SURESH GYAN VIHAR UNIVERSITY

The first research oriented University of state

SYLLABUS

B. TECH. AND DUAL DEGREE PROGRAMME 1ST YEAR (COMMON TO ALL BRANCHES)

GYAN VIHAR SCHOOL OF ENGINEERING & TECHNOLOGY

EDITION 2011

GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY

B. Tech. & Dual Degree Course1st Year (common to all branches)

Teaching & Examination Scheme

Edition 2011

B. Tech / Dual Degree Course 1st year **Semester: I**

S. No.	Course code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CE	ESE
		A. Theory							
1	CP 101	Computer Systems & Prog.	3	3	0	0	3	30	70
2	EN 101	Engineering English	3	3	0	0	3	30	70
3	EE 101/ME 101	Electrical & Electronics Engineering / Engg. Mechanics	4	3	1	0	3	30	70
4	MA 101	Engineering Mathematics- I	4	3	1	0	3	30	70
5	IT 101/ES 101	Information Technology/ Environmental Studies	2	2	0	0	3	30	70
6	PY 101/CY 101	Engg. Physics / Engg. Chemistry	4	3	1	0	3	30	70
		B. Practical & Sessional:							
7	CP 151/ME 151	Computer Programming Lab/ Auto CAD Lab	1	0	0	2	2	60	40
8	EE 151/ME 153	Electrical & Electronics Engg. Lab/ Workshop Practice	1	0	0	2	2	60	40
9	EN 151	English Communication Lab	1	0	0	2	2	60	40
10	PY 151/CY 151	Engg. Physics Lab/Engg. Chem. Lab	1	0	0	2	2	60	40
		C. Discipline & Extra Curricular Activities							
11	DE 101	Discipline and Extra Curricular Activities - I	2	0	0	0	0	100	0
		Total	**26**	**17**	**3**	**8**			
		Total Teaching Load		**28**					

B. Tech / Dual Degree Course 1st year **Semester: II**

S. No.	Course code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CE	ESE
		A. Theory							
1	CP 102	C++	3	3	0	0	3	30	70
2	EN 102	Communication Techniques	3	3	0	0	3	30	70
3	ME 102/EE 102	Engg. Mechanics / Electrical & Electronics Engineering	4	3	1	0	3	30	70
4	MA 102	Engineering Mathematics- II	4	3	1	0	3	30	70
5	ES 102/ IT 102	Environmental Studies / Information Technology	2	2	0	0	3	30	70
5	CY 102/PY 102	Engg. Chemistry /Engg. Physics	4	3	1	0	3	30	70
		B. Practical & Sessional:							
6	ME 152/CP 152	Auto CAD Lab / Computer Programming Lab	1	0	0	2	2	60	40
7	ME 154/EE 152	Workshop Practice/Electrical & Electronics Engg. Lab	1	0	0	2	2	60	40
8	EN 104	Language Lab	1	0	0	2	2	60	40
9	CP 154	OOPS Lab	1	0	0	2	2	60	40
10	CY 152/PY 152	Engg. Chem. Lab/ Engg. Physics Lab	1	0	0	2	2	60	40
		C. Discipline & Extra Curricular Activities							
11	DE 102	Discipline and Extra Curricular Activities - II	2	0	0	0	0	100	0
		Total	**27**	**17**	**3**	**10**			
		Total Teaching Load		**30**					

L = Lecture **T = Tutorial** **CE = Continuous Evaluation**
S = Seminar **P = Practical** **ESE = End Semester Examination**

GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY

B. Tech. & Dual Degree Course 1st Year (Common to All Branches)

LIST OF COURSES OFFERED

Course code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
			L	T/S	P		CE	ESE
CP 101	Computer Systems & Prog.	3	3	0	0	3	30	70
CP 102	C++	3	3	0	0	3	30	70
CP 151/152	Computer Programming Lab	1	0	0	2	2	60	40
CP 154	OOPS Lab	1	0	0	2	2	60	40
EE 101/102	Electrical & Electronics Engineering	4	3	1	0	3	30	70
EE 151/152	Electrical & Electronics Engg. Lab	1	0	0	2	2	60	40
IT 101/102	Information Technology	2	2	0	0	3	30	70
ME 101/102	Engg. Mechanics	4	3	1	0	3	30	70
ME 151/152	Auto CAD Lab	1	0	0	2	2	60	40
ME 153/154	Workshop Practice	1	0	0	2	2	60	40
EN 101	Engineering English	3	3	0	0	3	30	70
EN 102	Communication Techniques	3	3	0	0	3	30	70
EN 151	English Communication Lab	1	0	0	2	2	60	40
EN 104	Language Lab	1	0	0	2	2	60	40
MA 101	Engineering Mathematics- I	4	3	1	0	3	30	70
MA 102	Engineering Mathematics- II	4	3	1	0	3	30	70
PY 101/102	Engg. Physics	4	3	1	0	3	30	70
PY 151/152	Engg.Physics Lab	1	0	0	2	2	60	40
CY 101/102	Engg. Chemistry	4	3	1	0	3	30	70
CY 151/152	Engg. Chem. Lab	1	0	0	2	2	60	40
ES 101/102	Environmental Studies	2	2	0	0	3	30	70
DE 101/102	Discipline and Extra Curricular Activities - II	2	0	0	0	0	100	0

