



SWAMI DAYANANDA

COLLEGE OF ARTS & SCIENCE

Affiliated to Bharathidasan University, Tiruchirappalli.

UGC Recognized u/s 2(f) & 12 (B)

Dayananda campus, Manjakkudi – 612 610. Tamilnadu, India.

HAND BOOK

DEPARTMENT OF PHYSICS

INDEX

Sl. No	Particulars	Remarks
1.	DEPARTMENT PROFILE	
2.	SYLLABUS (CBCS)	
3.	CODE OF CONDUCT	

Profile of B.Sc., (Physics)

Bachelor of Science in Physics or BSc Physics is a 3 year undergraduate course, which deals with the nuances of Physics and its various properties. The curriculum is divided into 6 semesters, spanning over three years. It includes the specialized scientific study of Physics, Mathematics, and Chemistry in detail.

- Bachelor of Science in Physics or BSc Physics course provides foundation knowledge for a science-based career.
- It deals with developing scientific skills and creative thinking skills amongst the students and the power. It provides a deeper understanding of the fundamentals of Physics and mathematical concepts, through various theory subjects and practical sessions.
- Some of the BSc Physics subjects such as Thermodynamics, Force, Friction, Harmonic Motion, Inertia, velocity, electricity, etc are directly related to real-life learning and are learned through physics practical's.

Upon successful completion of the Bachelor of Science in Physics, any graduate student may opt for a Higher degree like M.Sc Physics, M.Phil Physics, M.Sc. Applied Physics, M.Sc.+ PhD (Physics and Astrophysics) or MBA. They may also pursue a career in the fields of Teaching, R&D, Aerospace, manufacturing, engineering, and more.

Career & Jobs

- The different roles of employment that are explored by BSc Physics graduates are:
- Physics Home Tutor
- Assistant Professor
- Physics Degree Lecturer
- Associate Auditor
- Proofreader
- Radiologist
- Statistician



Sem	Part	Course	Title	Inst. Hours/ Week	Credit	Exam Hours	Marks		Total
							Int	Ext	
I	I	Language Course-I (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course - I (ELC)		6	3	3	25	75	100
	III	Core Course-I (CC)	Properties of Matter and Acoustics	6	6	3	25	75	100
		Core Practical – I (CP)	Practical I	3	-	-	-	-	-
		First Allied Course-I (AC)		4	4	3	25	75	100
		First Allied Course-II (AC)		3	-	-	-	-	-
	IV	Value Education	Value Education	2	2	3	25	75	100
	Total			30	18				500
II	I	Language Course-II (LC)- Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course-II (ELC)		6	3	3	25	75	100
	III	Core Course-II (CC)	Mechanics	6	6	3	25	75	100
		Core Practical – I (CP)	Practical I	3	3	3	40	60	100
		First Allied Course-II (AC)		3	3	3	25	75	100
		First Allied Course-III (AC)		4	2	3	25	75	100
	IV	Environmental Studies	Environmental Studies	2	2	3	25	75	100
	Total			30	22				700
III	I	Language Course – III (LC)-Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course-III (ELC)		6	3	3	25	75	100
	III	Core Course – III (CC)	Thermal Physics	6	6	3	25	75	100
		Core Practical – II (CP)	Practical II	3	-	-	-	-	-
		Second Allied Course – I (AC)		4	4	3	25	75	100
		Second Allied Course-II (AP)		3	-	-	-	-	-
	IV	Non Major Elective I - for those who studied Tamil under Part-I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Energy Physics	2	2	3	25	75	100
	Total			30	18				500

IV	I	Language Course –IV (LC) - Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course – IV (ELC)		6	3	3	25	75	100
	III	Core Course – IV (CC)	Electricity, Magnetism and Electro Magnetism	5	5	3	25	75	100
		Core Practical – II (CP)	Practical II	3	3	3	40	60	100
		Second Allied Course - II (AP)		3	3	3	40	60	100
		Second Allied Course - III		3	2	3	25	75	100
	IV	Non Major Elective II-for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Laser Physics	2	2	3	25	75	100
		Skill Based Elective - I	Skill Based Elective - I	2	2	3	25	75	100
Total				30	23				800
V	III	Core Course – V (CC)	Optics	5	5	3	25	75	100
		Core Course – VI (CC)	Atomic and Molecular Physics	5	5	3	25	75	100
		Core Course – VII (CC)	Electronics	6	5	3	25	75	100
		Core Practical – III (CP)	Practical III	3	3	3	40	60	100
		Major Based Elective – I	Material Science	5	5	3	25	75	100
	IV	Skill Based Elective – II	Skill Based Elective - II	2	2	3	25	75	100
		Skill Based Elective – III	Skill Based Elective - III	2	2	3	25	75	100
		Soft Skills Development	Soft Skills Development	2	2	3	25	75	100
Total				30	29				800
VI	III	Core Course – VIII (CC)	Nuclear Physics	6	6	3	25	75	100
		Core Course – IX (CC)	Theoretical Physics	6	6	3	25	75	100
		Core Practical – IV (CP)	Practical IV	5	4	3	40	60	100
		Major Based Elective II	Microprocessor and ‘C’ Programming	6	6	3	25	75	100
		Major Based Elective III	Communication Physics	6	6	3	25	75	100
	V	Extension Activities	Extension Activities	-	1	-	-	-	-
		Gender Studies	Gender Studies	1	1	3	25	75	100
	Total				30	30			
Grand Total				180	140				3900

List of Allied Courses

Allied Course I

Mathematics

Language Part – I	-	4
English Part –II	-	4
Core Paper	-	9
Core Practical	-	4
Allied Paper	-	5
Allied Practical	-	1

Allied Course II

Chemistry / Computer Science

Non-Major Elective	-	2	
Skill Based Elective	-	3	
Major Based Elective	-	3	
Environmental Studies	-	1	
Value Education	-	1	
Soft Skill Development	-	1	
Gender Studies	-	1	
Extension Activities	-	1	(Credit only)

* for those who studied Tamil upto 10th +2 (Regular Stream)

+ Syllabus for other Languages should be on par with Tamil at degree level

those who studied Tamil upto 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV

** Extension Activities shall be out side instruction hours

Non Major Elective I & II – for those who studied Tamil under Part I

- a) Basic Tamil I & II for other language students
- b) Special Tamil I & II for those who studied Tamil upto 10th or +2 but opt for other languages in degree programme

Note:

	Internal Marks	External Marks
1. Theory	25	75
2. Practical	40	60
3. Separate passing minimum is prescribed for Internal and External marks		

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]
The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]
The passing minimum for University Examinations **shall be 40% out of 60 marks** [i.e. 24 marks]

CORE COURSE I

PROPERTIES OF MATTER AND ACOUSTICS

Objective:

To identify the characteristics of matter in terms their properties and to know the basic principles of acoustics.

UNIT I Elasticity

Hooke's law – Stress-Strain diagram – Factors affecting elasticity- Different moduli of elasticity - Relation between the elastic moduli – Poisson's ratio -- Twisting couple on a cylinder – Determination of rigidity modulus by static torsion – Work done in twisting a wire -Torsional oscillations of a body-Torsion pendulum - Determination of rigidity modulus and moment of inertia.

UNIT II Bending of Beams

Bending of beams - Expression for bending moment – Cantilever – Expression for depression of the loaded end of a cantilever — Young's modulus by measuring the tilt in a loaded cantilever – Oscillation of a cantilever - Non-uniform bending – Expression for depression- Uniform bending – Expression for elevation –Experimental determination of Young's modulus using pin and microscope method (Non-uniform bending – Uniform bending) - Determination of Young's modulus by Koenig's method.

UNIT III Surface Tension

Definition – Molecular forces – Explanation of surface tension on kinetic theory – Surface energy – Work done on increasing the area of a surface - Angle of contact - Neumann's triangle- Excess pressure inside a liquid drop and soap bubble - Excess pressure inside a curved liquid surface - Force between two plates separated by a thin layer of a liquid - Experimental determination of surface tension - Jaegar's method - Drop- weight method - Capillary rise method - Variation of surface tension with temperature.

UNIT IV Viscosity

Newton's law of viscous flow – streamlined and turbulent motion – Reynold's number - Poiseuille's formula for the flow of a liquid through a horizontal capillary tube – Experimental determination of co-efficient of a liquid by Poiseuille's method - Ostwald's viscometer – Terminal velocity and Stokes' formula - Viscosity of gases – Meyer's formula - Rankine's method - Variation of viscosity with temperature and pressure - Lubrication.

Equation of continuity of flow – Euler's equation for unidirectional flow - Bernoulli's theorem – Filter pump and Wings of aeroplane - Torricelli's theorem - Pitot tube.

UNIT V Acoustics

Newton's Formula for velocity of sound –Effect of Temperature, Pressure, Humidity , Density of medium and Wind - Musical Sound and Noise – Speech- Characteristics of Musical sound – Intensity of sound – Measurement of intensity of sound :Decibel and Phon- Bel.

Reverberation – Sabine's Reverberation formula – Factors Affecting the Acoustics of Buildings – Sound distribution in an Auditorium – Requisites for good acoustics – Ultrasonics – Production and detection – Medical applications of Ultrasonic waves – Acoustic Grating.

Books for Study:

1. R. Murugesan, *Properties of matter*, S. Chand & Co. Pvt. Ltd., Revised edition, 2012.
2. D.S. Mathur, *Elements of Properties of matter*, S. Chand & Co. Pvt.Ltd., Revised edition, 2010
3. Brijlal & N. Subramanyam, *Properties of matter*, Vikas Publishng. Pvt. Ltd, 2005.
4. Brijlal & N. Subramanyam, 'A Text Book of Sound', Vikas Publishing. Pvt. Ltd, 2008.

Books for Reference:

1. Feynman, *Lectures on Physics*. Vol. I & II by Richard P. Feynman, The New Millennium Edition, 2012.
2. David Halliday and Robert Resnick, *Fundamentals of Physics* by Wiley Plus., 2013.
3. B.H. Flowers and E. Mendoza, *Properties of matter*, Wiley Plus, 1991.
4. H.R. Gulati, *Fundamentals of General properties of matter*, S. Chand & Co. Pvt. Ltd, 2012.
5. Chatterjee and Sen Gupta, *A treatise on general properties of matter*, New central Books agency (p) Ltd, Kolkata, 2001.
6. R.L. Saihgal, *A Text Book of Sound*, S. Chand & Co. Pvt. Ltd, New Delhi, 1979.

CORE PRACTICAL I

(Any Twelve Experiments)

Objective:

To motivate and educate the students to acquire skill in physics Experiments.

1. Measurements of length (or diameter) using Vernier calipers, Screw gauge and Travelling microscope.
2. Non uniform bending - Pin & Microscope Method.
3. Cantilever depression—Scale and Telescope Method.
4. Surface Tension, Interfacial Surface Tension – Drop weight Method.
5. Surface Tension by Capillary rise method
6. Joule's Calorimeter - determination of Specific heat capacity of liquid.
7. Compound pendulum - g & k determination.
8. Specific heat capacity of liquid - Newton's law of cooling.
9. Coefficient of viscosity of liquid—Poiseuille's flow method.
10. Spectrometer - determination of μ of a solid prism.
11. P.O box – determination of Temperature coefficient.
12. Meter bridge - Specific resistance determination.
13. Comparison of Viscosities of two liquids – Ostwald's Viscometer/ HARE's apparatus
14. Long focus convex lens - f , R , refractive index-determination.
15. Concave lens – Focal length determination.
16. Determination of the Elastic Constants of a Wire by Searle's method.
17. Determine the frequency of a given tuning fork – Sonometer.

Books for Study :

1. Dr. S. Somasundaram, *Practical Physics*, Apsara publications, Tiruchirapalli, 2012.
2. Department of Physics, *Practical Physics*, (B.Sc. Physics Main), St. Joseph's College, Tiruchirapalli 1998.

Books for Reference:

1. S. Srinivasan, *A Text Book of Practical physics*, S. Sultan Chand publications. 2005
2. R. Sasikumar, *Practical Physics*, PHI Learning Pvt. Ltd, New Delhi, 2011.

CORE COURSE II

MECHANICS

Objective:

An attempt is made to give a better insight of the change of position of any physical object or event and their consequences.

UNIT I Projectile, Impulse and Impact

Projectile - particle projected in any direction - Path of a projectile is a parabola - Range of a projectile on plane inclined to the horizontal - Maximum range on the inclined plane - Impulse of a force - Laws of impact - Direct impact between two smooth spheres - oblique impact between two smooth spheres - Impact of a smooth sphere on a smooth fixed horizontal plane - Loss of KE due to direct impact - Oblique impact.

UNIT II Motion on a plane curve

Centripetal and centrifugal forces - Hodograph - Expression for normal acceleration - Motion of a cyclist along a curved path - Motion of a railway carriage round a curved track- upsetting of a carriage - Motion of a carriage on a banked up curve - Effect of earth's rotation on the value of the acceleration due to gravity - Variation of 'g' with altitude, latitude and depth.

UNIT III Gravitation

Newton's law of gravitation - Mass and density of earth - Inertial and Gravitation mass - Determination of G-Boy's experiment -Kepler's Laws of planetary motion -Deduction of Newton's law of gravitation from Kepler's Law - Gravitation - Field - potential -Intensity of Gravitational field - gravitational potential due to a point mass - Equipotential surface - Gravitational potential and field due to a spherical shell and solid sphere - Escape velocity -Orbital velocity.

UNIT IV Dynamics of rigid body and Friction

Moment of Inertia - Kinetic energy and angular momentum of rotating body - Theorems of perpendicular and parallel axes - Acceleration of a body rolling down an inclined plane without slipping - Oscillations of a small sphere on a large concave smooth surface - Compound pendulum - Centre of suspension and centre of oscillation - Centre of percussion - Minimum period of a compound pendulum - Kater's pendulum.

Friction - Laws of friction - Resultant reaction - Angle and cone of friction - Equilibrium of a body on a rough plane inclined to the horizontal - The friction clutch.

