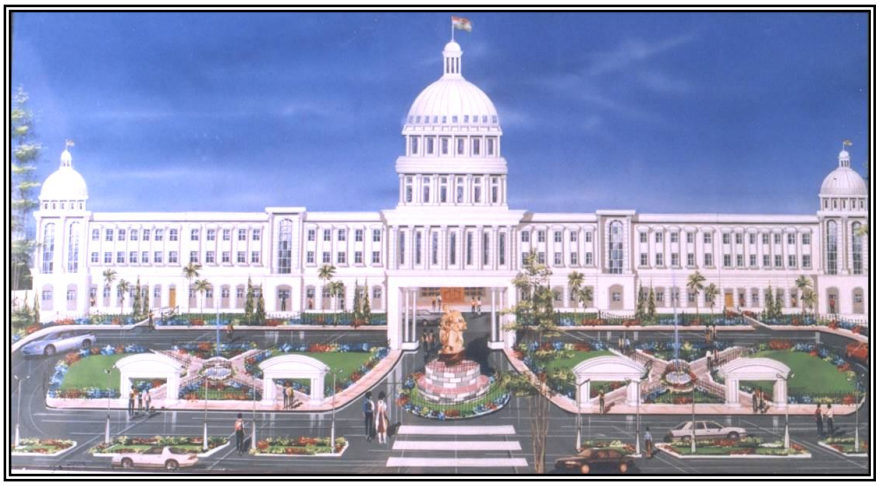
GUDLAVALLERU ENGINEERING COLLEGE

GUDLAVALLERU



DEPARTMENT

OF

CIVIL ENGINEERING

HANDOUTS

I B.Tech.

2009 - 10

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

(CIVIL ENGINEERING)
I B.Tech. 2009 – 10

COURSE STRUCTURE

S.No.	Subject	T	P/D	C
1.	English	2+1*	0	4
2.	Mathematics-I	3+1*	0	6
3.	Engineering Physics	2+1*	0	4
4.	Applied Chemistry	2+1*	0	4
5.	Applied Mechanics	4+1*	0	8
6.	C programming and Data structures	3+1*	0	6
7.	Engineering Graphics	0	6	8
8.	Engineering physics and Applied Chemistry Lab	0	3	4
9.	Computer Programming Lab	0	3	4
10.	Engineering Workshop Practice	0	3	4
11.	English Language Communication Skills lab	0	3	4
TOTAL		**22**	**18**	**56**

ACADEMIC CALENDAR

Instructions : 14-09-2009 01-05-2010 (33 Weeks)

Preparation & Practicals : 03-05-2010 15-05-2010 (2w)

End Examinations : 17-05-2010 29-05-2010 (2w)

Commencement of Class work for IInd year B.Tech, I Semester : 14-06-2010

THE SCHEDULE OF UNIT TESTS

TEST	TYPE	SYLLABUS	DATE
I Unit Test	Objective type	Unit – I	
II Unit Test	Subjective type	Unit – I & II	
III Unit Test	Objective type	Unit – III & IV	
IV Unit Test	Subjective type	Unit – III, IV & V	
V Unit Test	Objective type	Unit – VI & VII	
VI Unit Test	Subjective type	Unit – VI, VII & VIII	

Subject : **ENGLISH**

Class : I B.Tech. Year : 2009– 10

Branch : **Civil Engineering** Credits: **04**

AIM:-

To impart the four language skills:

1. Listening Skills
2. Reading Skills
3. Speaking Skills
4. Writing Skills

to the students of I Year B.Tech. to enhance their ability to communicate their ideas, feelings etc., to people with whom they come into contact and interaction. The English syllabi focuses on industry related communication that helps the students to understand the importance and usage of language.

OBJECTIVES:-

To improve their basic language skills (listening, speaking, reading and writing) focusing more on the communicative ability

To bring awareness of the types and processes of communication in organizations

To improve communication skills which are most required by the industry like presentation skills, group dynamics and interview skills

To enhance written communication skills in business contexts

To develop research oriented skills and produce god technical reports

Prescribed Textbooks:-

Learning English [A Communicative Approach]—Orient Longman Publication.

Wings of Fire by APJ Abdul Kalam.

REFERENCE BOOKS:-

1. Effective Technical Communication –M.Ashraf Razvi.
2. Speaking English Effectively.
3. Every day dialogues in English—Robert j Dixson.
4. Strengthen your English --- Bhaskaran & Horsburgh.
5. English for Technical Communication. –K.R.Lakshminarayana.
6. Strategies for Engineering Communication.
7. English for Engineer –with CD-Sirish Chaudary.
8. Basic Communication Skills for Technology.
9. A Practical Course in English Pronunciation.
10. English for Professional Courses –S.S. Prabhakar Rao.
11. A Text Book of English Phonetics for Indian Students –T.Balasubramanian.
12. CDs etc.

Assignments:

List of hard words and their synonyms and antonyms
Information transfer
Common errors : exercise sheets
Pronunciation of hard/new words for each unit
One essay for each lesson

Teaching Schedule: 2009-2010.

Date of Commencing of the Classes : 14-09-2009.
Last Date of Teaching : 01-05-2010.

Sl.No.	Week	Title of the Topic	No. of Periods.	Laboratory Items	No. of Periods.
1.	14-09-09 To 30-09-09.	Introduction to Spoken English and Communication.	06	Introduction to Multimedia, Systems, Operation And Utility.	06
2.	OCT I	Introduction to Grammatical Items	3	Introduction to Phonetics.	3
3.	OCT II	UNIT –I Astronomy.	3	Vowels.	3
4.	OCT III	Astronomy.	3	Diphthongs	3
5.	OCT IV	Astronomy. Spoken and Written Skills Based on Textual Exercises.	3	Consonant Sounds	3
6.	NOV. I WEEK	UNIT –I WINGS OF FIRE. Chapters 1 & 2.	3	Phonetic Transcription	3
7.	NOV. II WEEK	WINGS OF FIRE. Chapters 3 & 4.	3	Accent, Intonation & Rhythm	3
8.	NOV. III WEEK	UNIT –II Information Technology.	3	Conversational Items	3
9.	NOV. IV WEEK	Information Technology	3	Situational Dialogues	3
10.	DEC. I WEEK	Revision of the entire syllabi covered, for the sake of the new students	3	Active & passive Voice, Direct & Indirect Speech.	3
11.	DEC. II WEEK	UNIT –II WINGS OF FIRE. Chapters 5& 6.	3	Concord Sequence of Tense.	3
12.	DEC. III WEEK	WINGS OF FIRE. Chapters 7& 8.	3	Role Play.	3
13.	DEC. IV WEEK	Revision of the syllabus of first two units & prepare the Students for Exams.	3	Parts of Speech , Sentence, Subject & Predicate.	3
14.	JAN. I WEEK	UNIT –III HUMOUR	3	Articles Preposition.	3

15.	JAN. II WEEK	HUMOUR	3	Public Speaking	3
16.	JAN. III WEEK	UNIT –III WINGS OF FIRE. Chapters 9& 10.	3	Presentation Skills.	3
17.	JAN. IV WEEK	WINGS OF FIRE. Chapters 11& 12.	3	Tenses.	3
18.	FEB. I WEEK	UNIT –IV Environment.	3	Debate.	3
19.	FEB. II WEEK	Environment	3	Debating Skills.	3
20.	FEB. III WEEK	UNIT – V WINGS OF FIRE. Chapters 13 ,14 & 15.	3	Verb-Patterns.	3
21.	FEB. IV WEEK	WINGS OF FIRE. Chapters 16, 17 & 18.	3	Group Discussion	3
22.	MARCH I WEEK	UNIT –V Inspiration.	3	Group Discussion	3
23.	MARCH II WEEK	Inspiration.	3	Common Errors	3
24.	MARCH III WEEK	UNIT – V WINGS OF FIRE. Chapters 19, 20 & 21.	3	Interview Skills.	3
25.	MARCH IV WEEK	WINGS OF FIRE. Chapters 22 , 23 & 24.	3	Degrees of Comparison.	3
26.	APRIL I WEEK	UNIT – VI Human Interest.	3	Resume Preparation	3
27.	APRIL II WEEK	Human Interest. UNIT – VII Reading & Writing Skills.	3	e-Correspondence	3
28.	APRIL III WEEK	UNIT – VII Situation Dialogues, Letter & Essay Writing	3	Letter Writing	3
29.	APRIL IV WEEK	UNIT – VII Remedial Grammar	3	Vocabulary, Synonyms, Antonyms, Préfixes, Suffixes, Idioms & Phrases	3
30.	MAY I WEEK	Vocabulary -Development	3	Essay Writing	3
Total No. of Periods :					**92**

ENGLISH FACULTY

Subject	: **MATHEMATICS-I**		
Class	: I B.Tech.	Year	: 2009– 10
Branch	: **Civil Engineering**	Credits:	**06**

AIM:

"MATHEMATICS IS THE MOTHER OF ALL SCIENCES", It is a necessary avenue to scientific knowledge, which opens new vistas of mental activity. A sound knowledge of engineering mathematics is essential for the Modern Engineering student to reach new heights n life. So students need appropriate concepts, which will drive tem in attaining goals.

IMPORTANCE OF MATHEMATICS IN ENGINEERING STUDY:

Mathematics has become more and more important to engineering Science and it is easy to conjecture that this trend will also continue in the future. In fact solving the problems in modern Engineering and Experimental work has become complicated, time – consuming and expensive. Here mathematics offers aid in planning construction, in evaluating experimental data and in reducing the work and cost of finding solutions.

APPLICATION OF MATHEMATICS IN ENGINEERING:

The student shall see the application of Mathematics to an Engineering problem consist in three phases.

I) Modeling

ii) Solving

iii) Interpreting

I) Modeling: In modeling, the given physical information may be translated to differential equations, a system of linear equations or some other Mathematical expression and solving this by known methods.

ii) Solving: In this student will find the solution of the given problem in mathematical expression and solving this by known methods.

iii) Interpreting: interpretation of the Mathematical results in physical terms.

OBJECTIVES OF THE COURSE:

On completion of this course, all the students should be able to comprehend the following (unit wise).

UNIT – I

The student should be able to understand:

1.1 How to form the differential equations for the given equation.

1.2 How t to solve first order and first degree die.

1.3 How to solve exact, linear and Bernoulli equations.

1.4 The Applications to Newton's low of cooling.

1.5 The low of Natural growth and decay.

1.6 How to find orthogonal trajectories.

UNIT- II

The student should be able to understand:

2.1 How to solve second and higher order Homogenous linear differential equation with constant co efficiently.

2.2 How to solve second and higher and Homogenizes d.equations with constant coefficients with RHS term of the type e^{ax} ', sinax, cosax, poly nomials in x, $e^{x}v(x)$, v(x).

