



**National University**  
**Subject: Geography and Environment**  
**Syllabus for Four Year B. Sc Honours Course**  
**Effective from the Session: 2009-2010**

**Year wise courses and marks distribution.**

**First year Honours**

<b>Course Code</b>	<b>Course Title</b>	<b>Marks</b>	<b>Credits</b>
	Introduction to Geography and Environment	100	4
	Introduction to Physical Geography	100	4
	Introduction to Human Geography	100	4
	Practical-I	100	4
	<b>Group A (Any Two)</b>		
	Chemistry-I	100	4
	Chemistry Practical	50	2
	Fundamentals of Mathematics	100	4
	Calculus-I	50	2
	Botany-I	100	4
	Botany-I Practical	50	2
	Introduction to Zoology: Protozoa and non-chordates, Human Physiology, and Applied Zoology	100	4
	Zoology Practical - I	50	2
	Introduction to Statistics	100	4
	Statistics Practical-I	50	2
	<b>Group B (Any Two)</b>		
	Introductory Sociology or Introduction to Social Work	100	4
	Introduction to Political Theory	100	4
	Introduction to Psychology	100	4
	Principles of Economics	100	4

**Detailed Syllabus**

**First Year**

**Course Code ..... : Introduction to Geography and Environment      Marks 100, 4 Credits**

1. **Geography as a Discipline as Science, Earth Science and Social Science:** Definition, Concepts, Scope and Branches.
2. **Physical and Human basis of Geography:** Relation of Geography with other Disciplines.
3. **A Brief History of the Development of Geographical Knowledge and Concepts:** Ancient Geography-Greek and Roman Period; Geography in the Middle Ages-Muslim Period; Renaissance and Modern Geography; Contemporary Geography.
4. **Major Views in Contemporary Geography:** Regional View, Ecological View, Spatial Organization View, Earth Science View, Behavioral View.
5. **The Concept of Region and Regional Approach to Geography.**
6. **Environment:** Meaning, Structure, Types and Components of Environment; Geography and Environment; Environment and Society.
7. **Man-environment Relationships:** Determinism, Possibilism and Neo-possibilism
8. **Tools and Techniques in Geography:** Maps, Scales, Models, and GIS.
9. **The Shape and the Basic Dimensions of the Earth:** Rotation and Revolution of the Earth and their Effects; Determining Location on the Earth Surface.

#### **Selected Readings:**

- James, Preston E. *All Possible Worlds: History of Geographical Ideas*
- Chorley, R. and Peter Haggett (ed.) *Models in Geography*
- Hartshome, R. *The Nature of Geography*.
- Unwin, Tim. 1992. *The Place of Geography*, Longman, New York.
- Singh, Savindra, 1991, *Environmental Geography*, Prayag Pustak Bhawan, Allahabad, India.
- Ahmed, Nafis. *Muslim Contributions to Geography*
- Saxena, H.M. 1999. *Environmental Geography*, Rawat Publications, New Delhi.
- De Blij, H.J. and Muller, Peter O. 2004. *Geography: Realms, Regions and Concepts*, 11<sup>th</sup> edn. John Wiley and Sons, Inc.
- Bharucha, Erach. 2005. *Textbook of Environmental Studies*, University Press Pvt. Ltd. India.
- Haggett, P. *Geography : A Modern Synthesis*.
- Harvey, David. *Explanation in Geography*.
- Islam, M. Aminul 2006. *Bhugoler Dristibhangi o Dashan: Samakalin Probonata*. Bangladesh Geographical Society, Dhaka.
- Encyclopaedia Britannica ,Encyclopaedia of Social Sciences*
- Murphy, Rhodes. *An Introduction to Geography*

**Course Code ..... : Introduction to Physical Geography      Marks 100, 4 Credits**

1. **Physical Geography:** Nature, Scope and Relation with Other Disciplines of Natural Sciences.
2. **Historical Development of Physical Geography**
3. **Solar System:** Theories of Origin, Devolvement and Expansion.
4. **Origin of the Earth-different hypothesis:** Earth's Development, Geological Time-scale.
5. **Lithosphere:** Earth's Crust and Interior, Rocks and Minerals, Weathering and Erosion, Seismology, Isostasy, Earth's Movements-endogenic and exogenic, Continental Drift and Plate Tectonics, Agents of Sculpture (river, glacier wind wave)
6. **Atmosphere:** Composition of Atmosphere, Elements of Weather and Climate, Temperature, Pressure, Wind Systems and Humidity.
7. **Hydrosphere:** Global Distribution of Water; Ocean Shape, Size and Volume; Hydraulic Cycle; Movement, Causes and Effects of Ocean Current.
8. **Biosphere:** Distribution of Plant and Animals and their Related Factors.

### **Selected Readings:**

- James, P.E., *A Geography of Man*, Blaisdall Publishing Company.  
Robinson, H., *Physical Geography*, Mac Donald & Evans,  
Thronbury, W.D., *Principles of Geomorphology*, John Wiley, London.  
Holmes, A. *Principles of Physical Geology*.  
Cook, Ian et al. *Geography in Focus*, CPL (Causeway Press). For all course  
Wadia, D.N., *Geology of India*, Macmillan & Co. London.  
Singh, Savindra, 1999, *Physical Geography*, Prayag Pustak Bhawan, Allahabad, India.  
Lake, P. *Physical Geography*, Macmillan's & Co., Calcutta.  
Monkhouse, F.J. *The Principles of Physical Geography*, University of London Press, London.

