DAYALBAGH EDUCATIONAL INSTITUTE
FACULTY OF ENGINEERING
B.TECH. (AGRICULTURAL,CIVIL, ELECTRICAL, FOOTWEAR TECH., & MECHANICAL ENGINEERING): 2020-21

SECOND SEMESTER

COURSE NUMBER	COURSE TITLE	Credits	End sem. Exam.	Theory/ Practical
PHM281	APPLIED PHYSICS II	3.0	Y	T
PHM282	APPLIED PHYSICS LAB	1.0	Y	P
EEM201	COMPUTER CONCEPTS & C PROGRAMMING	3.0	Y	T
EEM202	BASIC ELECTRICAL ENGINEERING	3.0	Y	T
MEM201	ENGINEERING THERMODYNAMICS	3.0	Y	T
MEM202	ENGINEERING MECHANICS I	3.0	Y	T
MEM203	ENGINEERING DRAWING II	3.0	Y	P
MEM204	WORKSHOP PRACTICE II	1.5	Y	P
MAM281	ENGINEERING MATHEMATICS II	3.0	Y	T
EGC281	INDUSTRIAL VISITS	1.0	N	P
ESC281	ENVIRONMENTAL STUDIES	2.0	N	T
GKC281	SC.METH., G.K. & CURRENT AFFAIRS I	1.0	N	T
RDC281	AGRICULTURAL OPERATIONS II	1.0	N	P
RDC282	SOCIAL SERVICE	1.0	N	P
CAC281	CO-CURRICULAR ACTIVITIES	3.0	N	P
#	ANCILLARY COURSE	3.0	Y	T
	TOTAL CREDITS	35.0		

ANCILLARY COURSE ANYONE TO OPTED FROM THE FOLLOWING(FOR ALL BRANCHES)				
ENH281	ENGLISH II	3.0	Y	T
HSH281	HOUSEHOLD MANAGEMENT	3.0	Y	T
MUH281	SANGEET KRIYATMAK II	3.0	Y	P
SYH281	SOCIOLOGY OF SCIENCE	3.0	Y	T
ABH281	PRINCIPLES OF ECONOMICS	3.0	Y	T
ACH281	FUNDAMENTALS OF ACCOUNTING	3.0	Y	T
BBH281	BUSSINESS ORGANIZATION	3.0	Y	T
OMH201	COMMUNICATION TECHNIQUE HINDI II	3.0	Y	T
ZOH281	BASICS OF NEUROSCIENCE	3.0	Y	T

Course Number: PHM281, Course Title: APPLIED PHYSICS II
Class: B.Tech., Status of the Course: MAJOR, Approved Since Session: 2012-13
Credits: 3, Periods (55 mts. each) per week: 4(L:3+T:1+P:0), Min. Periods/Sem.: 39
UNIT 1: LASERS AND FIBER OPTICS
Spontaneous and stimulated emissions, Einstein's coefficients, population inversion and lasingaction, coherence, properties and types of lasers, applications, Fermat's principle and Snell's law,optical fiber, numerical aperture, types of fibers, fiber optic communication principles, fiber opticsensors.
UNIT 2: CONDUCTORS, DIELECTRICS AND MAGNETIC MATERIALS
Free electron theory (classical and quantum), Fermi-Dirac statistics, band theory of solids,dielectrics, types of polarization, internal field and Clausius-Mosotti equation, ferroelectricmaterials, magnetic materials, types and properties, domain theory, hard and soft magneticmaterials, application, superconductivity and types, Meissner effect, high temperaturesuperconductors, applications.
UNIT 3: NUCLEAR PHYSICS
Laws, units of activity, half-life, mean life and decay constant, measurement of decay constant,detectors of nuclear radiation, ionization, proportional and Geiger Muller counters, uses of nuclearradiations. Nuclear size, Carbon dating, binding energy and packing fraction.Nuclear fission andfusion, basic nuclear reactors.
UNIT 4: SPECIAL THEORY OF RELATIVITY
Frames of reference, laws of mechanics, inertial frame of reference, Galilean transformation, hypothesis of Galilean invariance, Non-inertial frames and fictions forces, centrifugal force,Michelson-Morley experiment, postulates of the special theory of relativity, Lorentz Transformationand addition of velocities, conservation of momentum and variations of mass, relativistic energy,Mass-energy and momentum-energy relation, particles with zero rest mass.
UNIT 5: ELECTRODYNAMICS
Coulomb's law for distribution of charges, polarization and Gauss's law, electric current andequation of continuity, magnetic induction and Lorentz force, steady current and Biot-Savart law,Ampere's law, magnetization and magnetic intensity, Faraday's law of induction,generalization ofAmpere's law, Maxwell's equation, electromagnetic wave equation, propagation of EM waves in freespace Poynting vector.

SUGGESTED READINGS:
Physics for Scientists and Engineers Vols. I, II, III, Douglas C. Giancoli, Prentice Hall, 2008.
Fundamentals of Physics, 6th Edition, D. Halliday, R. Resnick and J. Walker, John Wiley and Sons(2001).
Berkeley Physics Course Vol. 1-5, Tata McGraw Hill (2008).
Feynman Lectures in Physics, Vols. 1-3, Pearson, 2008.
Foundations of Electromagnetic Theory, 3rd edition, J.R. Reitz, F.J. Milford and R.W. Christy, Narosa (1979).