UNIT V Centre of gravity, Centre of Pressure, Floating bodies, Atmospheric pressure

Centre of gravity of a body - Centre of gravity of a trapezoidal lamina - C.G. of a solid hemisphere - C.G. of a solid tetrahedron - C.G. of a solid cone.

Centre of pressure - rectangular lamina - triangular lamina - triangular lamina immersed in a liquid.

Conditions of equilibrium of a floating body - Stability of equilibrium of a floating body - Metacentre - Experimental determination of a metacentric height of a ship.

The barometer - Fortin's barometer - Correction for a barometer - Faulty barometer - Variation of atmospheric pressure with altitude.

Books for study:

1. M. Narayanamurthi and N. Nagarathinam, *Dynamics*, The National Publishing Company 2005, Chennai.
2. M. Narayanamurthi and N. Nagarathinam, *Statics, Hydrostatics and Hydrodynamics* - The National Publishing Company 2005, Chennai.

Books for reference:

1. R. Murugesan, *Mechanics and Mathematical Physics*, S. Chand & Company Ltd., New Delhi, 2008.
2. D.S. Mathur, *Mechanics*, S. Chand & Company Ltd., New Delhi - 1990.

CORE COURSE III
THERMAL PHYSICS

Objective :

To understand the phenomena connected with heat as radiation, conduction, different thermal capacities of substances and the converse process of making heat to do mechanical work.

UNIT I Specific Heat

Specific heat of solids – Method of mixtures – radiation correction – Dulong and Petit's law - Quantum theory - Einstein's theory of specific heat – Debye's theory of specific heat– Specific heat of liquids – Newton's law of cooling - Specific heat of gases – Mayer's Relation – Quantization of various contributions to energy of diatomic molecules – Specific heat of diatomic gases.

UNIT II Conduction.

Coefficient of Thermal Conductivity - Rectilinear Flow of Heat along a Bar - Thermal conductivity of good conductors - Lee's method for metals - Forbe's method to find K – Lee's disc method for Bad Conductors – Heat Flow Through a Compound wall – Accretion of Ice on Ponds – Wiedemann-Franz law – Practical applications of conduction of heat.

UNIT III Radiation

Radiation – Stefan's law - Deduction of Newton's law from Stefan's law – Boltzmann's law – Black body radiation – Wein's law – Rayleigh-Jean's law – Planck's law – Angstrom Pyrheliometer – Solar constant – Surface temperature of sun - Sources of solar energy – Photo voltaic cell – Greenhouse effect.

UNIT IV Low Temperature

Joule – Thomson's effect – Porous plug experiment – Liquefaction of gases –Linde's method – Liquefaction of hydrogen - Adiabatic demagnetization – Liquefaction of He – Practical applications of low temperature – Refrigerating mechanism – Air conditioning mechanism – solid carbon dioxide(dry ice).

UNIT V Thermodynamics

Zeroth law of thermodynamics – First law of thermodynamics – Heat engines – Reversible and irreversible process - Carnot's theorem – Second law of thermodynamics - Thermodynamic Scale of temperature – Entropy – Change of entropy in reversible and irreversible processes – Temperature – entropy diagram (T.S) – Law of increase of entropy – Maxwell's thermo dynamical relations – Clausius' - Claypeyron's latent heat equations.

Books for Study:

1. Brijlaland Subramaniam, *Heat and Thermodynamics*, S. Chand &Co., 2001.
2. J. B. Rajamand C. L Arora, *Heat and Thermodynamics*, S. Chand & Co.1983.
3. Brijlaland Subramaniam, *Heat and Thermodynamics & Statistical physics*, S. Chand & Co. 2015.

Books for Reference:

1. M. Narayanamoorthy and N. Nagarathinam, *Heat*, National publishing Co, Chennai, Eight edition, 1987.
2. D.S. Mathur, *Heat and Thermodynamics*, S. Chand & Co. 2014.

CORE PRACTICAL II

(Any Twelve Experiments)

Objective:

To enhance the knowledge in experimental physics.

1. Uniform bending –Pin and Microscope.
2. Static Torsion -Determination of Rigidity modulus (n).
3. Torsional Pendulum – Rigidity modulus (n) and moment of inertia (I).
4. Stoke's method - Viscosity of highly viscous liquid.
5. Coefficient of viscosity of highly viscous liquid –Searle's viscometer method.
6. Emissive power of a surface - Spherical calorimeter.
7. Thermal conductivity of a bad conductor -Lee's disc method.
8. Carey Foster's Bridge –specific resistance determination.
9. Potentiometer - Ammeter calibration.
10. Potentiometer - Voltmeter calibration - low range.
11. Potentiometer - determination of resistance.
12. Figure of merit of a mirror Galvanometer.
13. Spectrometer -Determination μ of a liquid.
14. Spectrometer- Grating--normal incidence method.
15. Air Wedge - determination of Thickness of a thin wire.
16. High resistance by leakage – Using BG.
17. Characteristics of Junction and Zener diodes.

Books for Study :

- 1 Dr. S. Somasundaram, *Practical Physics*, Apsara publications, Tiruchirapalli, 2012.
- 2 Department of Physics, *Practical Physics*, (B.Sc. Physics Main), St. Joseph's College, Tiruchirapalli 1998.

Books for Reference:

1. S. Srinivasan, *A Text Book of Practical physics*, S. Sultan Chand publications, 2005.
2. R. Sasikumar, *Practical Physics*, PHI Learning Pvt. Ltd, New Delhi, 2011.

NON-MAJOR ELECTIVE I

ENERGY PHYSICS

Objective:

To make the students to understand the present day crisis of need for conserving energy and alternatives are provided.

UNIT I Conventional Energy Sources

World reserve- Commercial energy sources and their availability – Various forms of energy – Renewable and Conventional energy system – comparison – Coal, oil and natural gas – applications – Merits and Demerits.

UNIT II Solar energy

Renewable energy sources – Solar energy – nature and Solar radiation – components – Solar heaters – Crop dryers – Solar cookers – Water desalination (block diagram) -Photovoltaic generation – merits and demerits.

UNIT III Biomass energy fundamentals:

Biomass energy – classification – Photosynthesis – Biomass conversion process

UNIT IV Biomass Utilization

Gobar gas plants – Wood gasification – advantage & disadvantages of biomass as energy source

UNIT V Other forms of energy sources

Geothermal energy – Wind energy – Ocean thermal energy conversion – Energy from waves and tides (basic ideas).

Books for study:

1. D.P. Kothari, K.C. Singal & Rakesh Ranjan, *Renewable energy sources and emerging Technologies*, Prentice Hall of India Pvt. Ltd., New Delhi (2008).
2. Suhas P Sukhatme, *Solar energy -- Principles of thermal collection and storage*, Tata McGraw-Hill Publishing company, New Delhi, Second edition, 2012.

Books for References:

1. S.A. Abbasi and Nasema Abbasi, *Renewable Energy sources and their environmental impact*, PHI Learning Pvt. Ltd., New Delhi (2008).

CORE COURSE IV
ELECTRICITY, MAGNETISM AND ELECTROMAGNETISM

Objective:

This course provides an in depth coverage of behaviour of stationary electric charges, electricity, magnetism and how they are connected.

UNIT I Electrostatics

Coulomb's Law – Gauss's Law and its applications (Electric Field due to a uniformly charged sphere, hollow cylinder & solid cylinder)– Electric Potential – Potential at a point due to a uniformly charged conducting sphere – Principle of a capacitor– Capacity of a spherical and cylindrical capacitors – Energy stored in a charged capacitor–Loss of energy on sharing of charges between two capacitors.

UNIT II Current Electricity

Ampere's circuital law and its applications -Field along the axis of a circular coil and Solenoid–Theory of Ballistic Galvanometer –Figure of merit– Damping Correction– Kirchhoff's Laws of Electricity –Wheatstone's Bridge–Carey Foster's Bridge–Potentiometer– Calibration of Ammeter – Calibration of Voltmeter (Low range and High range) – Comparison of Resistances.

UNIT III Electromagnetic Induction

Laws of electromagnetic induction– Self and mutual induction– Self-inductance of a solenoid– Mutual inductance of a pair of solenoids–Coefficient of coupling– Experimental determination of self (Rayleigh's method) and mutual inductance– Growth and decay of current in a circuit containing L and R–Growth and decay of charge in a circuit containing C and R– Measurement of High resistance by leakage.

UNIT IV AC Circuits

Alternating EMF applied to series circuits containing LC, LR and CR– Alternating EMF applied to circuits containing L, C and R–Series and Parallel resonance circuits– Sharpness of resonance–Q factor– Comparison between Series and Parallel resonant circuits –Power in AC circuits (R, L-R, L-C-R only) – Power factor– Wattless current – Choke Coil – Transformer – Uses of Transformers – Skin Effect.

UNIT V Magnetism

Intensity of Magnetization– Magnetic Susceptibility– Magnetic Permeability – Types of magnetic materials– Properties of para, dia and ferromagnetic materials– Langevin's theory of dia and para magnetism– Weiss's theory of ferromagnetism – B-H curve–Energy loss due to magnetic hysteresis – Ballistic Galvanometer method for plotting B-H curve - Magnetic properties of iron and steel.

Books for Study:

1. BrijLal and N. Subrahmanyam, *A Text Book of Electricity and Magnetism*, Ratan Prakashan Mandir Educational & University Publishers, New Deihi, 2000.
2. R. Murugesan, *Electricity and Magnetism*, S. Chand & Company Pvt. Ltd., New Delhi – 2015

Books for Reference:

1. D. L. Sehgal, K. L. Chopra and N. K. Sehgal, *Electricity and Magnetism*, S. Chand & Sons. New Delhi. 1996.

NON MAJOR ELECTIVE II

LASER PHYSICS

Objective:

To introduce the physical and engineering principles of laser operation and their applications.

UNIT I Fundamentals of LASER

Spontaneous emission – Stimulated emission – Meta stable state – Population inversion – Pumping – Laser Characteristics

UNIT II Production of LASER

Helium – Neon Laser – Ruby Laser – CO₂ Laser – Semiconductor Laser

UNIT III Industrial Applications of LASER

Laser cutting – Welding – Drilling – Hologram – Recording and reconstruction of hologram

UNIT IV Lasers in Medicine

Lasers in Surgery – Lasers in ophthalmology – Lasers in cancer treatment

UNIT V Lasers in Communication

Optic fibre communication – Total internal reflection – Block diagram of fibre optic communication system – Advantages of fibre optic communication.

Books for study:

1. N. Avadhanulu , *An introduction to LASERS*, S. Chand & Company, 2001.

Books for References:

1. William T. Silfvast, *Laser fundamentals*, University Press, Published in South Asia by Foundation books, New Delhi, 1998.
2. K. Thyagarajan and A.K. Ghatak, *LASER Theory and Application*, Mc Millan, India Ltd, 1984.

CORE COURSE V

OPTICS

Objective :

To familiarize the fundamental laws concerning reflection, refraction, interference, diffraction, polarization, spectrum and allied phenomena.

UNIT I Geometrical optics

Spherical aberration - Spherical aberration of a thin and thick lens - Methods of reducing Spherical aberration - Coma - Aplanatic surface - Astigmatism - Curvature of the field - Meniscus lens - Distortion - Chromatic aberration - Chromatic aberration in a lens - Circle of least Chromatic aberration - Achromatic lenses.

UNIT II Interference

Air wedge - Newton's rings - Haidinger's fringes - Brewster's fringes - Michelson Interferometer and its applications - Fabry- Perot Interferometer - Interference filter - Stationary waves in light - Colour photography (qualitatively) - Holography - Construction and reconstruction of a hologram - Applications.

UNIT III Diffraction

Fresnel's diffraction - Diffraction at a (1) circular aperture (2) Straight edge (3) narrow wire - Fraunhofer diffraction at a single slit - Double slit - Missing orders in a Double slit, Diffraction pattern - Grating (theory) - Oblique incidence - Overlapping of spectral lines - Resolving power - Rayleigh's criterion of resolution- Resolving power of a Telescope and Grating - Dispersive power and resolving power of a grating.

UNIT IV Polarization

Nicol prism - Nicol prism as an analyzer and polarizer - Huygens's explanation of Double refraction in uniaxial crystals - Double Image polarizing prisms - Elliptical and Circularly polarized light - Production and detection - Quarter wave and half wave plates - Babinet's compensator - Optical activity - Fresnel's explanation of optical activity - Laurent's Half shade polarimeter.

UNIT V Optical Instruments

Microscopes - Simple Microscope (Magnifying glass) - Compound Microscope - Ultra-Microscope - Eyepieces - Huygen's Eyepiece - Ramsden's Eyepiece - Comparison of Eyepieces - Telescope - Refracting astronomical telescope - Abbe Refractometer - Pulfrich refractometer - Photographic Camera - Prism binoculars.

Books for study:

1. Dr. N. Subramaniam, Brijlal and Dr.M.N. Avathanulu, *Optics*, S. Chand & Co. Pvt.Ltd. 25th revised edition , New Delhi ,2012 .
2. Dr. N. Subramaniam, Brijlal and Dr.M.N. Avathanulu, *Optics*, S. Chand & Co. Pvt. Ltd.- 9th revised edition, New Delhi ,2014.
3. Krishnapada Ghosh Anandamoy Manna, *Text book of Physical Optics*, McMillan India Ltd, First edition, 2007.

Books for Reference:

1. Singh & Agarwal, *Optics and Atomic Physics*, Pragati Prakashan Meerut, Ninth edition, 2002.
2. A.B. Gupta, *Modern Optics*, Books and allied (P) Ltd, Kolkata, First edition, 2006.
3. Ajoy Ghatak, *Optics*, (TMH), New Delhi, Fourth edition, 2009.
4. Arian Lipson, Stephen G.Lipson and Henry Lipson, *Optical Physics*, Cambridge, Fourth edition, 2011.
5. Schaum's outlines, *Optics*, Tata McGraw Hill, 2011.

CORE COURSE VI

ATOMIC AND MOLECULAR PHYSICS

Objective:

The purpose is to understand the outgrowth of the structure ,extra nuclear part of the atom and origin of the spectra.

