General Tamil – I

SUBJECT CODE:

பாடத்திட்டம் **தகுதிப்புள்ளிகள்:**

காலம்: 120 மணிகள்

நோக்கம்:

1. மரபுக் கவிதைகளின் மூலம் இலக்கிய நயங்களை அறிந்துகொள்ளல்.
2. புதுக்கவிதைகள் எழுதும் முறையை புரிந்துகொள்ளல்.
3. உரைநடை, சிறுகதை, நாடகங்களின் மூலம் சிந்தனையை வெளிப்படுத்தும் திறன்களை வளர்த்துக்கொள்ளல்.
4. வெற்றிப்படிகள் என்ற தன் முன்னேற்ற நூலின் வழித் தன்னம்பிக்கை பெறல்
5. மொழித்திறன்களின் மூலம் இலக்கணங்களை நடைமுறையில் பயன்படுத்தல்.

அலகு -1: மரபுக் கவிதைகள்.

1. தமிழ்த்தாய் வாழ்த்து - பேரா. சுந்தரம்பிள்ளை
2. அ). மலரும் மாலையும்
   கோயில் வழிபாடு
   வாழ்க்கைத் தத்துவங்கள். } கவிமணி தேசிய விநாயகம் பிள்ளை
   ஆ) ஆசிய ஜோதி
   புத்தர் மயங்கி விழுதல்
3. செந்தமிழ் நாடென்னும்.....
   யாமறிந்த மொழிகளிலே.....
   கண்ணன் பாட்டு (இரண்டு தலைப்புகள்) } பாரதியார்
   கண்ணன் என் சேவகன்.
   கண்ணன் என் அரசன்.
4. அழகின் சிரிப்பு – அழகு, நிலவு, புறாக்கள்,
   அரசியல் வகையில் அயல் மொழிப் பெயர்கள், } பாரதிதாசன்
   உலகம் உன்னுடையது,
   தமிழனுக்கு வீழ்ச்சியில்லை.

1. பட்டுக் கோட்டையார் பாடல்
   புது நாளினை எண்ணி உழைப்போம் } பட்டுக்கோட்டை
   கல்யாணசுந்தரம்
   தூங்காதே தம்பி தூங்காதே.....

2. இயேசு காவியம்
   அ) ஊதாரிப்பிள்ளை
   ஆ) வள்ளல் அழகப்பா மறைந்தார்..
   } கண்ணதாசன்.

அலகு -2: புதுக்கவிதை, ஹைக்கூ, சென்ரியு, லிமரிக் கவிதைகள்:

7. அப்துல் ரகுமான் - அ) அன்பு ஆ) நெருப்பின் கிளை
   இ) குப்பையைக் கிளறும் சிறகுகள்.

8. மு. மேத்தா - அ) தீபங்கள், தீவைக்கலாமா?
   ஆ) தேசப்பிதாவுக்கு ஒரு தெருப்பாடகனின் அஞ்சலி.

9. வைரமுத்து - சுயகொள்ளி

10. அறிவுமதி - ஹைக்கூ கவிதைகள்.

11. தமிழ்ச்சி தங்கபாண்டியன் - எஞ்ச்சோட்டுப் பெண்

12. ஈரோடு தமிழன்பன் - ஒரு வண்டி சென்ரியா

13. சிற்பி பால சுப்ரமணியன் - ஒரு கிராமத்து நதி

14. நிர்மலா சுரேஷ் & ஈரோடு தமிழன்பன் - லிமரிக் கவிதைகள்

15. நாஞ்சில் யோமா சேகர் - சிவப்புச் சீதனம்

அலகு - 3

இலக்கிய வரலாறு – 18,19,20 நூற்றாண்டு மரபு கவிதை, புதுக்கவிதை, உரைநடை, சிறுகதை, புதினம், நாடகம்.

ஆலகு - 4 சிறுகதைத் தொகுப்பு :
வெற்றிப்படிகள் - தன் முன்னேற்ற நூல், தொகுப்பு.

அலகு -5: மொழித்திறன்

1. பிழை நீக்கி எழுதுதல்
2. பொருந்திய சொல்
3. கலைச் சொல்லாக்கம்.
4. மரபுத் தொடர்களை வாக்கியத்தில் அமைத்தல்
5. கடிதம் (உறவு முறை, அலுவலகக் கடிதம்)
6. நேர்காணல்
7. தமிழ்ப் பழமொழிகள்.

SEMESTER – I

தேர்வுமுறை

பகுதி -1

1. அகமதிப்பீட்டுத் தேர்வு - 2
2. அகமதிப்பீட்டுத் தேர்வு - இரண்டாம் பகுதி
   நேர்காணல், கடிதம் எழுதல், கலைச் சொற்களைத் தொகுத்தல்

பகுதி -2 - புறத் தேர்வு (பருவம் முடியும் போது)

பார்வைநூல்கள்:

1. கவிமணி தேசிக விநாயகம் பிள்ளை (1938), மலரும் மாலையும், சென்னை: பாரி நிலையம்.
2. பாரதியார் (1991), பாரதியார் கவிதைகள் (திருத்தமான பதிப்பு) சென்னை: சீனி விசுவநாதன் பதிப்பு.
3. பாரதிதாசன் (2005), பாரதிதாசன் கவிதைகள், திருச்சி: பாரதிதாசன் பல்கலைக்கழக உயராய்வு மையம்.
4. மு.அருணாசலம், (1975) தமிழ் இலக்கிய வரலாறு, சென்னை: தமிழியல் ஆய்வு மற்றும் வெளியீட்டு நிறுவனம்.
5. கவியரசு கண்ணதாசன் (1982), இயேசு காவியம், திருச்சிராப்பள்ளி: கலைக்காவிரி பதிப்பகம்.
6. http://elthu.com/kavignar/kavimani-desigair.
7. books.tamilcube.com>books.
8. http://elthu.com/kavignar/Bharathidasan.php

GENERAL ENGLISH
(Total: 120 Hrs)

SUBJECT CODE:

OBJECTIVES

- To promote competency in Language skills and strengthen the students knowledge in Vocabulary and Grammar.
- To teach them the basics in learning English.
- To enhance the reading and writing skills of the students.

UNIT-I VOCABULARY

1. Gender
2. Number
3. Misspelt Words

UNIT-II GRAMMAR

1. Common Errors
2. Spotting Errors

UNIT-III STRUCTURES

1. Word Formation
2. Sentence Formation

UNIT-IV READING COMPREHENSION

1. Comprehension
2. Close Reading

UNIT-V NON-VERBAL COMMUNICATION

1. Prose Comprehension
2. Jumbled Sentences
3. Filling Pay-in-slips
4. Precise Writing
5. Hints Developing

REFERENCES

1. Thomson, A. J and Martinet, A.V, (1986). *A practical grammar*. UK: Oxford University Press
2. Radha Krishna Pillai. G., K. Rajeev. K and Bhaskara Nair. P, (2008). *Written english for you*. New Delhi: Emerald Publications.

MATHEMATICS

CORE PAPER – I
CALCULUS
(Total: 120 Hrs)

SUBJECT CODE:

UNIT - I

Differentiation - Successive Differentiation - n^{th} derivates - Leibnitz formula for n^{th} derivative of a product - Envelope, Curvature, Evoultes.

UNIT -II

Partial differentiation - Errors and approximations - Maxima and minima for functions of two or more variables.

UNIT - III

Integration - Standard methods - Definite integrals - Reduction formula - integration as summation.

UNIT - IV

Beta and Gamma functions - Recurrence formula of Gamma functions-Properties of Beta functions- Relation between Beta and Gamma functions.

UNIT - V

Evaluation of double and triple integrals - Changing the order of integration - Change of variables - Applications in double and triple integrals.