**Course Code ..... : Introduction to Human Geography      Marks 100, 4 Credits**

1. **Human Geography:** Definition, Concepts, Contents and Scope.
2. **Branches or Components of Human Geography.**
3. **Historical Development of Human Geography.**
4. **Approaches to the Study of Human Geography.**
5. **Human Occupancy of the Earth and Man-Environment Relationships.**
6. **Human Population:** Size, Structure, Composition, Distribution and Change; Dynamics of Population-fertility, mortality and migration; Population Growth and Projection; Population as Resources.
7. **Economic Activities of the People:** Primary, Secondary, Tertiary and Quaternary.
8. **Transport and Trade:** Major Modes of Transport, International Trade and Trade Routes
9. **Human Settlements:** Classification, Hierarchy, Forms and Pattern.
10. **Society and Culture:** Social Stratification, Cultural Elements.

### **Selected Readings:**

- Emrys, Jones. 1995: *Human Geography*, Chatto and Windus, London  
Chapman, Keith. 1988: *People Pattern and Process: An Introduction to Human Geography*, John Wiley and Sons, New York.  
Cook, Ian et al. *Geography in Focus*, CPL (Causeway Press). For all course  
Brock, J.O. M. & Webb, A. : *Geography of Mankind*, New York.  
Chisholm, M. 1975. *Human Geography: Evolution or Revolution*, Harmonds Worth, Penguin Books.  
Barnes, Trevor and Gregory, Derek ed. 1997. *Reading Human Geography: The Poetics and Politics of Inquiry*, Arnold, London.  
James, P.E. and Martin, G.J. 1981. *All Possible Worlds: A History of Geographical Ideas*, 2<sup>nd</sup> edn. New York, John Wiley.  
Tidswell, V. 1976. *Patterns and Process in Human Geography*, University Tutorial Press, London.  
Chorley, R.J. and Haggett, P. eds. 1967. *Models in Geography*, London, Methuen.  
Hortshorn, T. A. and J. W. Alexander, J.W. 1988: *Economic Geography*, Prentice-Hall, New Delhi

Bradford, M.G. & Kent, W.A. 1987: *Human Geography*, Oxford University Press, U.K.  
 Norton, W. 1988: *Human Geography*, Oxford University Press, Canada.  
 Islam, M.A. 1992: *Bhugol: Dristibhongi O Dorshan*. Department of Geography, Dhaka University ( in Bangla).  
 Rashid, K.B.S. *Shangskritic Bhugol*: Bangla Academi, Dhaka ( in Bangla).  
 Johnston, R. J. et al., ed. 2000. *The Dictionary of Human Geography*, 4<sup>th</sup> edn. Blackwell Publishing.

**Course Code ..... : Practical-I (Exam 70, Lab Notebook 10, Lab viva-voce 10 and Field Report 10) One Day-long fieldwork      Marks 100, 4 Credits**

**1. Section I: Cartography (Marks 25)**

- 1.1. Definition and Use of Cartography
- 1.2. Map: Definition, Elements and Importance of Map, Classifications of Maps and their Uses.
- 1.3. Study of World Physical, Political, Regional and Economic Maps.
- 1.4. Scales: Definition, Representation of Scale, Importance, Classification and there Uses. Draw three from each of the class especially Simple, Diagonal, Comparative, Time, Pace and Unit of Scales.
- 1.5. Measurement of Latitudes, Longitudes and Bearings.
- 1.6. Map, Enlargement, Reduction and Combination.
- 1.7. Measurement of Area and Distance.

**2. Section II: Application of Cartographic Techniques on Various Statistical Data (Marks 25)**

- 2.1 Line Graph, Bar Graph, Climographs.
- 2.2 Simple and Compound Bar Graph.
- 2.3 Log and Semi-log Graph.
- 2.4 Age-sex Pyramid.
- 2.5 Pie-Diagram.
- 2.6 Methods of Drawing Distribution Maps (Choropleth, Isopleth and Dot Methods; Proportional Squares).

**3. Section III: Identification of Rocks and Minerals (Marks 20)**

- 3.1. Definition, Classification and Comparison of Rocks (Igneous, Sedimentary and Metamorphic) and Minerals.
- 3.2. Hardness Scale.
- 3.3. Physical Identification of Various Types of Rocks and Minerals.

**Selected Readings:**

Shingh, R.I. 1998: *Elements of Practical Geography*, India.  
 Keats, J.S. 1985: *Cartography*, Longman, London.  
 John, Campbell 1999. *Map Use and Analysis*, Wm. C. Brown Publishers.  
 Monkhouse, F.J. and Wikinson, F.J. 1976: *Maps and Diagrams*, Harper & Row Publishers, USA.  
 Robinson, A.H *Elements of Cartography*, New York, John Willy and sons.  
 Rouf, K.A. and Halim A: *Baboharic Bhugol*, Dhaka ( in Bangla).