UNIT I Cathode and Positive Ray - Analysis

Production and Properties of Cathode rays - Electronic charge - Millikan's oil- drop method - Production and properties of positive rays - Thomson's parabola method - Aston's, Dempster's and Bainbridge's mass - spectrographs (e/m) – Mass defect and Packing Fraction.

UNIT II Atom model

Bohr atom model – Critical Potentials - Experimental determination of critical potentials - Franck and Hertz's experiment -Sommerfield's Relativistic atom model - Vector atom model - Quantum numbers associated with vector atom model - Pauli's exclusion principle - Electronic configuration of elements and periodic table - Magnetic dipole moment due to orbital motion and spin of the electron - The Stern and Gerlach experiment - Zeeman effect - Experimental arrangement for the normal Zeeman effect - Larmor's theorem - Quantum mechanical explanation of the normal Zeeman effect - Anomalous Zeeman effect- Paschen Back Effect – Stark effect.

UNIT III X-Rays

X-rays - production - detection and properties -Bragg's law - Bragg's X-ray spectrometer - Laue's experiment - The Powder crystal method -Rotating crystal method -X-ray spectra - Characteristics of X-ray spectrum - Moseley's law - Compton effect - Determination of wavelength - Symmetry operations and elements of Symmetry.

UNIT IV Photoelectric Effect and Free Electron theory of metals

Free electron theory of metals - Properties of metals - Drude and Lorentz theory - Electrical and thermal conductivities - Wiedemann and Franz law.

Photoelectric effect - Lenard's experiment - Richardson and Compton experiment - Experimental investigations on the photoelectric effect - Laws of photoelectric emission - Einstein's photoelectric equation - Experimental verification - Millikan's experiment - Photoelectric cells - Photoemissive cell - Photovoltaic cell - Photoconductive cell - Applications of Photoelectric cells.

UNIT V Molecular Physics

Induced absorption - Spontaneous emission - Stimulated emission - Ruby laser - He laser - Semiconductor laser - Properties of laser beam – Applications of LASER in Medicine and Industry - Theory of the pure rotational spectrum of a molecule - Theory of the origin of the vibration - rotation spectrum of a molecule - Electronic spectra of molecules - Molecular orbital theory of Hydrogen molecule ion - Heitler-London theory of Hydrogen molecule - Theory of ESR .

Books for study:

1. R. Murugesan, KiruthigaSivaprasath, *Modern Physics*, S. Chand &Co Ltd., New Delhi, 14th Revised edition, 2014.
2. J.B. Rajam, *Atomic Physics*, S. Chand & Co Ltd., New Delhi, Revised edition, 2009.

Books for Reference:

1. Sehgal, Chopra and Sehgal, *Modern physics*, Sultan Chand & Sons, New Delhi.
2. Arthur Beiser, Shobhit Mahajan, S. RaiChoudhury, *Concepts of Modern Physics*, Sixth edition, SIE, 2009.
3. S.N .Ghoshal, *Atomic Physics*, S. Chand & Co Ltd., New Delhi, Revised edition, 2004.

CORE COURSE VII

ELECTRONICS

Objective:

To enable the students to understand all aspects of electronics in a lucid and comprehensive manner.

UNIT I Semiconductors, diodes and Bipolar Transistors

Intrinsic and extrinsic semi-conductors –PN junction diode – Biasing–V-I Characteristics– Rectifiers – Half wave – full wave and Bridge rectifiers – Break down mechanisms – Zener diode- characteristics of Zener diode – Zener diode as voltage regulator-Bipolar junction transistor – Basic configurations -Relation between α and β – Characteristic curves of transistor – CB, CE mode – DC load line – DC bias and stabilization – fixed bias – voltage divider bias.

UNIT II Amplifiers and Oscillators

Single stage CE amplifier – Analysis of hybrid equivalent circuit – Power amplifiers – Efficiency of class A,B & C Power amplifier - General theory of feedback – Properties of negative feedback – Criterion for oscillations – Hartley oscillator – Colpitt's oscillator.

UNIT III Number Systems, Logic Gates and Boolean Algebra

Introduction to decimal, binary, octal, hexadecimal number systems – Inter conversions– 1's and 2's complements –Logic gates, Symbols and their truth tables – AND, OR, NOT, NAND, NOR, XOR, and XNOR – Universality of NAND and NOR gates.

Boolean algebra – De-Morgan's theorems –Reducing Boolean expressions using Boolean laws – SOP forms of expressions (minterms) – Karnaugh map simplification(Four variables).

UNIT IV Combinational and Sequential Digital Systems

Half and full adders – Half and full subtractors – Decoder(2:4 line) – Encoder (4:2 line)– Multiplexer(4:1 line) – Demultiplexer (1:4 line) - Flip flop – RS – clocked RS – T and D flip flops – JK and master slave flip flops – Counters – Four bit asynchronous ripple counter – Mod-10 counter — Synchronous counter – Ring counter - Shift registers – SISO and SIPO shift registers.

UNIT V Operational amplifier

Operational amplifier - Characteristics – Inverting and Non-inverting amplifier – Voltage follower – Adder, Subtractor, Integrator and Differentiator circuits – Log & antilog amplifiers – Op- amp as Comparator – Filters-low,

bandpass, high pass filters -A/D conversion – Successive approximation method – D/A conversion – R-2R ladder network.

Books for study:

1. Mehta V.K., *Principles of Electronics*, S. Chand and company Ltd, 2014.
2. A.P. Malvino, D.P. Leach, *Digital Principles and Application*, IV Edition, Tata McGraw Hill, New Delhi, 2011.
3. V. Vijayendran, *Digital Fundamentals*, S.Viswanathan, Printers & Publishers Private Ltd, Chennai, 2004.

Books for Reference :

1. Theraja. B.L, *Basic electronics - Solid State*, S.Chand and Company Ltd 2002.
2. Sedha R.S., *A text book of applied Electronics*, S.Chand & company Ltd 2002.
3. W.H.Gothmann, *Digital Electronics*, Prentice Hall of India, Pvt. Ltd., New Delhi 1996.

CORE PRACTIAL III

(Any Twelve Experiments)

Objective:

To promote scientific temper and to learn physical concepts through these experiments.

1. Spectrometer- i-d curve.
2. Spectrometer - i-i' curve.
3. Spectrometer - small angle prism.
4. Field along the axis of a coil – determination of M.
5. Potentiometer - EMF of a thermocouple.
6. Potentiometer -Temperature coefficient of thermistor.
7. Ballistic Galvanometer-Figure of merit
8. Ballistic Galvanometer-Absolute Determination of Mutual Inductance.
9. Anderson's bridge – Self-inductance of a coil.
10. Series resonance circuits.
11. Parallel Resonance circuits.
12. Regulated power supply using Zener diode - Percentage of regulation.
13. Single stage - RC coupled amplifier – Transistor.
14. Hartley oscillator using transistor.
15. FET Characteristics.
16. AND, OR and NOT gates using discrete components
17. AND, OR and NOT gates using IC's.
18. Op - Amp -Adder and Subtractor.
19. Op - Amp - Integrator and Differentiator.
20. Construction of Half wave rectifier.
21. Half Adder and Full adder circuits using logic gates.
22. Half Subtractor and Full Subtractor circuits using logic gates.

Books for Study :

1. Dr. S. Somasundaram, *Practical Physics*, Apsara publications, Tiruchirapalli, 2012.
2. Department of Physics, *Practical Physics*, (B.Sc. Physics Main), St. Joseph's College, Tiruchirapalli 1998.

Books for Reference:

1. S. Srinivasan, *A Text Book of Practical physics*, S. Sultan Chand publications. 2005
2. R. Sasikumar, *Practical Physics*, PHI Learning Pvt. Ltd, New Delhi, 2011.

MAJOR BASED ELECTIVE I

MATERIAL SCIENCE

Objectives:

To develop knowledge in material science and to understand the relationship between properties and material characteristics.

UNIT I Crystal Structure

Types of crystals-space lattice-basis- unit cell and lattice parameters – Bravais lattices-Lattice planes and Miller indices-inter planar spacing in a cubic lattice-cubic lattice-SC – BCC – FCC- Sodium chloride and Diamond crystal structure – Bonding of solids (Ionic , Covalent , Metallic , Hydrogen and Van der Waal).

UNIT II Super Conducting Materials

Superconductivity – Properties-Meissner's effect- London equations - types of superconductors Type I and Type II –High temperature superconductors - Josephson effects and its applications – SQUIDS - Applications of superconductor.

UNIT III Nano Materials

Nanoscience and nanotechnology – Nanomaterials- Properties of nanomaterials (size dependent) -synthesis of nanomaterials- Fullerenes-Application of nanomaterials – Carbon nanotubes- Fabrication and structure of carbon nanotubes - Properties of carbon nanotubes (Mechanical and Electrical) - Applications of CNT's.

UNIT IV Smart Materials

Metallic glass and its applications — Fiber reinforced metals – SAW Materials and its applications – Biomaterials – Ceramic-Nuclear engineering materials-Nanophase materials - SMART materials- Conducting polymers- Optical materials - Fiber optic materials and their applications.

UNIT V Mechanical Behavior Of Materials

Different mechanical properties of engineering materials – creep – Fracture-technological properties – factors affecting mechanical properties of material-Heat treatment-cold and hot working-types of mechanical tests- metal forming process-deformation of metals-Deformation of crystals and polycrystalline materials.

Books for study:

1. Dr. M.N. Avadhanulu, *Material science*, S.Chand & Company, New Delhi, 2014.

Books for Reference:

1. M.Arumugam, *Material science*, Anuradha publishers, 1990.
2. V. Raghavan, *Material Science and Engineering* , Printice Hall India.,2004.
3. V. Rajendran, *Material Science*, Tata McGraw Hill Ltd, New Delhi,2001.

CORE COURSE VIII

NUCLEAR PHYSICS

Objective:

To emphasize the understanding of nuclear forces and models, elementary particles and Accelerators.

UNIT I General Properties of Nuclei and Nuclear Models

Constituents of nuclei-Classification of nuclei - Nuclear mass and binding energy - Binding energy and stability of nucleus, Mass defect and Packing fraction, Binding fraction Vs Mass number curve - Nuclear size - Nuclear spin-nuclear energy levels - Nuclear magnetic moment --Parity of nuclei - Nuclear forces - Yukawa's model of nuclear force.

Nuclear Models - Liquid drop model, Semi-empirical mass formula - Shell model- Salient features of shell model.

UNIT II Radioactivity

Radioactive decay law-Half life and Average life - Activity or strength of a radio – sample - Successive transformation - Radioactive chain- Radioactive equilibrium - Radioactive dating - α - decay - Geiger-Nuttall law - Tunnel effect - Gamow's theory of α decay - β -decay - Energetics of β -decay - Continuous β -spectrum - Inverse β -decay -Parity violation in β -decay - Neutrino hypothesis - Properties of neutrino - Gamma rays-origin of the gamma rays - Internal conversion.

UNIT III Particle Accelerators and Detectors

Linear accelerator – Cyclotron – Betatron - Electron synchrotron - Accelerators in India.

Radiation Detectors - Ionisation Chamber - Proportional counter – G.M. Counter-Cloud chamber - Scintillation counter - Solid state track detector – Semiconductor detector.

UNIT IV Nuclear Reactions and Nuclear Reactors

Nuclear reactions - Types of nuclear reactions – Conservation laws in nuclear reactions -Energetic of nuclear reactions - Kinematics of nuclear reactions -Threshold energy of nuclear reactions - Solution of the Q- value equation - Cross-section of nuclear reactions.

Nuclear fission - fission of light nuclei - Prompt and delayed neutrons - Neutron speed , classifications - Nuclear chain reaction - Neutron cycle - Nuclear reactor - Types of reactor -Fission bomb - Nuclear power in India-Fusion-Thermonuclear reaction - Hydrogen bomb -Possibility of fusion reactor.

UNIT V Elementary Particles

Classification of elementary particles – Pions and Muons - K-mesons – Hyperons- Conservation laws - Exact laws - Approximate conservative laws- Fundamental interactions – Antiparticles -Resonance particles – Hyper-nucleus - Symmetry classification of elementary particles - Quark model.

Books for Study:

1. Gupta & Roy., *Physics of the Nucleus*, Books and Allied (P) Ltd. Kolkatta, 2011 .

Books for Reference:

1. S. N. Ghoshal, *Nuclear Physics* , S. Chand & Co., Edition ,2003.
2. M L Pandya& R. P .S .Yadav, *Elements of Nuclear Physics*,Kedaar Nath & Ram Nath ,2000.
3. SatyaPrakash, *Nuclear Physics*, A Pragati Prakasan Publication, 2011.
4. Jahan Singh, *Fundamentals of Nuclear Physics*, A Pragati Publication, 2012.
5. D.C.Tayal, *Nuclear Physics*, Himalaya Publishing House, 2009.

CORE COURSE IX
THEORETICAL PHYSICS

Objective:

To know the facts and develop a unified and logical treatment of the subject matter with clarity and conciseness.

UNIT I Fundamental Principles and Lagrangian Formulation

Mechanics of a particle and system of particles – Conservation laws – Constraints – Generalized coordinates – Principle of virtual work-D’Alembert’s principle and Lagrange’s equation – Hamilton’s principle –Lagrange’s equation of motion – conservation theorems and symmetry properties –Atwood’s machine – Simple pendulum.

UNIT II Hamilton’s Formulation

Hamilton’s canonical equations of motion – Hamilton’s equations from variational principle –Principle of least action – Phase space – Generalized momentum – Cyclic co-ordinates –Conservation theorem for generalized momentum – Conservation theorem for energy

UNIT III Dual Nature of Matter

De Broglie concept of matter waves – De Broglie wavelength – Wave velocity and group velocity for the De Broglie waves – Experimental study of matter waves – Davison and Germer experiment – G.P. Thomson’s experiment for verifying De Broglie relation – Heisenberg’s uncertainty Principle – Electron microscope – Gamma ray microscope.

UNIT IV Basics of Quantum Mechanics

Basic postulates of wave Mechanics – Development of Schrödinger wave equation – Time independent and dependent forms of equations – Properties of wave function – Orthogonal and normalized wave function Eigen function and eigen values – Expectation values and Ehrenfest’s theorem.