2.3 How to solve the days by methods of variation of parameters.

UNIT- III

3.1 How to apply Rolle's Theorem

3.2 How to apply Lagrange's Mean Value Theorem

3.3 How to apply Cauchy's Mean Value Theorem

3.4 How to apply Generalized Mean Value Theorem

3.5 How to find the Functions of Several Variables

3.6 How to find Functional Dependence

3.7 How to find the Jacobian

3.8 How to find the Maximum and Minimum of functions of two variables with constrains and without constraints.

UNIT - IV

The student should be able to understand

4.1 How to find the Radius of Curvature

4.2 How to find the Centre of Curvature

4.3 How to find the Circle of Curvature

4.4 How to find the Evolutes and Envelops

4.5 How to trace a Cartesian curve for a given equation.

4.6 How to trace a Polar curve for a given equation.

4.7 How to trace a parametric curve for a given equation.

UNIT-V

5.1 How to find the lengths of solids by using integration,

5.2 How to find the volumes in Cartesian coordinates

5.3 How to find the volumes in polar coordinates.

5.4 How to find the surface areas in Cartesian coordinates.

5.5 How to find the surface areas in polar coordinates.

5.6 How to double integral of a given function.

5.7 Hot to double triple of a given function.

5.8 How to find the double integral by change of variables.

5.9 How to find the double integral by change of order of integration

5.10 How to find the triple integral by change of variables

5.11 How to find the triple integral by change of order of integration.

UNIT-VI

The student should be able to understand

6.1 How to test the convergence and divergence of a given series by different tests.

6.2 How to apply Ratio Test

6.3 How to apply Comparison Test

6.4 How to apply Comparison Test

6.5 How to apply Integral Test

6.6 How to apply Cauchy's Root Test

6.7 How to apply Raabe's Test

6.8 How to test absolute and conditional convergence of a given series.

UNIT-VII

The student should be able to understand

7.1 How to evaluate gradient, divergence and curl of given vectors.

7.2 The properties of sums – products of vectors.

7.3 The Laplaciand and second order operators.

7.4 How to find the line integral for vectors.

7.5 Find the work done, Potential function, area of the vectors.

7.6 How to find surface integrals.

7.7 How to find volume integrals.

7.8 Green's theorem and its verification for cylindrical and sparest coordinates.

7.9 Stoke's theorem and its verification for cylindrical and spherical coordinates.

7.10 Gass divergence theorem and its verification for cylindrical and spherical coordinates.

UNIT- VIII

The student should be able to understand

8.1 Definition of Laplace transforms.

8.2 How to find the Laplace transform of a given function.

8.3 Laplace transform of standard functions.

8.4 How to find the inverse Laplace transform of a given Laplace transform.

8.5 First and second shifting theorems.

8.6 How to find the Laplace transforms of derivatives and integrals.

8.7 Unit step functions, Doric's delta function, periodic function.

8.8 How to find the L.T. by using convolution theorem of a given function

8.9 How to solve ODE by using L.T's

8.10 How to find Partial fractions by Heaviside's Partial fraction expansion theorem

PRESCRIBED TEXT BOOKS:

1. A text book of Engineering Mathematics Volume -1,2005.T.K.V.Iyerngar, B.Krishna Gandhi and others, S.Chand ad OCmpany.
2. Engineering Mathematics, B.V.Ramana, Tata Mc Graw – Hill2003.
3. Engineering Mathematics –I, Sankaraiah, VGS Book Links, Hyderabad

REFERENCE BOOKS:

1. Engineering Mathematics-I 2002, p.Nageswara rao, y.Narsimhulu ,Prabhakar Rao.
2. Engineering Mathematics –I2004. Dr.Shahnaz Bathul, Right Publishers.
3. Engineering mathematics, S.K.V.S.Sri Rama Chary, m.Bhujanga Rao, Shankar, B.S.Publications2000.
4. Engineering Mathematics - I Rukmangadhachary, Pearson Education.

BOOKS AVAILABLE IN THE COLLEGE LIBRARY:

i). Elementary Engineering Mathematics by B.S. Grawel

ii) Higher Engineering Mathematics by B.S. Grawel

iii) Advanced Engineering Mathematics by –E.Kreyszig.

URLs:

1. www.ping.be /nping1339/matr.htm
2. www.quickmath.com
3. www.mathworld.wolfram.com
4. www.sst.ph.in.ac.uk
5. www.interscience.wiley.com
6. www.ma.hw.ac.uk

CONSULTING HOURS:

For clearing the doubts, the students can approach on all working days between 3.50 P.M and 4.40 P.M.

ASSIGNMENTS:

One assignment per every unit will be given to the students in the first week of each unit. Assignment comprises the questions collected from previous university question papers and expected important questions, conversing the entire portion.

TUTORIALS:

Tutorial classes will be conducted to clear the doubt, to solve previous university question papers, to solve some additional problems and to take special care of weak students**.**

ATTENDANCE:

i) A student has to put in a minimum of 75% of attendance I aggregate of all the subjects for acquiring credits in the I year and / or each semester thereafter.

ii) Condonation of shortage of attendance in aggregate up to 10% (655 and above and below 75%) in each semester or I year may be granted by the College Academic Committee.

iii) A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester /I year.

iv) Shortage of Attendance below 65% in aggregate shall in no case be condoned.

v) Students whose shortage of attendance is not condoned in any semester/ I year are not eligible to take their end examination of that class and their registration shall stand cancelled. They may seek re- admission for that semester / I year when offered next.

vi) Condonation of shortage of attendance as stipulated in 6 (ii) above shall be granted on genuine and valid grounds with supporting evidence.

vii) A stipulated fee shall be payable towards condonation of shortage of attendance.

SEMINAR TOPICS:

To be announced in the Classes.

LECTURE SCHEDULE

UNIT-I

1. Introduction to differential equations	1
2. Differential equations of first order and first degree	1
3. Exact equations	1
4. Linear differential equations and solutions	1
5. Bernoulli's equation	1
6. Application s to Newton's Law of cooling	1
7. Law of natural growth and decay	1
8. Orthogonal trajectories	1
9. Problems on above topics	1

UNIT - II

1. Linear differential equations of second order with constant coefficients	1
2. Linear differential equations of higher order with constant coefficients	1
3. Function of the type e^{qx}, sinax,cosax on rhs of D.E.	1
4. Problems on above models	1
5. Polynomials in x on rhs of D.E.	1
6. Type e^{ax} V(X) and Xv(x)	1
7. Problems on above models	1
8. Method of variation of parameters	1
9. Problems on above topics	1

UNIT - III

1. Roll 's theorem	1
2. Lagrange's Mean value Theorem	1
3. Cauchy's mean value Theorem	1
4. Generalized Mean Value theorem (Taylor's Theorem)	1
5. Function al dependence definition and examples	1
6. Jacobian definition and examples	1
7. Problems on jacobians	1
8. Properties of jacobians	1
9. Maxima and Minima of functions of two variables with constraints	1
10. Maxima and Minima of functions of two variables without constraints	1
11. Problems on maxima and minima	1

UNIT-IV

1. Radius of Curvature (Cartesian form and polar form)	1
2. Radius of curvature (parametric and pedal form)	1
3. Radius of curvature at origin (Newton's formulae)	1
4. Problems on radius of curvature	1
5. Centre of Curvature definition and examples	1
6. Circle of Curvature definition and examples	1
7. Evolutes definition and examples	1
8. Envelopes definition and examples	1
9. Curve tracing of Cartesian curves	1
10. Curve tracing of polar curves	1
11. Curve tracing of Parametric curves	1
12. Lengths of plane curves	1
13. Volume of solids of revolution	1
14. Surface areas in Cartesian coordinates	1
15. Surface areas in polar coordinates	1
16. Problems of the above topics	1

UNIT- V

1. Applications of Integration to Lengths	1
2. Applications of Integration to Volumes	1
3. Applications of Integration to Surface areas	1
4. Double integrals , Problems	1
5. Triple integrals , Problems	1
6. Change of variables in double integrals	1
7. Change of order of integration	1
8. Change of variables in triple integrals	1

UNIT- VI

1. Sequences – definitions and preliminary results	1
2. Problems on sequences	1
3. Series	1
4. Convergences and divergence	1
5. Ratio test	1
6. Comparison test	1
7. Integral test	1
8. Cauchy's root test	1
9. Raabe's test	1
10. Absolute and conditional convergence.	1

UNIT –VII

1. Introduction to vectors	1
2. Gradient and Divergence definitions and examples	1
3. Curl and their related properties of sums-products	1
4. Problems on above topics	1
5. Laplacian and second order operators	1
6. Vector Integration introduction and examples	1
7. Line integral and work done	1
8. Potential function definition and problems	1
9. Surface integrals and problems	1
10. Volume integrals and problems	1
11. Problems on above topics	1
12. Green's theorem statement and proof	1
13. Stoke's theorem statement and proof	1
14. Gauss's Divergence theorem statement and proof	1
15. Verification of Green's theorem	1
16. Verification of Stoke's theorem	1
17. Problems on above topics	1
18. Verification of Gauss's Theorems	1

UNIT – VIII

1. Definition and examples of Laplace transforms	1
2. Laplace transforms of standard functions	1
3. Inverse Laplace transforms	1
4. Problems on above topics	1
5. First shifting Theorem statement and proof	1
6. Laplace Transforms of derivatives	1
7. Problems on above topics	1
8. Laplace transforms of integrals	1

9. Unit step function definition and problems	1
10. Second shifting theorem statement and proof	1
11. Dirac's delta functionand periodic function definition and examples	1
12. Convolution theorem statement and proof	1
13. Problems on above topics	1
14. Differentiation and integration of transforms	1
15. Application of Laplace transforms to ordinary differential equations	1
16. Partial fractions-Heaviside's Partial fraction expansion theorem	1
17. Problems on above topics	1

ASSIGNMENT – I

1. Define (i) different equations
   (ii) Order of d.e.
   (iii) Degree of d.e.
   (iv) Solution of d.e and give examples.
2. Form the different equations of the family of parabolas with foci at the origin and axes along with x-axis
3. Explain the different equations of first order and first degree
4. Solve $(x^2 + 1) y^1 = y^2 + 1 = 0$ by using variable separable method
5. Solve $\frac{dy}{dx} = e^{2x-3y} + 2x^3 e^{-3y}$
6. Solve $(x^2 y - 2 x y^2) dx = (x^3 - 3x^2 y) dy$
7. Solve $(1 + e^{x/y}) dx + e^{x/y} (1 - \frac{x}{y}) dy = 0$
8. Solve $\frac{dy}{dx} = \frac{y + x - 2}{y - x - 4}$
9. Sol ve $\frac{dy}{dx} + y = -4$
10. $x \frac{dy}{dx} + y = \log x^2$
11. Solve $x \frac{dy}{dx} + y = x^3 y6$
12. Define exact equation and explain the necessary and sufficient condition for exactness.
13. Solve $\frac{dy}{dx} = \frac{y - 2x}{2y - x}$, $y(1) = 2$
14. Solve $Y (2xy + e^x) dx = e^x dy$
15. Explain orthogonal trajectories of curves.