Course Code ..... : Chemistry-I    Marks 100, 4 Credits, 60 Lectures

- 1. Measurements and the Scientific Method:** Measurements, units, SI units, reliability of measurements – precision and accuracy, rounding off, significant figures, significant figures in calculation, mean and median, errors, sources of errors.
- 2. Structure of atom:** Atom, isotopes, Atomic masses, Mass spectroscopy, Atomic nucleus, Nuclear binding energy, Nuclear reactions – fission and Fusion reactions, Bohr atom model, Spectrum of atomic hydrogen, Dual nature of electron, Heisenberg uncertainty principle, Quantum numbers, Atomic orbitals, Aufbau principle, Pauli exclusion principle, Hund's rule of maximum multiplicity, Electronic configuration of atoms.
- 3. Periodic Table:** Periodic law, Periodic table, Electronic configurations from the periodic table, Periodic properties of the elements such as ionization energies, Electron affinity, Electro negativity, Atomic/ionic radius along a period and down a group, Diagonal relationship
- 4. Chemical Bonds:** Chemical bond, Types of chemical bonds – ionic, Covalent coordination, Metallic, Hydrogen, Polar and no polar covalent bonds, Lewis dot structure, Shapes of molecules, VSEPR theory, Valence bond theory, Hybridization,  $\sigma$ - and  $\pi$ -bonding in compounds, Molecular orbital theory.
- 5. Oxidation and reduction:** Redox reactions, Writing and balancing Redox reactions,
- 6. States of Matter:** Comparison between solids, Liquids and gases, Changes of state, m.p. and b.p, phase transition, Phase diagram of water.
- 7. Gaseous and Their Properties:** The gas laws , The perfect gas equation, The kinetic theory of gases, Van der waals equations, Real gases, Graham's laws of diffusion and Effusion.
- 8. Solutions:** Solubility and intermolecular forces, Solubility product, Types of concentration units, Colligative properties of solutions, Henry's law, Nernst distribution law.
- 9. Acids and Bases:** Various concepts on acids and bases, Conjugate acids and bases, Neutralization reactions acid- base strength,  $p^H$ , Acid-base titrations, Acid-base indicators, Acid-base properties of salts, The common ion effect, Buffer solutions, Hard and soft acids and bases.
- 10. Chemical Equilibrium:** Reversible reactions and the equilibrium state, The equilibrium law, Reaction quotients and equilibrium constants, Calculations using  $K_c$ ,  $K_p$ , Homogeneous and heterogeneous equilibria, The principle of Le Chatelier and Brown.
- 11. Hydrocarbons:** Hydrocarbons, Saturated and unsaturated hydrocarbons, Alkanes, Alkenes, And Alkynes, Nomenclature of organic compounds-the IUPAC system natural gas, Petroleum, Petrochemicals.
- 12. Study of different classes of organic Compounds:** Alcohols, Aldehydes, Ketones, Carboxylic Acids, Esters, Amines and Amides.

**Books recommended:**

1. General Chemistry, D. D. Ebbing, Houghton Mifflin Co.
2. Chemistry – The Molecular Nature of Matter and Change, M. Silberberg. WCB /Mc Graw- Hill.
3. Introduction to Modern Inorganic Chemistry, S.Z. haider, Friends' International.
4. Principles of physical chemistry, M. M. Huque and M. A Nawab, students' publications.
5. Essentials of Physical chemistry, B.S Bahl, G.D Tuli and A Bahl, S. Chand & Co.Ltd.
6. Advanced Organic Chemistry, B.S. Bahl and A Bahl, S. Chand & Co. Ltd.
7. A Level chemistry by C.W. Ramsden
8. Organic Chemistry: T Morrison and R.N Boyed,
9. Fundamental of Organic Chemistry by W Solomons

**Course Code ..... : Chemistry-I Practical      Marks 100, 4 Credits, 60 Lectures**

1. Preparation of  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ , Mohr's salt and potash alum.
2. Separation and identification of four radicals from a mixture of anions and cations. The cations are  $\text{Pb}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Al}^{3+}$ ,  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Co}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Na}^+$ ,  $\text{K}^+$ , and  $\text{NH}_4^+$ , the anions are  $\text{NO}_3^-$ ,  $\text{CO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_4^{2-}$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$  and  $\text{I}^-$ .
3. Standardization of NaOH solution using standard oxalic acid solution,
4. Determination of  $\text{Fe}^{2+}$  using standard permanganate solution
5. Iodometric determination of copper(II) using standard  $\text{Na}_2\text{SO}_3$  solution.
6. Gravimetric determination of nickel as  $\text{Ni}(\text{HDMG})_2$  complex
7. Determination of the enthalpy change for the decomposition sodium dicarbonate into sodium carbonate.
8. Determination of the  $\text{p}^{\text{H}}$ - neutralization curves of a strong acid by a strong base.
9. Investigation of the conductance behaviour of electrolytic solution and applications (acetic acid)
10. Determination of the presence of nitrogen, halogen and sulphur in organic compounds.
11. Identification of the functional groups (unsaturation, alcohol, phenol, carbonyl, aldehyde, ketone, carboxylic acid, aromatic amine, amide and nitro- groups) in organic compound.

**Books Recommended:**

1. A Text Book of Quantitative Inorganic Analysis, A.I. Vogel, 3<sup>rd</sup>/4<sup>th</sup> edition, ELBS and Longman Green & Co. Ltd.
2. A Text Book of Quantitative Inorganic Analysis, A.I. Vogel 3<sup>rd</sup> /4<sup>th</sup> edition, ELBS and Longman Green & Co. Ltd.
3. Practical physical chemistry, A Faraday.
4. A Text Book of practical organic chemistry, A.I. Vogel, ELBS edition.

**Course Code ..... : Fundamentals of Mathematics      Marks 100, 4 Credits, 60 Lectures**

**Real Number System:** Field and order properties, Natural numbers, Integers and rational numbers, Absolute value and their properties, Basic inequalities.

**Complex Number System:** Field of Complex numbers, De Moivre's theorem and its applications.

**Theory of equations:** Relations between roots and coefficients, Symmetric functions of roots, Sum of the powers of roots, Synthetic division, Des Cartes' rule of signs, Multiplicity of roots, Transformation of equations.

**Matrices and Determinants:** Notion of matrix. Types of matrices. Algebra of matrices. Determinant function and its properties. Minors, Cofactors, expansion and evaluation of determinants. Elementary row and column operations and row-reduced echelon matrices. Invertible matrices. Diagonal, triangular and symmetric matrices.