UNIT V Exactly Solvable Quantum Systems

Linear harmonic oscillator – Particle in a box –Rectangular barrier potential –Rigid rotator – Hydrogen atom.

Books for study:

1. S.L.Gupta., V. Kumar and H.V.Sharma, Pragathi Prakasan, *Classical Mechanics* Educational Publisher, Meerut, 25th edition, 2011.
2. Murughesan, R., *Modern Physics*, S.Chand & Co., New Delhi, 2006.

Books for Reference:

1. Arthur Beiser, *Concept of Modern Physics*: McGraw Hill Ed. V (1999).
2. H.Goldstein, *Classical Mechanics*, Narosa Book distributors, New Delhi 1980.
3. N.C.Rana and P.S.Joag, *Classical Mechanics*, Tata Mc Graw Hill, New Delhi 1991.
4. P M. Mathews and K. Venkatesan, *A Text Book of Quantum Mechanics* ,Tata McGrawHill, New Delhi, 1987.

CORE PRACTIAL IV

(Any Twelve Experiments)

Objective:

To provide an indepth knowledge and skill in Electronics, C- Programming and Micro Processor.

SECTION – A

(Any Eight Experiments)

1. Koenig's method – Uniform bending.
2. Spectrometer - Grating-minimum deviation method
3. Spectrometer – Grating - dispersive power.
4. Spectrometer - Cauchy's constants.
5. M and H - Absolute determination using deflection and vibration magnetometer.
6. Potentiometer - High range Voltmeter calibration.
7. B.G. Absolute capacity of condenser.
8. Emitter follower amplifier - Frequency response.
9. Colpitt's oscillator using transistor.
10. Astable multi-vibrator using Transistor/op.amp
11. Monostable multi-vibrator using Transistor/op.amp.
12. FET amplifier – Common source.
13. Verification of Boolean Laws (any four.)
14. NAND as universal gate.
15. NOR as universal gate.

SECTION - B - MICROPROCESSOR 8085.(Any Two)

1. 8-bit addition and 8-bit subtraction.
2. 8-bit multiplication and 8-bit division.
3. Conversion from decimal to hexadecimal system.
4. Conversion from hexadecimal to decimal system.
5. Conversion from binary to hexadecimal.
6. Conversion from hexadecimal to binary.

SECTION- C - COMPUTER PROGRAMMING IN C (Any TWO)

1. Conversion of Centigrade into Fahrenheit.
2. Arranging numbers in ascending order/descending order.
3. Calculation of volume of sphere/cone/cube/rectangular cuboid.
4. Solving quadratic equation.
5. Sum of digits of a series.

Books for Study :

1. Dr.S.Somasundaram , *Practical Physics*, Apsara publications, Tiruchirapalli , 2012.
2. Department of Physics, *Practical Physics*, (B.Sc Physics Main), St. Joseph's College, Tiruchirapalli 1998.

Books for Reference:

1. S.Srinivasan, *A Text Book of Practical physics*, S.Sultan Chand publications, 2005.
2. R. Sasikumar, *Practical Physics*, PHI Learning Pvt. Ltd, New Delhi, 2011.

MAJOR BASED ELECTIVE II
MICROPROCESSOR AND 'C' PROGRAMMING

Objective:

The purpose of this course is to introduce students about the key features and implementation of C language and 8085 Microprocessor assembly.

UNIT I Basics of Digital Computer

Basic components of a digital computer - Evolution of microprocessors - Important INTEL microprocessors - Hardware, Software and Firmware - Memory - Semiconductor memories - RAM,ROM - Flash memory - CCD memory - Cache memory - Buses.

UNIT II Intel 8085 and its Architecture

INTEL 8085 - Pin Diagram - Architecture - Various registers - Status Flags - Interrupts and their order of priority - Addressing modes - Direct, Register, Register indirect, Immediate and implicit addressing - Instruction set - Data transfer group - Arithmetic Group - Logical group - Branch group, Stack, I/O and Machine control group.

UNIT III Assembly Language Programming

Addition - subtraction - multiplication -division of two 8- bit numbers - Finding the largest and smallest number in a data array-Arranging a list of numbers in ascending or descending order-complement - shift - mask-look up table- multibyte addition and subtraction -decimal addition - subtraction.

UNIT IV Introduction To C

Basic Structure of C Programs - Character set - C tokens - Keywords and identifiers - constants - variables - Data types - declaration of variables - Assigning values to variables - Symbolic constants - Operators and Expressions - Arithmetic operators - Relational, Logical and Assignment operators, Increment and Decrement operators - Conditional operator, Bitwise and Special operators-Arithmetic Expressions - Mathematical functions.

UNIT V Preliminaries And Functions

Data input and output - getchar, putchar, scanf, printf, gets, puts functions - Decision making and branching -if, if...else, else if ladder, switch, break, continue, goto - Decision making and looping - while, do... while, for, nested loops -Arrays (one-, two- and multi-dimensional arrays)- Declaration, Initialization of arrays.

Books for study:

1. B. Ram - *Fundamentals of Microprocessors and Microcontrollers*-Dhanpat Rai Publications (P) Ltd., New Delhi, 2013.
2. E. Balagurusamy - *Programming in ANSI C* - Tata McGraw Hill Education Private Limited, New Delhi,2012.

Books For Reference:

1. R. S.Gaonkar- *Microprocessor Architecture, Programming, and Applications with the 8085*, Penram International Publishing (India) Private Limited, Mumbai, 2007.
2. K. R. Venugopal and S. R. Prasad - *Programming with C* - Tata McGraw-Hill Publishing Company Limited, New Delhi, 2002.

MAJOR BASED ELECTIVE III

COMMUNICATION PHYSICS

Objective:

To promote scientific temper among students and update the basic functioning of various communication systems.

UNIT I Radio transmission and reception

Transmitter-modulation-need for modulation- types of modulation-amplitude,frequency and phase modulation- modulation factor-sideband frequencies in AM wave-limitations of amplitude modulation - frequency modulation-block diagram of AM and FM Transmitter.

Receiver- demodulation-AM & FM radio receivers-super heterodyne radio receiver.

UNIT II Fiber Optic Communication

Introduction –structure of optical fiber –total internal reflection in optical fiber – principal and propagation of light in optical fiber - acceptance angle - numerical aperture – types of optical fibers based on material – number of modes – refractive index profile - fiber optical communication system (block diagram) - fiber optic sensors – Temperature sensor – fiber optic endoscope.

UNIT III Radar Communication

Basic radar system -Radar range –Antenna scanning – Pulsed radar system - A-Scope- Plan position indicator- Tracking radar- Moving target indicator- Doppler effect-MTI Principle- CW Doppler Radar- Frequency modulator CW Radar.

UNIT IV Satellite Communication

Introduction – history of satellites – satellite communication system – satellite orbits – classification of satellites – types of satellites – basic components of satellite communication – constructional features of satellites- multiple access – communication package – antenna- power source – satellite foot points- satellite communication in India.

UNIT V Mobile Communication

GSM – mobile services- concept of cell – system architecture – radio interface – logical channels and frame hierarchy – protocols – localization and calling – Handover- facsimile (FAX) – application – VSAT (very small aperture terminals) – Modem – IPTV (internet protocol television) – Wi-Fi - 3G (Basic ideas only).

Books for Study:

1. Metha V.K., *Principles of Electronics*, S. Chand & Company Ltd., 2013
2. Anokh Singh and Chopra A.K., *Principles of communication Engineering*, S. Chand & Company PVT. Ltd., 2013.
3. Mani I. P., *A text book of Engineering Physics*, Dhanam Publications, Chennai-42, 2014.

Books for Reference:

1. Poornima Thangam I, *Satellite communication*, Charulatha Publications, 2012.
2. Dennis Roddy and John Coolen, *Electronic Communication*, PHI, 1990.
3. William C.Y. lee, *Cellular telecommunication* (second edition), Tata Mcgraw hill, 1991.



BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI- 620 024.

Applicable to the candidates admitted from the Academic year 2015-16 onwards

Part IV - VALUE EDUCATION (Revised syllabus)

Unit I Philosophy of Life and Social Values

Human Life on Earth (Kural 629) Purpose of Life (Kural 46) Meaning and Philosophy of Life (Kural 131, 226) Family (Kural 45), Peace in Family (Kural 1025) Society (Kural 446), The Law of Life (Kural 952), Brotherhood (Kural 807) Five responsibilities / duties of Man (a) to himself (b) to his family (c) to his environment (d) to his society, (e) to the Universe in his lives (Kural 43, 981).

Unit II Human Rights and Organisations

Definitions, Nature of Human Rights. Universal Declaration of Human Rights, International covenant on Civil and Political Rights - International covenant of Economic, Social and Cultural Rights. Amnesty International Red Cross.

Unit III Human Rights : Contemporary Challenges

Child labour - Womens Right - Bonded labour - Problems of refugees - Capital punishment. National and State Human Rights Commissions

Unit IV Yoga and Health

Definition, Meaning, Scope of Yoga - Aims and objectives of Yoga - Yoga Education with modern context - Different traditions and schools of Yoga - Yoga practices: Asanas, Pranayama and Meditation.

Unit V Role of State Public Service Commission

Constitutional provisions and formation - Powers and Functions - Methods of recruitment - Rules and notification, syllabi for different exams - written and oral - placement.

BOOKS FOR REFERENCES:

1. Thirukkural with English Translation of Rev. Dr. G.U. Pope, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur 613 004
2. திருக்குறள் - ஜி.யு.போப் - ஆங்கில மொழியாக்கத்துடன் உமா நூல். வெளியீட்டகம், தஞ்சாவூர்.
3. Leah Levin, Human Rights, NBT, 1998
4. V.R. Krishna Iyer, Dialectics and Dynamics of Human Rights in India, Tagore Law Lectures.
5. Yogic Therapy - Swami Kuvalayananda and Dr.S.L.Vinekar, Government of India, Ministry of Health, New Delhi.
6. SOUND HEALTH THROUGH YOGA - Dr.K.Chandrasekaran, Prem Kalyan Publications, Sedapatti, 1999.



BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI- 620 024

ENVIRONMENTAL STUDIES

(Applicable to the candidates admitted from the Academic year 2019-20 onwards)

Unit: 1 The Multidisciplinary nature of environmental studies
Definition, scope and importance. (2 lectures)
Need for public awareness

Unit: 2 Natural Resources:
Renewable and non-renewable resources:
Natural resources and associated problems.

- a) Forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.
- c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- f) Land resources: Land as a resources, land degradation, man induced Landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

(8 lectures)

Unit: 3 **Ecosystems**

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession.
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem:-

- a. Forest ecosystem
- b. Grassland ecosystem
- c. Desert ecosystem
- d. Aquatic ecosystems, (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit: 4 Biodiversity and its conservation

- Introduction – Definition : Genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
- Biological Diversity Act 2002/ BD Rules, 2004

(8 lectures)

Unit: 5 Environmental Pollution

Definition

Causes, effects and control measures of :

- Air Pollution
 - Water Pollution
 - Soil Pollution
 - Marine Pollution
 - Noise pollution
 - Thermal Pollution
 - Nuclear hazards
- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
 - Role of an individual in prevention of pollution
 - Pollution case studies
 - Disaster management: floods, earthquake, cyclone and landslides.
 - Ill-Effects of Fireworks: Firework and Celebrations, Health Hazards, Types of Fire, Firework and Safety

(8 lectures)

Unit: 6 Social Issues and the Environment

- From Unsustainable to Sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people; its problems and concerns.

Case studies

- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and Control of Pollution) Act.
- Wildlife Protection Act.
- Forest Conservation Act.
- Issues involved in enforcement of environmental legislation
- Public awareness.

(7 lectures)

Unit: 7 Human Population and the Environment

- Population growth, variation among nations.
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights - Value Education
- HIV/ AIDS - Women and Child Welfare
- Role of Information Technology in Environment and human health
- Case studies.

Unit: 8 Field Work

- Visit to a local area to document environmental assets-river / forest/ grassland/ hill / mountain

References:

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Public Ltd Bikaner.
 2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt Ltd, Ahamedabad – 380013, India, E-mail: mapin@icenet.net(R)
 3. Brunner R.C. 1989, Hazardous Waste Incineration, McGraw Hill Inc 480 p
 4. Clark R.S. Marine Pollution, Clanderson Press Oxford (TB)
 5. Cunningham, W.P.Cooper, T.H.Gorhani E & Hepworth, M.T. 2001.
 6. De A.K. Environmental Chemistry, Wiley Eastern Ltd
 7. Down to Earth, Centre for Science and Environment (R)
 8. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford University, Press 473p.
 9. Hawkins, R.E. Encyclopedia of India Natural History, Bombay Natural History Society, Bombay (R)
 10. Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press 1140 p.
 11. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws Himalaya Pub. House, Delhi 284 p.
 12. Mckinney, M.L. & Schoch R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition 639 p.
 13. Mhaskar A.K. Matter Hazardous, Techno-Science Publications (TB)
 14. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
 15. Odum, E.P. 1971 Fundamentals of Ecology. W.B. Saunders Co. USA. 574 p
 16. Rao MN & Datta, A.K. 1987 Waste Water treatment, Oxford & IBH Publication Co. Pvt Ltd 345 p.
 17. Sharma B.K. 2001 Environmental chemistry Goel Publ House, Meerut.
 18. Survey of the Environment, The Hindu (M).
 19. Townsend C. Harper, J and Michael Begon, Essentials of Ecology, Blackwell science (TB)
 20. Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media (R).
 21. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science Publications (TB).
 22. Wagner K.D. 1998 Environmental Management. W.B. Saunders Co. Philadelphia USA 499 p
- (M) Magazine (R) Reference (TB) Textbook
23. <http://nbaindia.org/uploaded/Biodiversityindia/Legal/33%20Biological%20Diversity%20Rules,%202004.pdf>.

PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES-I

OBJECTIVES:

- To develop the language skills of students by offering adequate practice in professional contexts.
- To enhance the lexical, grammatical and socio-linguistic and communicative competence of first year physical sciences students
- To focus on developing students' knowledge of domain specific registers and the required language skills.
- To develop strategic competence that will help in efficient communication
- To sharpen students' critical thinking skills and make students culturally aware of the target situation.