REFERENCES

1. Arumugam, S., & Thangapandian Issac, A. (1996). *Set Theory, Number Theory and Theory of Equations.* New Gamma Publishing House.
2. Pillai, T. M., T. N., & K. G. (1996). *Algebra* (Vol. 1 and 2). Viswanathan Private Limited.

CORE PAPER - II
CLASSICAL ALGEBRA
(Total: 120 Hrs)

SUBJECT CODE:

UNIT - I

Theory of Equations - Relation between roots and coefficients - Symmetric functions of roots - Formation of equation - Transformation of equation.

UNIT - II

Reciprocal equation - Descartes rule of signs - Diminishing and increasing the roots - Newton's Method of divisors - Horner's method.

UNIT - III

Inequalities - AM $\geq$ GM $\geq$ HM and applications - Cauchy Schwartz inequality - Weirstrass inequality.

UNIT - IV

Applications to maxima and minima.

UNIT - V

Binomial Exponential and Logarithmic series - Summation of series.

REFERENCES

1. Arumugam, S., & Thangapandian Issac, A. (2002). *Differential Equations.* New Gamma Publishing House.
2. Narayanan, S., and Manickavasagam Pillai, T.K., (1996). *Calculus* (Vol. II and III), S. Viswananthan Pvt. Ltd.
3. Narayanan, S., and Manickavasagam Pillai, T.K., (1996). *Differential Equations*, S. Viswananthan Pvt. Ltd.

DIFFERENTIAL EQUATIONS WITH LAPLACE TRANSFORM
(Total: 120 Hrs)

SUBJECT CODE:

UNIT - I

Ordinary differential equation - Non-Homogenous equations of the first degree in x and y- First order and first degree exact equation - Integrating factors - equations of the first order but of higher degree- Equations solvable for p, y and x and Clairaut's form.

UNIT -II

Linear differential Equations with constant coefficients - Particular integrals - Second order homogenous equations with variable coefficients-Equations reducible to the linear homogeneous equations - Variation of parameters - Simultaneous differential equations of the form $dx/P = dy/Q = dz/R$ – n^{th} order exact differential equation - Orthogonal trajectory.

UNIT - III

Partial differential equation of the first order - Derivation of partial differential equations - Classification on integrals - Lagrange's method of solving linear partial differential equations - Charpit's method of solving non-linear partial differential equations - Standard forms - Equations reducible to the standard forms.

UNIT - IV

The Laplace transforms and its results - Laplace transform of periodic functions - Some general theorems - Evaluation of integrals - Inverse Laplace transform.

UNIT - V

Solving ordinary differential equation with constant coefficients, variable coefficients and simultaneous linear equations using Laplace transform.

REFERENCES

1. Dr. S. Arumugam and Issac, (1996). *Analytical geometry of 3 dimensions and Vector Calculus*. New Gamma Publications.
2. Manickavasagam Pillai. T.K., and Narayanan (1998). *Analytical geometry of 3 dimensions* (Part II). S.V. Publications.

PHYSICS

CORE PAPER-I
MECHANICS, PROPERTIES OF MATTER AND SOUND

SUBJECT CODE:

(Total: 120 hrs)

UNIT-I: (24 hrs)

PROJECTILE, IMPULSE, IMPACT

Projectile – Path of a projectile- Range of projectile- Impulse and Impact-Direct and Oblique impact-Final velocity and loss of kinetic energy due to direct impact- Oblique impact-Motion of particle in a vertical motion

FRICTION

Friction-Laws of friction-angle of friction-resultant reaction-cone of friction-equilibrium of a body on a rough inclined plane to the horizontal and when the inclination in greater than the angle of friction- friction clutches.

UNIT-II: (24 hrs)

MOTION OF RIGID BODY

Moment of inertia-Perpendicular and Parallel axis theorem- Moment of inertia of Solid sphere about an axis through its Centre of gravity-Simple Harmonic Motion-Free and damped vibrations of a body-Compound Pendulum-Theory-Experiment to determine the acceleration due to gravity "g"-Torque and angular momentum-Conservation Of angular momentum.

Centre of gravity, centre of pressure and floating bodies

Centre of gravity-Centre of gravity of a solid hemisphere-hollow hemisphere and solid cone. Centre of pressure- rectangular and triangular laminas - triangular lamina immersed in a liquid.

Conditions of equilibrium of a floating body -Stability of floating bodies: Metacentre-Determination of metacentric height of a ship

UNIT-III: (24 hrs)

GRAVITATION

Newton's law of gravitation- Kepler's Law of Planetary motion – Deduction of Newton's law of gravitation form Kepler's Laws of gravitation – Determination of G- Boy's method – Gravitational potential – Gravitational field at a point due to spherical shell – Variation of 'g' with latitude, altitude and depth.

ELASTICITY

Hooke's law-Different moduli of elasticity- Relation between elastic moduli- Poisson's Ratio- Poisson's Ratio in terms of Elastic constants- Work done in stretching and twisting a wire –-Torsional oscillation – Determination of Rigidity modulus by static torsion- Bending Of beams-Definitions-Expressions for the bending moment-Cantilever-Expression for depression of the loaded end of a cantilever- Determination of a Young's modulus by Cantilever oscillations and Non uniform bending -Young's modulus by koenig's method-Uniform bending .

UNIT-IV: (24 hrs)

SURFACE TENSION

Definition and dimensions of surface tension-Molecular forces-Explanation of surface tension on kinetic theory-Work done on increasing the area of surface-Angle of contact-Spreading of one liquid over another-Excess pressure inside a liquid drop and soap bubble-experimental determination of surface tension-Jaegar's method-Variation of surface tension with temperature.

VISCOSITY

Newton's law of viscous flow – streamlined and turbulent flow –- 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

UNIT-V: (24 hrs)

ACCOUSTICS

Newton's Formula for velocity of sound –- Musical Sound and Noise – Speech-Intensity and loudness-Decible- intensity level Measurement of intensity of sound .

Reverberation and time of reverberation – absorption coefficient- Sabine's formula – Factors Affecting the Acoustics of Buildings – Sound distribution in an Auditorium – Requisites for good acoustical auditorium.

ULTRASONICS

Production and detection – Piezo electric crystal method - Magnetostriction Method - Medical applications of Ultrasonic waves – Acoustic Grating-Velocity of ultrasonics in liquid-Applications-Non destructive testing(NDT)-Medical, industrial and scientific applications of ultrasonic waves.

REFERENCES

1. Murugeshan, R., (2012). *Properties of matter*. S. Chand & Co. Pvt. Ltd., Revised edition.
2. D.S. Mathur, (2010). *Elements of Properties of matter*, S. Chand & Co. Pvt. Ltd. Revised edition, 2010.
3. Brijlal and Subramanyam, N. (2005). *Properties of matter*. Vikas Publishng. Pvt. Ltd.
4. Brijlal and Subramanyam, N. (2008). *A Text Book of Sound.* Vikas Publishing. Pvt. Ltd.
5. Srinivasan M. N., (1991).*Sound,* Himalaya Publications, New Delhi.
6. Baldevraj *(*2004).*Science and Technology of Ultrasonics*, Narosa.
7. D.Halliday, R.Resnick and J.Walker, (2001), *Fundamentals of Physics*, New York,Wiley,.
8. CRC Handbook of Physics & Chemistry, (1999)., CRS Press, NY,
9. R P. Feynman, R B Leighton and M Sands,(1998),*The Feynman Lectures on Physics*, VoIs. I, II, and III, New Delhi, Narosa.
10. http://bookboon.com/en/physics-ebooks

EXTENSIBLE LEARNING PHYSICS –I

SUBJECT CODE:

(Total: 60 hrs)

UNIT-I (12 hrs)

MOTION

Transporting Systems – Story of Transport – Types of motion -Motion along straight line – rectilinear motion - Motion along circular path – motion along periodic -Definition speed , velocity and acceleration .