L = Lecture **T = Tutorial** **CE = Continuous Evaluation**
S = Seminar **P = Practical** **ESE = End Semester Examination**

CP 101 COMPUTER SYSTEMS AND PROGRAMMING C (L, T, P) = 3 (3, 0, 0)

Units	Contents of the Course	Hours
I	**Introduction** Types of computers and generations Basic architecture of computers and its building blocks Input-Output devices, Memories	6
II	**Number Systems** Binary, octal, decimal and hexadecimal representation of numbers Integers and floating point numbers Representation of characters, ASCII and EBCDIC codes Binary Arithmetic: addition, subtraction, complements	7
III	**Classification of Computer Languages** Machine, assembly and high level languages Brief idea of operating system Assembler, compiler and interpreter **Programming in 'C'** Need of programming languages, Defining problems Flowcharts and algorithm development	8
IV	Data types, constants, variables, operators and expressions Input and output statements, Conditional and control statements, Arrays	8
V	Structures and unions ; Pointers; File handling	8
	Total	**37**

Reference books

1. Let Us c : Yaswant Kanetaker
2. Programming in c: Balaguruswami
3. Computer fundamental: P.K. Sinha
4. Programming in C: Lipschutz
5. Programming in C: Kernighan Ritchie
6. Computer System Programming : Naveen Hemrajani

CP 102 C++ C (L, T, P) = 3 (3, 0, 0)

Unit	Contents of the Course	Hours
I	Overview of C++ : Object oriented programming, Concepts, Advantages, Usage. C++ Environment: Program development environment, the language and the C++ language standards. Prototype of main() function, Data types. Array, Pointers References & The Dynamic Allocation operators : Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.	6
II	Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data member, Static member function, Passing objects to function, Returning objects, Object assignment. Constructor & Destructor: Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument, Destructor.	7
III	Inheritance : Base class Access control, Protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes .	7
IV	Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=,-= etc), Operator overloading restrictions, Operator overloading using friend function.	7
V	Virtual functions & Polymorphism: Virtual function, Pure Virtual functions, Early Vs. late binding The C++ I/O system basics : C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O.	8
	Total	**35**

Text & Reference Books :

Herbert Schildt, "C++ The Complete Reference " - TMH Publication ISBN 0-07-463880-7

R. Subburaj, "Object Oriented Programming With C++ ", Vikas Publishing House, New Delhi.isbn 81-259-1450-1

E. Balguruswamy, "C++ ", TMH Publication ISBN 0-07-462038-x

M Kumar "Programming In C++", TMH Publications

R. Lafore, "Object Oriented Programming C++ "

Ashok . N. Kamthane, "Object Oriented Programming with ANSI & Turbo C++", Pearson Education Publication, ISBN 81-7808-772-3

CP 151/152 COMPUTER PROGRAMMING LAB C (L, T, P) = 1 (0, 0, 2)

S.No.	List of Experiments
I	Simple input program integer, real character and string. (Formatted & Unformatted)
II	Conditional statement programs (if, if-else-if, switch-case)
III	Looping Program (for, while, do-white)
IV	Program based on array (one, two, and three dimensions)
V	Program using structure and unions.
VI	Program using Function (With and without recursion)
VII	Simple programs using pointers
VIII	File handling

CP 154 OBJECT ORIENTED PROGRAMMING LAB C (L, T, P) = 1 (0, 0, 2)

Write a program to find the greatest between four numbers.
Write a program to prepare mark sheet of student using structures.
Write a C program to read several different names and addresses, re-arrange the names in alphabetical order and print name in alphabetical order using structures.
Write a program to implement concatenation of two strings using pointers.
Write a program to search a pattern in a given string.
Write a program to read add, subtract and multiply integer matrices.
Write a program to calculate the power function (mn) using the function overloading technique, implement it for power of integer and double.
Implement file creation and operate it in different modes: seek, tell, read, write and close operations.
Using multilevel inheritance, prepare students' mark sheet. Three classes containing marks for every student in three subjects. The inherited class generate mark sheet.
Write a program to print the following output using FOR loop. 1 1 2 2 2 2 3 3 3 3 3 3 4 4 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5

EE 101/102 ELECTRICAL AND ELECTRONICS ENGINEERING C (L, T, P) = 4 (3, 1, 0)