LEARNING OUTCOMES:

- Recognise their own ability to improve their own competence in using the language
- Use language for speaking with confidence in an intelligible and acceptable manner
- Understand the importance of reading for life
- Read independently unfamiliar texts with comprehension
- Understand the importance of writing in academic life
- Write simple sentences without committing error of spelling or grammar

(Outcomes based on guidelines in UGC LOCF – Generic Elective)

UNIT 1: COMMUNICATION

1. **Listening:** Listening to instructions

2. **Speaking:** Telephone etiquette and Official phone conversations

3. **Reading** short passages (3 passages, one from each – Physics, Chemistry, Mathematics/Computer Science)

5. **Writing:** Letters and Emails in professional context

6. **Grammar in Context:**

- Wh and yes or no,
- Q tags
- Imperatives

7, **Vocabulary in Context:** Word formation - .

- i) Creating antonyms using Prefixes
- ii) Intensifying prefixes (E. g inflammable)

Changing words using suffixes

- A) Noun Endings
- B) Adjective Endings
- C) Verb Endings

UNIT 2: DESCRIPTION

Listening – Listening to process description

Speaking - Role play

Formal: With faculty and mentors in academic environment, workplace communication

Informal: With peers in academic environment, workplace communication

Reading –Reading passages on products, equipment and gadgets

Writing – Writing sentence definitions (e.g. computer) and extended definitions (e.g. artificial intelligence)

Picture Description – Description of Natural Phenomena

Grammar in Context: Connectives and linkers.

Vocabulary – Synonyms (register) - Compare & contrast expressions.

UNIT 3: NEGOTIATION STRATEGIES

Listening - Listening to interviews of specialists / inventors in fields (Subject specific)

Speaking – Brainstorming. (mind mapping). Small group discussions (subject-specific)

Reading – longer Reading text. (Comprehensive passages)

Writing – Essay Writing (250 word essay on topics related to subject area, like pollution, use of pesticides in cultivation, merits and demerits of devices like mobile phones, merits and demerits of technology in development)

Grammar in Context: Active voice & Passive voice – If conditional - Collocations –Phrasal verbs

UNIT 4: PRESENTATION SKILLS

Listening - Listening to presentation. Listening to lectures. Watching – documentaries (discovery / history channel)

Speaking – Short speech
- Making formal presentations (PPT)

Reading – Reading a written speech by eminent personalities in the relevant field / Short poems / Short biography.

Writing - Writing Recommendations
Interpreting visuals - charts / tables/flow diagrams/charts

Grammar in Context – Modals

Vocabulary (register) - Single word substitution

UNIT 5: CRITICAL THINKING SKILLS

Listening - Listening to advertisements/news and brief documentary films (with subtitles)

Speaking – Simple problems and suggesting solutions.

Reading: Motivational stories on Professional Competence, Professional Ethics and Life Skills (subject-specific)

Writing Studying problem and finding solutions- (Essay in 200 words)

Grammar-Make simple sentences

Vocabulary -Fixed expressions

SUGGESTED ACTIVITIES

UNIT 1

Listening: Links for formal conversation can be given - Gap filling exercises – Multiple Choice questions – Making notes.

Speaking - Role play activity

Reading – Note making. Note-Taking.

Writing: Guided Writing (developing hints)

Email

Grammar: Vocabulary – Worksheets – Games.

UNIT 2

Listening-

Process Descriptions (Processes of Condensation and Evaporation./Process of Measuring the thickness of a wire using a Screw -Gauge./process of Exaction of sugar from sugarcane)

Speaking – Role Play

Reading – Multiple choice questions - Evaluative answers – Classifying and labeling

Writing - Picture description – Description of natural phenomena (rainbow, earthquake, volcanic eruption, erosion, natural disasters in 150 to 200 words).

Vocabulary: Expansion of compound nouns

UNIT 3

Listening- Gap fill exercises – Listening comprehension

Speaking -Debates

Reading -Reading comprehension

Writing – Essay Writing

Grammar - Vocabulary, Activities, Worksheets & Games.

UNIT 4

Listening - Note taking (of listening & viewing items) - Filling a table based on the listening item.

Speaking – JAM, Presentations. (PPT-TECHNICAL)

Reading-Reading comprehension

Writing– Difference between recommendations and instructions

Questions/MCQs based on graphs/flow diagrams/charts

Grammar: Vocabulary – Activities, Worksheets & Games.

UNIT 5

Listening – Radio News/ TV-News telecast /

Speaking - Watch or listen to documentaries and ask questions

Reading - Reading motivational stories (success stories in subject area)

Writing - Essay writing.

Grammar -Vocabulary –Activities, Worksheets & Games

Professional English-Semester-II [part-III -add on Course]

Weightage: 4 Credits

Duration: 90hrs

Objectives:

The Professional Communication Skills Course is intended to help Learners in Arts and Science colleges

- Develop their competence in the use of English with particular reference to the workplace situation.
- Enhance the creativity of the students, which will enable them to think of innovative ways to solve issues in the workplace.
- Develop their competence and competitiveness and thereby improve their employability skills.
- Help students with a research bent of mind develop their skills in writing reports and research proposals.

Unit 1- Communicative Competence

(18 hrs)

Listening – Listening to two talks/lectures by specialists on selected subject specific topics -(TED Talks) and answering comprehension exercises (inferential questions)

Speaking: Small group discussions (the discussions could be based on the listening and reading passages- open ended questions

Reading: Two subject-based reading texts followed by comprehension activities/exercises

Writing: Summary writing based on the reading passages.

Grammar and vocabulary exercises/tasks to be designed based on the discourse patterns of the listening and reading texts in the book. This is applicable for all the units.

Unit 2 - Persuasive Communication

(18 hrs)

Listening: listening to a product launch- sensitizing learners to the nuances of persuasive communication

Speaking: debates – Just-A Minute Activities

Reading: reading texts on advertisements (on products relevant to the subject areas) and answering inferential questions

Writing: dialogue writing- writing an argumentative /persuasive essay.

Unit 3- Digital Competence

(18 hrs)

Listening to interviews (subject related)

Speaking: Interviews with subject specialists (using video conferencing skills)

Creating Vlogs (How to become a vlogger and use vlogging to nurture interests – subject related)

Reading: Selected sample of Web Page (subject area)

Writing: Creating Web Pages

Reading Comprehension: Essay on Digital Competence for Academic and Professional Life.

The essay will address all aspects of digital competence in relation to MS Office and how they can be utilized in relation to work in the subject area

Unit 4 - Creativity and Imagination

(18 hrs)

Listening to short (2 to 5 minutes) academic videos (prepared by EMRC/ other MOOC videos on Indian academic sites – E.g. <https://www.youtube.com/watch?v=tpvicScuDyo>)

Speaking: Making oral presentations through short films – subject based

Reading: Essay on Creativity and Imagination (subject based)

Writing – Basic Script Writing for short films (subject based)

- Creating blogs, flyers and brochures (subject based)
- Poster making – writing slogans/captions (subject based)

Unit 5- Workplace Communication& Basics of Academic Writing (18 hrs)

Speaking: Short academic presentation using PowerPoint

Reading & Writing: Product Profiles, Circulars, Minutes of Meeting.

Writing an introduction, paraphrasing

Punctuation(period, question mark, exclamation point, comma, semicolon, colon, dash, hyphen, parentheses, brackets, braces, apostrophe, quotation marks, and ellipsis)

Capitalization (use of upper case)

Outcomes of the Course.

At the end of the course, learners will be able to,

- Attend interviews with boldness and confidence.
 - Adapt easily into the workplace context, having become communicatively competent.
 - Apply to the Research &Development organisations/ sections in companies and offices with winning proposals.

Instruction to Course Writers:

1. **Acquisition of subject-related vocabulary should not be overlooked.** Textboxes with relevant vocabulary may be strategically placed as a Pre Task or in Summing Up
2. Grammar may be included if the text lends itself to the teaching of a Grammatical item. However, testing and evaluation does not include Grammar.

பாரதிதாசன் பல்கலைக்கழகம்,
(2016-17ஆம் கல்வியாண்டு முதல் சேர்க்கை பெறும் மாணாக்கர்களுக்கு)



திருச்சிராப்பள்ளி - 620 024

மூன்றாம் பருவம்

அடிப்படைத் தமிழ் - I
(Basic Tamil – I)

நோக்கம்: தமிழ்மொழியின் அடிப்படைகளை அறிந்துகொள்ளுதல். தமிழ் மொழியை எழுதவும் படிக்கவும் கற்றுக்கொள்ளுதல்.

அலகு 1

எழுத்துக்கள் அறிமுகம் - எழுத்துக்களின் வகைப்பாடு, எண்ணிக்கை - உயிரெழுத்துக்கள் - மெய்யெழுத்துக்கள் - உயிர்மெய்யெழுத்துக்கள் - ஆய்த எழுத்து - இனஎழுத்துக்கள் - வடமொழி எழுத்துக்கள்.

அலகு 2

எழுதும் பயிற்சி - தமிழ் எழுத்து வடிவங்களைக் காட்டி - அவற்றை இனங்காணவும் - வேறுபடுத்தி அறியவும் பயிற்சி தருதல் - ஒலிப்பு - பொருத்தமான எழுத்தைத் தேர்ந்தெடுக்கப் பரிசோதித்தல் - எழுத்துக்களை எழுதப் பயிற்றுவித்தல்.

அலகு 3

சொற்கள் கற்றல் - கோடிட்ட இடங்களை நிரப்புவதன் மூலம் எழுத்துகளையும் சொற்களையும் பயிற்றுவித்தல். வாசித்தல் - படம் ஒலிபெயர்ப்புச் சொல், இணையான ஆங்கிலச்சொல் முதலியவற்றைத் தந்து எழுத்துகளையும் சொற்களையும் பயிற்றுவித்தல்.

அலகு 4

சிறுதொடர் கற்றல் - எளிய தொடர்களை அறிமுகப்படுத்துதல் - சிறு தொடரின் உறுப்புகளைக் கற்றுத்தருதல் - அவ்வுறுப்புக்களைத் தொடரில் இனங்காணச்செய்தல் - சிறு தொடர்களை எழுதும் பயிற்சி தருதல்.

அலகு 5

மழலைப் பாடல்கள், அறநெறிக்கதைகள் - பாடல்களையும் கதைகளையும் பிழையின்றி வாசிக்கச் செய்தல் - பிழையின்றி எழுதச்செய்தல்.

பார்வை :

தமிழ் இணையப் பல்கலைக்கழகச் சான்றிதழ்க் கல்விப்பாடத்திட்டத்தில் உள்ள முதல் அலகான "அடிப்படைநிலை" (www.tamilvu.org)

நான்காம்பருவம்

அடிப்படைத் தமிழ் - II (Basic Tamil – II)

நோக்கம்: இப்பாடத்தில் கீழே தடித்த எழுத்துக்களில் தரப்பட்டுள்ள பாடங்களின் வழியாகத் தமிழ்மொழியை எழுதவும் வாசிக்கவும் பழக்குதல்.

அலகு 1

சந்தை - மலர்கள், காய்கறிகள், பழங்கள் முதலியன குறித்த செய்திகளை அறியச் செய்தல் - அவை தொடர்பான வாக்கியம் அமைக்கப் பழக்குதல் எங்கள் குடும்பம் - குடும்ப உறுப்பினர், குடும்ப உறவு முறைகள் பற்றி அறியச் செய்தல் - தொடர்பான சொற்கள், தொடர்கள் முதலியவற்றை வாசிக்கவும் எழுதவும் பழக்குதல்.

அலகு 2

விருந்தோம்பல் - உணவு பரிமாறும் முறை - உணவு வகைகள் முதலியன பற்றி விளக்கமாக அறியச் செய்தல் - ஆறு, குளம், கடல், வானம், மேகம், மலை, மழை முதலியன பற்றி அறியச் செய்தல் : இவை தொடர்பான சொற்கள், தொடர்கள் முதலியவற்றை வாசிக்கவும் எழுதவும் பழக்குதல்.

அலகு 3

பாரதியார் - பாரதியார் பற்றிய வரலாறு, அவரது ஓரிரு கவிதைகள் பற்றி அறியச்செய்தல் - கணைக்கால் இரும்பொறை - இம்மன்னனின் தன்மான உணர்வினை நாடகத்தின் வழியாக உணர்த்துதல். இப்பாடங்கள் தொடர்பான சொற்கள், தொடர்களை வாசிக்கவும் எழுதவும் பழக்குதல்.

அலகு 4

மாமல்லபுரம் - மாமல்லபுரம் அமைந்துள்ள இடம் மற்றும் கலைக்கோயில்கள் பற்றி விளக்குதல் - பயணம் - பேருந்தில் பயணம் செய்யும் முறையை விளங்க வைத்தல் இ வாசிக்கவும் எழுதவும் பழக்குதல்.

அலகு 5

மொழி - விளக்கம் - மொழிக்குடும்பங்கள் - உலகச் செம்மொழிகள் - இந்தியச் செம்மொழிகள் - செம்மொழித் தகுதிகள் - வரையறைகள் - வாழும் தமிழ்ச் செம்மொழி - தமிழின் தொன்மை - தமிழின் சிறப்புகள் - தமிழ்ச் செம்மொழி நூல்கள் - தமிழ்ச் செம்மொழி அறிந்தேற்பு பரிதிமாற்கலைஞர் அவர்கள் முதல் கலைஞர் திரு.மு.கருணாநிதி அவர்கள் வரை (அறிஞர்கள் - அமைப்புகள் - நிறுவனங்கள் - இயக்கங்கள் தொடர் முயற்சிகள் - அறப்போராட்டங்கள் - உலகத் தமிழ்ச் செம்மொழி மாநாடு, கோவை 2010)

பார்வை :

தமிழ் இணையப் பல்கலைக்கழகச் சான்றிதழ்க் கல்வி பாடத்திட்டத்தில் உள்ள இரண்டாம் அலகு மற்றும் மூன்றாம் அலகுகளான முறையே இடைநிலை, மேல்நிலை ஆகியவை (www.tamilvu.org).