Course Number: PHM282, Course Title: APPLIED PHYSICS LAB.
Class: B.Tech., Status of the Course: MAJOR, Approved Since Session: 2012-13
Credits: 1, Periods (55 mins. each) per week: 3(L:3+T:1+P:0), Min. Periods/Sem.: 40
Based on Theory Course.

Course Number: EEM201, Course Title: COMPUTER CONCEPTS & C PROGRAMMING
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2015-16
Total Credits: 3, Periods (55 mts. each)/week: 3(L:3+T:0+P:0+S:0), Min.pds./sem: 39
UNIT 1 : COMPUTER SYSTEM ELEMENTS
Essential computer hardware- CPU, memory, input & output, storage, factors affecting processing speed; Software- system software, application software; Operating Systems; functions, features and examples of modern OS.
Problem Solving using Computer Programs: Concept of an algorithm, heuristics, Flowcharts and pseudo-code.
Programming Languages: Low level- machine and assemble language, assembler; High level languages- chief characteristics and examples, compilers and interpreters.

UNIT 2 : C LANGUAGE ELEMENTS, OPERATORS AND EXPRESSIONS
Preprocessor directives, identifiers and reserved words, fundamental data types and variables, storage classes (automatic, external, static and register), statements, standard input & output functions, general form of a C program.
Operators and Expressions: Arithmetic, logical and relational operators, unary operators, conditional operators, mixed operands and type conversion, Operator precedence and associativity.
UNIT 3 : Control Structure AND MODULAR PROGRAMMING
Control Structures: Conditions, selection: If statement, nested if-else statements, the switch statement, using break and default with switch; iteration: while, do-while and for statements, nesting in loops; using the break and continue statements.
Modular Programming: Defining and accessing function, functions prototypes, passing arguments to functions by value, recursion.
UNIT 4 : ARRAYS, STRUCTURES & UNIONS AND POINTERS: Array notation, declaring and referencing arrays, manipulation of array elements, multi-dimensional arrays.
Structures and Unions: Purpose of using structures, declaring and assigning structures, unions.
Pointers: Pointer fundamentals and pointer arithmetic, pointers and arrays, pointer references as function arguments, dynamic memory allocation.
UNIT 5 : FILE HANDLING AND STANDARD C-LIBRARY
Data Files: Introduction to files, basic operations to open, close, read and write to data files.
Standard C Library: The standard C library; Examples of functions including I/O- fopen, fread etc.; string handling functions, math functions like pow, sin etc. and other standard library functions.

SUGGESTED READINGS:
Byron S Gottfried: PROGRAMMING WITH C, 2nd Edition, Tata McGraw Hill.
Jeri R. Hanly and Elliot B. Koffman: PROBLEM SOLVING AND PROGRAM DESIGN WITH C, 6th
Edition, Pearson.
Peter Norton: INTRODUCTION TO COMPUTERS, Tata McGraw Hill.
Dennis P Curtin et. Al.: INFORMATION TECHNOLOGY THE BREAKING WAVE, Tata Mc Graw Hill.
Patvardhan C: INTRODUCTION TO COMPUTERS AND PROGRAMMING IN C, Khanna Book Publishing.
Rajaram V: FUNDAMENTALS OF COMPUTERS, Prentice Hall of India, New Delhi.

Course Number: EEM202, Course Title: BASIC ELECTRICAL ENGINEERING
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2004-05
Total Credits: 3, Periods (55 mts. each)/week: 4(L:3+T:1+P:0+S:0), Min.pds./sem: 39
UNIT 1: CIRCUIT ANALYSIS
Review of basic concepts of units, voltage, current, energy, etc. R, L, and C – their geometrical,electrical and energy view point. Ohm's law, KVL, KCL, Mesh Analysis and Nodal Analysis.
Thevenin's and Norton's Superposition theorem. Maximum Power Transfer Theorem. Star Deltaconversion.
UNIT 2: AC CIRCUITS
Principles of single phase and three phase generation (qualitative treatment only). Steady stateanalysis of RC, RL and RLC circuits for sinusoidal excitation. Phasor notation, RMS Values, PowerFactor. Resonance. Complex Power, active and reactive power. 3-phase (balanced & unbalanced)system.
UNIT 3: MAGNETIC CIRCUITS AND TRANSFORMERS
Ampere's Circuital law and Constant Flux Theorem. B-H curve, Magnetic circuit calculations.Hysteresis and Eddy Current losses. Transformers: construction emf-equation ratings phasordiagram on No-load and Full-load, e.g. circuits, Open circuits and short circuit test, efficiency andregulation operation of auto transformers.
UNIT 4: ELECTRICAL MACHINES
Classification, construction, emf and torque production. Characteristics of DC motors andgenerators, application. Induction motors: revolving magnetic field, principle of torque production,ratings, construction (squirel cage and would rotor) Torque speed characteristics. Application.

UNIT 5: ELECTRICAL MEASUREMENTS
PMMC meters, moving iron ammeter and voltmeter. Dynamometer wattmeter, AC energy meter.
Extension of instrument ranges.