**System of Linear Equations:** System of linear equations (homogeneous and non-homogeneous) and their solutions. Gaussian elimination, Application of matrices and determinants for solving system of linear equations. Applications of system of equations in real life problems.

**Vector Spaces:** Euclidean  $n$ -space. Real vector spaces. Subspaces. Linear combination of vectors. Linear dependence of vectors. Basis and dimension. Linear transformations. Matrix representation of linear

transformation. Kernel and image. Eigenvalues and eigenvectors.

**Two-dimensional Geometry:** Transformation of coordinates, Pair of straight lines (homogeneous second degree equations, general second degree equations representing pair of straight lines, angle between pair of straight lines, bisectors of angle between pair of straight lines), General equations of second degree (reduction to standard forms, identifications, properties and tracing of conics).

**Three-dimensional Geometry:** Three-dimensional coordinates, Distance, Direction cosines and direction ratios. Planes and straight lines. Vectors in plane and space. Algebra of vectors. Scalar and vector product. Vector equations of straight lines and planes.

Evaluation: Final examination (Theory, 4 hours): 100 marks.

Ten questions will be set, of which any six are to be answered.

### **Books Recommended :**

1. S. Bernard & J M Child- *Higher algebra*.
2. Howard Anton & Chris Rorres – *Elementary Linear Algebra with Application*.
3. Khosh Mohammad- *Analytic Geometry and Vector Analysis*.
4. Md. Abdur Rahman – *Linear Algebra*.

### **Course Code ..... : Calculus-I      Marks 50, 2 Credits, 30 Lectures**

**Functions & their graphs :** Polynomial and rational functions, logarithmic and exponential functions, trigonometric functions & their inverses, hyperbolic functions & their inverses, combinations of such functions.

**Limit and continuity:** Definitions and basic theorems on limit and continuity. Limit at infinity & infinite limits, Computation of limits.

**Differentiation:** Tangent lines and rates of change. Definition of derivative. One-sided derivatives. Rules of differentiation . Successive differentiation. Leibnitz's theorem. Related rates. Linear approximations and differentials.

**Applications of Differentiation:** Mean value theorem. Maximum and minimum values of functions. Concavity and points of inflection. Optimization problems.

**Integration:** Antiderivatives and indefinite integrals. Techniques of integration. Definite integration using antiderivatives. Fundamental theorems of calculus. Basic properties of integration. Integration by reduction.

**Applications of Integration:** Arc length. Plane areas. Surfaces of revolution. Volumes of solids of revolution. Volumes by cylindrical shells. Volumes by cross sections.

**Approximation and Series:** Taylor polynomials and series. Convergence of series. Taylor's series. Taylor's theorem and remainders. Differentiation and integration of series.

Evaluation: Final exam (Theory, 3 hours): 50 marks.

Six questions will be set, of which any four are to be answered.

### Books Recommended:

1. Howard Anton - *Calculus (7<sup>th</sup> and forward editions)*.
2. E.W. Swokowski - *Calculus with Analytic Geometry*.
3. Md. A Matin & B Chakraborty, - *Differential Calculus*.

### Course Code .....: Botany -I    Marks 100, 4 Credits, 60 Lectures

1. Introduction: Origin and evolution of life; differences between plants and animals; modern concepts of classification of living organisms.
2. Microbiology:
  - a) Introduction to Viroids, Prions, Rickettsia and Mycoplasma.
  - b) Virus: Physical and chemical nature of phage, plant and animal viruses, multiplication of HIV virus and economic importance.
  - c) Bacteria: Types, fine structure, reproduction and importance.
  - d) Fungi: Habitat, characteristics, classification up to class (Alexopoulos), reproduction, importance, life history of *Saccharomyces*.
  - e) Cyanobacteria: Habitat, characteristics, structure, importance of Cyanobacteria .
  - f) Algae: Habitat, characteristics, classification up to class (Fritsch), reproduction, importance; life history of *Oeodogonium*.
  - g) Phytoplankton: Habitat, characteristics, classification and importance.
3. Lichen: Habitat, characteristics, classification and importance.
4. Limnology: Definition, scope, importance and classification of lakes.
5. Bryophyta: Habitat, characteristics, classification up to classes and reproduction; life history of *Riccia* and *Anthoceros*.
6. Pteridophyta: Habitat, characteristics, classification up to classes, importance; life history of *Selaginella* and *Christella*.
7. Gymnosperms: Habitat, characteristics and importance; life history of *Cycas* and *Gnetum*.
8. Angiosperms: Habitat, characteristics, ICBN, classification systems of plant kingdom. (Artificial, natural & phylogenetic). Identifying characters and economic importance of the following families: (a) Fabaceae, (b) Solanaceae and (c) Malvaceae and (d) Poaceae.
9. Plant Pathology: Concept of diseases in plants, causes, diagnosis, classification and importance of plant diseases, symptomatology and control measures; forecasting of plant diseases.  
Causal organisms, symptoms and control measures of brown spot of rice, stem rot of jute, citrus canker and tungro disease of rice.
10. Economic Botany: Local and scientific names, parts used and importance of at least 8 prominent plants of each of the following groups: (a) Food, (b) medicine, (c) timber, (d) fibre, (e) oil and (f) vegetables. Cultivation and processing of tea and rubber.

