. Interpenetration of Right Regular Solids

UNIT – V
INTERSECTION OF SOLIDS:- Intersection of Cylinder Vs Cylinder, Cylinder Vs Prism, Cylinder Vs Cone.

UNIT - VI

UNIT –VII
TRANSFORMATION OF PROJECTIONS : Conversion of Isometric Views to Orthographic Views – Conventions.

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

TEXT BOOK :
1. Engineering Drawing, N.D. Bhat / Charotar
3. Engineering Drawing – Basant Agrawal, TMH

REFERENCES :
Objectives:

- To make the student learn a programming language.
- To teach the student to write programs in C to solve the problems.
- To introduce the student to simple linear data structures such as lists, stacks, queues.

Recommended Systems/Software Requirements:

- Intel based desktop PC
- ANSI C Compiler with Supporting Editors

Week 1.

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.

Week 2.

a) Write a C program to calculate the following Sum:
   \[ \text{Sum}=1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10! \]

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

Week 3.

a) Write C programs that use both recursive and non-recursive functions
   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.

Week 4.

a) The total distance travelled by vehicle in 't' seconds is given by distance \(= ut+\frac{1}{2}at^2\) 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 from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

Week 5.

a) Write a C program to find both the largest and smallest number in a list of integers.

b) Write a C program that uses functions to perform the following:
   i) Addition of Two Matrices
   ii) Multiplication of Two Matrices

Week 6.

a) Write a C program that uses functions to perform the following operations:
   i) To insert a sub-string into a given main string from a given position.
   ii) To delete n characters from a given position in a given string.

b) Write a C program to determine if the given string is a palindrome or not

Week 7.

a) Write a C program that displays the position or index in the string S where the string T begins, or –1 if S doesn’t contain T.

b) Write a C program to count the lines, words and characters in a given text.

Week 8.

a) Write a C program to generate Pascal’s triangle.

b) Write a C program to construct a pyramid of numbers.

Week 9.

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

\[ 1+x+x^2+\ldots\ldots\ldots\ldots+x^n \]

For example: if n is 3 and x is 5, then the program computes 1+5+25+125. Print x, n, the sum

Perform error checking. For example, the formula does not make sense for negative exponents – if n is less than 0. Have your program print an error message if n<0, then go back and read in the next pair of numbers of without computing the sum. Are any values of x also illegal? If so, test for them too.
Week 10
a) 2’s complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2’s complement of 11100 is 00100. Write a C program to find the 2’s complement of a binary number.
b) Write a C program to convert a Roman numeral to its decimal equivalent.

Week 11
Write a C program that uses functions to perform the following operations:
i) Reading a complex number
ii) Writing a complex number
iii) Addition of two complex numbers
iv) Multiplication of two complex numbers
(Note: represent complex number using a structure.)

Week 12
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.)

Week 13
a) Write a C programme to display the contents of a file.
b) Write a C programme to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file)

Week 14
Write a C program that uses functions to perform the following operations on singly linked list:
i) Creation ii) Insertion iii) Deletion iv) Traversal

Week 15
Write C programs that implement stack (its operations) using
i) Arrays ii) Pointers

Week 16
Write C programs that implement Queue (its operations) using
i) Arrays ii) Pointers

Week 17
Write a C program that uses Stack operations to perform the following:
i) Converting infix expression into postfix expression
ii) Evaluating the postfix expression

Week 18
Write a C program that implements the following sorting methods to sort a given list of integers in ascending order
i) Bubble sort
ii) Selection sort

Week 19
Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
i) Linear search ii) Binary search

Week 20
Write C program that implements the following sorting method to sort a given list of integers in ascending order:
i) Quick sort

Week 21
Write C program that implement the following sorting method to sort a given list of integers in ascending order:
i) Merge sort

Week 22
Write C programs to implement the Lagrange interpolation and Newton- Gregory forward interpolation.

Week 23
Write C programs to implement the linear regression and polynomial regression algorithms.

Week 24
Write C programs to implement Trapezoidal and Simpson methods.

Text Books
4. Practical C Programming,Steve Oualline,O'Reilly,SPD, TMH publications.
1. Dispersive power of the material of a prism – Spectrometer
5. Time constant of an R-C circuit.
6. L-C-R circuit.
7. Magnetic field along the axis of current carrying coil – Stewart and Gees method.
8. Study the characteristics of LED and LASER sources.
9. Study the characteristics of p-i-n and avalanche photodiode detectors.
11. Evaluation of numerical aperture of given fibre.
12. Energy gap of a material of p-n junction.
13. Thermo electric effect – Seebeck effect and Peltier effect.
14. Torsional pendulum.

**ENGINEERING CHEMISTRY LAB**

List of Experiments (Any 12 of the following):

- **Titrimetry:**
  a. Estimation of hardness of water by EDTA method. (or)
  Estimation of calcium in limestone by Permanganometry.

- **Mineral Analysis:**
  2 Determination of percentage of copper in brass
  3 Estimation of manganese dioxide in pyrolusite.

- **Instrumental Methods:**
  4. **Colorimetry:**
     Determination of ferrous iron in cement by colorimetric method.
     (Or) Estimation of Copper by Colorimetric method.
  5. **Conductometry:**
     Conductometric titration of strong acid Vs strong base.
     (or) Conductometric titration of mixture of acids Vs strong base.
  6. **Potentiometry:**
     Titration of strong acid Vs strong base by potentiometry.
     (or) Titration of weak acid Vs strong base by potentiometry.