SUGGESTED READING:
BASIC ELECTRICAL ENGINEERING: Kothari & Nagrath
HUGHES ELECTRICAL TECHNOLOGY: (Revised by) I Mckenzie, Smith
ELECTRICAL ENGINEERING FUNDAMENTALS: V Del Toro

Course Number: EGC281, Course Title: INDUSTRIAL VISITS
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2000-01
Total Credits: 1
The students visits various industries to get an exposure to the various operations,processes etc.in different types of industries.

Course Number: MEM201, Course Title: ENGINEERING THERMODYNAMICS
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session-2013-14
Total Credits: 3, Periods (55 mts. each)/week: 4(L:3+T:1+P:0+S:0), Min.pds./sem.: 39
UNIT 1
Basic Concepts and Definitions: System. Introduction and definition of thermodynamics; Dimensions and units, Microscopic and Macroscopic approaches; System, surroundings and universe, Concept of continuum, Control system boundary, control volume and control surface. Properties and state, Thermodynamic properties, Thermodynamic path, process and cycle, Thermodynamic equilibrium, Reversibility and irreversibility, Quasi static process, Energy and its forms, Work and hear. Gas laws, Idea gas, Specific Heats and their calculations. Zeroth Law of Thermodynamics: Zeroth law of thermodynamics, Temperature and its measurement, Temperature scales.
UNIT 2
First Law of Thermodynamics: Thermodynamic definition or work, Thermodynamic processes, Calculation of work in various processes and sign convention, Non-flow work and flow work, Joules' experiment, First law of thermodynamics, Internal energy and enthalpy, First law of thermodynamics applied to open systems, Steady flow systems and their analysis, Steady flow energy equation, Application of equation to Boiler, Condenser, Evaporator, Turbine, Nozzle, Compressor (Rotary & Reciprocating), Throttling process etc., Introduction to unsteady processes such as filling and evacuation of vessels with and without heat transfer, PMM-I.
UNIT 3
Second Law of Thermodynamics: Limitations of first law of thermodynamics, Devices converting heat to work, Thermal reservoir, Heat engines, Efficiency, Devices converting work to heat, Heat pump, refrigerator, Coefficient of Performance, Reversed heat engine, Kelvin's-Plank's statement of second law of thermodynamics, Clausius statement of second law of thermodynamics, Equivalence of two statements of second law of thermodynamics, Reversible and irreversible processes, Carnot cycle and Carnot engine, Carnot theorem and it's corollaries. Thermodynamic temperature scale, PMM-II.
Entropy: Clausius inequality, Concept of Entropy, Entropy change in different thermodynamic processes, Tds equation, Principle of entropy increase, T-S diagram, Statement of the third law of thermodynamics.
Availability and Irreversibility: Available and unavailable energy, Availability and Irreversibility, Second law efficiency.
UNIT 4
Properties of Steam: Pure substance, Property of steam, Triple point, Critical point, Sub-cooled liquid, Saturation states, Superheated states, Phase transformation process of water, Graphical representation of pressure, volume and temperature (P-V-T surfaces), P-T & P-V diagrams. T-S and H-S diagrams, use of property diagram. Steam-Tables & Mollier charts, Dryness fraction and its measurement.
UNIT 5

Real Gases: Deviation of real gases from ideal gases. Different forms of the equation of state. Reduced properties. Compressibility factors chart. Maxwell relations. Joule-Thomson coefficient, Clapeyron's equation.

Engines: Steam Engines- Constructional details and working.

Introduction of IC Engines: Otto and Diesel cycle (No numerical), Working of compression Ignition engines, spark Ignition engines, 2 stroke and 4 stroke engines, Theoretical & actual indicator diagrams and valve timing diagrams.

SUGGESTED READING:
Cengel & Boles: ENGINEERING THERMODYNAMICS, TMH
Sonntag: FUNDAMENTALS OF THERMODYNAMICS, Wiley India Pvt. Ltd.
Van Wylen: FUNDAMENTALS OF CLASSICAL THERMODYNAMICS, John Wiley & Sons.
J.P. Holman: THERMODYNAMICS, McGraw Hill.
P.K. Nag: ENGINEERING THERMODYNAMICS, TMH.
Onkar Singh: ENGINEERING THERMODYNAMICS, New Age International Publication.
R.K. Rajput: THERMAL ENGINEERING, Laxmi Publication.
C.P. Arora: ENGINEERING THERMODYNAMICS.