### **Books Recommended**

1. Agrios, G.N. 1997 : Plant Pathology (4th ed.). Academic Press, London.
2. Bold, H.C. and M.J. Wynne. 1978 : Introduction to the Algae, Prentice Hall, India
3. Hawker, Lilian, E. 1967 : Fungi, Hutchinson Univ. Library, Cambridge Univ. Press, London.
4. Lawrence, G.H.M. 1951 : Taxonomy of Vascular Plants. The Macmillan Co. New York.
5. Pelczer, M.J., E.C.S. Chan and N.R. Krieg. 1993 : Microbiology: Concepts and Applications. McGraw Hill Book Co. Inc. New York.
6. Vashista, P.C. 1993 : Botany for Degree Students: Pteridophyta. S.C. Chand & Co. Ltd. Ramnagar, New Delhi.
7. Mukherji, H. and Ganguly, 2000: Plant Groups, Centrl Book Agency, Calcutta.
8. Hill, F.A. 1972. : Economic Botany, Tata McGraw-Hill Publishin Company, India.
9. রায়, শ্যামল কুমার, পাল, নিশীথ কুমার : অপুস্পক উদ্ভিদবিজ্ঞান (১ম ও ২য় খন্ড), বাংলা একাডেমী, ঢাকা।  
পাশা, মোস্তফা কামাল, ১৯৯৫
10. খান, আজমাজদ আলী এবং : স্নাতক উদ্ভিদ বিজ্ঞান ১ম, ২য় ও ৩য় খন্ড।  
তরিকুল ইসলাম
11. খন্দকার মনিরুজ্জামান, ১৯৯৪ : লিমনোলজী, ঢাকা বিশ্ববিদ্যালয় প্রকাশনা, ঢাকা।
12. বাসার, এম. এ., এম.এ. হাসান এবং : উদ্ভিদ বিজ্ঞান, হাসান বুক হাউজ, বাংলা বাজার, ঢাকা।  
ম. রফিকুল ইসলাম. ২০০৪
13. হাসান, এম. এ. এবং : উদ্ভিদ শ্রেণী বিন্যাস তত্ত্ব (৩য় সংস্করণ), হাসান বুক হাউস, ঢাকা।  
এম. কে. আলম. ১৯৯৭
14. খাতুন, রাবেয়া, ২০০২ : উদ্ভিদ শ্রেণীবিন্যাস, ইউরেকা বুক এজেন্সি, রাজশাহী।

### **Course Code .....: Botany -I Practical Marks 50, 2 Credits, 30 Lectures, Time : 6 hours**

1. Detail study including dissection (where necessary), mounting, drawing, description and identification with classification of the following genera:

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- Cyanobacteria : *Nostoc, anabaena.*  
Algae : *Chlamydomonas, Oedogonium .*  
Fungi : *Saccharomyces and Ascobolus.*  
Bryophyte : *Riccia and Marchantia.*  
Pteridophyte : *Selaginella, Christella.*  
Gymnosperms : *Cycas.*  
Angiosperm : Poaceae and Fabaceae

2. Identification of the following genera with reasons:

..... 06

- Algae : *Volvox, Polysiphonea and Fucas.*  
Fungi : *Rhizopus, Agaricus, Puccinia and Penicillium.*  
Lichen : Crustose, Foliose and Fructose.  
Bryophyte : *Anthoceros, Semibarbula.*  
Pteridophyte : *Selaginella, Marsilea, Azolla and Pteris*

Gymnosperms : Male and female cones of *Cycas*,  
 Angiosperms : Scientific names of common plants around the institution.

3. Find out algal specimens from local fresh water sample; draw and describe. .... 05
4. Study of the symptoms and causal organisms of Brown spot of rice and stem rot of Jute. .... 05
5. Detailed taxonomic study of the families as included in the theory syllabus. .... 08
6. Study of plant and plant parts, and economic uses of angiosperms included in the syllabus. .... 06
7. Preparation of herbarium specimens of local plants and submission during examination. .... 05
8. Laboratory Note book. .... 05

### **Books Recommended**

1. Agrios, G.N. 1997 : Plant Pathology (4th ed.). Academic Press, London.
2. Bold, H.C. and M.J. Wynne. 1978 : Introduction to the Algae, Prentice Hall, India
3. Devlin, M.R. and H.F. Witham. 1986 : Plant Physiology (4th ed.). CBS Publishers and Distributors, New Delhi.
4. Esau, K. 1953 : Plant Anatomy. John Wiley & Sons, Inc., New York.
5. Goodwin, T.W. and E.I. Mereer. 1983 : Introduction to Plant Biochemistry (2nd ed.). Pergamon Press.
6. Hawker, Lilian, E. 1967 : Fungi, Hutchinson Univ. Library, Cambridge Univ. Press, London.
7. Kumar, H.D. 1995 : General Ecology, Vikash Pub. House, India.
8. Lawrence, G.H.M. 1951 : Taxonomy of Vascular Plants. The Macmillan Co. New York.
9. Pelczer, M.J., E.C.S. Chan and N.R. Krieg. 1993 : Microbiology: Concepts and Applications. McGraw Hill Book Co. Inc. New York.
10. Vashista, P.C. 1993 : Botany for Degree Students: Pteridophyta. S.C. Chand & Co. Ltd. Ramnagar, New Delhi.
11. পাশা, মোস্তফা কামাল : ব্যবহারিক উদ্ভিদবিজ্ঞান, বাংলা একাডেমী, ঢাকা।  
 রায়, শ্যামল কুমার, ১৯৮৬
12. আখতারুজ্জামান, ম. : বংশগতি বিদ্যা, হাসান বুক হাউজ, ঢাকা।
13. আখতারুজ্জামান, ম. ২০০০ : বিবর্তন বাদ, হাসান বুক হাউজ, ঢাকা।
14. ইসলাম, এ.এস. ১৯৮৪ : বংশগতি বিদ্যার মূল কথা, বাংলা একাডেমী, ঢাকা।
15. কর্মকার, যদুলাল. ২০০০ : উদ্ভিদ শরীর বিজ্ঞান, হাসান বুক হাউজ, ঢাকা।
16. খান, আমজাদ আলী এবং তরিকুল ইসলাম : স্নাতক উদ্ভিদ বিজ্ঞান ১ম, ২য় ও ৩য় খন্ড।
17. খন্দকার মনিরুজ্জামান, ১৯৯৪ : লিমনোলজী, ঢাকা বিশ্ববিদ্যালয় প্রকাশনা, ঢাকা।
18. জামান, এম. এ. ১৯৭৫ : কোষবিদ্যা, বাংলা একাডেমী, ঢাকা।
19. বাসার, এম. এ., এম.এ. হাসান এবং ম. রফিকুল ইসলাম. ২০০৪ : উদ্ভিদ বিজ্ঞান, হাসান বুক হাউজ, বাংলা বাজার, ঢাকা।
20. হাসান, এম. এ. ১৯৯৬ : বাংলাদেশের ভেষজ উদ্ভিদ, আশরাফিয়া বই ঘর, বাংলা বাজার, ঢাকা।