16. Show that the confocal and coaxial parabolas having x – axis as their axis is self orthogonal
17. If the temp of the air is 300k and the substance cools from 370 K to 340 K in 15 minutes Find when the temperature will be 310 K

ASSIGNMENT – II

1. Solve $(D^2 + 4d + 13)\ y = 18\ e^{-2x}$ when $y(o) = o$, $y^1(o) = 4$
2. Solve $(D^3 + 1)\ y = 2\ \cos^2 x$
3. Solve $2\frac{d^2y}{dx^2} + \frac{3\,d\,y}{d\,x} + 4y = x^2 - 2x$
4. (a) Solve the differential equation: $y''-4y'+3y=4e^{3x}$, $y(0) = 1$, $y'(0)=3$.
   (b) Solve the differential equation: $(1+x)^2\frac{d^2y}{dx^2} + (1+x)\frac{dy}{dx} + y = 4\cos\log(1+x)$
5. (a) Solve the differential equation: $(D^3-1)y=e^x+\sin^3x+2$
   (b) Solve the differential equation: $(x^3D^3+2x^2D^2+2)y=10(x+\frac{1}{x})$.
6. (a) Solve the differential equation: $)D^2+4D+4)y=18\cosh x$.
   (b) Solve the differential equation: $(D^2+4y = \cos x$.
7. (a) Solve the differential equation $y''-y'-2y=3e^{2x}$, $y(0)=0$, $y'(0)=2$
   (b) Solve the differential equation: $(D^2+1)y = \text{cosec } x$ by variation of parameters method.
8. (a) Solve the differential equation: $(D^2-1)y = x\sin x+x^2 e^x$.
   (b) Solve the differential equation: $(x^2D^2+xD+4)y=\log x \cos(2\log x)$.

ASSIGNMENT – III

1. Verify Cauchy's mean value theorem and show that c of the Cauchy's mean value theorem for the function $f(x) = x^2$ and $g(x) = x$ in [a, b] is the arithmetic mean between a and b
2. Expand $\tan\left(\frac{\Pi}{4} + x\right)$ in ascending powers of x.
3. Define Jacobian of u(x, y), v (x, y) with respective x, y. Explain properties of Jacobians
4. Explain maxima and minima for a function of two variables
5. Investigate the function $x^3 + y^3 – 3axy$ for maxima and minima
6. Find the minimum value of $x^2 + y^2 + z^2$ given that ax + by + cz = p

ASSIGNMENT – IV

1. Define a) radius of curvature b) center of curvature c) Circle of curvature
2. Show that the circle of curvature at the origin of the parabola y = mx + $\frac{x^2}{a}$ is $x^2 + y^2 = a (1 + m^2) (y – mx)$.
3. Find the evolute of the astroid $x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$
4. Show that the evolute of the curve x = a (cos θ + θ Sin θ), y = a(sin θ - θ cos θ) is $x^2 + y^2 = a^2$
5. Define envelope find the envelope of $cy^2 + x(x + c)^2$ where m is the parameter.
6. Find the envelope of a family of straight lines $\frac{x}{a}+\frac{y}{b}=1$ where the parameters a and b are connected by the relations.
   a. a + b = c
   b. $a^2 + b^2 = c^2$
   c. $ab = c^2$ where c is constant
7. Write the procedure to Trace cantesian curve.
8. Trace the curve $y = x^3$
9. Trace the curve $y^2 (a + x) = x^2 (3a – x)$
10. Trace the curve r = a + b cos t (a > b)
11. Trace the curve $x = t^2$, $y = t - \frac{t^3}{3}$
12. Trace the curve x = a (t + sin t) , y = a(1 – cos t)
13. Explain about the lengths, volumes and surface areas
14. Find the lenth of the arc of the curve x = log y between the points whose coordinate are $\frac{3}{4}$ and $\frac{4}{3}$
15. Find the perimeter of the Limacon r = a + b cos t, a > b.
16. Find the volume of a sphere of radius r
17. Find the surface area of solid formed by revolution of the ellipse $x^2 + y^2 = 16$ about its major axis.
18. Find surface area of solid cardied r = a (1 – cos t) about the initial line.

ASSIGNMENT – V

1. Evaluate $\int_{o}^{3}\int_{1}^{2} x\ y\ (x^2+y^2)\,d\ y\ d\ x$
2. Evaluate $\iint r^2 \sin\theta\, d\ r\ d\ \theta$ where R is the semi-circle r = 2a cos θ above the initial line
3. Change the order of integration of $\int_{o}^{2}\int_{o}^{2} x\ y\ d\ x\ d\ y$ and hence evaluate it.
4. Show that the area included between $y^2 = 4a\ (x + a)$ and $y^2 = 4\ b\ (b-x)$ is $\frac{8}{3}$ (a + b) $\sqrt{ab}$
5. Find the area founded by the curves by the curves x y = z, $x^2 = 4y$ and y = 4
6. Evaluate $\iiint x^2 y\ z\ d\ x\ d\ y\ d\ z$ taken over the tetrahedron bounded by the phares x = o, y = 0, z = o, $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$
7. Find the volume of the solid bounded by the surface x = o, y= o, z = o and x+y+z=1
8. Evaluate $\int_{x=o}^{1}\int_{y=0}^{\sqrt{1-x^2}}\int_{zz=\sqrt{x^2+y^2}} \sqrt{x^2+y^2+z^2}$ dz dy dx Changing in to spherical polar coordinate.

ASSIGNMENT – VI

1. Define convergence, divergence and oscillation of a series.

   The geometric series $1 + r + r^2 + \ldots\ldots$

   i) Converges if $|r| < 1$

   ii) Diverges if $r \geq 1$

   iii) Oscillates if $r \leq -1$
2. State and prove p-test.
3. Test for the convergence of $\sum \frac{1}{n}\sin\frac{1}{n}$
4. Using ratio test, test the convergence of $1 + \frac{x}{2}+\frac{x^2}{5}+\ldots+\frac{x^n}{n^2+1}+\ldots..$
5. Using root test, test the convergence of $\sum\left(\frac{nx}{1+n}\right)^n$
6. Test the convergence of $\sum \frac{n!}{2n!}x^{2n}$
7. Prove that if any absolutely convergent series is convergent.

ASSIGNMENT – VII

1. Explain the concept of Del and Gradient of a scalar point function and unit Geometrical significance of gradient.
2. Define directional derivative of a function and find the directional derivative of $\phi = x^2 y z + 4 x z^2$ at the point (1, -2, -1) in the direction of 2 I – j – 2k.
3. Find the angle between the surfaces $x^2 + y^2 + z^2 = 9$ and $x^2 + y^2 - z = 3$ at the point (2, -1, 2)
4. of r = xi + yi + zk show that
   (i) grad r =
5. Prove that curl grad ϕ = o
6. If $\bar{a}$ and $\bar{b}$ are irrigational, P.T. $\bar{a}$ x $\bar{b}$ is sole noidel.
7. Evaluate $\int \overline{F} . d \overline{r}$ when $\overline{F}$ + x^2 I + y^3 j and d is the straight line joining (0,0) to (1,1)
8. Evaluate $\int_s \overline{F} . \overline{n}$. ds where $\overline{F}$ = 18Zi – 12j+ 3yk and S is the surface of the plane zx+3y+6z = 12 is the first octant.
9. Evaluate $\iiint_V \overline{F}$ dv for $\overline{F}$ = xi + yj + zk where V is the region founded by the surfaces x = 0, y= 0, y = 6, z = 4 and $z = x^2$
10. State and prove Green's theorem
11. Verify Greeny theorem in the plane for $(x^2 – xy^3) dx + (y^2 – 2xy) dy$ where c is a square with vertices (0,0), (2,0), (2,2), (0,2)
12. State and prove stokes theorem
13. Verify stokes theorem for $\overline{F}$ = x^2y + xyj where s is the area of the square in the plane Z= 0 bounded by x = 0, y = 0, x = a, y = a
14. By using stoke's the show that curl grad ϕ = 0
15. Verify Gauss divergence theorem for $\overline{F}$ = 4xzi = xyz^2j + 3zk over the region above the plane z = 0 bounded by the cone $x^2 + y^2 = z^2$ and the plain z – 4 = 0

ASSIGNMENT – VIII

1. Define Laplace transform and explain the properties of Leplace transform
2. Find the Leplace transform of the following by Using definition
   (i) $f(t) = \sin^3 t$.
   (ii) $f(t) = \cos at \sinhat$
   (iii) $f(t) = t^2 \sin 2t$
   (iv) $f(t) = \frac{1-\cos t}{t^2}$
3. Find the inverse Leplace transform of
4. (i) $\frac{1}{(s-2)(s^2+1)}$
   (ii) Log $\left(\frac{s-1}{s+1}\right) + 2$
   (iii) Log $\frac{1+s}{s}$
   (iv) $\cot^{-1}(1+s)$
   (v) $\frac{s^2}{(s+1)^3}$
5. Find the Leplace transform of $\int_o^t \frac{e^{-4t} \sin 3t}{t} dt$
6. State and prove convolution theorem. Apply convolution theorem to evaluate.
   (i) $\frac{1}{s(s^2-a^2)}$
   (ii) $\frac{1}{(s+1)(s^2+9)}$
7. Solve $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + zy = 4x + e^{3x}$ Where y=1, $\frac{dy}{dx} = -1$ at x = o
8. Find the L.T. of $f(t) = k \quad o < t < a$
   $-k \quad a < t < za$

Prepared by

B.Akkayya Naidu

Subject : **ENGINEERING PHYSICS**

Class : I B.Tech. Year : 2009 - 10

Branch : **Civil Engineering** Credits : **04**

AIM & OBJECTIVE OF ENGINEERING PHYSICS:

Contents included in the syllabus of Engineering Physics course find reasonably good relevance to provide basic principles of Physics to and Engineer.

Broadly speaking, any branch of Engineering can't progress without knowing the fundamental concepts of physics.

The present day technological developments have been the result of joint efforts of physicists and Engineers. A proper study of physics and its various applications would certainly enhance the capabilities of an Engineering student of any branch.

A good account of physical optics, introduction to lasers and fiber optics helps Civil Engineering students in different t areas of measurement; on-destructive testing etc. applications of lasers are quite useful in understanding the techniques of material processing, Laser Doppler velocimetry etc.

Basic principles and properties of dielectrics, Magnetic materials, and superconductivity provide good understanding of material technology coursed in forthcoming higher semesters.

A brief account of exposure is also given on materials for space applications and some properties of mechanical materials.

As a whole, engineering physics course offered to 1st year Civil students has covered wide spectrum of areas of physics useful to Engineers.

The Engineering physics offers a perfect combination of fundamentals and applied knowledge to prepare graduates for technological changes.

TEXT BOOKS

1. **Engineering Physics** by R.K.Gaur – S.L.Gupta, Dhanpat Raj and Sons
2. **Applied Physics** by Dr.M.Chandra Shekar & Dr.P.Appala Naidu, VGS Book links

Reference Books:

1. **Engineering Physics** by Dr.M.Arumugam, Anuradha Agencies
2. **Physics Volume 2** by Halliday, Resnick and Krane, John Wiley & Son
3. **Engineering Physics** by M.N.Avadhanulu & P G Kshirasagar, S.Chand & Company Ltd
4. **Engineering Physics** by P.V.Naik, Pearson Education
5. **Materials Science and Engineering** by V.Raghavan, Prentice-Hall India
6. **Engineering Physics (Vol.1)** by M.D.Khanna and V.Balaswamy, Vikas Publishing House PVt.Ltd., New Delhi.

Books Available in Library

1. **Solid State Physics** by S.O.PIllai
2. **Engineering Physics** by Dr. Armugam, Anuradha Agencies
3. **Engineering Physics** by R.K.Gover, S.L.Gupta
4. Some standard books

Journals

1. Pramana Journal of Physics
2. Bulletin of material science.

Cds: Available in library

1. Engineering Physics by Prof. V.Ravishankar (IIT) Khanpur.

Journal on line in SONET Digital Library: URLS

http://www.phy6.org/stargaze/Sintro.htm

http://pwg.gsfc.nasa.gov/stargaze/Sintro.htm

CONSULTING HOURS

For a Clearing the doubts, the students can approach on all working days After 4.20.P.M.