UNIT	CONTENTS OF THE COURSE	Hours
1	DC Networks: Kirchoff's Laws, Node Voltage and Mesh Current Analysis;Delta-Star and Star-Delta Transformation, Source Conversion. Classification of Network Elements, Superposition Theorem, Thevenin's Theorem.	**7**
II	Single Phase AC Circuits: Generation of Single Phase AC Voltage, EMF Equation, Average, RMS and Effective Values. RLC Series, Parallel and Series-Parallel Circuits, Complex Representation of Impedances. Phasor Diagram, Power and Power Factor. • Three Phase A.C. Circuits: Generation of Three-Phase AC Voltage, Delta and Star-Connection, Line & Phase Quantities, 3-Phase Balanced Circuits, Phasor Diagram, Measurement of Power in Three Phase Balanced Circuits.	**7**
III	• Transformer: Faraday's Law of Electromagnetic Induction, Construction and Operation of Single Phase Transformer, EMF Equation, Voltage & Current Relationship and Phasor Diagram of Ideal Transformer. • Electrical DC Machine: Principle of DC Machines, Types, Different Parts of DC Machines.	**7**
IV	• Transistor: Bipolar Junction Transistor, Transistor Current Components, Characteristics of CE, CB and CC Transistor Amplifiers. • Thyristors: The four layer diode, Bi-directional thyristors, the uni-junction transistor and its application in thyristor circuits.	**7**
V	• Communication System: Introduction to modulation (AM, FM & PM) demodulation, multiplexing. Superhetrodyne radio receiver, television. Elementary concepts of optical, satellite & mobile communication.	**7**
	Total	**35**

Recommended Books

1. BL Theraja, Electrical Engineering
2. Niazi, Electrical and Electronics Engineering
3. Network Synthesis by Heytt Kamerly
4. Network Theory by Van Valkenburg

EE 151/152 ELECTRICAL AND ELECTRONICS ENGG. LAB C (L, T, P) = 1 (0, 0, 2)

S. No.	List of Experiments
	A. ELECTRICAL LAB
1.	Single line diagram of a power system and a distribution sub-station and basic functional study of main components used in power systems.
2.	Make house wiring including earthing for 1-phase energy meter, MCB, ceiling fan, tube light, three pin socket and a lamp operated from two different positions. Basic functional study of components used in house wiring.
3.	Study the construction and basic working of ceiling fan, single phase induction motor and three phase squirrel cage induction motor. Connect ceiling fan along with regulator and single phase induction motor through auto-transformer to run and vary speed.
4.	(a) Basic functional study and connection of moving coil & moving iron ammeters and voltmeters, dynamometer, wattmeter and energy meter. (b) Run a 3-phase squirrel cage induction motor at no load and measure its voltage, current, power and power factor. Reverse the direction of rotation.
5.	Study the construction, circuit, working and application of the following lamps: (i) Fluorescent lamp, (ii) Sodium vapour lamp, (iii) Mercury vapour lamp, (iv) Halogen lamp and (v) Neon lamp
6.	(a) Study the construction and connection of single phase transformer and auto-transformer. Measure input and output voltage and fin turn ratio. (b) Study the construction of a core type three phase transformer. Perform star and delta connection on a 3-phase transformer and find relation between line and phase voltage.
	ELECTRONICS LAB
7.	Identification, testing and applications of resistors, inductors, capacitors, PN-diode, Zener diode, LED, LCD, BJT, FET, UJT, SCR, Photo diode and Photo transistor.
8.	(a) Functional study of CRO, analog & digital multi-meters and function / signal generator. (b) Study the single phase half wave and bridge rectifier and effects of filters on waveform.
9.	Study the BJT amplifier in common emitter configuration. Measure voltage gain, plot gain frequency response and calculate its bandwidth.
10.	(a) Study the construction and basic working of SCR. (b) Study the single phase half wave and bridge controlled rectifier and observe the effect of firing angle on waveform.

IT 101/102 INFORMATION TECHNOLOGY C (L, T, P) = 3 (3, 0, 0)

Unit	Contents of the Course	Hours
I	• An overview of information technology, difference between data and information, quality, of information, Information system. • Important data types: text, image, graphics & animation, audio, video. • Data compression and its techniques	6
II	• Introduction to internet: www, web browser, search engine, email • Introduction to e-commerce and its advantage, security threats to e-commerce, Electronic payment system, • E-governance, EDI and its benefits • Introduction to cryptography, digital signature and smart card technology	7
III	• Introduction to LAN, WAN, MAN: Transmission media • Data transmission type: Introduction to OSI reference model • Analog and digital signals, modulation • Network topologies, client-server architecture, ISDN	7
IV	• Overview, definition and function of operating system, need of operating system • Batch processing, spooling, multi-programming, multi-processing Time sharing, online processing, real time system	7
V	• Application software and their categories, system software • User interface GUI, spread sheet • Data base software, its features and benefits	8
	Total	**35**

Recommended Books:

1. Information Technology and the Networked Economy, Second Edition **By** McKeown, Patrick G.
2. Internet & Intranet Engineering, Tata McGraw Hill company.
3. Information Technology by Ajit Poonia.
4. Information Technology by D.P. Sharma