ACTIVITIES AND DEMONSTRATIONS

Modern transporting systems – Features and advantages – systems at rest and moving in daily life –Understanding periodic motion - stone tied with a rope –motion of a pendulum clock – demonstration of rectilinear and circular motions – objects in rest and motion - rolling ball and motion of a military tanker.

UNIT-II (12 hrs)

FRICTION

Definition – factors affecting friction –static and sliding friction - Increasing friction – Grip – reducing friction - lubricants – wheels – types of frictions – fluid frictions – drags.

ACTIVITIES AND DEMONSTRATIONS

Demonstration of friction through relative motions between surfaces – examples and explanation of sliding frictions - walking on wet muddy track and oily surfaces - uses of lubricants in automobiles and machines - working of ball bearings – effect of different shapes while objects move through fluids.

UNIT-III (12 hrs)

MEASURING SYSTEMS AND UNITS

Units and Measurements – methods and units – ancient methods of measurement – Indian methods of measurements – Unit – standard units of measurement – CGS – MKS – International system of units – SI units.

ACTIVITIES AND DEMONSTRATIONS

Hands span measurements and length of a foot – length and breadth of a class room and tables – correct measurements using meter scale – comparison between conventional method of measurements and standard measurements

UNIT-IV (12 hrs)

METHODS OF MEASUREMENT

Measurements of time – speed- oscillatory motion – measurement of time period of a simple pendulum –units of time and speed – ancient method of measuring length and area - measuring devices –sand clock – water clock – speedometer – odometer –digital measuring devices and principles.

ACTIVITIES AND DEMONSTRATIONS

Finding the period of oscillation of simple pendulum - time and distance covered chart of a moving ball –preparation of distance – time graph of a car from odometer reading – analyzing distance -time graph of the bus

UNIT-V (12 hrs)

FORCE

Definition – pushing and pulling forces – forces due to interaction –change of state of motion –change of shape of the body –realisation of force –contact forces – non contact forces-electrostatic force – gravitational force – units and explanation.

Activities and demonstrations

Demonstration of pushing and pulling forces from day today activities – demonstration of interactive forces –muscular forces while breathing and digestion -gravity of astronauts in space ship.

REFERENCES

1. 1. CRC Handbook of Physics & Chemistry, (1999),NY,CRS Press,.
2. D.Halliday, R.Resnick and J.Walker,(2001).Fundamentals of Physics, NY ,Wiley,
3. D.Halliday, R.Resnick and K.S.Krane,(1994).Physics, Vols I, II &III Extended,
4. Dr.J.P.Sharma.(2009),Comprehensive Environmental studies, New Delhi, Laxmi publications
5. NCERT (NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING) Text Books for standard VI,VII,VIII,New Delhi.
   NY ,Wiley
6. R P. Feynman, R B Leighton and M Sands,(1998),The Feynman Lectures on Physics, VoIs. I, II, and III, New Delhi,.Narosa,
7. Tamil Nadu Text Books for CBSE VI,VII, VIII.
8. Tamil Nadu Text Books for standard VI,VII, VIII.
9. https//www.practicalphysics.org
10. https://www.education.com>activity >physics
11. https://www.iop.org>education>itp>resources
12. https://www.nsf.gov>news>physics.

CORE PRACTICAL - I

SUBJECT CODE:

(Total: 60hrs)

(Any 12 Experiments)

1. Measurements of length (or diameter) using Vernier calipers, Screw gauge and Travelling microscope.
2. Young's modulus – non uniform bending – pin and microscope.
3. Young's modulus – non uniform bending – optic lever method
4. Young's modulus cantilever depression – scale and telescope method.
5. Rigidity modulus – torsional pendulum.
6. Rigidity modulus–static torsion– scale and telescope method.
7. Surface tension and interfacial surface tension – drop weight method.
8. Co-efficient of viscosity of liquid – graduated burette – Radius of cappellet method.
9. Comparison of viscosities – (h1/h2)..
10. Compound Pendulum – Determination of 'g'and 'k'
11. Thermal conductivity of a bad conductor – Lee's disc method.
12. Specific heat of liquid – Newton's law of cooling.
13. Sonometer – frequency of tuning fork.
14. Melde's string frequency of vibrator
15. Viscosity by capillary flow method
16. Sonometre frequency of AC
17. Joules calorimeter –determination of specific heat capacity of liquid
18. Spectrometer –refractive index of prism – μ of a liquid.
19. Determine the frequency of a given tuning fork – Sonometer

REFERENCES

1. S Srinivasan, S., (2005). *A Text Book of Practical physics.* S. Sultan Chand publications.

2. Sasikumar, R., (2011). *Practical Physics.* PHI Learning Pvt. Ltd, New Delhi.

3. https//www.practicalphysics.org

ALLIED MATHEMATICS - I

SUBJECT CODE:

(**Total : 120 Hrs**)

UNIT-I

ALGEBRA: Statement of Binomial, Exponential and Logarithmic series – Approximation and limit expression obtained by Binomial, Exponential and Logarithmic series. (Omit summation problems)

UNIT-II

MATRICES: Rank of a matrix – Simultaneous linear equations – Eigen values and Eigen vectors – Cayley-Hamilton Theorem (without proof) and its applications.

UNIT-III

FINITE DIFFERENCES: Interpolation – Binomial method – Lagrange's interpolation. (Omit exercises)

UNIT-IV

TRIGNOMETRY: Expansions of Cos nθ, Sin nθ and tan nθ - Expansion of Sin θ and Cos θ in a series of ascending powers of θ - Hyperbolic functions – Relation between Hyperbolic functions – Inverse Hyperbolic functions – Real and Imaginary parts.

UNIT-V

DIFFERENTIAL CALCULUS: Curvature – Circle, radius and center of curvature – Coordinates of center of Curvature – Evolute and Involute – Radius of Curvature when the curve is given in polar coordinates – p-r Equation of the curve.

REFERENCES

1. S. Narayanan, R. HanumanthaRao, ManickavachagamPillai and P. Kandasamy, S. Viswanathan , (2007). *Ancillary Mathematics (Volume I)*. Printers & Publishers Pvt. Ltd.

2. Kandasamy.P and Thilagavathy.K, (2004). *Mathematics for B.Sc., Branch I; Vol I.* S. Chand and Company Ltd., New Delhi.

CHEMISTRY

CORE PAPER- I
INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY – I

SUBJECT CODE:

(Total: 120 Hrs)

UNIT-I

Structure of atom-discovery of electron, determination of e/m ratio, determination of charge of electron.Black body radiation- Failure of Classical theory is explaining black body radiation, Planck's quantum theory. Einstein's theory of photo electric effect, Compton effect, Davisson and Germer experiment, de- Broglie hypothesis, Heisenberg's uncertainty principle. Physical significance of wave function, well – behaved wave function. Quantum numbers and their significance.Concept of atomic orbitals.Shapes of s, p and d orbitals.Nodal planes and nodal points in atomic orbitals.

(**24Hours)**

UNIT-II

Atomic orbitals, quantum numbers- principal, azimuthal, magnetic and spin quantum numbers and their significance, Pauli's exclusion principle, Hund's rule, aufbauprinciple,(n + l) rule, stability of half filled and completely filled orbitals.

Classification of s, p, d & f block elements, atomic volume, atomic and ionic radii, ionization potential, electron affinity and electronegativity – variation along periods and groups. Factors influencing periodic properties.

(**24Hours)**

UNIT-III

Chemical bonding- Ionic bonding- factors influencing the formation of ionic bond-characteristics of ionic compounds – Born-Haber cycle. Covalent bond - factors influencing the formation covalent bond-partial ionic character in covalent bond-Fajan's rule and coordinate bond. (**24Hours)**

UNIT- IV

Classification of organic compounds, functional group, homologous series.IUPAC system of nomenclature -mono functional compounds, priority rules for multifunctional componds – Isomerism – Types of isomerism (structural andstereoisomerisms) with appropriate examples. Polar, non-polar molecules, electron donating and withdrawing groups.Polar inductiveeffect, mesomeric effect, electromeric effect and hyperconjugation.Homolytic and heterolytic fission- free radicals, carbocations, carbanions and their stabilities. Electrophiles and nucleophiles. (**24Hours)**

UNIT- V

Alkanes-general methods of preparation of alkanes, Hybridisation in methane.Chemical properties of alkanes-halogenation, nitration, sulphonation, oxidation, thermal decomposition, isomerisation and aromatization.