ASSIGNMENTS

One assignment per every unit will be given to the students in the first week of each unit. Assignment comprises the question collected from previous university question paper ad expected important questions, covering the entire portion.

TUTORIALS:

Tutorial classes will be conducted to clear the doubt, to solve previous university question papers, to solve some additional problems and to take special care of weak students.

LECTURER SCHEDULE FOR ENGINEERING PHYSICS

UNIT-I

OPTICS:

Introduction	1
Superposition of waves	1
Young's double slit experiment	1
Coherence	1
Interference in thin films by reflection-Newton's rings	1
DIFFRACTION & Fressnel and Fraunhofer diffraction	1
Fraunhofer diffraction at a single slit & at a double slit	1
Circular aperture	1
Diffraction grating & Grating spectrum	1
Resolving power of a grating	1
Rayleigh's Circular aperture	1

Resolving power of a grating	1
Rayuleigh's criterion for resolving power.	1
POLARIZATION	1
Representation of polarized and unpolarized light	1
Double refraction	1
Nicol prism	1

UNIT - II

ULTRASONICS

Introduction- production of Ultrasonic waves	1
Magnetostriction method	1
piezo electric method	1
Detection of Ultrasonics & Properties of Ultrasoncs	1
use of Ultrasonics for non- destructive testing s & Applications	1

ACOUSTICS OF BUILDINGS

Basic requirement of acoustically good hall	1
reverberation and time of reverberation	1
Sabine's formula for reverberation time	1
Measurement of absorption coefficient of a material factors	1
affecting the architectural acoustics and their remedy.	1

UNIT – III

MAGNETIC PROPERTIES

Permeability & Magnetization	1
origin of magnetic moment	1
Classification of magnetic materials	1
Dia, Para and Ferro magnetism	1
hysteretic curve	1
Soft and Hard magnetic materials	1

SUPERCONDUCTIVETY

General properties & Meissner effect	1
penetration depth	1
Type I and IIsuperconductors	1
Flux quationzation	1
josephson Effect	1
BCS Theory and Applications of superconductors.	1

UNIT-IV

CRYSTAL STRUCTURES & X-RAY DIFFERACTION

Introduction, Space Lattice & basis	1
Unit cell & Lattice parameter	1
Crystal systems & Bravais lattices	1
Structure and Packing fractions of Simple cubic	1

body centered cubic	1
Face centered cubic crystals	1
Directions and Planes in crystal	1
Miller indices	1
Separation between successive [h,k,l]planes	1
Diffraction of X-rays by Crystal planes	1
Bragg's Law	1
Laue method powder method.	1

UNIT-V

LASERS

Introduction	1
Characteristics of Lasers	1
Spontaneous and Stimulated Emissions of radiation	1
Einstein's coefficients0Population inversion	1
Ruby laser	1
helium-Neon Laser	1
Semiconductor Laser	1
Applications of lasers in industry & Scientific and Medical fields.	1

UNIT-VI

FIBER OPTICS

Introduction	1
Principle fiber	1
Acceptance angle and Acceptance cone	1
Numerical aperture	1
Step Index fiber	1
Transmission of signal in SI fiber	1
Graded Index fiber and	1
Transmission of signal in GI fiber	1
Attenuation in optical fibers	1
Advantages of optical fibers in communication & Applications	1

UNIT VII

Dielectric Properties

Introduction, Internal field	1
Clasius mosotti equation	1
Electronic, Ionic & orientation polarization	1
Frequency dependence of dielectric constant	1
Ferro & Piezo electricity	1
Important requirements insulators	1

THERMAL PROPORTIES

Introduction Specific Heat of Solids	1
Einstein Model & Debye Model	1
Lattice Vibrations, Phonons, Thermal Conductivity	1

UNIT-VIII

Nano materials

Introduction to Nano materials	1
Fabrication of Nano materials	1
Physical and Chemical properties of Nano materials	1
Carbon Nanotubes and applications Nano Technology	1
REVIEW AND PROBLEMS	4

ASSIGNMENT – 1

TOPICS: **1. Interference 2. Diffraction**:

Answer the following questions

1. Explain the principle of super position of waves and explain young's experiment on the basis of wave theory?
2. Write the difference between interference and diffraction?
3. Explain Newton's rings experiment with relevant diagram?
4. Explain with theory the Fraunhofer Diffraction due to single slit?
5. Explain with theory how wave length of spectra line is determined using clean diffraction grating?

Answer the following questions

1. In Young's double slit experiment a source of light of wavelength 4200 A^0 is used to obtain interference fringes of width 0.64 x 10^{-2} m. What should be the wavelength of the light source to obtain fringes 0.46 x 10^{-2} m wide, if the distance between screen and slits is reduced to half the initial value?
2. In a Newton's ring experiment the diameter of the 5^{th} dark ring was 0.3 cm and the diameter of the 25^{th} ring was 0.8 cm. If the radius of curvature of the plano-convex lens is 100 cm, find the wavelength of the light used.
3. In a Newton rings experiment, the diameters of the 4^{th} and 12^{th} dark rings are 0.40 cm and 0.70 cm respectively. Find the diameter of the 20^{th} dark ring.
4. Compute the minimum number of lines required in a grating to resolve the sodium doublet in the second order. Take λ_1 = 5890 A^0 and λ_2 = 5896 A^0.

ASSIGNMENT – II

Topics : Polarization 2. Ultrasonic

Answer the following questions

1. Distinguish between polarized light and unpolarized light and explain double refraction?
2. Describe the construction and working of a Nicol prism ?
3. What are ultrasonic Waves? Explain its application and properties?

4. Explain production of ultrasonic waves using piezoelectric effect and magnetostriction method.

Answer the following questions

1. The velocity of ultrasonic beam in a medium is 350 m per second if the frequency is 5 MHZ, find wave length of the beam ?
2. A quartz crystal of thickens 0.001 m is vibrating at resonance. Calculate the fundamental frequency of it. (Young's modulus of quartz=7.9 X 10^{10} N / m^2, and its density = 2650kg/$m^{3)}$

ASSIGNMENT – III

Topics : 1. Acoustics of buildings 2. Super conductivity

Answer the following questions

1. What are the basic requirements of acoustically good hall and explain reverberation ?
2. Explain sabine's formula for reverberation time?
3. What is meissner effect and Josephson Effect?
4. Give salient features of BCS theory and what is super conductivity ?

Answer the following questions

1. Explain the term reverbation of sound in the case of an auditorium and hence define the period of reverbation?
2. Define the term coefficient of obsorption and write short note on it ?
3. What is penetration depth?
4. What is specific heat of a solid? Discuss its variations with temperature?

ASSIGNMENT – IV

Topics: 1. Lasers 2. Fiber optics

Answer the following questions

1. Discuss briefly the principle of working of optical fiber and its applications ?
2. What is step- index fiber and graded index fiber ?
3. Define Numerical aperture ?
4. Describe the construction and working of ruby laser ?
5. With necessart theory and energy level diagram, explain the working of a Helium -Neon gas laser ?

Answer the following questions

1. Define population inversion and stimulated emission ?
2. Explain transmission of signal in graded index fiber ?
3. Mention some important applications of lasers ?
4. Calculate the numerical aperture and acceptance angle of an optical fiber whose core and cladding refractive indices are 1.563 and 1.498 respectively

ASSIGNMENT – V

Topics : 1. Magnetic properties 2. Crystal structures X-ray diffraction

Answer the following questions

1. Distinguish between Dia, Para & Ferro Magnetism ?
2. What is Hysteresis ? Draw the hysteresis curve for a ferromagnetic material and explain its features ?
3. Define ferrites amd explain their applications?
4. Calculate the packing fraction of a simple cubic body centered and face centered cubic structures ?
5. Explain different crystal systems with a neat diagram ?

Answer the following questions

1. Define unit cell and bravais lattice ?
2. Define permeability and explain magnetization ?
3. What are miller indices ? Draw (111) and (110) planes in a cubic lattice ?
4. Explain Bragg's law of X-ray diffraction ? Explain significance of Burgers vector
5. Describe with suitable diagram the powder method for determination of crystal structure.

ASSIGNMENT – VI

Topics : 1. Dielectric Properties 2. Thermal Properties 3. Science and Technology of Nano materials

Answer the following questions

1. (a) Derive an expression fro internal field in dielectrics.
   (b) Deduce Clausius – Mossotti equation

2. Explain the polarization mechanism in dielectric materials.
3. (a) Define thermal capacity.
   (b) Derive the unit of thermal conductivity.
   (c) Derive and discuss one dimensional lattice vibrations in solids.
4. (a) Discuss tow dimensional lattice vibrations in solids.
   (b) Explain the mechanism of the thermal conduction
5. Discuss the chemical and Physical properties of nano materials. Analyze the application of nano technology?
6. Explain carbon nano tube and write its applications?
7. Define Nano Technology and Nano Sciences?

ASSIGNMENT – VII
FROM ALL CHAPTERS

Answer the following questions

1. Absorption
2. Spontaneous emission
3. Write a short notes on “Porcelain”
4. Mention the sailent features of a ferro magnetic materials
5. Explain various properties of paramagnetic materials
6. Explain the phenomenon of interference
7. Explain the principle of superposition of waves ?
8. What is meant by double refraction ?
9. Difference between interference and diffraction ?
10. Explain Rayliegh’s criterion for resolving power of a telescope?
11. Explain the principle of superposition of waves ?
12. How are the dielectric materials classified?
13. What is optic axis ?

ASSIGNMENT – VIII
FROM ALL CHAPTERS

Answer the following questions

1. Define the following
   i) Plane of vibration
   ii) Plane of polarization
2. What is penetration depth? Explain
3. What is population inversion and pumping mechanism ?
4. Describe the crystal structure of NaCl
5. What is meissner effect?
6. How are the dielectric materials classifieds?
7. Draw the neat diagram for Nicolprism?
8. What is meant by structural materials?
9. Explain the principle of an optical fiber
10. Explain how the optical fibers are classified
11. Write the application of lasers ?

Smt. P.VIJAYA LAKSHMI

Asst. Professor of Physics

Subject : **APPLIED CHEMISTRY**

Class : I B.Tech. Year : 2009 - 10

Branch : **Civil Engineering** Credits : **04**

AIM & OBJECTIVE:

Applied Chemistry is a very useful subject to engineering students. **Water Technology I & II** will give the basic concepts to Civl Engineering students in the areas of Environmntal Engineering, Water Resource Engineering, etc.