ME 101/102 **ENGINEERING MECHANICS** **C (L, T, P) = 4 (3, 1, 0)**

Units	Contents of the Course	Hours
I	System of forces, Fundamental laws of mechanics, Composition of forces : Free body diagram, Lamis's theorem : Moments and couple, Varignon's theorem, condition of equilibrium : Types of support and loading, reaction, Analysis of simple trusses by methods of joints and method of sections.	6
II	Law of Coulomb friction, Ladder, Wedges: Belt friction and rolling: Principle of virtual work and its application.	6
III	Location of centroid and center of gravity,area moment of inertia, mass moment of machine : Law of machines, Variation of mechanical advantages, efficiency, reversibility of machine : Pulleys, wheel and axle,wheel and differential axle : Transmission of power through belt and rope.	7
IV	**Kinematics of Particle: -** Rectilinear motion,plane curvilinear motion : Projectile motion : Constrained motion of connected particles. **Dynamics of Particle and Rigid Body: -** Newton's law of motion: D'Alembert's principle.	6
V	**Work and Energy: -** Work,energy (potential, Kinetic and Spring) : Work-Energy relation : Law of conservation of energy. **Impulse and Momentum: -** Impulse, momentum: Impulse-Momentum relation, Impact. **Vibration: -** Un-damped Free vibrations.	7
	Total	**32**

Recommended Books:

1. Engineering Mechanics by Domkundwar & Domkundwar, Dhanpat Rai & Co.
2. Engineering Mechanics by D.S.Kumar.
3. Engineering Mechanics by R.K.Rajput.
4. Classical Mechanics by R. Douglas Gregory University of Manchester
5. Engineering Mechanics by Bhattacharya Oxford University Press.

ME 151/152 **AUTO-CAD LAB** **C (L, T, P) = 1 (0, 0, 2)**

Units	Contents of the Course	Hours
I	**LINE:** Lettering and Dimensioning. **SCALES:** Representative factor, Plain scales, Diagonal scales, Scales of Chords. **CONIC SECTIONS:** Construction of ellipse, Parabola and hyperbola by different methods, normal and tangents.	6
II	**PROJECTIONS:** Types of Projection, Orthographic Projection, First angle and Third angle Projection.	6
III	**SECTIONS OF SOLIDS:-** Section of right solids by normal and inclined planes.	7
IV	**2 D Drafting:-** Introduction to CAD, using coordinate systems, 2-Dimensional drafting, making 2 D vices, working with Draw tools, Working with Grips, Dynamic & Parametric Modification, understanding References (X-Line, Ray), Concept of Hatching, Different Hatching styles & patterns, Importance of Layer, Working with Layers, Dimensioning (Create, Edit & Styling).	6
V	**3D Modeling:-** Intro to 3-D Modeling, Concept & Typing of 3-D Model, 3-D coordinate system, overview of 3-D objects, Create wire frame model, viewing 3-D Model, Create surfaces, Solid Modeling, Sectioning of 3-D Model.	7
	Total	**32**

Recommended Books:

1. Engineering Drawing by N.D.Bhatt & V.M.Panchal.
2. Practical Geometry by P.S.Gill.
3. Engineering Drawing by Laxmi Narayan Mathur.
4. Advanced Techniques in Auto CAD by Tickoo Sham T.M.H.
5. Understanding Auto CAD by Tickoo Sham T.M.H.

ME 153/154 **WORKSHOP PRACTICE** **C (L, T, P) = 1 (0, 0, 2)**

CARPENTRY SHOP

Timber, definition, engineering applications, seasoning and preservation Plywood and ply boards.

List of jobs to be made in the Carpentryshop

1. T – Lap joint
2. Bridle joint

FOUNDRY SHOP

Moulding Sands, constituents and characteristics,

Pattern definition, materials types, core prints,Role of gate, runner, riser, core and chaplets, Causes and remedies of some common casting defects like blow holes, cavities, inclusions

List of jobs to be made in the Foundryshop

1. Mould of any pattern
2. Casting of any simple pattern

WELDING SHOP

Definition of welding, brazing and soldering processes and their applications

Oxyacetylene gas welding process, equipment and techniques, types of flames and their Applications. Manual metal arc welding technique and equipment, AC and DC welding

Electrodes: Constituents and functions of electrode coating, welding positions

Types of welded joints, common welding defects such as cracks, undercutting, slag inclusion and boring

List of jobs to be made in the Weldingshop

1. Gas welding practice by students on mild steel flat
2. Lap joint by gas welding
3. MMA welding practice by students
4. Square butt joint by MMA welding
5. Lap joint by MMA welding
6. Demonstration of brazing

MACHINE SHOP PRACTICE

Study Of Machine Tools:-

Lathe Machine : Parts Of lathe description ,operations on lathe, tools used on lathes, attachments ,Specifications of lathe ,types of lathe

Shaper Machine:- Parts of shaper, description of parts ,Operations on shaper ,tools used on Shaper ,Mechanisms in shaper, specification of shaper

List of jobs to be made in the Machineshop

1. Job on lathe with one step turning and chamfering operations
2. Job on shaper for finishing two sides of a job
3. Drilling two holes of size 5 and 12 mm diameter on job used / to be used for shaping
4. Grinding a corner of above job on bench grinder

FITTING AND SMITHY SHOP

Files, materials and classification.

Forging, forging principle, materials, Operations like drawing, upsetting, bending and forge welding, Use of forged parts.