Alkenes-general methods of preparation of alkenes.Hybridisation in ethylene. Chemical properties of alkenes-hydrogenation, halogenation, hydrohalogenation(Markovnikoff's rule and peroxide effect), hydration, hydroboration, oxidation by $KMnO_4$ and ozonolysis.

(**24Hours)**

REFERENCES

1. 1. Bahl, B.S. and Arun Bahl, (2010), Advanced Organic Chemistry, New Delhi, S. Chand & Company Private Limited.
2. Puri, B.R. and. Sharma, L.R, (2011), Principles of Inorganic Chemistry, Delhi, Milestone publishers & distributors.
3. Puri, B.R. and Sharma, L.R, (2011), Principles of Physical Chemistry, Jalandhar, Vishal publishing company.
4. http://www.chem1.com/acad/webtext/atoms/index.html
5. http://periodicvideos.com/
6. https://www.wyzant.com/resources/lessons/science/chemistry/introduction_to_organic_chemistry.

CHEMISTRY FOR SCHOOL EDUCATION - PAPER – I

SUBJECT CODE:

(Total: 60 Hrs)

UNIT-I FOOD AND NUTRITION

Components of food - Nutrients – definition- major nutrients. Carbohydrates – definition – classification – test for carbohydrates. Proteins – classification – test for proteins. Fats – test for fats. Vitamin and minerals – deficiency diseases.Chart / Electric display to matches vitamins and deficiency diseases.

(12Hours)

UNIT-II ACID, BASES AND SALTS

Definition of acids, bases and salts and indicators.Extractions of natural dyes. Test for acids and bases. Demonstration of the functioning of an inhibitor with an acid-base titration.Demonstration of degree of solubility and miscibility with suitable substances.

(12Hours)

UNIT-III PHYSICAL AND CHEMICAL CHANGES

Demonstration experiments showing physical change and chemical change – Azo formation, lime water carbon dioxide reaction, exchange reaction with copper sulphate and blade, crystallisation with copper sulphate solution. Rusting of iron and galvanisation. Iron pillar near Qutubminar. Demonstration experiment showing the effect of saliva on starch.

(12Hours)

UNIT-IV SEPARATION TECHNIQUES

Definitions and demonstration experiments about sedimentation, decantation, filtration, evaporation, condensation and saturation.

(12Hours)

UNIT-V AIR

Air – composition – demonstration experiment showing (i) the presence of water vapour in air (ii) presence of oxygen in air (iii) Dust particles in air (iv) dissolved air in water and (iv) soil air. **(12Hours)**

REFERENCES

1. 6^{th}, 7^{th} and 8^{th} Standard science books, New Delhi, NCERT (National Council of Educational Research and Training).
2. http://ncert.nic.in/textbook/textbook.htm?kech1=0-7
3. http://chemistrynoteslecture.com/Units%20112%20High%20School%20Chemistry.html
4. https://byjus.com/ncert-solutions-class-8-science/chapter-18-pollution-air-water/

SEMESTER – I

CORE PRACTICAL - I

INORGANIC QUALITATIVE ANALYSIS
(Total: 60 Hrs)

SUBJECT CODE:

A. INORGANIC QUALITATIVE ANALYSIS

Semi micro method of analysis of a mixture containing two cations and two anions of which one may be an interfering acid radical requiring elimination during the analysis of basic radical.

a. Basic radicals: - Lead, copper, zinc, bismuth, cadmium, tin, iron, aluminium, manganese, magnesium, cobalt, nickel, calcium, barium, strontium, ammonium
b. Acidic radicals: - Sulphate, carbonate, nitrate, chloride, bromide, iodide, oxalate, arsenite, arsenate, phosphate, borate and chromate

REFERENCES

1. 1. Venkateswaran, V., Veeraswamy, R. and Kulandaivelu, A.R, (2006), *Basic Principles of Practical Chemistry*, New Delhi, Sultan Chand & Sons Private Limited.
2. https://en.wikipedia.org/wiki/Qualitative_inorganic_analysis
3. https://archive.org/stream/manuchemianalqual00newtrich#page/n19/mode/2up
4. https://www.britannica.com/science/qualitative-chemical-analysis

ALLIED MATHEMATICS- I

SUBJECT CODE:

(Total : 120 Hrs)

UNIT-I ALGEBRA

Statement of Binomial, Exponential and Logarithmic series – Approximation and limit expression obtained by Binomial, Exponential and Logarithmic series.
(Omit summation problems)

UNIT-II MATRICES

Rank of a matrix – Simultaneous linear equations – Eigen values and Eigen vectors – Cayley-Hamilton Theorem (without proof) and its applications.

UNIT-III FINITE DIFFERENCES

Interpolation – Binomial method – Lagrange's interpolation.
(Omit exercises)

UNIT -IV TRIGNOMETRY

Expansions of Cos nθ, Sin nθ and tan nθ - Expansion of Sin θ and Cos θ in a series of ascending powers of θ - Hyperbolic functions – Relation between Hyperbolic functions – Inverse Hyperbolic functions – Real and Imaginary parts.

UNIT-V DIFFERENTIAL CALCULUS

Curvature – Circle, radius and center of curvature – Coordinates of center of Curvature – Evolute and Involute – Radius of Curvature when the curve is given in polar coordinates – p-r Equation of the curve.

REFERENCES

1. Narayanan, S., HanumanthaRao, ManickavachagamPillai and Kandasamy.,P, (2007). *Ancillary Mathematics* (Volume I), S. Viswanathan Printers & Publishers Pvt. Ltd.

2. Kandasamy.P and Thilagavathy.K., (2004). *Mathematics for B.Sc*., Branch I; Vol – I, S. Chand and Company Ltd., New Delhi,.

ALLIED ZOOLOGY I
(FOR BOTANY & CHEMISTRY MAJOR STUDENTS)

SUBJECT CODE:

(Total: 80 hrs)

UNIT-I

Outline classification of the animal kingdom.

Invertebrata- Classification and Characterisitics

Protozoa – Type study : Entamoeba ; conjugation in Paramecium – protozoan parasites

UNIT-II

Porifera – Type study : Sycon

Coelenterata - Type study : Obelia geniculata- poymorphism; corals

UNIT-III

Platyhelminthes - Type study : Taenia solium

Aschelminthes- Type study : Ascaris ; parasitic adaptations

UNIT-IV

Annelida – Type study : Earthworm ; coelom ; metamerism

Arthropoda – Type study : Prawn ; appendages

UNIT-V

Mollusca – Type study : Pila ; pearl production

Echinodermata – Type study : Asterias ; larval forms of echinoderms

REFERENCES

1. EkambaranathaAyyar, M and Ananthakrishnan, T.N. (1993).*Outlines of Zoology.Vol.I and II*, Madras :Viswanathan and Co..
2. Linville & Kelly (1993). *Textbook of General Zoology*. NewDelhi: Discovery publishing House.
3. Dhami,P,S&Dhami,J,K. *Invertebrate Zoology*. New Delhi: S. Chand and Co.
4. Jordan, E.K. and P.S. Verma. (1993). *Chordate Zoology.*(12th ed.).New Delhi:S. Chand & Co. Ltd.,
5. Trilok Chandra Majupuria. (1962). *A textbook of Invertebrate Zoology*. Jullundur City: S.Nagin.