It is also useful for various subjects as follows:

II B.Tech.-II Sem.	Environmental Studies
III B.Tech.-I Sem.	Water Resource Engineering-I
III B.Tech.-II Sem.	Water Resource Engineering-II & Environmental Engineering-I
IV B.Tech.-I Sem.	Environmental Engineering-II & Air Pollution and Control

TEXT BOOKS:

1) Text book of Engineering Chemistry by Jain & Jain.
2) Text book of Engineering Chemistry by C.P.Murthy, C.V.Agarwal & A. Naidu

REFERENCES:

1) A Text book of Engineering Chemistry by S.S.Dara.
2) Engineering Chemistry by J.C.Kurisascose and J.Rajaram.
3) A Text book of Engineering Chemistry by Shashi Chawla.
4) Laboratory Manual on Engineering Chemistry by S.K. Bhasin and Sudha Rani.
5) Engineering Chemistry by R.Gopalan, D.Venkappaya and S.Nagarajan.
6) Engineering Chemistry by R.V.Gadag, A.N.Tayyanand.

AVAILABLE IN THE LIBRARY:

TEXT BOOKS:

1) Text book of Engineering Chemistry by Jain & Jain.
2) Text book of Engineering Chemistry by C.V.Agarwal
3) A Text book of Engineering Chemistry by S.S.Dara.
4) Engineering Chemistry by J.C.Kurisascose and J.Rajaram.
5) A Text book of Engineering Chemistry by Balaram Pani.
6) A Text book of Engineering Chemistry by Shashi Chawla.
7) Industrial Chemistry by O.P.Veeramani and A.K.Narula.
8) Advanced Engineering Chemistry by Senapati and Mohanty.
9) Engineering Chemistry by R.Gopalan, D.Venkappaya and S.Nagarajan.

SESSION PLAN

UNIT-I # WATER TECHNOLOGY-I

1. Introduction, Sources of water. Effect of water on rocks and minerals. Types of impurities in water.	1P	
2. Hardness of water – Temporary & Permanent Hardness, Units and Interconversions of Units	1P	
3. Soap solution method,	1P	
4. EDTA method	1P	
5. Problems on Temporary & Permanent Hardness	2P	
6. Analysis of Water: 1) Alkalinity	1P	
7. Analysis of Water: 2) Chlorides	1P	
8. Analysis of Water: Dissolved Oxygen	1P	
9. Disadvantages of Hard Water	1P	
10. Methods of treatmnt of Water for domestic purpose	1P	(**11P**)

UNIT-II # WATER TECHNOLOGY-II

1. Water for industrial purpose	1P	
2. Boiler Troubles – Carry over, Sludges & Scales, Priming & Foaming	1P	
3. Boiler Corrosion, Caustic embrittlement	1P	
4. Water Treatment – Internal Treatment	1P	
5. Water Treatment – Lime Soda Process	1P	
6. Zeolite Process	1P	
7. Ion Exchange Process	1P	
8. Problems	2P	
9. Reverse Osmosis	1P	(**10P**)

UNIT-III # SCIENCE OF CORROSION

Definition, Examples – Underground, Soil Corrosion, Pitting Corrosion	1P	
Stress Corrosion, Season Cracking, Caustic Embrittlement.	1P	
Types of Corrosion: Theories of Corrosion & Mechanism – Dry Corrosion, Wet Corrosion.	1P	
Principles of Corrosion. Galvanic Series. Galvanic Series, Galvanic Corrosion. Concentration Cell Corrosion.	1P	
Mechanism of Wet Corrosion – Hydrogen evolution type. Oxygen absorption type.	1P	
Atmospheric Factors influencing Corrosion. Control of Corrosion	1P	
Proper Design, Use of pure metal and metal alloys, Passivity	1P	
Cathodic Protection – Sacrificial anode and Impressed Current. Modifying the Environment. Use of Inhibitors.	1P	(**8P**)

UNIT-IV # PROTECTIVE COATINGS AND THEIR APPLICATIONS:

1. Surface Preparation: a) Solvent Cleaning b)Alkali Cleaning
   c) Pickling and Etching d) Stand Blasting e) Mechanical Cleaning, Metallic Coatings, 1P
2. Anodic Coating Galvanization
3. Cathodic Coating – Tinning, Metal Cladding, Electroplating Eg,. Chromium 1P
4. Plating. Metal Spraying. Cementation – Sheradizing, Colourizing, Chormizing 1P
5. Chemical Conversion Coatings: a) Phosphate b) Chromate
   c) Chemical Oxide d) Anodized Coatings 1P
6. Ceramic Protective Materials: 1) Vitreous Enamels 2) Enamels 1P
7. Organic Coatings: a) Paints – Constituents and their functions b) Varnishes 1P
   c) Lacquers d) Enamels e) Emulsion Paints f) Distempers 1P (**7P**)

UNIT-V # POLYMER SCIENCE & TECHNOLOGY

Polymerization Reactions – Basic Concepts. Types of Polymerization –
Addition and Condensation Polymerizations. 1P
Plastics – Thermosetting and Thermoplastics – Differences Compounding. 1P
Casting and Spining. Molding of Plastics – Compression, Injection,
Transfer, and Extrusion molding methods.
Composition, Properties and Engineering Uses of the Following:
Polyethylene, PVC, Teflon, Bakelite, Nylon. 1P
Polymethyl Methacrylate. Urea-Formaldehyde and Silicone Resins. 1P
Rubber – Processing of Natural Rubber, Vulcanization and Compounding. 1P
7. Elastomers–Buna S,Buna N, Thiokol. 1P (**6P**)

UNIT-VI # REFRACTORIES & INSULATORS:

Refractories – Definition. Classification with examples:
Criteria of a good Refractory Material; 1P
Causes for the failure of a Refractory Material; 1P
Insulators – Definition and Classification with Examples 1P
Characteristics of Insulating Materials; Thermal Insulators.
Electrical Insulators – Their Characteristics and Engineering Applications. 1P (**4P**)

UNIT-VII # LUBRICANTS:

Principles – Metallic friction – Surface Energy, Surface Attraction,
Adsorption, Surface Roughness 1P
Types of Lubrication and Mechanism – Thick Film or Hydrodynamic Lubrication.
Thin Film or Boundary Lubrication, Extreme Pressure and
Temperature Lubrication. 1P
Classification of Lubricants – Liquid Lubricants – Petroleum Oils –
Fixed Oils – Additives – Synthetic Lubricants – Semisolid Lubricants –
Calcium base; Soda base and Lithium base greases – Solid lubricants –
Graphite – Molybdenum disulphide. 1P
Properties of Lubricants – Viscocity – Flash and Fire points –
s Cloud and Pour Points 1P
Emulsification – Volatility Gravity – Color – Carbon Residue –
Oxidation Stability 1P
Aniline –Point-Neutrilization number-Saponification number-
Mechanical Stability
Selection of lubricants – Cutting tools – internal combustion engines – Steam turbines
– Gears – Food industry. 1P (**6P**)

UNIT-VIII # Inorganic Cementing Materials:

Cement: Important Parameters for Manufacturing Cement Clinkers.	1P
Chemical Constituents and Composition of Cement.	2P
Methods of Manufacture of Cement – Wet and Dry Processes.	2P
Additives for Cement.	1P
Properties of Cement - Setting and Hardening.	1P
Types of Portland Cement.	2P
	(9P)

Total - 61 Periods

CONSULTING HOURS:

For Clearing the doubts, the students can approach on all working days after the classwork.

ASSIGNMENTS:

One Assignment per evry unit will be given to ghe student after the completion of each unit. Assignment comprises the question collected from previous university question papers and exercise questions, covering the entire unit.

CONTINUOUS EVALUATION PROCEDURE:

The performance of a student shall be evaluated for 100 marks in the subject

"APPLIED CHEMISTRY". As per the JNTUK Curriculum, the distribution shall be 20 marks for internal evaluation and 80 marks for the end semester descriptive type examination.

In internal evaluation there will be 3 Online and 3 Descriptive test will be conducted. These mid exams will be conducted as per the examination schedule. Out of 6 internal tests, best 4 tests will be considered for the award of 20 sessional marks.

D.SURENDRA BABU
Associate Professor
Dept. of Basic Science & Humanities.

Subject : **APPLIED MECHANICS**

Class : I B.Tech. Year: 2009 – 10

Branch : **Civil Engineering** Credit: 08

AIM & OBJECT

The demand from engineering industry is more and more for young engineers who are soundly grounded in their fundamental subjects rather than for those with specialized training. An civil engineer is continuously being confronted by new problems who do not always yield to routine methods of solutions. The aim of introducing the subject "Applied Mechanics" is to build a strong foundation, to acquaint the student with as many general methods of attack as possible, and to illustrate the application of these methods to practical engineering problems.

Science is concerned with a systematic understanding and gathering the facts, laws and principles governing natural phenomenon. Engineering is an art of utilization of the established facts, laws and principles for the benefit of mankind. Applied Mechanics is the branch of Physical Science that deals with the behaviour of bodies at the state of rest or the state of motion.

Mechanics are broadly classified as

i) Mechanics of rigid bodies (Applied Mechanics)
ii) Mechanics of deformed bodies (Strength of Materials)
iii) Mechanics **of Fluids** **(Fluid Mechanics)**

Applied Mechanics mainly deals with Statics and Dynamics. Dynamics further classified as Kinematics and Kinetics.

LESSON PLAN

Weekly periods: 3 + 1

UNIT	CONTENTS	NO. OF PERIODS
UNIT - I	**Introduction to Applied Mechanics**	**2**
	Basic Concepts	**3**
	System of Forces:	
	Coplanar Concurrent forces	**3**
	Components of space	**3**
	Resultant	**3**
	Moment of a force and its application	**3**
	Couples and resultant of force systems	**3**
	Equilibrium of Systems of Forces:	
	Free body Diagrams	**2**
	Equations of Equilibrium of coplamar systems	**4**
	Special systems of concurrent forces	**3**
UNIT - II	**Friction:**	
	Types of friction, Limiting friction, Laws of friction, Static and Dynamic frictions	**2**
	Motion of Bodies	**4**
	Wedge, Screw, Screw jack and differential screw jack	**4**
	(1st ONLINE AND SUBJECTIVE TEST)	

UNIT - III	**Transmission of Power:**	
	Flat belt drives - Types of flat belt drives Length of belt, Tensions, Tight side, slack side	**5**
	Initial and centrifugal - Power transmitted and condition for maximum power	**5**
UNIT - IV	**Centroid:**	
	Centroids of single figures (from basic principles)	**3**
	Centroids of composite figures	**4**
	Centre of Gravity:	
	Centre of gravity of simple body (from basic principles)	**2**
	Centre of gravity of composite bodies	**3**
	Pappu's theorem	**2**
	Area Moments of Inertia:	
	Definition, Polar Moment of inertia	**3**
	Transfer theorem	**3**
	Moments of inertia of composite figures	**4**
	Products of Inertia	**2**
	Transfer formula for product of inertia	**2**
UNIT - V	**Mass Moment of Inertia:**	
	Moment of inertia of masses	**2**
	Transfer formula for mass moments of inertia	**3**
	Mass moment of inertia of composite masses	**2**
	(2nd ONLINE AND SUBJECTIVE TEST)	
UNIT - VI	**Kinematics:**	
	Rectilinear and curvilinear motions, velocity and acceleration	**6**
	Motion of rigid body	**2**
	Types and their analysis in planar motion	**2**
UNIT - VII	**Kinetics:**	
	Analysis as a particle in translation	**2**
	Analysis as a Rigid body in translation	**2**
	Central force motion	**2**
	Equations of plane motion	**2**
	Fixed axis Rotation, Rolling bodies	**3**
	Work - Energy methods:	
	Equations of translation	**1**
	Work - Energy applications to particle motion	**3**
	Connected system	**3**
	Fixed axis rotation and plane motion	**4**
UNIT - VIII	**Mechanical Vibrations:**	
	Definitions and concepts	**2**
	Simple Hormonic motion	**3**
	Free Vibrations	**3**
	Simple and compound pendulums and its applications	**4**
	Tortional vibrations Total	**130 periods**
	(3rd ONLINE AND SUBJECTIVE TEST)	