21. হাসান, এম. এ. এবং : উদ্ভিদ শ্রেণী বিন্যাস তত্ত্ব (৩য় সংস্করণ), হাসান বুক হাউস, ঢাকা।  
এম. কে. আলম. ১৯৯৭

**Course Code ..... : Introduction to Zoology: Protozoa and non-chordates, Human Physiology, and Applied Zoology Marks 100, 4 Credits, 60 Lectures**

**Group-A: Introduction to Zoology: Protozoa and non-chordates**

**Introduction to Zoology:** Definition and scope of zoology. Foundation of animal life: Level of organization (protoplasmic, cellular, tissue, organ, organ system, organism, species, individual, population, community, fauna, biota, ecosystem, biosphere, biodiversity). Cells: Cell and cell theory, structure and functions of cell organelles. Gametogenesis: Spermatogenesis and oogenesis; placentation. Classification of animals: Animal kingdoms; classification up to phyla on the basis of organization, symmetry, coelom and phylogeny; different taxa and Linnean hierarchy and nomenclature.

**Protozoa and non-chordates:** General characteristics of the following protozoa and non-chordates phyla with examples – Apicomplexa, Ciliophora, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Gastrotricha, Nematomorpha, Rotifera, Acanthocephala, Kinorhyncha, Loricifera, Priapulida, Supuncula, Pogonophora, Tardigrada, Onychophora, Phoronida, Brachiopoda, Bryozoa/Ectoprocta, Chaetognatha, Echinodermata, and Hemichordata.

General and diagnostic characteristics of the following phyla with examples – Sarcomastigophora, Annelida, Arthropoda and Mollusca.

**Type study of the following with their systematic position, habitats, external morphology, organ systems such as digestion, movement, circulation, respiration, excretion, nervous, and reproduction; food and feeding habits, mode of life and development –**

- a. Phylum Sarcomastigophora: *Euglena*
- b. Phylum Apicomplexa: *Eimeria*
- c. Phylum Ciliophora: *Paramecium*
- d. Phylum Porifera: *Scypha*
- e. Phylum Cnidaria: *Obelia*
- f. Phylum Nematoda: *Ascaris*
- g. Phylum Mollusca: *Pila*
- h. Phylum Arthropoda: Prawn
- i. Phylum Echinodermata: *Astropecten*
- j. Phylum Hemichordata: *Balanoglossus*.

**Group-B: Human Physiology and Applied Zoology**

**Human Physiology:** Outline of the physiology of digestion, blood circulation, respiration, excretion and reproduction; endocrine glands and their functions; vitamins and vitamin deficiency diseases.

**Applied Zoology:** Introduction to the major fields of applied zoology: Entomology, Fisheries Biology, Wildlife Biology, and Parasitology. Agricultural pests: Major pests of rice, jute, sugarcane and stored

grains. Integrated fish farming: Types, poultry, livestock and paddy-cum-fish culture. Poultry farming: System of poultry farming, diseases of poultry and their control, economic importance of poultry and their impacts on socio-economic condition of Bangladesh.

**Course Code ..... : Zoology Practical-I (time: 6 hrs in one day) Marks 50, 2 Credits, 30 Lectures**

- 1. Study of museum specimens:** Representative of all major non-chordate phyla (minimum 20 specimens to be studied).
- 2. Study of permanent slides:** Whole mount, body parts and various cells and invertebrate tissues (at least 10 slides to be studied)
  - a. Whole animals – representatives of protozoans, rotifers and arthropods.
  - b. Mouth parts of arthropods.
  - c. Parasites – nematodes and platyhelminths.
  - d. Different larval forms of invertebrates.
  - e. Histological slides of invertebrates.
- 3. Preparation and study of whole mounts of different non-chordates.**
- 4. External morphology and dissection of various organ systems of earthworm, cockroach, prawn, *Pila* and *Lamellidens*.**
  - a. Digestive system of prawn, *Pila* and *Lamellidens*.
  - b. Circulatory system of earthworm and prawn.
  - c. Nervous system of cockroach, grasshopper, prawn, *Pila* and *Lamellidens*.
- 5. Temporary mounting –**
  - a. Brain of earthworm.
  - b. Salivary gland of cockroach.
  - c. Statocyst of prawn.
- 6. Study of appendages of prawn.**
- 7. Animal physiology –**
  - a. Estimation of blood pressure and pulse rate.
  - b. Determination of blood group.
- 8. Class records.**