ALLIED ZOOLOGY PRACTICALS
(FOR BOTANY & CHEMISTRY MAJOR STUDENTS)

SUBJECT CODE:

(Total : 40 Hrs)

I-DISSECTION

Cockroach: Digestive and Nervous system

Prawn : Nervous system

II-MOUNTING

Mouth parts of cockroach, mosquito, house fly, prawn appendages ,placoid scales

III-SPOTTERS

Entamoeba, Plasmodium, Paramoecium, Paramoecium-Conjugation, Sycon, Obeliageniculata,

(colony& medusa) , Fasciola hepatica (Entire & Transverse section), Taeniasolium (Entire & Transverse section), Leech (Entire & Transverse section), Earth worm , Prawn, Pila , Fresh

water mussel, star fish , Amphioxus, Shark, Frog , Pigeon and Rat.

IV-RECORD

BOTANY

CORE PAPER I

BIODIVERSITY- I: ALGAE, FUNGI, LICHENS AND BRYOPHYTES

SUBJECT CODE:

(Total: 120 Hrs)

ALGAE

UNIT-I

Distribution, Pigmentation, flagellation, storage products and cell wall composition of various divisions of Algae.General account and classification of Algae (Fritsch system 1935).

UNIT-II

Range of structure, reproduction, life histories and phylogeny of the following genera:
Ulva, Sargassum, Gracilaria, Nostoc, SpirulinaandDiatoms. Economic importance of Algae.

FUNGI

UNIT-III

General Characters, Classification by Alexopoulos(1979) and economic importance of Fungi- Medicine- Food- Biopesticides-Enzymes-Biofertiliser-Industrial uses
Structure, reproduction and life histories of the following:

Zygomycotina	:	Mucor
Ascomycotina	:	Peziza
Basidiomycotina	:	Agaricus
Deuteromycotina	:	Cercospora

LICHENS

UNIT-IV

Salient features of lichens with special reference to Usnea. Economic importance of Lichens.

BRYOPHYTES

UNIT-V

Classifications of Bryophyta(Watson 1971) - Structure and reproduction of the following: Hepaticopsida (Marchantia); Anthocerotiopsida (Anthoceros); Bryospida (Funaria).

REFERENCES

1. Vashista Sinha, B.R, Singh, V.P, (2002), *Botany for Degree students- Algae* 9th revised edition, S.Chand& Company Ltd., New Delhi.
2. Pandey, B.P,(2000) *Text Book of Botany Algae,*S.Chand& Company, New Delhi.
3. Sharma, O.P,(1992), *Text Book of Algae*, Tata McGraw Hill Publication Company Ltd., New Delhi
4. VashistaB.R ,(1982), *Botany for Degree Students – Fungi*-S.Chand& Co New Delhi.
5. Chopra G.L., (1990) *A Text book of Fungi*, S.Nagin& Co. Meerut, India
6. Pandey, B.P, (1997) College Botany Vol. I Fungi & Pathology.
7. PremPuri,(1981), *Bryophytes –Morphology, growth and differentiation* – Atma Ram & Sons, Delhi.

8. Dube, H., 1978, A textbook of Fungi, Bacteria and Virus. Vikas Publishers.
9. www.biology discussion. Com
10. www.biologywise.com
11. http://phycolab.yolasite.com/students.php

BIOBASICS I – BOTANY

SUBJECT CODE:

(Total: 60 Hrs)

ORIGIN OF LIFE

Origin of universe- Spontaneous generation-
Early conditions of earth
Origin of Biomolecules -Muller's Experiment

FACTORS AFFECTING LIFE

Biotic and abiotic factors and their influence on microbes, plants, animals, soil, wind, light, temperature, rainfall and fire.

BASICS OF LIFE

Basic unit- Outline of Microscopic structures of cell and its organelles.
ProkaroteAnd Eukaryote organisms

DIVERSITY OF LIVING ORGANISMS I

Basis of Classification -Classification and Evolution-The Hierarchy of Classification. Tree of Life -The Five Kingdoms.

Salient features of the Thallophyta(Algae, Fungi and Lichen), BryophytaPteridophyta , Gymnosperms and Angiosperms

REFERENCES

1. NarayanaSwamy, R.V, Rao K.N, (2009),*Outlines of Botany*,V.Subramanian Pvt. Limited, Chennai.
2. Pandey, B.P, (2011). *Botany for Degree students*, S.Chand&Co.Ltd., New Delhi .
3. Pandey, B.P, (2010,)*Modern Practical Botany vol I, II, III*, S.Chand& Company Ltd. New Delhi.

CORE PRACTICAL I
(Total: 60 Hrs)

Subject Code:

PRACTICALS

BIODIVERSITY- I: ALGAE, FUNGI, LICHENS AND BRYOPHYTES

1. Micro preparation of the types prescribed in the syllabus.
2. Identifying the micro slides relevant to the syllabus.
3. Identifying types of algae mixtures.

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

1. Making suitable micro preparations of the types prescribed in Pteridophytes and Gymnosperms.
2. Observing and identifying the fossil slides included in the syllabus.

REFERENCES

1. 1. Arnold, C.A, (1947), *An introduction to Palaeobotany,* McGraw Hill Publisher.
2. Chamberlain, C.A, (1986), *Gymnosperms – Structure and Evolution,* CBS Publishers & Distributors
3. Chopra G.L., (1990) *A Text book of Fungi*, S.Nagin& Co. Meerut, India
4. Dube, H., 1978, A textbook of Fungi, Bacteria and Virus. Vikas Publishers.
5. Pandey, B.P, (1997) College Botany Vol. I Fungi & Pathology.
6. Pandey, B.P,(2000) *Text Book of Botany Algae,*S.Chand& Company, New Delhi.
7. PremPuri,(1981), *Bryophytes –Morphology, growth and differentiation* – Atma Ram & Sons, Delhi.
8. Sharma, O.P,(1992), *Text Book of Algae*, Tata McGraw Hill Publication Company Ltd., New Delhi
9. Smith, G.M, (1955),*Cryptogamic Botany Vol. I & II,* McGraw Hill Company.
10. Sporne, K.R, (1976), *Morphology of Gymnosperms,*B.I.Publishers.
11. Sukla& Mishra, S.P, (1982), *Essentials of Palaeobotany,*Vikas Publishing House.
12. Vashista Sinha, B.R, Singh, V.P, (2002), *Botany for Degree students- Algae* 9th revised edition, S.Chand& Company Ltd., New Delhi.
13. Vashista, P.C, (1967), *Botany for Degree Students Vol. IV*, S.Chand& Co. New Delhi.

14. Vashista, P.C, (1976), *Botany for Degree Students Vol. V (Gymnosperms)*S.Chand& Co. New Delhi.
15. Vashista B.R ,(1982), *Botany for Degree Students – Fungi*-S.Chand& Co New Delhi.
16. http://phycolab.yolasite.com/students.php
17. http://phycolab.yolasite.com/students.php
18. www.biology discussion. Com
19. www.biology discussion. Com
20. www.biologywise.com
21. www.biologywise.com

ALLIED ZOOLOGY

(FOR BOTANY & CHEMISTRY MAJOR STUDENTS)

SUBJECT CODE:

(Total: 80 hrs)

UNIT-I

Outline classification of the animal kingdom.