SUGGESTIONS:

The syllabus may be further strengthened with following extra topics.

i) **Virtual work principle**
ii) **Pressure on curved bodies and Flexible suspension cables**
iii) **D' Alembert Principle**
iv) **Projectiles**

Text Books:

1. **Engineering Mechanics by S.Timoshenko Young & J.V.Rao**
2. **Engineering Mechanics by F.L.Singer**

Reference Books:

1. **Engineering Mechanics by I.H. Shames**
2. **Engineering Mechanics by S.S.Bhavikatti & Rajasekharappa**
3. **Engineering Mechanics by Hibbeler**
4. **Engineering Mechanics by Nelson, Best and Mclean (Schaum's outlines)**
5. **Engineering Mechanics by R.K.Bansal**
6. **Engineering Mechanics by K.L.Kumar**
7. **Engineering Mechanics by A.R.Basw**
8. **Engineering Mechanics by A.K.Tayal**
9. **Engineering Mechanics by S.Ramamrutham**
10. **Engineering Mechanics by S.B.Junarkar**
11. **Engineering Mechanics by I.B.Prasad**
12. **Engineering Mechanics by R.S.Khurmi**
13. **Engineering Mechanics by R.K.Rajput**

Journals:

National:
1. **IE Journal of Mechanical Engineering**
2. **Journal of Engineering Technology**
3. **Journal of Engineering Today**

International:
1. **ASME Journal of Applied Mechanics**
2. **ASME Journal of Mechmotrics Engineering**
3. **ASME Trans on Mechatronics**

Online Journals:

URLS:
1. **http://scitation.aip.org/ASME journal/AMR**
2. **http://scitation.aip.org/ASME journal/Applied Mechanics**
3. **http://scitation.aip.org/ASME journal/Manufacturing**

IIT Learning Material (Video Course):

1. **Engineering Mechanics-IIT-Kanpur**
2. **Engineering Mechanics-CBT**

Consulting Hours: Students can approach for doubts whenever the subject teacher and students are free from class work.

Tutorials: One period is allotted for Tutorials so that unsolved assignment problems, some additional problems and questions from previous university papers can be taken up.

Assignments: Assignments on various units both objective and descriptive type will be given to students during the coursework and these assignments will be corrected with suggestions. The student performance on these assignments will also be considered during evaluation procedures.

Continuous Evaluation Procedure:

As per JNTU regulations, the performance of a student in the subject Applied Mechanics during 1st year shall be evaluated for 100 marks; 20 marks for internal evaluation and 80 marks for the year end descriptive type examinations.

For internal evaluation, three online and three subjective type tests will be conducted with a duration of 20 minutes and 90 minutes respectively. Out of the above six internal tests, best four tests will be considered for award of 20 sessional marks.

The distribution of syllabus for conduct of objective and subjective type tests is as follows:

Syllabus under

1 – 2 Unites : One Online and one subjective
3 – 5 Unites : One Online and one subjective
6 – 8 Unites : One Online and one subjective

Each objective test question paper shall contain 20 objective type questions for 20 marks. Each subjective type test question paper shall contain 5 questions out of which 3 need to be answered. Subjective type question paper is also for 20 marks. Hence, all the tests (Objective and subjective type) have equal weightage.

Prepared By

P.Kodanda Rama Rao

Subject : **C Programming and Data Structures**

Class : I B.Tech. Year: 2009 – 10

Branch : **Civil Engineering** Credit: 06

1. AIMS AND OBJECTIVES OF THE COURSE:

→ 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 the simple linear and non-linear data structure such as lists, stacks, queues, trees and graphs

2. PRESCRIBED TEXT BOOKS AND REFERENCE BOOKS

a) **Text books**

1. Computer science, A structured programming approach using C,B.A.Forouzen and R.F.Gilberg, third edition, Thomson.
2. Data structures using C –A.S.Tanenbaum – PHI/Pearson Education

b) Reference books

1. C & Data structures - P.Padmanabham,B.S.Publications
2. The C Programming Language – Dennies M. Ritchie -PHI / Pearson education
3. C programming with problem solving – J.A.Jones
4. Programming in C - Stephen G.Kochan,III edition Pearson
5. Data structures and program design in C , R.Kruse, Shashi M Pearson Education.

3) GUIDANCE ON BOOKS, JOURNALS, TERM PAPERS AND DIGITAL LEARNING MATERIALS AVAILABLE IN THE COLLEGE ON THE SUBJECT

a) Guidance on books

1. Programming in Ansi C by Balaguruswamy
2. Data structures in C by Rajni Jindal
3. Let us C by Yaswant Kanethkar
4. Data structures Schaum series
5. An introduction to data structures by Sorenson.
6. Test your C skills by Yaswanth Kanethkar

b) Journals

C / C++ users journal
IEEE online journals about programming, ACM online journals of programming.

c) Digital Learning Materials

Programming and data structures video CDs by IIT,Kharagpur.
Data structures video CDs by IIT, Delhi.
ICN spot materials for CDS audio CDs.

4.SESSION PLANS (REVISION SCHEDULE)

UNIT – I

Algorithm/Pseudocode	2
Flow chart	2
Program development steps	1
Basic structure of C program	2
A Simple C Program	1
C tokens	2
Data types and sizes	1
Declaration of variable, assigning values	1
Arithmetic, relational operators	1
Logical and conditional operators	1
Increment and decrement operators	1
Bit wise operators	1
Type conversions, expressions	1
Evaluation of expressions	1
Input – Output statements	1
If statement	1
Switch statement	1
While statement	1
Do-while statement	1
For-while statement	1
Conditional & goto statement	1
Programming examples, Break & Continue	2

UNIT – II

Designing Structured Programs:	
Basics of functions	1
Parameter passing	1
Storage Classes Extern, Auto, Register and Static	1
Recursive functions	1
Scope rules, User defined, Standard library functions	2
Header files	1
C Preprocessor	1
Example C Programs	3

UNIT – III

Arrays :

One dimensional arrays	1
Initialization, reading, writing	1
Programs with one dimensional arrays	2
Two dimensional arrays	1
Programs with 2-D arrays	1
Applications of arrays	1

Pointers:

Pointers and addresses	1
Pointer arithmetic	1
Pointers and 1D array	1
Pointers and 2D array	1
Pointers as function arguments	1
Pointers to Pointers	1

Pointers to functions	1
Dynamic memory Management	2
Command line arguments	1
C Programming examples	3

UNIT – IV

Structures:

Definitions, initialization	1
Assigning values, reading & writing	1
Passing of structures as arguments	1
Array of structures	1
Pointers to structures	1
Self referential structures	1
Unions, typedef, bit fields	1
C Program examples	2

UNIT –V

Files:

Concept and Types of Files	1
Standard I/O formatted	1
Standard I/O unformatted	1
Opening & closing of files	1
Error handling	1
C Program examples	1

UNIT – VI

Linear search	1
Binary search	1
Bubble sort	1
Selection sort	1
Insertion sort	1
Quick sort	2
merge sort	2

UNIT – VII

Introduction to Data structures	1
Stack and its operations	2
Queue and its operations	1
Circular queue	1
Infix, Postfix & Prefix programs	3
Dynamic memory allocation	1
Singly linked list	2
Doubly linked list	1
Circular linked list	1
Stack using linked list	1
Queue using linked list	1

UNIT – VIII

Binary trees	2
Tree traversals	1
Program	1
Graph representations	1
Graph traversal (BFS & DFS)	1
Total:	**103**

6. CONSULTING HOURS WITH TEACHER FOR CLEARING THE DOUBTS OF STUDENTS

Monday to Friday After 3.50 p.m.

7. ASSIGNMENTS & TUTORIALS AND UNIT TESTS, DISTRIBUTION OF SESSIONAL MARKS AND ATTENDANCE

a) Assignments & tutorials

UNIT – I

1. Write short notes about various data types.
2. Explain about various control structures.
3. In detail write about operators in C.
4. Explain different selection and sequence statements.
5. Explain different Looping Statements.

UNIT – II

1. Explain different parameter passing techniques with example programs.
2. Discuss all the storage class present in C.
3. What is recursion and how is it implemented?
4. list the uses of Preprocessor directives with example.

UNIT – III

1. Write a program to add given set of: integers using pointers.
2. Write the differences between pointer to an array and array of pointers.
3. Write a program to swap two values using call by reference.
4. A program to print a set of string taken from the command line.

UNIT – IV

1. Write a program to insert, delete, update records of students using a structure.
2. A program to demonstrate self-referential structures.
3. Explain the concept of Pointers to Structures.

UNIT-V

1. Write a program to copy contents of one file into other file.
2. Explain different File manipulation operations.

UNIT – VI

1. Implement & trace out binary search method for the given data values.
   10, 17, 24, 63, 79 about 63
2. Compare various sorting techniques.

UNIT – VII

1. Write a program to concatenate two linked lists.
2. Write a program to count number of nodes in linked list.
3. Write short notes about minimal spanning tree.
4. Conversion of Infix expression into Prefix expression.
5. Conversion of Prefix expression into Postfix expression.

UNIT – VIII

1. Explain Tree Traversal techniques with Example program.
2. Explain Graph Traversal Techniques with Example Program.

Tutorials

Tutorials will be conducted to discuss

1) Topics covered in previous classes
2) University question papers
3) Solving exercises

Unit tests, distribution of sessional marks and attendance

Distribution of sessional marks

The performance of a student shall be evaluated for 100 marks. As per the JNTU curriculum, the distribution shall be 20 marks for internal evaluation and 80 marks for the end semester descriptive type examination.

In Internal evaluation, there will be three objective type tests for duration of 20 minutes each and three descriptive type exams with 90 minutes duration. Out of six internal tests, best four tests will be considered for the award of internal marks.

Attendance

A student has to put in a minimum of 75% of attendance in aggregate of all the subjects for acquiring credits in the I year and or each semester thereafter. Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester or I year may be granted by the college Academic Committee. A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester.

8. Seminar Topics

1. Pointers to Pointers
2. Pointer to functions
3. Non-recursive tree traversals
4. Recursive Vs Non Recursive functions
5. Linear Vs Non Linear Data structures

Prepared By

Y.K.Viswanadham

subject	: **ENGINEERING GRAPHICS**		
Class	: I B.Tech.	Year	: 2009 – 10
Branch	: **Civil Engineering**	Credits:	**08**

AIM:

To introduce basics of drawing and data presentation techniques required to impart information to others by graphical methods.

OBJECTIVES:

- To acquire Engineering sketching and Drawing skills.
- To be able to lay out an orthographic representation of an object
- To draw auxiliary views as required
- To draw a pictorial view of object
- To appreciate perspective
- To take a section cut
- To sketch an object
- To present data in such a way that the salient features are evident

TEXT BOOK:

1. Engineering Drawing, N.D. Bhat / Charotar
2. Engineering graphics with Auto CAD- R.B. Choudary/Anuradha Publishes
3 Engineering Drawing, Narayana and Kannaiah / Scietech publishers

REFERENCE BOOKS:

1. Engineering Drawing and Graphics, Venugopal / New age.
2. Engineering Drawing- Johle/Tata Macgraw Hill.
3. Computer Aided Engineering Drawing- Trymbaka Murthy- I.K. International.