Course Number: MEM202, Course Title: ENGINEERING MECHANICS I

Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2000-01
Total Credits: 3, Periods (55 mts. each)/week: 4(L:3+T:1+P:0+S:0), Min.pds./sem: 52
UNIT 1: REVIEW
Vector. Unit vector. Components of a vector. SI units and their notations. Concurrent force system. Resultant & equilibrant.
GENERAL FORCE SYSTEM: Moments of a force and of a couple. Resultant of a coplanar force system. Single force equivalent. Resultant of a general force system. Wrench. Free body diagram. Equilibrium of a rigid body. Static indeterminacy.
UNIT 2: STRUCTURES
Trusses. Method of joints. Method of sections. Force analysis of frames and machines.
DISTRIBUTED FORCES: Gravitational forces. Surface loadings.
UNIT 3: STATICS OF LIQUIDS - Hydrostatic pressure. Centre of pressure. Bouyancy.
FRICTION: Dry friction. Systems involving sliding or tipping. Wedges. Square threaded screws. Belt friction.
UNIT 4: INTERNAL FORCES
Bending of beams. Differential relationships between rate of loading, Shear Force and BendingMoment. Beams and cantilevers. Shear force, bending moment and axial force diagrams forhorizontal beams with concentrated (vertical and inclined), uniformly distributed and uniformlyincreasing loads and moments. Inclined beams. Beams floating on water.
UNIT 5: VIRTUAL WORK
Principle of Virtual work Potential energy, Stability.
MOMENTS OF INERTIA: Area moments of inertia. Parallel axis theorem. Transformation of axes.

SUGGESTED READING:
Dayaratnam: STATICS
Ginsberg & Genin: STATICS
Shames: STATICS
Meriam: STATICS
Hibler: STATICS

Course Number: MEM203, Course Title: ENGINEERING DRAWING II

Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2000-01
Total Credits: 3, Periods (55 mts. each)/week: 3(L:0+T:0+P:3+S:0), Min.pds./sem: 39
UNIT 1: JOINTS
Rivets and Riveted Joints, Welded Joints and their Symbols, Bolts and Bolted Joints, Pins andCotters, Kuckle and Cotter Joints. Screw Threads, Screw and Screwed Fastenings. Pipes and PipeJoints.
UNIT 2: BEARINGS AND BRACKETS
Shafts, Pulleys, Keys, Shaft Couplings, Simple Bearings, Plummer Block, Wall, Bracket.

UNIT 3: STEAM ENGINE PARTS
Stuffing Box, Cross Head, Connecting Rod and Crank. Eccentric, Slide Valve. (Free Hand Sketchingof Various Parts Stated Above)
UNIT 4 & UNIT 5: GRAPHIC STATICS
Representation of Forces using Bow's Notation, Determination of Resultants and Reactions.Application To Coplanar Force Systems Including Frames and Beams. SF and BM Diagrams forBeams and Cantilevers with Concentrated and V.D. Loads. Use of Funicular Polygons.

SUGGESTED READING:
Laxminarayanan & Mathew: M/C DRAWING Vijayvergiya: M/C DRAWING
Sastry & Prasad: APP. MECHANICS Bhatt: MACHINE DRAWING
Perkinson: FIRST YEAR ENGG., DRAWING

Course Number: MEM204, Course Title: WORKSHOP PRACTICE II
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2000-01
Total Credits: 1.5, Periods (55 mts. each)/week: 3(L:0+T:0+P:3+S:0), Min.pds./sem: 39
MACHINE SHOP
Demonstration of different Machines & Operations: Lathe Machine, Milling Machine, Shaping Machine.
(a) Practice of different operations of Lathe Machine: (1) Facing (2) Tapper Turning (3) Plain Turning (4) Step Turning etc.
(b) Practice of making Vee-block on Shaping Machine on C.I. Casting.
(c) Practice of making different shapes from cylindrical rod on Milling Machine (1) Hexagonal (2) Square (3) Triangular & Practice of Indexing.
SMITHY SHOP
Demonstration of different tools of shop.
Practice of different operations of Smithy Shop-(1) Upsetting (2) Drawing Down (3) Setting Down (4) Bending (5) Revetting.
PATTERN SHOP
Demonstration of pattern shop tools.
Idea of different pattern allowances-(1) Contraction allowance (2) Draft allowance (3) Machining allowance (4) Rapping allowance (5) Distortion allowance.
Practice of a pattern of Vee-block by fixing allowances.

Course Number: FEM201, Course Title: ELEMENTARY LEATHER TECHNOLOGY
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2014-15
Total Credits: 3, Periods (55 mts. each)/week: 3(L:0+T:0+P:3+S:0), Min.pds./sem: 39
UNIT 1: INTRODUCTION TO LEATHER
Introduction about leather manufacturing, Raw, hides and skins structure composition of hides defects, flaying and curing, Different methods of Preservation of hides & skins, Visual inspection for defects in leather. Elementary knowledge about pre-tanning process like curing, soaking, liming, deliming and drenching, bating pickling, Degreasing.
UNIT 2: INTRODUCTION TO TANNING
Introduction about tanning, Classification and methods of tanning, syntans, their classification and uses, post tanning and finishing operations.
UNIT 3: TYPES OF LEATHER AND ITS REQUIREMENTS FOR FOOTWEAR
Types of finished leathers, common defects in finished leather, characteristics of leather required for the manufacturing of footwear
UNIT 4: PROPERTIES OF LEATHER
Inherent difference in fiber structure in different parts of hide and its influence in the cutting of footwear components, physical properties, Tensile strength, plasticity, elasticity, Thermostatic property and their bearing on foot and body comfort, tear Resistance, wet and dry rub resistance.
UNIT 5: SELECTION AND GRADES OF LEATHER

Common problems arising from insects and from micro-organisms in leather manufacture, Selection criteria for purchase of different types of leather, Assortment of leather into different grades.