Invertebrata- Classification and Characterisitics

Protozoa – Type study : Entamoeba ; conjugation in Paramecium – protozoan parasites

UNIT-II

Porifera – Type study : Sycon

Coelenterata - Type study : Obelia geniculata- poymorphism; corals

UNIT-III

Platyhelminthes - Type study : Taenia solium

Aschelminthes- Type study : Ascaris ; parasitic adaptations

UNIT-IV

Annelida – Type study : Earthworm ; coelom ; metamerism

Arthropoda – Type study : Prawn ; appendages

UNIT-V

Mollusca – Type study : Pila ; pearl production

Echinodermata – Type study : Asterias ; larval forms of echinoderms

REFERENCES

1. Ekambaranatha Ayyar, M and Ananthakrishnan, T.N. 1993, Outlines of Zoology, Vol.I and II, Madras. Viswanathan and Co.
2. Ayyar, E.K. and T.N. Ananthakrishnan, 1992. Manual of Zoology Vol. 1 (Invertebrate), Parts I & II. Madras. S. Viswanathan (Printers and Publishers) Pvt Ltd.,
3. Jordan, E.K. and P.S. Verma, 1993. Invertebrate Zoology, 12th Edition, New Delhi, S. Chand & Co Ltd
4. Kotpal, R.L., 1988 – 1992. (All Series) Protozoa, Porifera, Coelentereta, Annelida, Arthropoda, Mollusca, Echinodermata, Meerut , Rastogi Publications.
5. Jordan, E.K. and P.S. Verma, 1993. Chordate Zoology, 12th edition, New Delhi.,S. Chand & Co. Ltd.,
6. Jordan, E.K. and P.S. Verma, 1995. Chordate Zoology and Elements of Animal Physiology, 10th edition, New Delhi. S. Chand & Co Ltd.
7. Nigam, H.C., 1983. Zoology of Chordates, Jalandhar , Vishal Publications.
8. http://onesourcebook.com/download/biology-of-invertebrates.pdf
9. http://www.ebooksdownloads.xyz/search/an-introduction-to-the-invertebrates
10. https://thebookee.net/in/invertebrate-zoology-p-s-verma-and-jordan-free-pdf-books-download.

SEMESTER – I

11. http://www.e-bookdownload.net/search/anatomy-of-the-chordates-fourth-edition
12. https://www.kopykitab.com/Chordate-Zoology-by-E-L-Jordan-And-Dr-P-S-Verma
13. http://bestlibrary.co/download/chordate-zoology.pdf

ALLIED ZOOLOGY PRACTICALS
(FOR BOTANY & CHEMISTRY MAJOR STUDENTS)

SUBJECT CODE:

(Total: 40 Hrs)

I. DISSECTION

Cockroach: Digestive and Nervous system
Prawn : Nervous system

II. MOUNTING

Mouth parts of cockroach, mosquito, house fly, prawn appendages ,placoid scales

III. SPOTTERS

Entamoeba, Plasmodium, Paramoecium, Paramoecium-Conjugation, Sycon, Obeliageniculata, (colony& medusa) , Fasciola hepatica (Entire & Transverse section), Taeniasolium (Entire & Transverse section), Leech (Entire & Transverse section), Earth worm , Prawn, Pila , Fresh water mussel, star fish , Amphioxus, Shark, Frog , Pigeon and Rat.

IV. Record

ZOOLOGY

CORE PAPER-I
INVERTEBRATA

SUBJECT CODE:

(Total: 120 hrs)

UNIT-I (24 hrs)

General characters and classification of invertebrate up to class. Levels of organization - unicellular, multicellular, acoelom,eucoelom , pseudocoelom , segmentation

UNIT-II (24 hrs)

Protozoa - General characters and classification with examples ; Type study – paramoecium ; parasitic protozoans .

Porifera - General characters and classification - Type study - sycon ; canal system in sponges

UNI- III (24 hrs)

Coelenterata – General characters and classification – Type study –obelia ; polymorphism ;coral reefs.

Helminthes - General characters and classification –Type study –Liver fluke ; parasitic helminthes

UNIT-IV (24 hrs)

Annelida - General characters and classification – Type study – Neries; metamerism

Arthropoda - General characters and classification - Type study - prawn, cockroach; economic importance of insects .

UNIT-V (24 hrs)

Mollusca - General characters and classification – Type study – Fresh water mussel ; Torsion in gastropod

Echinodermata - General characters and classification – Type study – star fish ; larvae of echinoderms ; water vascular system.

REFERENCES

1. Parker and Haswell, 1964. Text Book of Zoology, Vol I (Invertebrate), New Delhi A.Z.T,B.S. Publishers and Distributors
2. Hickman, C.P. Jr., F.M.Hickuman and L.S. Roberts, 1984. Integrated Principles of Zoology, 7th Edition, St. Louis , Times Merror/Mosby College Publication.
3. Hyman L.H. 1951 The Invertebrata, Vol I to VI. New York , Mc Graw – Hill Book Co., New York
4. Borradile, L.A. Eastham, L.E.S. and J.T. Saunders. 1977 The Invertebrate , London, Cambridge University Press.
5. Adam Sedgewick – A students text books of Zoology – Vol I and III – Alahabad., Central Book Depot, Alahabad.

SEMESTER – I

6. Barnes , R.D, 1982 Invertebrate Zoology VI edition , Philadelphia. Holt Saunders International.
7. 7 Ayyar, E.K. and T.N. Ananthakrishnan, 1992. Manual of Zoology Vol. 1 (Invertebrate), Parts I & II. Madras. S. Viswanathan (Printers and Publishers) Pvt Ltd.,
8. Jordan, E.K. and P.S. Verma, 1993. Invertebrate Zoology, 12th Edition, New Delhi, S. Chand & Co Ltd
9. Kotpal, R.L., 1988 – 1992. (All Series) Protozoa, Porifera, Coelentereta, Annelida, Arthropoda, Mollusca, Echinodermata, Meerut , Rastogi Publications.
10. http://onesourcebook.com/download/biology-of-invertebrates.pdf
11. http://www.ebooksdownloads.xyz/search/an-introduction-to-the-invertebrates
12. https://thebookee.net/in/invertebrate-zoology-p-s-verma-and-jordan-free-pdf-books-download

BASIC ZOOLOGY - I

SUBJECT CODE:

(Total: 60 hrs)

UNIT-I (12 hrs)

Diversity of organisms –Micro organisms : Virus – classification; AIDS virus ; Bacteria - classification ; structure and shape ; Fungi ; Algae ; protozoa ; Uses of microbes in medicine and agriculture ; microbes in food preservation ; microbes in genetic engineering ; diseases caused by microbes in animals and humans.

Activities:

Observation of drop of water, curd, other sources, bread mould under the microscope; experiment showing fermentation of dough – increase in volume (using yeast) .

UNIT-II (12 hrs)

Diversity of organisms – Animals : General characteristics - protozoa , sycon, coral, worm , insect , prawn , mollusk, echinoderm , fish , frog , snake , bird , mammal .

UNIT-III (12 hrs)

Basis of classification : Need for classification - Five Kingdoms – criteria - Monera , Protista, Fungi, Plantae , Animalia ; Features ; Binomial nomenclature , history , necessity and principles of binomial nomenclature

Activities:

Identification of animals upto class levels in the institutional campus and making a project report with their salient features

UNIT-IV (12 hrs)

Animals in daily life : Different animals used in daily life ; uses of animals - for food , fibre , drought ; different animal products ; animal fibers

Sericulture – types of silk ; Apiculture ; poultry – silver revolution

Activities : Visit to fish farm, poultry farm, cattle farm ; honeybee culture farm and sericulture units.

UNIT-V (12 hrs)

Animal protection and management - care of domestic and wild animals and conservation of wild life ; zoos, sanctuaries, forest reserves etc.; endangered fauna species, red data book; endemic species, migration.