BOOKS AVAILABLE IN LIBRARY:

Other Reference Books available in College Library.

1.	Engineering Drawing	-	R.B. Gupta
2.	Engineering Drawing	-	R.K. Dhawan
3.	Engineering Graphics	-	R.K. Hedge / Niranjan Murthy
4.	Engineering Graphics	-	K.R. Mohan
5.	Engineering Drawing	-	P. Kannaiah / K.L. Narayana / K. Venkata Reddy.
6.	Basic Engineering Drawing	-	Anwani
7.	Workbook of Engineering Drawing	-	S.R. Manchu

DIGITAL LEARNING MATERIALS:

1. Computer Based Tutorial

SESSION PLAN:

UNIT – I	**Topics to be covered**	**No. of Classes**
Introduction To Engineering Drawing:		
1.	Introduction to Engineering Graphics and their significance	3
2.	Engineering drawing, instruments and their use conventions in drawing – lettering – BIS conventions	3
3.	Letter practice on graph sheet and drawing sheet	6
4.	Dimensioning practice	3
5.	Curves used in Engineering practice and their constructions conic sections – Ellipse	6
6.	Curves used in Engineering practice and their constructions - Conic sections – Parabola	3
7.	Curves used in Engineering practice and their constructions - Conic sections – Hyperbola & Rectangular hyperbola	3
8.	Special curves – Cycloid	3
9.	Special curves – Epicycloids	3
10.	Special curves – Hypocycloid and Involute	6
11.	Special curves – Helics	3
12.	Scales used in engineering practice and representative fraction - the principals – construction of plain diagonal and vernier scales	
UNIT – II		
Drawing of Projections Or Views Or Orthographic Projection in first Angle Projection only :		
1.	Principles of orthographic projections – Conventions & projection of points	6
2.	Projections of lines inclined to both the planes	6
3.	Traces	3
UNIT – III		
Projections Of Planes & Solids:		
1.	Projections of planes	6
2.	Projections of Auxiliary planes	3
3.	Projections of Auxiliary planes inclined to both the planes	6

4. Projections of regular solids 3
5. Projections of regular solids inclined to both the planes Auxiliary views 3
6. Section or sectional views of right regular solids – Prism 3
7 .Section or sectional views of right regular solids – Cylinder 3
8. Section or sectional views of right regular solids – Pyramid 3
9. Section or sectional views of right regular solids – Cone Auxiliary views 3

UNIT – IV

Development & Interpenetration of Solids:

1. Development of surfaces of right regular solids – Prism 3
2. Development of surfaces of right regular solids – Cylinder 3
3. Development of surfaces of right regular solids – Pyramid, cone 3
4. Intersection of cylinder Vs. Cylinder 3
5. Inter section of cylinder Vs. Prism 3
6. Inter section of cylinder Vs. Cone 3

UNIT – V

Isometric Projections:

1. Principles of isometric projection, isometric scale, isometric views, conventions 3
2. Isometric views of lines and plane figures 3
3. Isometric views of simple and compound solids 3
4. Isometric projection of objects having non isometric lines 3
5. Isometric projection of spherical parts 3
6. Problems on isometric projection 9

UNIT – VI

Transformation of Projections:

1. Problems on conversion of isometric views to orthographic views 12
2. Problems on conversion of orthographic views to isometric views 12

UNIT – VII

Perspective Projections:

1. Perspective view : Points and lines 3
2. Perspective view : Plane figures 3
3. Simple solids Vanishing point method (General method only) 6

UNIT – VIII

Introduction To Computer Aided Drafting	
1. Generation of Points , Lines And Curves	3
2. Generation of Polygon And Simple Solids	3
3. Dimensioning	6
Total No. of Classes:	**180**

CONTINUOUS EVALUATION PROCEDURE:

The performance of a student shall be evaluated for 100 marks in the subject "Engineering Graphics". As per the JNTU curriculum the distribution shall be 20 marks for internal evaluation and 80 marks for the year end examination.

Out of 20 internal marks 10 marks will be awarded for day to day sheet work. There shall be three internal tests out of which average of the best two will be considered for the award of remaining 10 marks.

ATTENDANCE:

A student has to put in a minimum of 75% of attendance in aggregate of all the subjects for eligibility to take the end examinations and for acquiring the credits.

CONSULTING HOURS:

For a clearing the doubts, the students can approach on all working days between 3.50 PM and 4.40 PM.

Prepared By

T.Leela Krishna

Subject : **ENGINEERING PHYSICS AND APPLIED CHEMISTRY LAB**

Class : I B.Tech. Year : 2009 – 10

Branch : Civil Engineering Credits: **04**

ENGINEERING PHYSICS LAB

OBJECTIVE:

The main aim of this lab is to correlate the theoretical learning of Physics subject in the class room by doing experiments in the lab. Interference, diffraction they study in the class room and they learn the same by doing experiments in the lab similarly they study Biot Savart Law in class and they appreciate the same by doing Stewart and gee's law in the lab therefore the Engineering Physics is Lab is a useful Tool for the students to understand the subject of Physics.

LIST OF EXPERIMENTS:

1. Determination of rigidity modulus of a given wire by Torsional Pendulum.
2. Sonometer – Verification of Laws of Vibrations of stretched strings.
3. Refractive index of the material of the give prism.
4. Melde's experiment
5. Magnetic field along the axis of a circular Coil – Stewart & Gee's experiment
6. Frequency of A.C supply
7. Newton's Rings
8. Parallel Fringes
9. Dispersive Power of material of the Prisam
10. Diffraction grating – Normal incidence

BOOKS:

1. Practical Physics for Engineering students by Vijay Kumar & T. Radha Krishna.
2. Lab Manuals

MAINTENANCE OF OBSERVATION BOOKS AND RECORDS - SUBMISSION OF RECORD EVALUATION PROCEDURE:

The student should complete the previous observation work before coming to the lab. The observation along with the record should submit at the lab. The record marks which are five will be entered by the concerned staff member in the record. The graph sheet work (if any) of the experiment should be corrected before entering into the record.

MODE OF EXAMINATION – EXPERIMENT, VIVA etc.

Internal Marks

Experiment	=	5
Record	=	5
Viva-voce	=	5
Internal exam	=	10
Total	**=**	**25**

Internal marks	=	25
External marks	=	50
Total marks	**=**	**75**

REPETITION OF EXPERIMENTS FOR POOR LEARNERS AND ABSENT STUDENTS:

The repetition of experiments for the poor learners and absent students should be carried out after 3.50 P.M. according to the time table.

CONSULTING HOURS WITH TEACHER FOR CLEARING DOUBTS ON EXPERIMENTAL PROCEDURES:

The students may consult the lab in charge for clearing doubts on experimental procedures in between 3.50 p.m. to 4.30 p.m. on the same day.

Smt.P.Vijaya Lakshmi

Asst. professor of physics

APPLIED CHEMISTRY LAB

Chemical Analysis can broadly be divided into two categories.

i. Qualitative, and
ii. Quantitative

Qualitative analysis deals with the detection of the constituents of the given material while quantitative analysis deals with their determination.

Quantitative analysis, in turn, can broadly be divided into

i. Gravimetric
ii. Volumetric, and
iii. Instrumental Methods

Because of its simplicity, giving fairly accurate results at the same time, **volumetric analysis** is a much preferred method of analysis.

Experiments 1 to 8 come under the category of Volumetric Analysis and 9 & 10 come under the category of Instrumental Methods of Analysis (Colorimetric Methods).

These experiments deal with the determination of the content of the desired constituents in different materials, thus giving us an idea of their suitability for use in different Engineering processes.

List of Experiments

REDOX TITRATIONS:

1. Preparation of Standard Potassium Dichromate and Estimation of Ferrous Iron.
2. Preparation of Standard Potassium Dichromate and Estimation of Ferric Iron.

IODOMETRY:

3. Preparation of Standard Potassium Dichromate and Estimation of Copper, by Iodometry.

COMPLEXOMETRY:

4. Preparation of Standard EDTA solution and Estimation of Calcium / Hardness of Water.
5. Preparation of Standard EDTA and Estimation of Copper

PRECIPITATION TITRATION:

6. Preparation of Standard solution of Zinc and Estimation of Ferrocyanide

ANALYSIS OF MINERALS:

7. Percentage Purity of Pyrolusite.
8. Percentage Purity of Limestone.

COLORIMETRIC ESTIMATIONS:

9. Manganese in Steel.
10. Iron in Cement

TEXT BOOKS:

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

Evaluation

Seasonal Marks : 25 End Examination : 50 Total : 75

Sessional Marks : 25

day-to-day work :15
Internal Lab Test :10
Including Record

End Examination : 50

Total : 75

Students are informed to be regular to their lab classes.

Students who were absent to their regular classes or who had to repeat the experiments, should carry out the experiment in the classes conducted after 3.50PM

They may consult the lab instructor any time between 9.00AM and 4.40PM

Prepared By

Prof (Dr) P.V.Krishna Rao

Subject : **C Programming and Data Structures**

Class : I B.Tech. Year: 2009 – 10

Branch : **Civil Engineering** Credit: 04

1. Aims & Objects of the Lab course:

→ 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 the simple linear and non-linear data structure such as lists, stacks, queues, trees and graphs.

2. Use of lab manual:

Lab manual gives an idea to the students how to write programs and also gives guidelines how to manage lab record.

3. List of experiments to be conducted

Week I

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

b) Write a C program toe 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 = $ut+1/2at^2$ 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)

Week 5

a) Write a C program to find both the larges 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 in to 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:

$1+x+x^2+x^3+.....+x^n$

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

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 14

Write a C program that uses functions to perform the following operations on doubly linked list.:

i) Creation ii) Insertion iii) Deletion iv) Traversal in both ways

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 uses functions to perform the following:

i) Creating a Binary Tree of integers
ii) Traversing the above binary tree in preorder, inorder and postorder.

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 programs that implement the following sorting methods to sort a given list of integers in ascending order:
i) Bubble sort ii) Quick sort

Week 21
Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
i) Insertion sort ii) 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.

4. Maintenance of observation books and records – submission of record& evaluation procedure

a) Maintenance of observation books and records

Every student must & should bring their observation books during the lab session After completion of modeling their projects the observation will be signed.

b) Submission of record & evaluation procedure

Records should be submitted according to the schedule given by the concerned lecturer. For every two-session Record correction process will be taken.

5. Mid-examination and mode of examination – experiment, viva etc.

Internal lab examination will be conducted twice for a year. One will be at the middle of the year and second will be after the completion of syllabus. Out of these two best will be considered.

Each Internal tests mark evaluation:

Weekly evaluation procedure	5
Record submission	5
Experiment	10
Viva-voce	5

	25
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6. Repetition of experiments for poor learners and absent students

Extra lab facility is there in our college. Those who want to repeat their experiments; they can utilize the extra lab from 3.50 p.m to 5:30 p.m.