List of jobs to be made in the Fitting And SmithyShop

1. Finishing of two sides of a square piece by filing
2. Tin smithy for making mechanical joint and soldering of joint
3. To cut a square notch using hacksaw and to drill three holes on PCD and tapping

List of Recommended Books:-

1. Workshop Technology And Practice By Hazara Chowdhary Vol I & Vol II
2. Workshop Technology And Practice By B.S. Raghuvanshi
3. Production Technology By R.K. Jain
4. Manufacturing Process By :Begman
5. Workshop Technology By : Chapman Vol I ,II & III

EH 101 **ENGINEERING ENGLISH** **C (L, T, P) = 3 (3, 0, 0)**

Units	Contents of the Subject
I	**Poems** • Poetry Appreciation • Ode on Solitude- A Pope • Preludes- T S Eliot • On His Blindness- John Milton
II	**Poems** • Solitary Reaper-W Wordsworth • The Sun Rising – John Donne • Death the Leveler- James Shirley • Voice of the Unwanted Girl-Sujata Bhatt
III	**Short stories** • The Coffee House – Leo Tolstoy • Three Questions – Leo Tolstoy • Monal Hunt – Manohar Malgonkar • The Marriage is a Private Affair – Chinua Achebe
IV	**Essays** • Of truth- Francis Bacon • Toasted English- R K Narayan • The Influence of Science – EN Dac Andrade and Julian Huxley • Our Civilization – C E M Joad.
V	**Novella** • The Old Man and the sea – E Hemingway

Recommended books: -

Popular Short stories Oxford University Press
Penguin Book of Verse Penguin
Complete works of Chinua Achebe – AITBS publication
The Old Man and the sea – E Hemingway
The Complete works of Leo Tolstoy.
Prose for pleasure and Comprehension – H G S Rao Oxford Publication.
Oxford Companion to English Literature O U P
A glossary of literary terms -M H Abrams

EH 151 **ENGLISH COMMUNICATION LAB** **C (L, T, P) = 1 (0, 0, 2)**

One is required to study any 10 topics from the topics mentioned below.

S No.	Contents of the Subject
1	Phonetics
2	Phonetic symbols and transcription
3	Synonyms and Antonyms
4	Word forms
5	Affixes
6	Words commonly misspell
7	Homonyms
8	Homophones
9	One word substitution
10	Proverbs
11	Idioms and phrases
12	Reading comprehension

Recommended books:-

Reference books:-

1 *Better English Pronunciation*- J D O' Connor Cambridge University press
2 *A Textbook of English Phonetics for Indian Students*- T Balasubranian Macmillan Publication
3 *Spoken English* – J B Harrison & R K Bansal Macmillan Publication
4 *English prəˈnaʊntsɪŋ Dictionary* – Daniel Jones Cambridge University Press
5 *Oxford Advanced Learner's Dictionary*

EH 102 **COMMUNICATION TECHNIQUES** **C (L, T, P) = 4 (3, 1, 0)**

Units	Contents of the Course	Hours
I	**Grammar** • Words and Sentences • Verbs / Tenses • Questions / Questions Tags • Modal Verbs • The Passive	**10**
II	**Grammar** • The Infinitive and The ING form • Nouns and Articles • Determiners • Reported Speech • Adjectives and Adverbs	**08**
III	**Grammar** • Prepositions • Verbs with Prepositions and Adverbs • Pronouns • Relative Clauses • Conditionals • Linking Words	**08**
IV	**Compositions** • Essay and Report Writing • Review Writing	**03**
V	**Compositions** • Applications, Letter and Précis Writing • Technical Proposal Writing	**03**
	Total	**32**

Recommended books:-

1 Communicative Grammar & Composition by R K Lidiya, Oxford University Press
2 A Textbook of General English by R P Bhatnagar, Popular Book Depot

Reference books:-

1 The Pocket Guide to English Language- John O' Connor, Cambridge University Press
2 Modern English –N. Krishnaswamy, Macmillan publication
3 Oxford Guide to Writing and Speaking – John Selly Oxford University press
4 English Grammar for Today – Geoffrey Leech, Pearson Longman
5 University Grammar of English – Quirk & Greenbaum, Pearson Longman
6 Practical English Usages- Michael Swan, Oxford University Press

EH 104 **LANGUAGE LAB** **C (L, T, P) = 1 (0, 0, 2)**

One is required to study any 10 topics from the topics mentioned below

S No	Contents of the Subject
1	Introducing communication
2	Communication:- Objectives & media
3	Communication:- Types, barriers and Principles
4	Modern Communication devices Principles of emphatic communication
5	Personality development (Types & essentials)
6	Body language (Kinesics, proxemics, paralanguage, physical context)
7	Principles of personal vision, personal leadership & personal management
8	Leadership & Team building
9	Principles of Interpersonal leadership & Creative Corporation
10	Group discussion & seminars
11	Interview techniques
12	Practical lessons on personality development.