SUGGESTED READINGS:
NIIR Board of Consultants & Engineers, Leather Processing & Tanning TechnologyHandbook, 2005
K.T.Sarkar. AJoy Sarkar, Theory and practice of leather Manufacture, Madras.
S.S.Dutta, Introduction to the principles of leather manufacture, Indian Leather TechnologistsAssociation Calcutta 1980.

Course: MAM281, Title: ENGINEERING MATHEMATICS II
Class: B. Tech., Status of Course: MAJOR COURSE, Approved since session: 2017-18
Total Credits: 3, Periods (55 mts. each)/week:3(L-3-0+P/S-0), Min pds./sem:39
UNIT 1: DIFFERENTIAL EQUATIONS
Equations of first order and first degree, Linear equations with constant coefficients, Equations offirst order but not of first degree, Singular solutions, Orthogonal trajectories.
UNIT 2: TOTAL DIFFERENTIAL EQUATIONS
Simultaneous and Total Differential Equations: Necessary and Sufficient conditions for integrabilityof the total differential equations, Solution by inspection, Regarding one variable as constant,Homogenous Total Differential Equations, Method of Auxiliary Equations.
UNIT 3: DIFFERENTIAL EQUATIONS OF SECOND ORDER
Ordinary Linear Differential Equations of Second Order: When one integral belonging to C.F. isknown, Method of Removal of the first derivative, Transformation of the equations by changing theindependent variable, Method of variation of parameters.
UNIT 4: PARTIAL DIFFERENTIAL EQUATIONS
Elementary partial differential equations of first order, Homogenous and non-homogenous partialdifferential equations with constant coeffcents, Solution for wave, heat conduction andtransmission equations.
UNIT 5: FOURIER SERIES
Dirichlet's conditions, Half range series, Harmonic analysis.

SUGGESTED READINGS:
Ray and Sharma : Differential Equations
Gorakh Prasad: Text Book of Differential Calculus
Chadda GC, Dwivedi D S and Tripathi S M: Text Book of Differential Calculus
Raddick and Millar: Advanced Mathematics for Engineers.

Course Number: ENH281, Course Title: ENGLISH II
Class: B.Tech., Status of Course: NF ANCILLARY COURSE, Approved since session: 2009-10
Total Credits: 3, Periods (55 mts. each)/week: 3(L:3+T:0+P:0+S:0), Min.pds./sem: 39
UNIT 1: Developing Narrative Skills, Situational Writings, and Consultation of Dictionary.
UNIT 2: Correction of Errors related to various parts of Speech.
UNIT 3: Various Concepts and How to express them (7-10 concepts to be covered).
UNIT 4: Vocabulary building process through various sources
UNIT 5: Commonly used Idioms and Phrases.

Course Number: HSH281, Course Title: HOUSEHOLD MANAGEMENT
Class: B.Tech., Status of Course: NF ANCILLARY COURSE, Approved since session: 1998-1999
Total Credits: 3, Periods (55 mts. each)/week: 3(L:3+T:0+P:0+S:0), Min.pds./sem.: 39
UNIT 1 [8 pds]
(a) Functions of food: (i) physiological (ii) social (iii) psychological (b) Food group prescribed by ICMR (c) Meal management for the family.
UNIT 2 [8 pds]
Functions sources, requirements and deficiency of: (a) Carbohydrates (b) Proteins (c) fats (d) vitamin A, D, E, K (e) B complex and vitamin C (f) Iron and calcium.
UNIT 3 [8 pds]

(a) Behaviour problems of childhood (b) Parent-Child relationship (c) Discipline (d)Immunization for the child.
UNIT 4 [8 pds]
(a) Process of decision making (b) Budget making (c) Stages of family life cycle.
UNIT 5 [7 pds]
(a) Selection of draperies and linen (b) Care and storage of garments dry cleaning.

SUGGESTED READINGS:
Moorthy Gayatri: FOOD AND NUTRITION   Hurlock EB: CHILD DEVELOPMENT
Devdas RP: A TEXTBOOK ON CHILD DEVELOPMENT Nickell & Dosey: A MANAGEMENT FOR FAMILY LIVING
Deulkar Durga: A GUIDE TO HOUSEHOLD TEXTILE AND LAUNDARY WORK

Course Number: MUH281, Course Title: SANGEET KRIYATMAK II
Class: B.Tech., Status of Course: NF ANCILLARY COURSE, Approved since session: 2015-16
Total Credits: 3, Periods (55 mts. each)/week: 3(L:0+T:0+P:3+S:0), Min.pds./sem.: 39
UNIT 1: Introduction to swar/Taal vadya-Baithak
UNIT 2: Sargam evam Alankar
UNIT 3: Playing/Singing of Dhun/Geet
UNIT 4: Playing/Singing of Prayer
UNIT 5: Playing/Singing of University Song

Course Number: SYH281, Course Title: SOCIOLOGY OF SCIENCE
Class: B.Tech., Status of Course: ANCILLARY COURSE, Approved since session: 2001-02
Total Credits: 3, Periods (55 mts. each)/week: 3(L-3+T-0+P/S-0), Min.pds./sem.: 39
UNIT 1 [7 pds]
Sociology & Social Engineering-Meaning, Nature and Scope.
UNIT 2 [9 pds]
Basic Concepts-Society, Community, Association, Institution, Social Groups: Meaning & Classification.
UNIT 3 [7 pds]
Concepts: (a) Social Ecology (b) Rural and Urban. Community: Concepts. Social Structure: Concepts.
UNIT 4 [7 pds]
Science & Technology and social change.
UNIT 5 [9 pds]
Society and Values: Meaning of Values, types of Values and their importance.