Activities : Films on wild life, TV programmes, visit to zoo/ forest area/sanctuaries etc.; case study with information on disappearing tigers; data on endemic and endangered species from MEF, Govt. of India, NGOs

REFERENCES

1. B.S. Beckett , 1986 Biology– A modern introduction .– New York , Oxford University Press

SEMESTER – I

2. Robert Wallace , 1992 ,Biology Science of Life , New York, Sanders and Ferl-Harper Collins College Publishers.
3. John Sears and Sue Taylor , 1994 Life & Living — London, Hodder & Stoughton .
4. Paddy Gannon , 2013, Frame work of Science -, New Delhi, Oxford University Press
5. Lewis , Gaffin, Hoefnagles , Parker , 2002, Life 4th edn, New York , McGraw Hill .
6. Saundra Alters , 2000 , Biology: understanding life 3rd edn , , UK , Jones & Barthlett Publishers.
7. TamilNadu Text book : for standards VI,VII,VIII ,2017 Chennai, Tamil Nadu text books and educational service corporation.
8. P.S.Verma & V.K. Agarwal 2016, Science for ninth class Part 3 Biology , New Delhi S.Chand & Co Ltd
9. N.Arumugam , 1999 , Cell biology, Ahmedabad, Saras publications
10. Modern Zoology - Ramesh Gupta , Meerut ,G.R. Bathla Publications Pvt. Ltd.
11. T.S.Ranganathan 2000 , Human anatomy ,New Delhi S.Chand & Co. , Ltd.
12. TamilNadu Text book : for standards VI,VII,VIII , 2017 Chennai, Tamil Nadu text books and educational service corporation
13. https://en.wikibooks.org/wiki/General_Biology/Classification_of_Living_Things/Classification_and_Domains_of_Life
14. https://books.google.co.in/books/about/Classification_of_Living_Organisms.
15. http: www.en. Wikipedia.org/wiki/microorganism
16. https://www.curwensville.org/cms/lib2/PA01000485/Centricity/Domain/111/cellOrganization.pdf
17. http://longfiles.com/vnomi0qlout2/Cellular_Respiration_(Biology_Collection).pdf.html
18. https://www.exploringnature.org/graphics/teaching_aids/Tissue_identification.pdf

CORE PRACTICAL I

INVERTEBRATA & CHORDATA

SUBJECT CODE:

(Total : 60 Hrs)

I. DISSECTION

Cockroach: Digestive system, Nervous system, Reproductive system,

Prawn : Digestive system, Nervous system

Fish : Digestive system

II. MOUNTING

Mouth parts: Cockroach, House fly, Mosquito

Prawn appendages: Cephalic, Thoracic, Abdominal

Fish : scales

III. SPOTTERS

Classify giving reasons:

Paramoecium	Sycon sponge	Aurelia	Calotes Rabbit
Liver fluke	Ascaris	Nereis	Naja Naja
Prawn	Fresh water mussel	Star fish	Columba

Draw labeled sketches:

T.S. of Taenia solium	Physalia	Paramecium	T.S. of liver fluke
Obelia medusa	Ephyra larva	Redia larva	
Cercaria larva	Mysis larva	Alima larva	

Biological significance:

Paramecium – Conjugation	Velella	Heteronereis	Amphioxus
Trochophore larva	Chaetopterus	Peripatus	Balanoglossus
Limulus	Chiton	Entamoeba	Hippocampus
Plasmodium	Obelia colony	Liver fluke – miracidium	
Taenia – Mature proglottid	Ascaris	Millipede	Ichthyophis
Centipede	Sepia	Octopus	Rhacophorus
Sea cucumber	Sea urchin	Leech	Chameleon
Nauplius larva	Zoea larva	Sacculina on crab	
Sea anemone on Hermit crab			

Relate structure and function:

Sponge – Spicules	Sponge – Gemmule	Taenia – Scolex
Nereis – Parapodium	Prawn – Petasma	Honey bee – Sting apparatus
Scorpion – Book lung	Starfish – Pedicellariae	Starfish - Tube foot
Draco / wing	Pigeon – synsacrum /keel	

Medical Importance

Parasitic protozoans, Parasitic helminthes.

Economic Importance

Sponges , corals, shells, prawns

SEMESTER – I

IV. RECORD

V. FIELD VISIT TO MUSEUM -REPORT

REFERENCES

1. Parker and Haswell, 1964. Text Book of Zoology, Vol I (Invertebrate), A.Z.T,B.S. Publishers and Distributors, New Delhi – 110 051, 874pp.
2. Hickman, C.P. Jr., F.M.Hickuman and L.S. Roberts, 1984. Integrated Principles of Zoology, 7th Edition, Times Merror/Mosby College Publication. St. Louis. 1065pp.
3. Hyman volume I to VI
4. L.A. Borradile and F.A. Potts- The Invertebrate – Cambridge University Press.
5. Adam Sedgewick – A students text books of Zoology – Vol I and III – Central Book Depot, Alahabad.
6. Barnes , R.D, Invertebrate Zoology(1982) VI edition , Holt Saunders International.
7. P.S. Dhami and J.K. Dhami – Invertebrate Zoology – R. Chand and Co.
8. Ayyar, E.K. and T.N. Ananthakrishnan, 1992. Manual of Zoology Vol. 1 (Invertebrate), Parts I & II. S. Viswanathan (Printers and Publishers) Pvt Ltd., Madras, 991p.
9. Jordan, E.K. and P.S. Verma, 1993. Invertebrate Zoology, 12th Edition, S. Chand & Co Ltd., Ram Nagar, New Delhi, 1050pp.
10.Kotpal, R.L., 1988 – 1992. (All Series) Protozoa, Porifera, Coelentereta, Annelida, Arthropoda, Mollusca, Echinodermata, Aves – Rastogi Publications, Meerut – 250 002.

ALLIED BOTANY - I

SUBJECT CODE:

(Total: 80 Hrs)

UNIT-I

General classification of plant kingdom. Prokaryotes – Bacteria – structure, Nutrition, reproduction and economic importance. Structure and reproduction of T4 Bacteriophage.

UNIT-II

Structure, life cycle of the following (No developmental details). Algae - Nostoc andChara . Fungi - Saccharomyces, Agaricus andPenicillium.

UNIT-III

Lichens, Economic importance of algae, fungi and lichens. Structure and life cycle of the following (No developmental details) Bryophytes - Marchantia and Funaria.

UNIT-IV

Structure and life cycle of the following (No developmental details) Pteridophytes – Lycopodium, Adiantum and Ophioglossum.

UNIT-V

Structure and life cycle of the following Gymnosperm - Cycas.

REFERENCES

1. NarayanaSwamy, R.V, Rao K.N, (2009), *Outlines of Botany* ,V. Subramanian Pvt. Limited, Chennai.
2. Pandey, B.P, (2011). *Botany for Degree students*, S. Chand & Co.Ltd., New Delhi
3. Pandey, B.P, (2010,) *Modern Practical Botany vol I, II, III*, S.Chand & Company Ltd. New Delhi.

ALLIED BOTANY PRACTICAL I

PRACTICALS

1. Micro preparation of the types prescribed in the syllabus.
2. Identifying the micro slides relevant to the syllabus.
3. Description in technical terms, plants belonging to any of the families prescribed and of identify the family.
4. 4.Dissection of flower, construction of floral diagram and floral formula
5. 5.To make suitablemicropreparation and identify materials of Algae,Fungi ,
6. 6.Bryophytes ,Pteridophytes, Gymnosperms and Angiosperms.
7. 7.To describe simple experimental set up in Plant Physiology of the syllabus.

REFERENCES

1. NarayanaSwamy, R.V, Rao K.N, (2009), *Outlines of Botany* ,V. Subramanian Pvt. Limited, Chennai.

2. Pandey, B.P, (2011). *Botany for Degree students*, S. Chand & Co.Ltd., New Delhi .

3. Pandey, B.P, (2010,) *Modern Practical Botany vol I, II, III*, S.Chand & Company Ltd. New Delhi.

EDUCATION

CHILDHOOD AND GROWING UP- PART – I

(Total: 60 Hrs)

SUBJECT CODE:

COURSE OBJECTIVES

At the end of the course, the student-teachers will be able to:

1. understand the growth of child development
2. understand the stages and dimensions of child development
3. compare various theories and its contributions to child development
4. analyse the gender stereotyping and issues,
5. identify the various socializing agencies and their role on child development

UNIT-I GROWTH AND DEVELOPMENT OF CHILDHOOD

Meaning and concepts of growth and development-Principles of growth and development- Difference between growth and development- Impact of nature and nurture on child development.