Reference books:-

1 *Working with Emotional Intelligence*-Daniel Goldman
2 *Emotional Intelligence*- Daniel Goldman
3 *Stress Management*-Vera Pfeiffer
4 *Self hypnosis*- Valerie Austin
5 *Memory Boosters*- Hamlyn
6 *The 7 Habits of highly Effective People*- Stephen R. Covey
7 *First Things First*- Stephen R. Covey

MA 101 **ENGINEERING MATHEMATICS – I** **C (L, T, P) = 4 (3, 1, 0)**

Units	Contents of the Course	Hours
I	**Differential Calculus** • Curvature, Concavity and Convexity and Point of inflexion (Cartesian Coordinates only) • Partial Differentiation, Euler's Theorem on Homogeneous Functions. • Approximate Calculations	6
II	**Differential Calculus** • Maxima and Minima of Two and more Independent Variables, Lagrange's method of undetermined multipliers. • Asymptotes, Intersection of the curve and its asymptotes. • Multiple points, Curve tracing of simple curves (Cartesian and Polar) including cardioids, Lemniscates of Bernoulli, Limacon, Equiangular Spiral, Folium of Descartes.	7
III	**Integral Calculus** • Application of Integral calculus is finding lengths, areas of simple plane curves. • Application of Integral calculus is finding volumes & surfaces of solids of revolution. • Double and Triple integral, Change of order of integration, Beta function and Gamma function.	7
IV	**Differential Equations** • Differential Equations of first order and first degree. • Linear Differential Equations of Higher Order with Constant Coefficients. • Homogeneous Linear Differential Equations.	7
V	**Differential Equations** • Linear Differential Equations of Second Order with Variable Coefficients: Method of Change of Dependent and Independent Variables. • Method of Variation of Parameters. • Method of solution in series.	7
	Total	**34**

Books Recommended:

1. Advanced Mathematics for Engineers by Erwin Kreszig.
2. Advanced Mathematics for Engineers by B.S. Griwal.
3. Advanced Mathematics for Engineers by Chandrika Prasad.
4. Engg. Mathematics I by Y.N. Gaur & C.L. Koul
5. Engg. Mathematics I by K.C. Jain & M.L. Rawat
6. Engg. Mathematics I by D.N. Vyas

MA 102 **ENGINEERING MATHEMATICS – II** **C (L, T, P) = 4 (3, 1, 0)**

Units	Contents of the Course	Hours
I	**Algebra** • Convergence and Divergence of infinite series: Comparison test, Cauchy's n^{th} root test, D'alemberts ratio test, logarithmic ratio test, Raabi's test, De'Morgan and Bertrand's test, Cauchy's condensation test, Gauss test (without proof). • Alternating Series: Leibniz's test (without proof), Absolute convergence and Conditional convergence. • Fourier Series: Expansion of simple function's in Fourier Series, Fourier Series of even and odd functions. Half range series, change of intervals, Harmonic Analysis.	6
II	**Matrices** • Rank of a matrix, inverse of a matrix by elementary transformations. • Solution of simultaneous linear equations by matrix method. • Eigen values and Eigen vectors, Cayley- Hamilton theorem (without proof). • Diagonalization of matrix.	6
III	**Coordinate Geometry of Three Dimensions** • Equation of a sphere. • Intersection of a sphere and a plane, tangent plane, normal lines. • Right circular cone. • Right circular cylinder.	6
IV	**Vector Calculus** • Scalar and vector point functions, differentiation & integration of vector functions. • Gradient, Divergence, Curl and Differential Operator. • Line, Surface and volume integrals. • Green's Theorem in a Plane, Gauss' and Stoke's Theorem (without proof) and their Applications.	7
V	**Partial Differential Equations** • Partial Differential Equations of the First Order. • Non-linear Partial Differential Equations of order one: Standard forms. • Charpit's Method.	7
	Total	**32**

Books Recommended:

1. Advanced Mathematics for Engineers by Erwin Kreszig.
2. Advanced Mathematics for Engineers by B.S. Griwal
3. Advanced Mathematics for Engineers by Chandrika Prasad
4. Engg. Mathematics Book 2 by Y.N. Gaur & C.L. Koul
5. Engg. Mathematics II by K.C. Jain & M.L. Rawat

6. Engg. Mathematics II by D.N. Vyas 7. Real Analysis by S.P. Goyal & S.L. Bhargava

PY 101/102 ENGINEERING PHYSICS C (L, T, P) = 4 (3, 1, 0)

Units	Contents of Course	Hours
I	**Interference of light** • Newton's Rings: Theory and determination of diameters of dark and bright rings. • Michelson's interferometer: Construction and working, Determination of wavelength of light and wavelength separation of two nearby wavelengths. **Polarization of Light** • Production of Plane, circular and elliptically polarized, Phase retardation plates, • Specific rotation and its measurement using the half shade and Bi-Quartz polarimeters.	**8 hrs,**
II	**Diffraction of Light :** • Fraunhofer's diffraction due to single Slit, • Theory of plane transmission grating and determination of wavelength of light • Resolving power: Reyliegh criterion, Resolving power of diffraction grating.	**6 hrs.**
III	**Lasers , Holography and Optical fiber** • Theory , design and application of Ruby, He- Ne and semiconductor lasers • Construction and Reconstruction of Hologram • Introduction of optical fiber as wave guide • Numerical Apeture of an optical fiber	**6 hrs.**
IV	**Special Theory of Relativity** • Postulates of special theory of relativity, Lorentz Transformations • Relativity of length , mass, and time. • Relativistic velocity addition , Mass- Energy relation	**6 hrs.**
V	**Electricity & Magnetism** • Scalar and Vector Fields, Concepts of Gradient, Divergence and Curl, Maxwell's electromagnetic Equations. **Nuclear Radiation Detectors** • Nuclear Binding Energy, Construction , working and properties of proportional , G.eiger M.uller and Scintillation counter	**7 hrs.**
	Total	**33**