- **Physical Properties:**
  7. Determination of viscosity of sample oil by redwood/oswald’s viscometer
  8. Determination Surface Tension of lubricants.

- **Identification and Preparations:**
  9. Identification of functional groups present in organic compounds.
  10. Preparation of organic compounds
      Asprin (or) Benzimidazole

- **Kinetics:**
  11. To determine the rate constant of hydrolysis of methyl acetate catalysed by an acid and also the energy of activation. (or) To study the kinetics of reaction between K₂S₂O₈ and KI.
  12. Demonstration Experiments (Any One of the following):
      a. Determination of dissociation constant of weak acid-by PH metry
      b. Preparation of Thiokol rubber
      c. Adsorption on Charcoal
      d. Heat of reaction

- **TEXT BOOKS:**
  2. Inorganic quantitative analysis, Vogel.

- **REFERENCE BOOKS:**
  1. Text Book of engineering chemistry by R. N. Goyal and Harmendra Goel.
ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

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

Objectives:
1. To expose the students to a variety of self-instructional, learner-friendly modes of language learning.
2. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer-based competitive exams such as GRE, TOEFL, GMAT etc.
3. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.
4. To train them to use language effectively to face interviews, group discussions, public speaking.
5. To initiate them into greater use of the computer in resume preparation, report writing, format-making 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 / Role Play.
5. ‘Just A Minute’ Sessions (JAM).
6. Describing Objects / Situations / People.
7. Information Transfer
8. Debate
10. Giving Directions.

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

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.
- Vocabulary in Use, Michael McCarthy, Felicity O’Den, Cambridge.
- 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. A Handbook for English Language Laboratories – Prof. E. Suresh Kumar, P. Sreehari, Foundation Books.
3. English Conversation Practice by Grant Taylor, Tata McGraw Hill.
5. Communicate or Collapse: A Handbook of Effective Public Speaking, Group Discussions and Interviews, by Pushpa Lata & Kumar, Prentice-Hall of India.
7. Spoken English by R. K. Bansal & J. B. Harrison, Orient Longman.
8. English Language Communication: A Reader cum Lab Manual Dr A Ramakrishna Rao, Dr. G. Natanam & Prof. S. A. Sankaranarayanan, Anuradha Publications, Chennai.
12. Spoken English: A foundation Course, Parts 1 & 2, Kamalesh Sadanand and Susheela punitha, Orient Longman

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 an external examiner/ or the teacher concerned with the help of another member of the staff of the same department of the same institution.
Objectives:
The IT Workshop for engineers is a training lab course spread over 54 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel and Power Point.

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. The students should work on working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.

Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. In addition, awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced.

Productivity tools module would enable the students in crafting professional word documents, excel spread sheets and power point presentations using the Microsoft suite of office tools and LaTeX. (Recommended to use Microsoft office 2007 in place of MS Office 2003)

PC Hardware
Week 1 – Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Week 2 – Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Week 3 – Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Week 4 – Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva.

Week 5 – Task 5: Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Week 6 – Task 6: Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web
Week 7 - Task 1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Week 8 - Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Week 9 - Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Week 10 - Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install an anti virus software, configure their personal firewall and windows update on their computer. Then they need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

Productivity tools
LaTeX and Word
**Week 11 – Word Orientation**: The mentor needs to give an overview of LaTeX and Microsoft (MS) office 2007/ equivalent (FOSS) tool word: Importance of LaTeX and MS office 2007/ equivalent (FOSS) tool Word as word Processors, Details of the three tasks and features that would be covered in each, using LaTeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter.

**Task 1 : Using LaTeX and Word** to create project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.

**Week 12 - Task 2 : Creating project abstract** Features to be covered:- Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

**Week 13 - Task 3 : Creating a Newsletter** : Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

**Excel**

**Week 14 - Excel Orientation**: The mentor needs to tell the importance of MS office 2007/ equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the two tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

**Task 1: Creating a Scheduler** - Features to be covered:- Gridlines, Format Cells, Summation, auto fill, Formatting Text

**Week 15 - Task 2 : Calculating GPA** - .Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP, Sorting, Conditional formatting

**LaTeX and MS/equivalent (FOSS) tool Power Point**

**Week 16 - Task1**: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Power point. Students will be given model power point presentation which needs to be replicated (exactly how it’s asked).

**Week 17- Task 2**: Second week helps students in making their presentations interactive. Topic covered during this week includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts

**Week 18 - Task 3**: Concentrating on the in and out of Microsoft power point and presentations in LaTeX. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes :- Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.

**REFERENCES :**

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
2. LaTeX Companion – Leslie Lamport, PHI/Pearson.
3. Introduction to Computers, Peter Norton, 6/e Mc Graw Hill
4. Upgrading and Repairing, PC’s 18th e, Scott Muller QUE, Pearson Education
5. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech
7. PC Hardware and A+Handbook – Kate J. Chase PHI (Microsoft)

**ENGINEERING WORKSHOP**

**1. TRADES FOR EXERCISES :**
At least two exercises from each trade:

1. House Wiring
2. Carpentry
3. Tin-Smithy and Development of jobs carried out and soldering.
4. Fitting

**2. TRADES FOR DEMONSTRATION & EXPOSURE:**

1. Metal Cutting (Water Plasma)
2 Power Tools in Construction, wood working, Electrical Engineering and Mechanical Engineering

**TEXT BOOK:**

2 Workshop Manual by Venkat Reddy