#### **Distribution of Marks for First Year Final Examination**

1. Major dissection (dissection 8 + display 2 + drawing and labeling 3) = **13 marks.**
2. Temporary mount (staining, mounting and display 3 + drawing and labeling 2) = **5 marks.**

3. Spotting of museum specimens – 8 items (identification and classification 1 + diagnostic characteristics 1) = **16 marks.**
  - a. Invertebrate specimens (4 items)  $2 \times 4 = 8$  marks.
  - b. Whole mount slides (mouth parts, parasites, larvae) (2 items)  $2 \times 2 = 4$  marks.
  - c. Histological slides (2 items)  $2 \times 2 = 4$  marks.
4. Appendages (detachment, placement and drawing on a paper sheet 3, labeling 2, displaying 1) = **6 marks.**
5. Class records = **10 marks.**

***Books Recommended:***

1. C.P. Hickman and L.S Roberts. 1995. *Animal Diversity* Wm.C. Brown
2. L.S. Dillon. 1976. *Animal Variety: An Evolutionary Account:* Wm C. brown Company Publishers, Dubuque, Iowa.
3. J.D. Bernal. 1969. *The Origin of Life.* Weidenfeld and Nicolson, London.
4. E.E. Ruppert and R.D. Barnes. 1994. *Invertebrate Zoology* (6<sup>th</sup> edition). Saunders College Publishing-harcourt Brace College Publishers, New York, London
5. C.P. Hickman. *Integrated Principles of Zoology*, C.V. Morsby Co. Inc., New York
6. A.J. Marshal and W.D. Williams. *Text Book of Zoology Invertebrates*, (edited the 7<sup>th</sup> edition of Text Book of Zoology, Vol. I, T.J. Parker and W.A. Haswell)
7. N.J. Reigle. *A Synoptic Introduction to the Animal Kingdom.*
8. E.O. Wilson, T. Eisner and W.R. Brigges, *Life: Cells, Organisms Populations.*
9. C.C. Chatterjee Human Physiology Vols. I & II
10. W.H. Davson . *A Text Book of General Physiology*
11. G.L. Presser and P.A. Brown Comparative Animal Physiology
12. B.I. balinsky. *An Introduction of Embryology*
13. D. Dent. *Insect Pest Management.* Chapman and Hall, London.
14. P. Southgalte and J. Lucas (eds), 1998. *Aquaculture Fish and Shellfish Farming* Fishing News.
15. M. King. 1995. *Fisheries Biology Assessment and Management.* Blackwell Science.
16. C.G. Scalet. L.D. Flake and D.W. Willis. 1996. *Introduction to Wildlife and Fisheries: An Integrated Approach.* W.H. Freeman.
17. TVR. Pillay. 1993. *Aquaculture: Principles and Practices.* Fishing News Books.
18. L.P. Pedigo. *Entomology and Pest Management.*
19. R.Wall and D. Shearer, 1997. *Vetenerary Entomology.* Chapman & Hall
20. V.G. Jingran and R.S.V. Pull in 1985. *A Hatchery Manual for the Common, Chinese and Indian Major Carps.* ADB/ICLARM
২১. মোঃ আব্দুর রাজ্জাক মিয়া । ২০০৭ । পোলট্রি ব্যবস্থাপনা । বাংলা একাডেমী ।
২২. গৌতম বুদ্ধ দাশ । ২০০৪ । পোলট্রি উৎপাদন । বাংলা একাডেমী ।
২৩. এ. এইচ. এম. মোস্তফা । ১৯৯৪ । খামারে হাঁস-মুরগী পালন ও রোগ-ব্যাধির চিকিৎসা । বাংলা একাডেমী ।

**Course Code ..... : Introduction to Statistics Marks 100, 4 Credits, 60 Lectures**

- 1. Descriptive Statistics:** Statistics–Its nature and some important uses, Qualitative and quantitative data, Classification, Tabulation and frequency distribution, Graphical representation of data, Measures of location, Measures of Dispersion, Skewness and Kurtosis, Mathematical relationship among different measures of location, dispersion, Skewness and kurtosis.
- 2. Bivariate Data:** Correlation coefficient, Correlation analysis, The purpose and uses of regression analysis, Simple regression and methods of least squares and estimation of parameters, Correlation ratio, Rank correlation, Partial and multiple correlation.
- 3. Elementary Probability:** Meaning of Probability, Classical and empirical definitions of Probability, Axiomatic approach of defining probability, Event, Sample space and simple problems on probability, Addition rule, Conditional probability, Multiplication rule and Bayes theorems, The concept of a random variables, Probability function and probability density function, Joint probability function. Marginal and conditional distributions, Statistical independence, Expected value and related theorems, Moment generating function, Common probability distributions, Binomial, Poisson and Normal.
- 4. Index Number:** Concept of an index number and problems in the construction of index number, Types of indices (Price, Quantity, Value and cost of living indices) and their uses, Tests for index numbers.
- 5. Time Series analysis:** Elements of time-series analysis, Measurement of trend by moving average, By least square method, Trend curve, Determination of seasonal indices, Cyclical movements.
- 6. Numerical Mathematics:** Differences of a polynomial, Finite difference operator, Difference table, Newton's formula and starling's central difference formula, Inverse interpolation, Numerical integration.