(Suggested instructional approaches and methods:

i. Talk by teachers/experts on the principles of growth and development.
ii. A debate on the influence of nature and nurture on individual development.)

UNIT-II STAGES AND DIMENSIONS OF DEVELOPMENT

Stages: infancy, early childhood and adolescence and their dimensions of development : physical, cognitive, moral , emotional and social.

(Suggested instructional approaches and methods:

i. Talk by the teacher/psychologist on the various stages of child development.
ii. Invited talk by experts on dimensions of child development.)

UNIT-III THEORIES OF CHILD DEVELOPMENT

Psycho-social stages (Erikson), Cognitive development (Piaget), Moral development (Kohlberg), Socio-cultural approach to cognitive development (Vygotsky), Ecological systems theory(Bronfenbrenner).

(Suggested instructional approaches and methods:

i. Teacher talk on child development theories.
ii. Student seminar on various theories of child development.)

UNIT-IV SOCIALIZING AGENCIES OF CHILD DEVELOPMENT

Agencies of socialization: Family, school, peer, and community

(Suggested instructional approaches and methods:

i. Presentation of report based on field study/ case study on child rearing practices.
ii. Seminar on family, school and peer influence on socializing process.)

UNIT-V GENDER STEREOTYPES AND GENDER ROLES

Gender stereotypes in early child, middle childhood and adolescence - Influences of gender stereotyping: biological, cultural and environmental -Gender identity in middle childhood and in adolescence - Gender schema theory- strategies for development non-gender – stereotyped children.

(Suggested instructional approaches and methods:

i. Invited lecture by a Feminist on gender stereotypes.
ii. Seminar on strategies for development of non-gender stereotyped children.)

TASKS AND ASSIGNMENTS

1. Submission of a case study report on an adolescent student in the practice teaching school.

REFERENCES

1. AnithaWoolfolk. (2004). Educational psychology. Singapore: Persion Education.
2. Baron.A. Robert (2000). Pshychology. New Delhi: Prentice-Hall of India.
3. Bert Laura. E. (2014). Child development. New Delhi: PHI Learning.
4. Hurlock, Elizabeth. B. (1980). Development Psychology. New Delhi: McGrawHill Education.
5. Hurlock, Elizabeth. B. (1980). Adolescent Development. New Delhi: Tata McGraw Hill.
6. Hurlock, Elizabeth. B. (2015). Child development. New Delhi: McGraw Hill Education.
7. Thangasamy, Kokila. (2014). Psychology of learning and human development. Madurai: MaaNila Publisher.
8. www.simplypschology.org
9. psychlassics.yorkn.ca
10. Psychology.wikia.com

COURSE: LANGUAGE ACROSS THE CURRICULUM

(Total: 60 Hrs)

SUBJECT CODE:

COURSE OBJECTIVES

At the end of the course, the student-teachers will be able to:

1. understand the language background of the learner,
2. know language diversity in the classroom,
3. understand the nature of communication process in the classroom,
4. understand the nature of reading comprehension in different content areas,
5. develop multilingual awareness among the learners.

UNIT-I LANGUAGE AND SOCIETY

Language: Meaning, concept and functions - Understanding of Home language and School Language - Understanding the language background of the learner - Developing oral and written language in the classroom - Language and Culture.

(Suggested instructional approaches/methods:

i. Organise the students to participate in Discussion on Home Language Vs. School Language.

ii. Visit a school in your neighbourhood and find out the language background of students and conduct a seminar highlighting the language diversity that exists in the classroom.)

UNIT-II LANGUAGE DIVERSITY IN CLASSROOMS

First Language and Second Language Acquisition - Using of First and Second Language in the classroom - Difference between language as a school subject and means of Communication. - Relationship between language mastery and subject mastery. - Mastery in first language and subject - mastery in second language and subject. - Understanding of multilingualism in classroom.

(Suggested instructional approaches/methods:

i. Observe two Language classes of secondary schools (one rural and the other urban) and record the discipline-based language, teacher language and student language during interaction-Make a comparative analysis.

ii. Conduct a seminar on: “Language is the vehicle that carries the content”.)

UNIT-III POSITION OF ENGLISH LANGUAGE IN THE INDIAN CONTEXT

Position of English as a second language in India – Communication process in the classroom - The nature of classroom discourse; oral language in the classroom; discussion as a tool for learning; the nature of questioning in the classroom – types of questions and teacher control.

(Suggested instructional approaches/methods:

i. Arrange an extempore speech competition regarding importance and development of language.

ii. Discussion on common errors in pronunciation and its remedial exercises for students.)

SEMESTER – I

UNIT-IV LANGUAGE ACROSS CURRICULUM

Language for specific purpose and subjects – Social Sciences, Science and Mathematics - Critical review of medium of instruction – Factors related to poor reading comprehension - Developing skills of reading comprehension - Theories of Language- Deficit theory and Discontinuity theory - Educational implications of language - Understanding the nature of classroom interaction.

(Suggested instructional approaches/methods:

i. Participation in two Extempore Presentations, one Debate, one Paragraph writing and one Application writing.(To be the basis of Evaluation after exhaustive sessions to improve communication skills.

ii. Discussion on "Language development in the school is the responsibility of all the teachers".)

UNIT-V LANGUAGE RELATED ISSUES

Bilingualism - Multilingualism - Challenges of teaching language in multicultural classroom - Nature of reading comprehension in the content areas. - Developing writing skills for writing in specific content areas. - Strategies for developing oral language in the classroom that promotes learning in the subject areas. - Reading in the content areas – Social Sciences, Science and Mathematics; nature of expository texts Vs.narrative texts; transactional Vs. reflexive texts; Schema theory; text structures; examining content areas textbooks; reading strategies for note-making, summarizing; making reading-writing connections; process writing; analyzing children's writing to understand their conceptions; writing with a sense of purpose – writing to learn and understand.

(Suggested instructional approaches/methods:

i. Talk to the students and find out the different languages that they speak. Prepare plan to use multilingualism as a strategy in the English classroom.

ii. Interact with 5 student-teachers and present a paper on:
   - the structure of their language
   - pronunciation
   - vocabulary.)

TASK AND ASSIGNMENTS

Based on Eller Deficit Theory: Children's from lower socioeconomic classes "cannot speak complete sentences, do not know the names of common objects, cannot form concepts or convey logical thoughts."

Step-1: Student teachers have to find the students who are undergoing this type of problem.

Step-2: According to Eller theory, give a remedial treatment by teaching correct pronunciation.

Step-3: The pronunciation of the students before training and after training can be recorded to find the progress of the students.

2 . Take a few passages from Science, Social Science and Maths textbooks of Classes VI-VIII/ IX-X/ XI-XII and analyse on the following issues and offer your findings and suggestions.

. How are the different registers of language have been introduced?

a) Does the language clearly convey the meaning of the topic being discussed?
b) Is the language learner-friendly?
c) Is the language too technical?

REFERENCES

1. Agnihotri, R.K. (1995), Multilingualism as a classroom resource. Heinemann Educational Books.
2. Earl Stevick.W.(1982), Teaching and Learning Languages. Cambridge: Cambridege University Press.
3. Krashen, S.D.(1981), The study of second language acquisition and secondlanguage learning. Oxford: Oxford University Press.
4. Richards,J.C.(2006), Communicative language teaching today. Cambridge: Cambridge University Press.
5. Thangasamy, Kokila (2016) Communicative English for College Students. Chennai: Pavai Publications.
6. Widdowson, H. (1978), Aspects of language teaching. Oxford: Oxford University Press.
7. Wallace, M.J. (1998). Study skills in English. Cambridge: Cambridge University Press.
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9. Language for understanding across the curriculum – www.det.act.gov.au>LUAChandbook
10. Curriculum guide – Language arts language across the curriculum – www.moe.gov.jm>sites>default>files.