SUGGESTED READINGS:-
TB Bottomore: SOCIOLOGY   RM Maclver & CH Page: SOCIETY
AR Desai: RURAL SOCIOLOGY IN INDIA   CN Shankar Rao: SOCIOLOGY
Guha Ram Chandra (Ed.): SOCIAL ECOLOGY   Elliot & Merrill: SOCIAL DISORGANISATION
Sachadeva & V Bhushan: AN INTRODUCTION TO SOCIOLOGY

Course Number: ABH281, Course Title: PRINCIPLES OF ECONOMICS
Class: B.Tech., Status of Course: ANCILLARY COURSE, Approved since session: 2017-18
Total Credits:3, Periods(55 mts. each)/week:3(L-4+T-0+P/S-0), Min.pds./sem.:39
UNIT 1: INTRODUCTION [5 pds]
(a) Definition and Scope of Economics (b) Nature of Economic Laws.
UNIT 2: CONSUMPTION [9 pds]
(a) Meaning and Importance of Consumption (b) Characteristics and Classification of Wants (c)Utility, Concepts, Marshallian & Hicksian approach (d) Demand - Laws and Elasticity of Demand.
UNIT 3: PRODUCTION [9 pds]
(a) Meaning of Production, Factors of Production (b) Meaning, Characteristics and Efficiency ofFactors of Production (c) Malthusian and Optimum Theories of Population, Localisation of Industries(d) Laws of Return.
UNIT 4: EXCHANGE AND DISTRIBUTION [8 pds]

(a) Market-Meaning and Classification (b) Extent of Market (c) Price Equilibrium(elementary) (d)Concept and Theories of Distribution (elementary).
UNIT 5: PUBLIC FINANCE [8 pds]
(a) Definition Scope and Importance of Public Finance (b) Private and Public Finance (c) Tax Structure: An overview, Taxation in India (d) Budget-An overview, Budgetary process in India.

SUGGESTED READINGS:
KK Dewett: MODERN ECONOMIC THEORY
KPM Sundharam: TEXT BOOK OF ECONOMIC THEORY
HS Agrawal: PRINCIPLES OF ECONOMICS
DP Gautam: PRINCIPLES OF ECONOMICS
VC Sinha: PRINCIPLES OF ECONOMICS
Kotsoyiannis A: MODERN MICRO ECONOMICS

Course No.: ACH231/251/291/281, Course Title**: FUNDAMENTALS OF ACCOUNTING**
Class: B.Tech., Status of Course: NF Half Course, Since session: 2017-18
Total Credits:3, Periods(55 mts. each)/week:4(L-4+T-0+P/S-0), Min.pds./sem.:52
UNIT 1: OVERVIEW OF ACCOUNTING [12 pds]
Meaning, Objects and Importance of Accounting, Accounting Concepts & Conventions, Double Entry System.
UNIT 2: ACCOUNTING PROCESS I [10 pds]
Journal, Ledger, Trial Balance and Subsidiary Books.
UNIT 3: BANK RECONCILIATION STATEMENT, CAPITAL & REVENUE [10 pds]
Bank Reconciliation Statement, Capital and Revenue, Provisions and Reserves. Depreciation (Fixed Installment Method, Written Down Value Method)
UNIT 4: PREPARATION OF FINAL ACCOUNTS [10 pds]
Trading Account, Profit & Loss Account and Balance Sheet, Adjustments.
UNIT 5: FINAL ACCOUNTS WITH ADJUSTMENTS [10 pds]
Preparation of Final Accounts (with Adjustments)

SUGGESTED READINGS:
Batliboi JR: ADVANCED ACCOUNTS   Gupta RR: ADVANCED ACCOUNTANCY
Gupta SP & Arjun Das: ADVANCED ACCOUNTANCY   Shukla MC & Grewal TS: ADVANCED ACCOUNTS
Shukla SM: ADVANCED ACCOUNTANCY   Gupta RL: ADVANCED ACCOUNTS

Course Number: BBH281, Course Title: BUSINESS ORGANISATION
Class: B.A.(SS), Status of Course: ANCILLARY COURSE, Approved since session: 2015-16
Total Credits:3, Periods(55 mts. each)/week: 4(L-4+ T-O+P/S-O), Min.pds./sem.: 52
[SAME AS BBH101/BAH231/251/291]
UNIT 1: INTRODUCTION [10 pds]
Nature, Object, Meaning and Importance of Business Organisation. Social Responsibilities of Business. Functions of Business Organisation.
UNIT 2: FORMS OF BUSINESS ORGANISATION [10 pds]
Factors Determining the Forms of Business Organisation, Sole Proprietorship, Partnership.
UNIT 3: JOINT STOCK COMPANIES [15 pds]
Definition, Kinds, Formation, Management, Meetings & Winding up.
UNIT 4: ADVERTISING [10 pds]
Meaning, Object and Advertising Media, Importance of Advertisement and AdvertisementCopy.
UNIT 5: STOCK & PRODUCE EXCHANGES [7 pds]
Meaning, Functions, Importance and Control of Stock & Produce Exchanges.