7. Consulting hours with teacher for clearing doubts on experimental procedures

Monday to Friday After 3:50 p.m.

Prepared By

Y.K.Viswanadham

Subject	: **ENGINEERING WORKSHOP PRACTICE**		
Class	: I B.Tech.	Year	: 2009–10
Branch	: Civil Engineering	Credits	: 04

AIM & OBJECTIVE OF THE LAB COURSE:

The aim behind introduction of the lab in I B.Tech. Regular course is to get the awareness on the fundamentals of the manufacturing / production process. The fundamentals on the types of joints and their process details will be learned in CARPENTRY, TINSMITHY, FITTING & WELDING trades. The students will also learn the manufacturing process in the trades of FOUNDRY, BLACK SMITHY. They will get the fundamentals of the electric circuits and their applications in HOUSE WIRING. They will get the usage of POWER TOOLS used in Wood working, Construction and Electrical Engineering. They will get the exposure on WELDING, MACHINE SHOP, PLUMBING, which they will go through in detailed in further semesters. The students will get the fundamentals of computers like software installation, operating system installation etc., and hardware like system assembling, disassembling, problems and their trouble shooting.

USE OF LAB MANUALS:

The relevance of the experiment, experimentation procedure, and points for discussion must be advanced to the students before they can meaningfully carry out the experiments.

The manual instruction sheets for different experiments include the following heads:

1. Name of the experiment
2. Aim
3. Tools
4. Procedure
5. Precautions
6. Results

The students are required to study the equipment in respect of a particular instruction sheet and after studying the sheet, perform the experiment carefully. They must prepare a write up bringing out the salient features of their experiments concentrating on the results. A proposed layout of students, write-up is:

1. Name and Class
2. Date
3. Name of the experiment

4. Objective
5. Procedure
6. Sketch of the apparatus
7. Results: Statements

LIST OF EXPERIMENTS

CARPENTRY

1. Cross Halving Joint
2. Dovetail Joint

HOUSE WIRING

1. Dim & Bright Connection
2. Tube Light Connection

FOUNDRY

1. Solid Pattern
2. Stepped Pulley

BLACK SMITHY

1. U-Clamp
2. S-Clamp

TIN SMITHY

1. L-Pipe
2. Funnel

FITTING:

1.V-Fitting

2.Semi – Circular Fitting

DEMONSTRATION

1. Plumbing
2. Machine shop
3. Metal Cutting (Water Plasma)
4. Welding
5. Power tools in construction, wood working, Electrical Engg & Mechanical Engg

IT WORKSHOP – 1:

Computer hardware, identification of parts, disassembly, assembly of computer to working conditions, simple diagnostic exercises.

IT WORKSHOP – 2:

Installation of operating system – windows and Linux, simple diagnostic exercises.

A batch consists of 25 students

Student to Experiment Ratio - 1:1

TEXT BOOK:

Work shop Manual / P.Kannaiah/ K.L.Narayana/ Scitech Publishers.

MAINTENANCE OF OBSERVATION BOOKS AND RECORDS - SUBMISSION OF RECORD EVALUATION PROCEDURE:

Learner has to maintain observation book regularly and to obtain the initial of the lab in charge in every class. Record of the experimentation should be submitted in the immediate next lab. Late submission will not be entertained.

MODE OF EXAMINATION-EXPERIMENT, VIVA etc.:

Internal Marks

Experiment	=	8
Record	=	5
Viva-Voce	=	2

Each experiment is evaluated for above 15 marks.

The average of all job marks will be considered as job marks (15)

Internal exam	=	10
Total Internal Marks	=	**25 (15 + 10)**

In finalization of Internals both Mechanical Workshop and IT Workshop marks will be taken into consideration.

External marks	=	50
Total Marks	=	**75 (25 + 50)**

REPETITION OF EXPERIMENTS FOR POOR LEARNERS AND ABSENT STUDENTS:

Learner will be permitted to repeat the experiment depending on free slots of the laboratory in consultation with the lab in charge. The absentees will be providing with opportunity of doing the experiment at the end of semester. But the marks will not be considered for those experiments in evaluation of sessional.

CONSULTING HOURS WITH TEACHER FOR CLEARING DOUBTS ON DRAWING LAB WORK PROCEDURES:

The students may consult the lab in charge for clearing doubts on drawing procedures in between 3.30 p.m. to 4.30 p.m. on all working days.

Subject : **ENGLISH LANGUAGE COMMUNICATION SKILLS LAB**

Class : I B.Tech. Year : 2009– 10

Branch : **Civil Engineering** Credits: **04**

Objectives:

The language lab focuses on computer aided multi-media instruction and language acquisition to achieve the following 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 computer monitor, thus providing them with the required facility to face computer-based competitive exams like 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 and public speaking
5. To initiate them into greater use of the computer in resume preparation, report writing, format-making etc.

Total Number of experiments: 21 (Phonetics + communication skills)

	Phonetics	**Communication Skills**
1.	Introduction to English Sounds-Pure Vowels	Introductions and greetings Pair/group(5 member) activity
2.	Introduction to English Sounds-Diphthongs	Situational Dialogues-1 (Role plays-generated by teachers)
3.	Introduction to English Sounds-Consonants	Situational Dialogues-2 (Role plays-generated by students)
4.	Syllable	Unprepared presentations-2 minutes (I mid term exam)
5.	Past and Plural Markers	Information Transfer-1 (graphs given by teachers-cardboards)
6.	Accent and Intonation	Information Transfer-2 (graphs drawn and brought by students-OHP)
7.	Intonation and revision	Debate
8.	Listening exercises-1	Presentation Skills (II Mid-Term examination)
9.	Listening exercises-2	Group Discussion
10.	Revision	Book Review

11.	--	Mini Project Presentation-Final Examination

Syllabus for I-Mid Term

1. Presentations (oral) 2 minutes for every student.
2. Identifying the sounds in the given words

Syllabus for II-Mid Term

1. Presentation Skills (PPT presentations)
2. Plural and past tense markers, accent marking

Final Examination

1. Mini Project Presentation
2. Listening Comprehension

Record work

Phonetics:

1,2 and 3 (To do in the class): Giving 3 examples for each sound in the word initial, medial and final positions.

4. Syllabic division for 30 words

5. Identify past and plural markers for 30 words each

6. Mark accent for 30 technical words

7. Mark intonation for 30 sentences

Communication Skills:

1. Writing about self (about 250 words)
2. Write a paragraph describing a place, person, situation, incident or process.
3. Information transfer
4. Debate: 5 points for and 5 points against the given topic.
5. PPT prints are to be attached to the record
6. Group Discussion: Write 10 points generated in the discussion along with the consensus.
7. Book review-essay writing (about 500 words)
8. Mini Project report

SUGGESTED SOFTWARE

1. Cambridge Advanced Learner's Dictionary with exercises.
2. The Rosetta stone English Library
3. Clarity pronunciation power
4. Mastering English in vocabulary, Grammar, spelling, composition
5. Dosting Kinder play series of Grammar, punctuation, composition etc.
6. Language in use, Foundation Books Private Limited

7. Learning to speak English – 4cds
8. Microsoft Encarta.
9. Murphy's English Grammar, Cambridge
10. Time series of IQ Test, Brain – Treasurer, Aptitude Test.
11. English in Mind, Herbert Puncta and Left Strambers with Meredith Levy, Cambridge

SUGGESTED BOOKS:

1. Developing communication skills by Krishna Mohan & Mura Benerji (Mac Millan)
2. Speaking English Effectively by Krishna Mohan & Mura Benerje (Mac Millan)
3. Better English Pronunciation by JDO-Connor (VBS Cambridge)
4. Oxford practice Grammar with, John Estword, Oxford.
5. Handwork of English Grammar and usage, Mark Lester and Larry Beason, Tata McGraw – Hill
6. A textbook of English Phonetics for Indian students by T.Bala Subramanian
7. Lingua TOEFL CBT Insider by Dreamtech
8. TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, CRACKING, CLIFFS)
9 English skills for Technicial students WBSCTE with British council, GL.
9. A hand book of English for competitive examinations, by B.Shyamala Rao, Blauie Books, Chennai.

SCHEME OF EVALUATION:

English Language Laboratory Practical Examination.

(As per JNTU)

I. Internal Assessment - 25 marks

First Test : 10 Marks

Second Test : 10 Marks.

[Average marks will be taken into account.]

15 marks will be awarded for day-to-day work and

II. End Examination - 50marks

ENGLISH FACULTY

GUDLAVALLERU ENGINEERING COLLEGE :: GUDLAVALLERU

DEPARTMENT OF CIVIL ENGINEERING

REPORT TO BE SUBMITTED BY I CE STUDENT AT THE END OF YEAR TO GET HALL TICKET

NAME :
ROLL NO:

BRANCH: Civil Engineering YEAR:

1. **Cumulative Attendance: _____%**
   s
   Reasons if attendance is less than 85%:

2. **Subject wise Information:**

Subject	Cumulative Attendance	Online Quiz Marks (If absent mark with red pen)			Reasons for absent	Descriptive Marks (If absent mark with red pen)			Reasons for absent	Initial of Concerned Faculty / Lab Records submitted	
		1	2	3		1	2	3		Yes/No	Initial
ENG											
M-I											
EP											
AC											
AM											
CPDS											
EG											
EP&AC Lab											
CP Lab											
EWSP											
EL & CS Lab											

3. **Assignment Details:**

Subjects	Assignment-I	Assignment-II	Assignment-III	Assignment-IV	Assignment-V	Assignment-VI	Assignment-VII	Assignment-VIII
ENG								
M-I								
EP								
AC								
AM								
CPDS								
EG								

4. Books / CD's Reference

Subject	Text Books Purchased		Books Referred in the Library		CD's Observed	Sites visited (Mention URL's)	Remarks
	Title of the Book	Author	Title of the Book	Author	Sonet /IIT/ IEG/ Edusat/ CBT/Ekalavya/ etc.		
ENG							
M-I							
EP							
AC							
AM							
CPDS							
EG							

5. Counselling Details:

	1st Counselling	2nd Counselling	3rd Counselling	4th Counselling	5th Counselling
Date to Attend					
Attended Date					

6. Cooperative Learning Details:

Roll No's in the Cooperative Learning Groups :		
Subject	**Dates of Discussion**	**Total Interacting Hours**
ENG		
M-I		
EP		
AC		
AM		
CPDS		
EG		

NOTE: Enclose the copy of Self Learning Group Discussion Sheet

7. Punishments if any : **Yes / No**

8. Fines paid: **Yes /No** **(If yes mention amount)**

9. Participations in various activities:

I. Are you Class Representative: **Yes / No** **(If yes mention period)**

II. CMC member **Yes / No**

III. Coordinator **Yes / No** **(If yes specify an event)**

IV. Other activities: **Yes / No**

If Yes

Date **Topic Name** **Place**

Position /Prize

G.D.	**Yes / No**
Aptitude	**Yes / No**
Seminar	**Yes / No**
Quiz	**Yes / No**
S/W contest	**Yes / No**
Conference	**Yes / No**
Workshop	**Yes / No**
Sports	**Yes / No**

10. **Are you doing any Projects? Yes / No**
    (If yes Mention Name of Project)

11. **Future plans / Goals**

Recommended to issue the hall ticket

Signature of Counsellor
H.C.E.