Books Recommended

Optics by A.K. Ghatak (Tata McGraw-Hill)
Introductory Quantum Mechanics by Liboff (Pearson's Publication)
Quantum Mech. by A.Ghatak & S. Lokhathan (Tata McGraw-Hill
A textbook of Optics: Brijlal and Subramanium. S. Chand Co. Ltd.
Introduction to Modern Optics by G.R. Fowels
An introduction to Fiber Optics by R. Allen Shotwell, PHI
Elements of Electromagnetic Fields: S P Seth, Dhanpat Rai & Company.
Lasers Theory and Applications by Thyagarajan and Ghatak, Macmillan India Ltd.
Elements of Electromagnetic by Mathew N.O. Sadiku, Oxford University Press.
Introductory University optics: Beynon, Prentice Hall of India Pvt. Ltd.
An introduction to Fiber Optics by John M. Senior, PHI
Nuclear Physics by Burchem (Addision Weisly)

PY 151/152 ENGINEERING PHYSICS LAB C (L, T, P) = 1 (0, 0, 2)

S. No.	LIST OF PRACTICALS
1	To determine the dispersive power of material of prism
2	To determine the wavelength of sodium light by Newton's rings experiment
3	To determine the specific rotation of glucose / cane sugar solution using polarimeter
4	To determine the wavelength of prominent lines of white light by plane diffraction grating
5	To determine the wavelength of sodium light with the help of Michelson interferometer
6	To study the profile of He-Ne Laser
7	To determine the Numerical Aperture of optical fiber
8	To determine the fringe width and distance between coherent sources by Fresnel's bi-prism experiment
9	To determine the band gap in a semiconductor using a P.N. junction diode
10	To convert a galvanometer into an ammeter.
11	To convert a galvanometer into a voltmeter
12	To draw the plateau characteristic of a Geiger Muller Counter using a radio active source.
13	To determine the height of an object with the help of sextant
14	To determine high resistance by method of leakage with the help of ballistic galvanometer
15	To determine the specific resistance of a given of a wire with the help of Carry Foster's Bridge

CY 101/102 ENGINEERING CHEMISTRY C (L, T, P) = 4 (3, 1, 0)

Units	Contents of the Subject	Hours
I	**Water:** Common impurities, Hardness, Determination of hardness by Clark's and Complex metric (EDTA) method, Degree of Hardness. **Municipal Water Supply**: Requisites of drinking water, Purification of water. Sedimentation, coagulation, filtration, sterilization. Break point chlorination. **Water for Steam Preparation:** Boiler Trouble, Carryover, Corrosion, Scale & Sludge and caustic embrittlement. **Methods of Boiler Water Treatment:** Preliminary treatments, Preheating. Lime-Soda Process, Permutite or Zeolite process, Deionization or demineralization. Feed water Conditioning, Internal treatment, Blow down. Problems based on water treatment (Lime-Soda Process).	**7 hrs.**
II	**Corrosion:** Definition and its significance, Theories of corrosion. Galvanic Cell and concentration Cell, Pitting and Stress Corrosion. Protection against Corrosion, Protective Metallic Coating. **Lubricants:** Classification, Types, Properties: Viscosity, Viscosity Index, Flash and Fire point, Cloud and Pour point and Emulsification. **Pollution:** Elementary idea of air and water pollution, Effect of air pollution. Depletion of ozone layer and its environmental impact. Greenhouse effect. **Phase Rule:** Statement, Definitions. Application to one component system: Water and Sulphur. Study of two components: Lead-Silver.	**9 hrs.**
III	**New & Advanced Engineering Materials:** Materials and Chemistry of **Software & Hardware** industry: chip and integrated circuit manufacturing. Chemistry of **Electrical** Engineering materials. **Electronics and Communication** industries: Materials for**, Mechanical** industries Materials for **Civil constructions**.	**7 hrs.**
IV	**Plastics:** Classification and constituents of plastics and their uses, preparation, properties and uses of Polyethylene. Bakelite, Terylene and Nylon. **Rubber :** Natural rubber, vulcanization, synthetic rubbers. **Cement:** Manufacture of Portland cement, vertical shaft kiln technology, Chemistry of setting and hardening. **Refractories:** Definition, properties, classification, Manufacturing and Properties of Silica and Fireclay Refractories. **Glass:** Preparation, varieties and uses, **Explosive:** Introduction, classification, requisites of explosives. Plastic explosives, blasting fuses, application.	**7 hrs.**
V	**Chemicals Fuels:** Origin and classification fuels. **Solid Fuels:** Coal**,** Calorific value ,Proximate and Ultimate analysis Determination of calorific value by Bomb Calorimeter. **Liquid Fuel: Advantages**, petroleum and refining of petroleum, synthetic petrol, Cracking and Reforming, Knocking –Ant knocking Octane number, Cetane number. **Gaseous Fuels:** Advantages, Manufacture, composition and calorific value of coal gas and oil gas, Determination of calorific value by Junker's Calorimeter. **Advanced fuel systems:** Elementary Non-conventional Energy Materials.	**7 hrs.**
	Total	**37**