SUGGESTED READINGS:
Bhushan YK: BUSINESS ORGANISATION & MANAGEMENT Shukla MC: BUSINESS ORGANISATION & MANAGEMENT
Sharlekar SA: MODERN BUSINESS ORGANISATION AND MANAGEMENT
Jagdish Prakash: BUSINESS ORGANISATION AND MANAGEMENT
Agarwal RC: BUSINESS ORGANISATION AND MANAGEMENT (HINDI)
Mehrotra HC & Gupta BS: BUSINESS ORGANISATION AND MANAGEMENT (HINDI)
Bhushan YK: BUSINESS ORGANISATION AND MANAGEMENT (HINDI) Gupta CB: BUSINESS ORGANISATION

Course Number: OMH201, Course Title: COMMUNICATION TECHNIQUES HINDI II
Class: B.Tech., Status of Course: ANCILLARY COURSE, Approved since session: 2009-10
Total Credits: 3, Periods (55 mts. each)/week: 3 (L-3+T-0+P/S-0), Min.pds./sem: 39
UNIT 1
UNIT 2
UNIT 3
UNIT 4
UNIT 5

Course Number: ZOH281, Course Title: BASICS OF NEUROSCIENCE
Class: B.Tech, Status of Course: N.F. ANCILLARY COURSE, Approvedsince session: 2016-17
Total Credits: 3, Periods(55 mts. each)/week: 3(L-3+T-0+P/S-0),Min.pds./sem.:39
UNIT 1: INTRODUCTION TO NEUROSCIENCE [7 pds]
(a) Historical perspectives of neuroscience (b) Neuroanatomy: Central Nervous System (CNS), Peripheral Nervous System (PNS), Autonomic Nervous System (ANS), Spinal cord.
UNIT 2: THE NERVOUS SYSTEM- AN INTRODUCTION [8 pds]
(a) Introduction to the structure and function of the nervous system; Cellular components: Neurons, Neuroglia (b) Neuron doctrine; The prototypical neuron- axons and dendrites as unique structural components of neurons (c) The ionic bases of resting membrane potential; The action potential, it's generation and properties (d) The action potential conduction.
UNIT 3: ION CHANNELS AND NEUROTRANSMITTERS [8 pds]
(a) Ion channels (b) Different types of neurotransmitters- catecholamines, amino acidergic and peptidergic neurotransmitters (c) transmitter gated channels; G-protein coupled receptors and effectors (d) Neurotransmitter receptors; Ionotropic and metabotropic receptors.
UNIT 4: CELLULAR AND MOLECULAR NEUROPHYSIOLOGY [8 pds]
(a) Molecular and cellular approaches used to study the CNS at the level of single molecules; Synapse: Synaptic transmission, types of dynapses, Synaptic function (b) Principles of chemical synaptic transmission (c) Principles of synaptic integration (d) EPSPs and IPSPs (e) Ion channels (f) Neural transmission.
UNIT 5: TECHNIQUES TO STUDY BRAIN [8 pds]
(a) Sensory systems (b) Molecular basis of behavior including learning and memory; Types of memory with reference to Artificial Intelligence (AI) (c) Neuroimaging techniques e.g. MRI, fMRI, PET scan and EEG (d) Molecular pathogenesis of pain (e) Neurodegenerative diseases e.g. Parkinson's, Alzheimers, Huntington's, psychological disorders and addiction.
SUGGESTED READINGS:
Dale Purves et al: NEUROSCIENCE. 5th Ed (2012). Sinauer Associates Inc.
Eric R. Kandel et al: PRINCIPLES OF NEURAL SCIENCE. 5th Ed (2012). Elsevier
Scanlon & Tina Sander. ESSENTIALS OF ANATOMY AND PHYSIOLOGY. 5th Ed (2012). F.A. Davis Company
Frank Amthor. NEUROBIOLOGY FOR DUMMIES. 1st Ed (2014). For Dummies, A Wiley Brand

Course No.GKC281, Title: SC.METH. G.K. & CURRENT AFFAIRS II
Class: B.Tech., Status: Core Course, Approved since session: 2004-05
Total Credits: 1, Periods(55 mts. each)/week:1(L-1+ T -O+P/S-O), Min.pds./sem. :13
UNIT 1: POLITICAL SCIENCE-INDIA
Constitution-preamble, citizenship, fundamental, rights, Distribution of powers, General elections, Mode of amendments, Some important amendments, President, Prime Minister and their tenure, salary, powers etc., Defence Forces and Awards.
UNIT 2: POLITICAL SCIENCE
INDIA-Important Indian Political Parties and their symbols, Important Indian Newspapers. WORLD-United Nations Organisation - its main organs, specialised agencies of UNO, major blocks, treaties, alliances, conferences and associations.
UINT 3: ECONOMICS-INDIA
Some basic economic facts, Five Year Plans, Industrial developments, Principal industries, Industrial Financial Institutions.
UNIT 4: ECONOMICS-WORLD