பாரதிதாசன் பல்கலைக்கழகம்,

திருச்சிராப்பள்ளி - 620 024

(2016-17ஆம் கல்வியாண்டு முதல் சேர்க்கை பெறும் மாணாக்கர்களுக்கு)

மூன்றாம் பருவம்

சிறப்புத் தமிழ் - தாள் I
(Special Tamil - I)

(பத்து அல்லது பன்னிரண்டாம் வகுப்பு வரை தமிழ் படித்திருந்து இளநிலைப் பட்டப்படிப்பில் (UG) பகுதி I இல் இதர மொழிப்பாடங்கள் படிக்கின்ற மாணவ / மாணவியர் படிக்க வேண்டிய சிறப்புத் தமிழ் முதலாம் தாளாக்குரியபாடத்திட்டம். இப்பாடத்திட்டப் பகுதிகள் பல்கலைக்கழக இளங்கலை முதலாமாண்டு செய்யுள் திரட்டு நூலை அடிப்படையாகக் கொண்டது.)

அலகு - I

பாரதியார்	1. செந்தமிழ்நாடு	2. புதுமைப்பெண்
பாரதிதாசன்	1. அழகு	2. தமிழனுக்கு வீழ்ச்சியில்லை
கவிமணி தேசிகவிநாயகம் பிள்ளை	1. சுகாதாரக்கும்மி	
சுரதா	1. கலப்பை	

அலகு - II

கவி காமு ஷெரீப்	1. நிலவே சொல்	2. அறிய முயல்
கண்ணதாசன்	1. நட்பு	
வாணிதாசன்	1. வாழ்க இளம்பரிதி	

அலகு - III

நாட்டுப்புறப்பாடல்கள்	1. தாலாட்டுப் பாடல்	2. ஒப்பாரிப் பாடல்
புதுக்கவிதைகள்	1. அப்துல் ரகுமான் - வெற்றி	
	2. அறிவுமதி - நட்புக்காலம்	
	3. ஆண்டாள் பிரியதர்ஷினி - நிலாச்சோறு	
	4. சிற்பி - ஓடு ஓடு சங்கிலி	
	5. தாமரை - தீர்ப்பு	
	6. மீரா - தலைகுனிவு	
	7. மேத்தா.மு - வெளிச்சம் வெளியே இல்லை	
	8. வைரமுத்து - ருசி	

ஐக்க கவிதைகள்

1. அமுதபாரதி	2. அரிமதி இளம்பரிதி	3. அரிமதி தென்னகன்
4. அன்பாதவன்	5. இராசன்.எ.மு.	6. உயிர்வேலி ஆலா
7. கார்முகில்	8. செந்தமிழன்	9. புதுவை இளவேனில்
10. புதுவை தமிழ் நெஞ்சன்		

அலகு - IV

சிறுகதை	1. கைவண்ணம்...(தேர்ந்தெடுக்கப்பட்ட சிறுகதைகள்) தொகுப்பாசிரியர் முனைவர் தங்க. செந்தில்குமார் அய்யா நிலையம், கதவு எண், 1603, ஆரோக்கிய நகர், ஐந்தாம் தெரு, E.B. காலனி, நாஞ்சிக்கோட்டைச் சாலை, தஞ்சாவூர் - 613 006 விலை ரூ.70/-
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அலகு - V

இலக்கிய வரலாறு	1. மரபுக் கவிதை	2. புதுக்கவிதை	3. சிறுகதை
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நான்காம்பருவம்

சிறப்புத் தமிழ் - தாள் II (Special Tamil - II)

(பத்து அல்லது பன்னிரண்டாம் வகுப்பு வரை தமிழ் படித்திருந்து பகுதி I இல் இதர மொழிப்பாடங்கள் படிக்கின்ற மாணவ / மாணவியர் படிக்க வேண்டிய **சிறப்புத் தமிழ் இரண்டாம் தாளுக்குரிய பாடத்திட்டம்**. இப்பாடத்திட்டப் பகுதிகள் பல்கலைக்கழக இளங்கலை இரண்டாமாண்டு செய்யுள் திரட்டு நூலை அடிப்படையாகக் கொண்டது.)

அலகு - I

புறநானூறு

1. 'வள்ளியோர் படர்ந்து' எனத் தொடங்கும் பாடல் (பாடல் எண். 47)
2. 'நின்னயந்துறைஞர்க்கும்' எனத் தொடங்கும் பாடல் (பாடல் எண். 163)

குறுந்தொகை

1. 'வில்லோன் காலன கழலே' எனத் தொடங்கும் பாடல் (பாடல் எண். 07)
2. 'அகவன் மகளே! அகவன் மகளே' எனத் தொடங்கும் பாடல் (பாடல் எண். 23)

அலகு - II

சிறுபாணாற்றுப்படை (முழுவதும்)

அலகு - III

திருக்குறள் நாலடியார்

1. புறங்கூறாமை (அதிகாரம் 19)
2. மானம் (அதிகாரம் 97)
1. 'அரும்பெறல்' எனத் தொடங்கும் பாடல் (பாடல் எண். 34)
2. 'கல்லாதுபோகிய நாளும்' எனத் தொடங்கும் பாடல் (பாடல் எண். 169)

அலகு - IV

சிலப்பதிகாரம்

- அடைக்கலக் காதை (பல்கலைக்கழக செய்யுள் திரட்டில் உள்ள பகுதி மட்டும்)

கம்பராமாயணம்

- குகப் படலம் (பல்கலைக்கழக செய்யுள் திரட்டில் உள்ள பகுதி மட்டும்)

அலகு - V

இலக்கிய வரலாறு

- அற இலக்கியம்,
சங்க இலக்கியம்
காப்பிய இலக்கியம்

NON MAJOR ELECTIVES (ARTS)

(For the candidates admitted from the academic year 2016-2017)

SI. No.	DEPARTMENT OFFERING THE NON-MAJOR ELECTIVE COURSES	TITLE OF THE NON-MAJOR ELECTIVE COURSES
1.	Applied Tamil	I. தமிழ் நடைக்கூறுகள் II. சிந்தனையியல்
2.	B.Litt.	
3.	Pulavar Degree	
4.	Tamil	
5.	B.B.A. (Bachelor of Business Administration)	I. Management Principles (or) Stock Exchange Practices II. Banking Practices (or) International Business
6.	B.Com.	I. Personal Investment (or) Elements of Insurance II. Introduction to Accountancy (or) Salesmanship
7.	B.Com. (Applied)	
8.	B.Com. (Computer Applications)	
9.	B.Com. (Bank Management)	I. Banking Practices (or) Indian Banking System II. Rural Banking (or) Elements of Insurance
10.	B.Com (Corporate Secretaryship)	I. Elements of Company Law II. Stock Markets in India
11.	B.Com (Co-operation)	I. Fundamentals of Cooperation (or) Cooperative Finance and Banking II. Cooperatives in Foreign Countries (or) Cooperative Bookkeeping System
12.	Economics	I. Advertisement Management II. Economics of Transportation
13.	English	I. Presentation Skills II. Functional Skills
14.	History	I. Freedom Movement in India II. Working of Indian Constitution
15.	Journalism & Mass Communication	I. Basic Photography II. Freelance Journalism
16.	Public Administration	I. Public Administration for Civil Services II. Indian Government and Administration
17.	Sanskrit	I. Introduction to Early Sanskrit Literature (or) History of fables & Popular tales and Didactic Literature Pub. R.S. Vadhyer Pub. Palakad II. Scientific Literature (or) Indian Aesthetics
18.	Social Work	I. Human Rights II. Contemporary Social Issues and Problems
19.	Sociology	I. Dynamics of Society II. Women Empowerment
20.	Tourism And Travel Management	I. Basics of Tourism II. Cultural Tourism

NON MAJOR ELECTIVES (SCIENCE)

(For the candidates admitted from the academic year 2016-2017 onwards)

SI. No.	DEPARTMENT OFFERING THE NON-MAJOR ELECTIVE COURSES	TITLE OF THE NON-MAJOR ELECTIVE COURSES
1.	Apparel and Fashion Technology	I. Hand Embroidery (P) II. Jewellery Making (P)
2.	BCA	I. Working Principles of Internet II. Fundamentals of Information Technology
3.	Biochemistry	I. Health and diseases II. Hospital Management
4.	Biotechnology	I. Biotechnology for Human Welfare II. Food Processing
5.	Botany	I. Biofertilizers & Biopesticides II. Horticulture
6.	Chemistry	I. Chemistry in Everyday Life II. Health Chemistry
7.	Computer Science	I. Working Principles of Internet II. Fundamentals of Information Technology
8.	Electronics	I. Principles of Electronics II. Everyday Electronics
9.	Fashion Technology & Costume Designing	I. Fashion Accessories Designing II. Visual Merchandising
10.	Geography	I. Geography of Tourism II. Disaster Management
11.	Geology	I. Fundamentals of Geology II. Introduction to Minerals, Rocks and Fossils
12.	Home Science	I. Bakery and Food Preservation II. Apparel Designing
13.	Hospital Administration	I. Personal Hygiene II. Role of Hospital Services
14.	Hotel Management & Catering Science	I. Basic Tamil / Special Tamil II. Basic Tamil / Special Tamil
15.	Information Technology	I. Fundamentals of Information Technology II. Information Security : Principles and Practices
16.	Mathematics	I. Quantitative Aptitude I II. Quantitative Aptitude II
17.	Microbiology	I. Mushroom Technology II. Biofertilizer Technology
18.	Nutrition & Dietetics	I. Nutrition for Women II. Nutrition for Health and Fitness

19.	Physics	I. Energy Physics II. Laser Physics
20.	Software Development	I. Working Principles of Internet II. Fundamentals of Information Technology
21.	Textile Science	I. Management and Entrepreneurship II. Marketing and Merchandising
22.	Visual Communication	I. Basics of Communication II. Communication Personality Development
23.	Zoology	I. Public Health and Hygiene II. Ornamental fish farming

NON-MAJOR ELECTIVE - I
PUBLIC ADMINISTRATION FOR CIVIL SERVICES

Objectives :

1. Students studying other majors may get familiarize with the basic concepts of Public Administration
2. To expose the students to various basic theories in Public administration.

Unit I - Introduction Meaning, Nature, Scope and Significance of Public Administration - Comparative Public Administration - Public and Private Administration - New Public Management.

Unit II - Basic Concepts Organisation - Hierarchy - Unity of command - Span of control - Co-ordination - Centralization and Decentralization - Line and Staff.

Unit III - Theories of Administration Scientific Management (Taylor and the Scientific Management Movement) - Classical Theory (Fayol, Urwick, Gulick and others) - Bureaucratic Theory (Weber and his critics) - Behavioural Approach - Systems approach.

Unit IV - Administrative Behaviour Decision making - Communication and control, Leadership.

Unit V - Accountability and Control The concepts of Accountability and control : Legislative, Executive and Judicial control - Citizen and Administration : Role of civil society - People's Participation and Right to Information.

Reference :

1. Avasthi and S.R. Maheswari , “ Public Administration’ , Lakshmi Navas, Agra, 2006
2. Rumki Basu, Concepts and Theories of Administration, Sterling Publication, New delhi 2004.
3. Lakshmi Kanth P, Public Administration for UPSC McGraw Hill, New Delhi-2011.

NON-MAJOR ELECTIVE - II

INDIAN GOVERNMENT AND ADMINISTRATION

Objective : It facilitates the students to understand its various aspects of the subjects - evolution and constitutional frame work, salient features of Indian Administration, Union executive, State executive, District Administration.

Unit - I Evolution of Indian Administration - Constitutional Development Framework – Salient Feature of Indian constitution

Unit - II Union Administration – President - Prime Minister - Council of Ministers – Ministries and Departments – Supreme Court.

Unit - III State Administration – Executive – Council of Ministers – Departments and Directorate – State Public Service Commission – High Court – District Administration – Local Government.

Unit - IV Constitutional Authorities - Finance Commission - Union Public Service Commission - Election Commission - Comptroller and Auditor General of India

Unit - V Issues in Indian Administration - Generalists vs. Specialists - Centre-State relations Corruption – Lokpal, Lokayuktha - Administrative Reforms in India

References:

1. Dr.Vishnoo Bhagwan and Dr.Vidya Bhushan Indian Administration, S.Chand and Company Ltd., New Delhi, 2011.
2. M.Sharma ,Indian Administration ,Anmol Publications Pvt. Ltd., New Delhi, 2007.
3. S.R. Maheswari ,Indian Administration, S.Chand Co., New Delhi, 2010.