Books Recommended:

1. Engg. Chemistry by Dr. G.N. Sharma and Dr. Shuchi Gupta
2. Engg. Chemistry by K.D. Gupta and S.K. Jain
3. Engg. Chemistry by K.L. Malaria and G.P. Goyal
4. Engg. Chemistry by Vyas and Vyas
5. Physical Chemistry by Glasstone
6. Theory and Practicals of Engg. Chemistry by Shashi Chawla
7. Applied Chemistry by Dr. G.N. Sharma and Dr. Shuchi Gupta

CY 151/152 **CHEMISTRY LAB** **C (L, T, P) = 1 (0, 0, 2)**

S. No.	Name of Experiment	No. of Practical Turns
I	**Physical Methods of Analysis**	
1.	Conduct metric Analysis	
a.	Determination of strength Acid and Bases	01
b.	Determination of Solubility of Barium sulphate	01
c.	Determination of equivalent conductivity	01
2.	pH Analysis	
a.	Determination of strength of Acids and Bases	01
b.	Determination of PH of various Water Sample and its Analysis	01
3.	Determination of Viscosity of a given sample of oil at various temperature by Redwood Viscometer No.1	01
4.	Determination of Flash and Fire point of a given sample using Pensky Marten apparatus	01
5.	Determination of Cloud and Pour point of a sample	01
II	**Volumetric Analysis**	
1.	To study kinetics of acetone iodine reactions	02
2.	Determination of available chorine in Bleaching Powder	01
3.	Determination of free chlorine in a Water sample	01
4.	To study hydrolysis of ester	01
5.	Determination of B.O.D Value of Water sample	01
6.	Determination of C.O.D Value of Water sample	01
7.	Determination of hardness of water	01
8.	Determination of Dissolved Oxygen or Ammonia or Carbon Dioxide	02
9.	Determination of total suspended dissolved and fixed solids in Sewage and Water sample	01
III	**REDOX Titrations**	
1.	Determination of Copper sulphate Idometrically	01
2.	Determine Potassium dichromate idometrically	01
3.	Determination Potassium dichromate by retreating it against ferrous ammonium sulphate (Using internal indictor)	02
4.	Estimation of Iron in plain Carbon steel	01
5.	Estimation of Copper in brass	01
IV	**Gravimetric Analysis**	
1.	Barium as Barium sulphate gravimetrically	02
2.	Silver as Silver Nitrate gravimetrically	02
3.	Copper as Copper thiocynate gravimetrically	02

- As per availability of experiment

ES101/102 **ENVIRONMENTAL STUDIES** **C (L, T, P) = 2 (2,01, 0)**

Units	Contents of the Course	Hours
I	**Man & Environment:** Definition of Environment & its various components. Ecosystem concepts. Dependence of Man on nature for its various various needs. Human population growth & its impacts on environment. Environment & human health. Environmental concerns including climate change, Global warming, Acid Rain, Ozone layer Depletion etc. Environmental ethics. Traditional ways of utilising various components of environment. Sustainable developments.	6
II	**Natural Resources:** Forest resources, Mining , Dams & their effects on forests & tribal people. Water resources-over utilization of water, floods, droughts and conflicts over water resources. Mineral Resources- Use of various minerals for Human welfare & environmental effects of mining. Food resources -World food problem. Impacts of changing Agriculture practices on Environment. Energy Resources-Renewable and non renewable energy Resources & exploration of alternative energy sources. Land Resources- land degradation, soil erosion, desertification & soil contamination.	6
III	**Ecosystems:** Structure & function, energy flow, food chains, food webs, Ecological pyramids. Basics of forest grasslands, desert & aquatic ecosystem (Ponds, Streams, Lakes, Rivers, Oceans & Estuaries)	6
IV	**Biological Diversity:** Genetic, species & ecosystem diversity, Values of Biodiversity, Global, National & Local Biodiversity. Hot-spots of Biodiversity, threat to biodiversity. Endangered & endemic species of India. Conservation of biodiversity in situ & ex-situ	6
V	**Environment pollution:** Causes, effects & control of- Air pollution, Water pollution, Soil pollution, Noise Pollution, Thermal pollution & Nuclear Hazards. Solid wastes & their Management. Disaster Management-Flood, Drought, Earthquake, Land slides etc.	6
	Total	**30**

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