Important internationals monetary organisations, Currencies of different countries, Glossary of economic terms.
UNIT 5: ENVIRONMENTAL STUDIES-ECO SYSTEM & BIODIVERSITY
(a) Ecosystem - Concept, Structure and Function, Energy Flow in the Ecosystem, Food Chain, Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem (b) Biodiversity and its Conservation - Introduction, genetic species and Ecosystem Diversity, Value of Bio-diversity, India as a Mega-Diversity Nation, Hot-spots of Biodiversity, Threats to Biodiversity, Endangered and Endemic Species in India, Conservation of Biodiversity.
SUGGESTED READING:

NCERT: TEXT BOOKS ON HISTORY, GEOGRAPHY, CIVICS	MANORAMA YEAR BOOK
MR Agarwal: GENERAL KNOWLEDGE DIGEST	NEWS PAPAERS AND MAGAZINES:
HINDI & ENGLISH DAILY NEWS PAPERS	INDIA TODAY
COMPETITION MASTER	SPORTS STAR
COMPETITION SUCCESS REVIEWS	YOJNA

Course Number: RDC281, Course Title: AGRICULTURAL OPERATIONS II
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2000-01
Total Credits: 1, Periods (55 mts. each)/week: 2(L:0+T:0+P:2+S:0), Min.pds./sem: 26
For B.Tech. Agricultural Engineering
1. Soil science: Soil genesis and classification - Nature and origin of soil; soil forming rocks and minerals, their classification and composition, soil forming processes, classification of soils – soil taxonomy orders, Important soil physical properties; and their importance; soil particle distribution. Soil colloids– their composition, properties and origin of charge;
ion exchange in soil and nutrient availability, Soil organic matter – its composition and decomposition, effect on soil fertility, Soil reaction – acidic, saline and sodic soils; quality or irrigation water; essential plants nutrients – their functions and deficiency symptoms in plants; important inorganic fertilizers and their reactions in soils, Use of saline and sodic water for crop production, Gypsum requirement for reclamation of sodic soils and neutralising RSC; Liquid fertilizers and their solubility and compatibility.
2. Different types of crops and crop classification according to different seasons.
3. Irrigation. Different methods.
4. Weed classification and control.
5. Pesticides and pest control.
For B.Tech. Civil, Elecrical, Mechanical Engineering and Footwear Technology
Different types of crops and crop classification according to different seasons.
Irrigation. Different methods.
Weed classification and control.
Pesticides and pest control.

Course Number: RDC282, Course Title: SOCIAL SERVICE
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2000-01
Total Credits: 1, Periods (55 mts. each)/week: 2(L:2+T:0+P:0+S:0), Min.pds./sem: 26
The students are exposed to social service and youth activities in and around the campus to inculcate social upliftment through dignity of labour and moral values.

Course Number: CAC281, Course Title: CO-CURRICULAR ACTIVITIES
Class: B.Tech., Status of Course: MAJOR COURSE, Approved since session: 2000-01
Total Credits: 1, Periods (55 mts. each)/week: 2(L:0+T:0+P:2+S:0), Min.pds./sem: 26
Participation by the students in sports and games, literary, social, cultural and professionalactivities is compulsory. The proficiency attained in them is evaluated every year and counted in the assessment of the overall performance of the student to encourage a balanced and all-round development of their personality.

Course No.: ESC281 Course Title: ENVIRONMENTAL STUDIES
Class: B.Tech., Status of Course: CORE COURSE, Approved since session: 2018-19
Total Credits:2, Periods(55 mts. each)/week:2(L-2+T-0+P/S-0), Min.pds./sem.:26
UNIT 1: INTRODUCTION TO NATURAL RESOURCES
Introduction to natural resources (soil, water, air, flora and fauna).

UNIT 2: ECOSYSTEMS

Structure and function of an ecosystem. Different types of ecosystems (Forest, Grassland, Desert, Aquatic etc.), Ecological succession , Food chain, Food Webs, Ecological pyramids.

UNIT 3: BIODIVERSITY AND ITS CONSERVATION

Value of biodiversity. India as a mega-biodiversity Nation. Threats to biodiversity. Methods of conservation of biodiversity.

UNIT 4: DEGRADATION OF NATURAL RESOURCES

Overexploitation, soil, water and air pollution, waste generation. Remediation and management of degraded soil.

UNIT 5: ENVIRONMENT AND SOCIAL ISSUES

Environmental ethics. Human population and Environment and Human health Status report on environmental issues related to natural resource management and socio-economic conditions.

SUGGESTED READINGS:

Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380013, India

Heywood, V. H & Watson, R. T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press1140p.

Jadhav, H & Bhosale, V. M. 1995. Environmental Science Protection and Laws. Himalaya Pub.House, Delhi 284 p.

Odum, E. P. 1971. Fundamentals of Ecology. W. B. Saunders Co. USA, 574p

Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science

Wanger K. D., 1998 Environmental Management. W. B. Saunders Co. Philadelphia, USA 499 p.