SKILL BASED ELECTIVE PAPERS
(2016 onwards)

Updated on 19.02.2018

Sl. No.	Skill Based Elective Paper	Paper	Semester	Title of the Paper
1.	Clinical Microbiology	I	IV	Clinical Bacteriology
		II	V	Clinical Mycology and Virology
		III	V	Clinical Parasitology
2.	Computer Application	I	IV	Hardware Troubleshooting
		II	V	Ruby on Rails
		III	V	Web Services
3.	Customer Relationship Management	I	IV	Overview of Customer Relationship Management (CRM)
		II	V	CRM in Services Marketing & its Tools
		III	V	E – CRM (Virtual Marketing)
4.	Desktop Publishing	I	IV	Page Maker
		II	V	Corel Draw
		III	V	Dream weaver
5.	Herbal Medicine	I	IV	Ethno Medicine
		II	V	Pharmacognosy
		III	V	Herbs and Drug Action
6.	Journalism and Public Relations	I	IV	Journalism and Mass Media
		II	V	Reporting and Editing
		III	V	Public Relations
7.	Office Management	I	IV	Introduction to Office Management
		II	V	Office Management Tools
		III	V	Communication & Interpersonal Skills
8.	Sales and Marketing Management	I	IV	Introduction to Marketing Management
		II	V	Sales Management
		III	V	Retail Management
9.	Tourism and Travel Management	I	IV	Tourism and Travel Agency
		II	V	Cultural Tourism in India
		III	V	Tourism Product – 3
10.	Yoga and Stress Management	I	IV	Fundamentals of Yogic Practices
		II	V	Stress Management Through Yoga
		III	V	Asanas and Pranayamas – Practical
11.	அச்ச ஊடகங்கள்	I	IV	தமிழ் இதழியல் வரலாறு
		II	V	நாளிதழ் உருவாக்கமும் வடிவமைப்பும்
		III	V	இலக்கிய இதழ்கள்
12.	Biotechnology	I	IV	Aqua Culture
		II	V	Biofertilizer
		III	V	Mushroom Cultivation and Value Addition
13.	Chemistry	I	IV	Food and Nutrition
		II	V	Agricultural Chemistry
		III	V	Dyeing Techniques and Water Treatment

14.	Electronics	I	IV	Home Appliance Maintenance and Servicing
		II	V	Computer Hardware and Networking
		III	V	Mobile Servicing
15.	Hotel Management and Catering Science	I	IV	Hospitality Marketing
		II	V	Information Technology in Hotel Industry
		III	V	Information Technology in Hotel Industry (P)
16.	Microbiology	I	IV	Microbial Nanotechnology
		II	V	Diagnostic Microbiology
		III	V	Antimicrobial agents
17.	Zoology	I	IV	Apiculture
				Aquaculture
		II	V	Sericulture
				Poultry Farming
		III	V	Vermiculture
				Dairy farming

SKILL BASED ELECTIVE PAPERS
(2016 onwards)

Sl. No.	Skill Based Elective Paper	Paper	Semester	Title of the Paper
1.	அச்ச ஊடகங்கள்	I	IV	தமிழ் இதழியல் வரலாறு
		II	V	நாளிதழ் உருவாக்கமும் வடிவமைப்பும்
		III	V	இலக்கிய இதழ்கள்
2.	Biotechnology	I	IV	Aqua Culture
		II	V	Biofertilizer
		III	V	Mushroom Cultivation and Value Addition
3.	Chemistry	I	IV	Food and Nutrition
		II	V	Agricultural Chemistry
		III	V	Dyeing Techniques and Water Treatment
4.	Clinical Microbiology	I	IV	Clinical Bacteriology
		II	V	Clinical Mycology and Virology
		III	V	Clinical Parasitology
5.	Computer Application	I	IV	Hardware Troubleshooting
		II	V	Ruby on Rails
		III	V	Web Services
6.	Customer Relationship Management	I	IV	Overview of Customer Relationship Management (CRM)
		II	V	CRM in Services Marketing & its Tools
		III	V	E – CRM (Virtual Marketing)
7.	Desktop Publishing	I	IV	Page Maker
		II	V	Corel Draw
		III	V	Dream weaver
8.	Electronics	I	IV	Home Appliance Maintenance and Servicing
		II	V	Computer Hardware and Networking
		III	V	Mobile Servicing
9.	Herbal Medicine	I	IV	Ethno Medicine
		II	V	Pharmacognosy
		III	V	Herbs and Drug Action
10.	Hotel Management and Catering Science	I	IV	Hospitality Marketing
		II	V	Information Technology in Hotel Industry
		III	V	Information Technology in Hotel Industry (P)
11.	Journalism and Public Relations	I	IV	Journalism and Mass Media
		II	V	Reporting and Editing
		III	V	Public Relations
12.	Microbiology	I	IV	Microbial Nanotechnology
		II	V	Diagnostic Microbiology
		III	V	Antimicrobial agents

13.	Office Management	I	IV	Introduction to Office Management
		II	V	Office Management Tools
		III	V	Communication & Interpersonal Skills
14.	Sales and Marketing Management	I	IV	Introduction to Marketing Management
		II	V	Sales Management
		III	V	Retail Management
15.	Travel and Tourism Management	I	IV	Tourism and Travel Agency
		II	V	Cultural Tourism in India
		III	V	Tourism Product – 3
16.	Yoga and Stress Management	I	IV	Fundamentals of Yogic Practices
		II	V	Stress Management Through Yoga
		III	V	Asanas and Pranayamas – Practical
17.	Zoology	I	IV	Apiculture
				Aquaculture
		II	V	Sericulture
				Poultry Farming
		III	V	Vermiculture
				Dairy farming

YOGA AND STRESS MANAGEMENT

Skill Based Elective I (Semester-IV)

FUNDAMENTALS OF YOGIC PRACTICES

Unit I

Meaning and definition of Yoga – aims & objectives of yoga – misconception about yoga. Historical perceptive on yoga – yoga before the time of Patanjali (Indus valley civilization, Vedas, Brahmnas, Upanishads, Epics, Puranas). Contributions of Patanjali and Thirumular to yoga. Yoga practices and other systems of exercises.

Unit II

Schools of Yoga: Bhakthi Yoga, Jnana Yoga, Karma Yoga, Kundalini Yoga, Mantra Yoga, Hatha Yoga, Raja Yoga. Eight Limbs of Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana & Samathi. General principles of practicing Asana, Pranayama, Meditation, Kriyas Bandhas and Mudra.

Unit III

Classification of Asanas - Meditative Asanas – Relaxative Asanas – Cultural Asanas. - safety measure and precautions while performing asanas. Pranayama – different phases in Pranayama practices: Puraka (Inhalation), Kumbhaka (Retention) and Recaka (Exhalation), - safety measures and precautions while performing pranayama. Meditation - Its techniques & benefits. Practicing methods and benefits of Kriyas, Bandha and Mudra.

Unit IV

Impact of Yoga on Muscular system, Respiratory System, Circulatory system, Nervous system, Digestive system and Endocrine system

Unit V

Yoga and development of Social qualities of personality – Co-operation – Simplicity – Tolerance – Social adjustments – Yoga and personal efficiency. Improvement of personal efficiency through yoga.

Reference

- Author's guide, (2003). Yoga – The Science of Holistic living. Chennai: Vivekananda Kendra Prakashana trust
- Chandrasekaran, K., (1999) Sound Health through Yoga. Sedapatti: Prem Kalyan Publications.
- Maguire, Imelda., (2005) Yoga for a Healthy Body. London: Greenwich Editions.
- Mariayyah, P., (2000). Suriyanamaskar. Perunthurai: Jaya Publishing House.
- Tummers, Nanette. E., (2009) Teaching Yoga for Life. Champaign: Human Kinetics.

Skill Based Elective II (Semester V)

STRESS MANAGEMENT THROUGH YOGA

Unit I

Meaning and Definition of Stress. Types: Eutress, Distress, Anticipatory Anxiety, Intense Anxiety and Depression. Meaning of Management – Stress Management.

Unit II

Concept of Stress according to Yoga: Patanjali aphorism (PYS II - 3) Avidya Asmita. Bhagavad – Gita (Gita II 62-63) Dhayato Visayam Punsah ... Yoga Vasistha and Upanishad.

Unit III

Physiology of Stress on: Autonomic Nervous System (ANS), Endocrine System, Hypothalamus, Cerebral Cortex and Neurohumours.

Unit IV

Mechanism of Stress related diseases: Psychic, Psychosomatic, Somatic and Organic phase. Role of Meditation & Pranayama on stress – physiological aspect of Meditation. Constant stress & strain, anxiety, conflicts resulting in fatigue among Executive. Contribution of Yoga to solve the stress related problems of Executive.

Unit V

Meaning and definition of Health – various dimensions of health (Physical, Mental, Social and Spiritual) – Yoga and health – Yoga as therapy. Physical fitness. Stress control exercise – Sitting meditation, Walking meditation, Progressive muscular relaxation, Gentle stretches and Massage.

Reference

- Andrews, Linda Wasmer., (2005). Stress Control for peace of Mind. London: Greenwich Editions
- Lalvani, Vimla., (1998). Yoga for stress. London: Hamlyn
- Nagendra, H.R., and Nagarathana, R., (2004). Yoga perspective in stress management. Bangalore: Swami Vivekananda Yoga Prakashana.
- Nagendra, H.R., and Nagarathana, R., (2004). Yoga practices for anxiety & depression. Bangalore: Swami Sukhabodhanandha Yoga Prakashana.
- Sukhabodhanandha, Swami., (2002). Stress Management. Bangalore: Prasanna trust.
- Udupa, K.N., (1996). Stress management by Yoga. NewDelhi: Motilal Banaridass Publishers Private Limited.

Skill Based Elective III (Semester V)

ASANAS AND PRANAYAMAS – PRACTICAL

UNIT I

Meditative Asanas: 1. Sukhasana, 2. Siddhaasana (or) Siddhayoniasana, 3. Ardha Padmasana (or) Padmasana 4. Vajrasana **Relaxative Asanas** 5. Makarasana 6. Advasana 7. Matsya Kridasana 8. Shavasana, 9. Jyestikasana

UNIT II

Cultural Asanas: 10. Tadasana, 11. Ardha Katti Chakrasana, 12. Pada Hastasana, 13. Utkattasana 14. Parivrruthu Trikonasana, 15. Garudasana, 16. Bakasana, 17. Sithilai Tadasana 18. Ardha Chakrasana 19. Vrksasana 20. Trikonasana, 21. Natarajasana, 22. Virabhadrasana

Sitting Postures: 23. Machiyasana, 24. Sasangasana 25. Parvatasana, 26. Dandasana, 27. Janu Sirshasana 28. Ardha Padma Pachimottasana, 29. Ustrasana, 30. Baddha Padmasana, 31. Tolasana 32. Tolangulasana, 33. Supta Vajrasana, 34. Vakrasana, 35. Ardha Sirsasana, 36. Baddha Konasana 37. Sithilai Dandasana, 38. Pachimottasana, 39. Ardha Ustrasana, 40. Yoga Mudra, 41. Saithalyasana 42. Gomukasana, 43. Veerasana, 44. Baddha Padmasana.

UNIT III

Prone Postures: 45. Bhujangasana, 46. Salabhasana, 47. Naukasana, 48. Ardha Salabhasana, 49. Dhanurasana, 50. Sarpasana.

Supine Postures:

- | | |
|--------------------------|------------------------|
| 51. Navasana | 59. Pawanamuktasana |
| 52. Viparitha Karani | 60. Padma sarvangasana |
| 53. Uttana Padasana | 61. Halasana |
| 54. Chakrasana | 62. Marjariasana |
| 55. Tolangulasana | 63. Sarvangasana |
| 56. Matsyasana | 64. Ardha Halasana |
| 57. Ardha Padma Halasana | 65. Uttana Padasana |
| 58. Sethu Bandhasana | |

UNIT IV

Pranayamas

- | | |
|------------------------------|-----------------------------------|
| 1. Suha Pranayama | 6. Chandra Anuloma Viloma |
| 2. Chandra Bhedana Pranayama | 7. Nadi Shodhana |
| 3. Sitkari Pranayama | 8. Surya Anuloma Viloma Pranayama |
| 4. Surya Bhedana Pranayama | 9. Bhramari Pranayama |
| 5. Sitali Pranayama | |

UNIT V

Preparation for Meditation, (sitting in meditative Asanas with Concentration on Tip of the Nose and Centre of eye brow) pranadarana (Body awareness) - Yoga Nidra.

Reference

- Iyengar, BKS., (2003). The Art of Yoga. New Delhi: Harper Collins Publishers.
- Maguire, Imelda., (2005). Yoga for a Healthy Body. London: Greenwich Editions.
- Ravishankar.N.S., (2001). Yoga for Health. New Delhi: Pustak Mahal.
- Tummers, Nanette, E., (2009) Teaching Yoga for Life. Champaign: Human Kinetics.
- Yogendra, Hansa Jayadeva and Desai, Armaiti Neriosand., (1991) Yoga for back and joint disorders. Mumbai: Dr.Jayadeva Yogendra for the yoga institute.

**SOFT SKILLS DEVELOPMENT****Learning Objective**

Today's world is all about relationship, communication and presenting oneself, one's ideas and the company in the most positive and impactful way. This course intends to enable students to achieve excellence in both personal and professional life.

Unit I

Know Thyself/ Understanding Self

Introduction to Soft skills-Self discovery-Developing positive attitude-Improving perceptions-Forming values

Unit II

Interpersonal Skills/ Understanding Others

Developing interpersonal relationship-Team building-group dynamics-Net working-Improved work relationship

Unit III

Communication Skills / Communication with others

Art of listening-Art of reading-Art of speaking-Art of writing-Art of writing e-mails-e mail etiquette

Unit IV

Corporate Skills / Working with Others

Developing body language-Practising etiquette and mannerism-Time management-Stress management

Unit V

Selling Self / Job Hunting

Writing resume/cv-interview skills-Group discussion- Mock interview-Mock GD – Goal setting - Career planning

TEXT BOOKS:

Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers & Distributors, No, B-20 & 21, V.M.M. Complex, Chatiram Bus Stand, Tiruchirappalli- 620 002.

(Phone No: 0431-2702824; Mobile No: 94433 70597, 98430 74472)

Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi- 110 055.

Mobile No : 94425 14814 (Dr.K.Alex)

REFERENCE BOOKS:

- (i) Developing the leader within you John c Maxwell
- (ii) Good to Great by *Jim Collins*
- (iii) The seven habits of highly effective people Stephen Covey
- (iv) Emotional Intelligence Daniel Goleman
- (v) You can win Shive Khera
- (vi) Principle centred leadership Stephen Covey



Bharathidasan University, Tiruchirappalli – 24

Gender Studies

Objectives

- ❖ To make boys and girls aware of each others strengths and Weakness.
- ❖ To develop sensitivity towards both genders in order to lead an ethically enriched life.
- ❖ To promote attitudinal change towards a gender balanced ambience and women empowerment .

Unit – I

Concepts of Gender: Sex – Gender – Biological Determinism – Patriarchy – Feminism – Gender Discrimination – Gender Division of labour – Gender Stereotyping – Gender Sensitivity – Gender Equity – Equality – Gender Mainstreaming - Empowerment.

Unit – II

Women’s Studies vs Gender Studies : UGC’s Guidelines – VII to XI Plans – Gender Studies : Beijing Conference and CEDAW – Exclusiveness and Inclusiveness.

Unit – III

Areas of Gender Discrimination : Family – Sex Ratio – Literacy – Health – Governance – Religion Work Vs Employment – Market – Media – Politics – Law – Domestic Violence – Sexual Harassment – State Policies and Planning .

Unit – IV

Women Development and Gender Empowerment : Initiatives – International Women’s Decade – International Women’s Year – National Policy for Empowerment of Women – Women Empowerment Year 2001 – Mainstreaming Global Policies .

Unit – V

Women’s Movements and Safeguarding Mechanism : In India National /State Commission for Women(NCW) – All Women Police Station – Family Court – Domestic Violence Act – Prevention of Sexual Harassment at Work Place Supreme Court Guidelines – Maternity Benefit Act – PNDT Act – Hindu Succession Act 2005 – Eve Teasing Prevention Act – Self Help Groups – 73rd and 74th Amendment for PRIS

பாலின சமத்துவம்

அலகு - I

பாலினம் தொடர்பான கோட்பாடுகள் :பாலியல் - பாலினம் - உடற்கூறுரீதியாக நிர்ணயித்தல் - ஆணாதிக்கம் - பெண்ணியம் - பாலின பாகுபாடு - பாலின வேலைப்பாகுபாடு - பாலின ஒருபடித்தானவைகள் - பாலின உணர்வூட்டல் - பாலின சமவாய்ப்பு - பாலின சமத்துவம் - பாலின மையநீரோட்டமாக்கல் - அதிகாரப்படுத்துதல்

அலகு -II

மகளிரியல் Vs பாலின சமத்துவக்கல்வி - பல்கலைக்கழக மானியக்குழுவின் வழிக்காட்டுதல்கள் - ஏழாவது ஐந்தாண்டுதிட்டம் முதல் பதினோராவது ஐந்தாண்டுதிட்டம் - பாலின சமத்துவக்கல்வி : பெய்ஜிங் மாநாடு மற்றும் பெண்களுக்கு எதிரான அனைத்து வன்முறைகளையும் ஒழிப்பதற்கான சர்வதேச உடன்படிக்கை - இணைத்தல் /உட்படுத்துதல் - ஒதுக்கல் -

அலகு - III

பாலியல் பாகுபாட்டிற்கான தளங்கள் : குடும்பம் - பாலின விகிதாச்சாரம் - கல்வி - ஆரோக்கியம் - ஆளுமை -மதம் - வேலை Vs வேலை வாய்ப்பு - சந்தை - ஊடகங்கள் - அரசியல் - சட்டம் -குடும்ப வன்முறை -பாலியல் துன்புறுத்தல் - அரசு கொள்கைகள் மற்றும் திட்டங்கள் .

அலகு - IV

பெண்கள் மேம்பாடு மற்றும் பாலின சமத்துவ மேம்பாடு : முயற்சிகள் - சர்வதேச பெண்களுக்கான தசாப்தம் - சர்வதேச பெண்கள் ஆண்டு - பெண்களின் மேம்பாட்டிற்கான தேசிய கொள்கை - பெண்கள் அதிகார ஆண்டு 2001 - சர்வதேச கொள்கைகளை மைய நீரோட்டமாக்கல்

அலகு - V

பெண்கள் இயக்கங்கள் மற்றும் பாதுகாப்பு நிறுவன ஏற்பாடுகள் : தேசிய மற்றும் மாநில மகளிர் ஆணையம் - அனைத்து மகளிர் காவல் நிலையங்கள் - குடும்ப நீதி மன்றங்கள் - குடும்ப வன்முறையிலிருந்து பெண்களைப் பாதுகாக்கும் சட்டம் 2005 - பணியிடங்களில் பெண்கள் மீதான பாலியல் துன்புறுத்தல்களை தடுப்பதற்கான உச்சநீதிமன்ற வழிகாட்டுதல்கள் - தாய்சேய் சேமநலச்சட்டம் - பெண்சிசுவை கருவிலேயே கண்டறியும் தொழில் நுட்பம் (முறைப்படுத்துதல் மற்றும் தவறாக பயன்படுத்துதலை தடை செய்திடும்) சட்டம் - ஈவ்ஹிங் (பெண்களை தொல்லை செய்தல்) தடுப்புச்சட்டம் - சுய உதவிக் குழுக்கள் - பஞ்சாயத்து அமைப்புகளுக்கான 73வது மற்றும் 74வது சட்டத்திருத்தம்.

References

1. Bhasin Kamala, Understanding Gender : Gender Basics , New Delhi : Women Unlimited , 2004
2. Bhasin Kamala, Exploring Masculinity: Gender Basics , New Delhi: Women Unlimited ,2004
3. Bhasin Kamala , What is Patriarchy? : Gender Basics, New Delhi :Women Unlimited ,1993
4. Pernau Margrit, Ahmad Imtiaz, Reifeld Hermut (ed.,)Family and Gender : Changing Values in Germany and India ,New Delhi :Sage Publications,2003
5. Agarwal Bina, Humphries Jane and Robeyns Ingrid(ed.,) Capabilities , Freedom , and Equality: Amartya Sen's Work from a Gender Perspective,New Delhi : Oxford University Press ,2006
6. Rajadurai. S.V,Geetha.V,Themes in Caste Gender and Religion, Tiruchirappalli : Bharathidasan University ,2007
7. Misra Geetanjali, Chandiramani Radhika (ed.,) Sexuality , Gender and Rights: Exploring Theory and Practice in South and Southeast Asia, New Delhi : Sage Publication ,2005
8. Rao Anupama (ed.,) Gender &Caste : Issues in Contemporary Indian Feminism, New Delhi : Kali for Women, 2003
9. Saha Chandana , Gender Equity and Gender Equality : Study of Girl Child in Rajasthan , Jaipur: Rawat Publication ,2003.
10. Krishna Sumi, (ed.,),Livelihood and Gender : Equity in Community Resource Management, New Delhi : Sage Publication ,2004
11. Pludi.A Michele(ed.,) praefer Guide to the Psychology of Gender ,London : Praeger Publisher ,2004
12. Wharton .S Amy , The Sociology of Gender : An Introduction to Theory and Research , USA : Blackwell Publishing ,2005
13. Mohanty Manoranjan(ed.,) Class ,Caste ,Gender : Readings in Indian Government and Politics – 5,New Delhi : Sage Publications ,2004.
14. Arya Sadhna Women ,Gender Equality and the State ,New Delhi :Deep &Deep Publication, 2000
15. பாலியலை புரிந்து கொள்வோம், மதுரை :ஏக்தா,.....
16. Mishra .O.P, Law Relating to Women &Child ,Allahabad :Central Law Agency ,2001
17. Chari Leelavathi ,Know Your Rights ,Madras; Tamilnadu Social Welfare Board,1987
18. Bhattacharya Malini , Sexual Violence and Law ,Kolkata; West Bengala Commission for Women ,2002
19. Sexual Harassment at the Workplace – A Guide , New Delhi ;Sakshi,1999
20. அஜிதா, குடும்ப வன்முறையிலிருந்து பெண்களை பாதுகாக்கும் சட்டம் 2005, மதுரை : ஏக்தா 2005
21. கு.சாமிதுரை& இராதாகிருட்டினன், பெண்கள் நலன் காக்கும் சட்டங்கள், மதுரை: Account Test Center:2007
22. பொன்.கிருஷ்ணசாமி,ஜே.பால் பாஸ்கர்&ஆ.ஜான் வின்சென்ட், பெண்களும் உச்ச நீதிமன்றமும், மதுரை :சோக்கோ வாசகர் வட்டம், 2004
23. வனஜா &சியாமா சுந்தரி, பெண்களுக்கான சட்டங்கள், செகந்திராபாத் : உலகத்தோழமை மையம்
24. க.உமாசங்கர், பி.பாலசந்தர், க.சசிகலா, செ.பழனிச்சாமி, சூரியன் (பெண்கள் தொடர்பான சட்டங்கள் குறித்த தொடக்கநிலை கையேடு: செகந்திராபாத்: உலகத்தோழமை மையம்,2006
25. குடும்ப வன்முறையிலிருந்து பெண்களை பாதுகாக்கும் சட்டம் 2005- கையேடு, திருச்சி:
26. Women's Integrated National Development Trust
27. ரவீந்திரநாத். ஜி.ஆர்., 'ராகிங் ஒழிப்போம்!' 'ஈவடிசிங்' ஒழிப்போம், சென்னை I.D.P.D.வெளியீடு

CODE OF CONDUCT FOR STUDENTS

1. Students should not leave the College premises during class hours without written permission of the Principal / Competent authority.
2. Students should be punctual in attending classes and other co-curricular and extra-curricular activities. Late comers will not be allowed in the class.
3. Students will be responsible for all equipment entrusted to them. Students should not cause any damage to any property, equipment, instruments, tools etc., of the College. An amount of Rs.150 towards General maintenance, is payable by each Student at the end of the Academic Year, prior to Examinations. In case of any damage, the actual cost will be recovered from the student along with a fine.
4. Students should take care of their belongings while within the campus. The College will not be responsible for any loss of such belongings.
5. Use of Mobile phones, Pagers, Cameras, etc., are prohibited inside the campus, during College hours, from 10am to 4pm. If found in contravention, they will be confiscated.

Smoking and consumption of pan is prohibited inside the campus. Consumption of any intoxicants or drugs is totally prohibited, and will lead to immediate dismissal from the College.

6. Students should display their Identity Card prominently, while they are within the campus and while travelling in the College bus. The security staff will not permit any student inside the campus without their identity card.
7. All Students should dress in a presentable manner. T-shirts and sleeveless dresses are not permitted.
8. The management reserves the right to modify the class timings and schedule.
9. Students should not hold any meetings or collect any money from other students without proper permission from the Principal / HOD.
10. Students should not involve themselves in any political or religious activity inside the Campus.

Ragging in any form is totally banned and is punishable as per the Government Order. If any student is found to be indulging in any sort of ragging or harassment to juniors or other fellow students, inside or outside the campus, bus, he/she will be dismissed immediately from the College, and criminal action will be taken against them as per the rules.

11. The following acts of misconduct will result in immediate dismissal from the College:

- (i) Assault of any person
- (ii) Willful damage to College property
- (iii) Intimidation, coercion and/or interference with other students
- (iv) Misbehavior with other students and/or Staff

12. The decision of the Principal decision is final and binding on all the students, in all matters pertaining to the College.

13. All other rules, regulations and guidelines prescribed by University / Government agencies will be implemented.

14. Attendance

1. Absence from class without proper reason and without prior permission from the HOD is tantamount to breach of discipline and such absence will attract punishment and should be avoided. One period of absence in the forenoon or afternoon session will be treated as half a day of absence.

2. Absence for more than 10 days without prior permission from the HOD may lead to removal from the nominal roll.

3. Students appearing for the University examinations must have at least 80% of attendance as per the rules of the University. A minimum of 70% attendance is required to appear for examinations.

RULES OF CONDUCT AND DISCIPLINE

1. All students should conduct themselves with DECENCY, DECORUM and DIGNITY at all times and in all places.

2. Students must co-operate in protecting and taking care of all college property and equipments. They are expected to keep the building, playfield and their rooms neat and tidy.

3. Difficulties experienced by the students and suggestions for improving their welfare may be brought to the notice of the principal or any other staff member for consideration and necessary action.

4. Students who want to participate in matches and competitions not conducted by the college can do so only after getting the permission of the principal.

5. Students are forbidden from taking any part in political activities of any kind particularly those directed against the authority of the government.

6. Students who are found damaging college property will be expelled from the college. If any damage to the college property is caused by the student who is not identified minimum collective fine of Rs.100/- per student will be levied at the end of the year.

RULES REGARDING ATTENDANCE & LEAVE OF ABSENCE

1. A Candidates other than private one shall be required to put in seventy five percent to qualify for admission to any prescribed examination of the university.

2. If a student is absent for one or more hours during a session (Forenoon or afternoon) he/she will lose the attendance for half-a-day.

3. The Principal of the college shall have a power to condone shortage of attendance of students to be admitted for university examinations upto a maximum of a 10 percent, ie., nine days each semester on valid reasons as ill health etc., on payment of the prescribed condonation fee of Rs.500/-.

4. Statement of attendance of the students shall be displayed in the college notice board every month.
5. In case the shortage of attendance of a student exceeds the limit prescribed for purpose of condonation of attendance, he/she will not be presented to the University examinations.
6. A student will be given only one opportunity to carry forward the deficiency in attendance of one semester to the next semester during the degree course, failing which he/she will have to re-do the course.

DISCIPLINE REGULATIONS

The following rules shall be on force in the college as per the Tamilnadu Educational rules.

1. No Student who has been convicted of any offence in a criminal court will be allowed to continue his studies in the college.
2. Students should abstain from active participation in party or communal politics.
3. Students who indulge in political propaganda or who organize fellow students in to political factions in the premises of the college or who otherwise engage themselves in party politics are liable to be expelled from the college.
4. Principal or other constituted college authorities may frame and issue from time to time disciplinary rules of a permanent or temporary nature relating to the conduct, inside and outside the college premises, of students.
5. Principal and other constituted college authorities shall have full powers to inflict the following punishments in the interest of the students or of the institution concerned fine, denial of attendance, denial of terms certificates, suspensions and expulsion.
6. Students should not indulge in any activity leading to the disruption of peace and discipline and dislocation of normal work in the college premises. Those who are guilty of violation of this rule will be severely dealt with.
7. Ragging is strictly forbidden. Anyone who is guilty of ragging will be severely punished.
8. Students who are guilty of (a) rude language towards the staff of the college or (b) assault or attempt to assault the staff or fellow students of the college, will be expelled from the institution.

RAGGING – WARNING

- Ragging of any sort is banned.
- Ragging is illegal and punishable.
- Ragging in any form at any place in the college campus or outside is strictly prohibited.
- Ragging is punishable with imprisonment upto 7 years with a fine of Rs.25,000. Strict disciplinary action will be taken against any student found indulging in an act of ragging.

- Any complaint about ragging has to be reported to the respective HODs or authorities.
- Ragging of any sort will be informed to the Police authorities.

IDENTITY CARD

Every student will be provided with an identity card with his photo duly attested by the principal. Students are required to keep their identity card with them always.