**Books Recommended:**

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|--------------------------------|---|
| 1. Yule and Kendall            | : Introduction to Theory of Statistics.                 |
| 2. Islam, M. Nurul.            | : An Introduction to Statistics and Probability.        |
| 3. Jalil A. and Ferdous R.     | : Basic Statistics.                                     |
| 4. Mostafa M.G.                | : Methods of Statistics.                                |
| 5. David E.N.                  | : Probability Theory for Statistical Methods.           |
| 6. Weatherburn C.F.            | : A First Course in Mathematical statistics.            |
| 7. Mosteller, Roure and Thomas | : Probability with Statistical Applications.            |
| 8. Ali A.                      | : Theory of Statistics Vol. I                           |
| 9. Mallick, S.A.               | : সাংখ্যিক গনিত   |
| 10. Freeman H.                 | : Acturial, Mathematics Vols; I and II                  |
| 11. Scarborough                | : Numerical Mathematics.                                |
| 12. David F.N.                 | : Probability theory for Statistical Methods.           |
| 13. Shil R.N.                  | : Introduction to Theory of Statistics.                 |
| 14. Feller, W                  | : Introduction to Statistical Time Series (latest ed.). |
| 15. Gupta and Kapoor           | : Applied Statistics.                                   |

**Course Code ..... : Statistics Practical-I Marks 100, 4 Credits, 60 Lectures**

Condensation and tabulation of data, Graphical representation of data, Frequency table, Measures of location, Dispersion, Moments, Skewness and Kurtosis, measures of correlation coefficient, Rank correlation, Fitting of simple regression lines, Fitting of Binomial, Normal and Poisson's distributions, Finding trend values and seasonal variation from time series data by different methods, Calculation of Index numbers and test of index number, Use of Newton's forward and backward formula, Solution of numerical integration.

**Course Code ..... : Introducing Sociology**

**Marks 100, 4 Credits, 60 Lectures**

1. **Definition, Nature & Scope of Sociology**, relationship with other social sciences. Development of Sociology: Contributions of Auguste Comte, Herbert Spencer, Emile Durkheim, Max Weber
2. **Culture, Beliefs & Values**: Norms, sanctions, symbols, language, subculture, counter-culture, hegemony & resistance
3. **Globalization, Culture and Society**: Globalization and its different dimensions, Cultural globalization, global culture and social change
4. **Urbanization and Social Formation**: Definition of urbanization and urbanism, Process of urbanization in developing societies and social formation, over urbanization, growth of slum & poverty in mega cities
5. **Gender and Society**: Discourse of WID, WAD and GAD, Why gender is important in the discourse of development, Gender inequality & women's subjugation in developing societies.
6. **Environmental Problems, Natural Disasters and Social Crisis**: Climate change and its impact on society, Natural disaster, social crisis and vulnerabilities, Climate change, deforestation and mal-development.
7. **Social Inequality**: Dimensions of social inequality: Class, gender, age, minority group (religious and indigenous), economic vulnerability, Social inequalities in developed & developing countries.
8. **Types of societies**: Marxist view on classifying societies on the basis of type of control over economic resources and Lenski's view on classifying societies by their main means of subsistence.
9. **Deviance & Social Control**: Definition of deviance, theories of deviance. Crime & justice system, agencies of social control
10. **Health, Illness and Society**: Nature & scope of the problem, Urbanizations, acute, chronic & life style diseases, Social, environmental & behavioural factors affecting health, Communicable & behavioural diseases: STD, HIV/AIDS, TB, Hep-B etc

**Reference**

**Giddens Sociology**

**Tony Bilton et al Introductory Sociology**

**Course Code ..... : Introduction to Social Work**

**Marks 100, 4 Credits, 60 Lectures**

1. Social Work: Meaning, Characteristics, Scope and Importance Relationship of Social Work with other Sciences- Sociology, Economics, Psychology and Political Science.
2. Evolution: Evolution of Social Work in UK, USA, India and Bangladesh.
3. Social Reformers and their Movements in Pre-partition India and Bangladesh: Raja Rammohan Ray, Ishwar Chandra Vidyasagar, A.K Fazlul Haque, Sir Syad Ahmed, Begum Rokeya.
4. Social Legislations Related to Social Security, Women Welfare, Child Welfare.
5. Profession and Social Work: Meaning and Characteristics of Profession, Social Work as profession, Philosophical, Religions and Ethical Basis of Social Work.
6. Industrial Revolution: Meaning, Impact on Society, Industrialization, Urbanization, Welfare State.
7. Social Problems and Social Services in Bangladesh.
8. Methods of Social Work: Basic and Auxiliary Methods and their Basic Issues such as Meaning, Elements, Principles and Area of Use. Importance of Social Work Methods in Bangladesh.

***Books Recommended:***

1. Barker, Robert L. :Social Work Dictionary, 3<sup>rd</sup> ed. NASW, New York, 1995.
2. Coulshed, Veronica Social Work Practice: An Introduction 2<sup>nd</sup> ed. London. Macmillan, 1991.
3. Friedlander, Walter A. : Introduction to Social Welfare. Prentice Hall, 2<sup>nd</sup> ed. New Delhi-1967.
4. Khalid, M. : Welfare State, Karachi, Royal Book, 1968
5. Morales, A. And Shaefor, B. Social Work – A Profession of many faces, 4<sup>th</sup> ed. Allyn and Bacan, Boston, 1986.

**Course Code ..... : Introduction to Political Theory**

**Marks 100, 4 Credits, 60 Lectures**

**Political Science** : Meaning, Nature, Scope, Methods, Relations to other Social Sciences, Importance to Study Political Science.

**State** : Definition, Elements, State and Government, State and Individual, State and Society, Theories of the origin of the state.

**Fundamental concepts** : Sovereignty, Law, Liberty, Equality, Rights and Duties, Nation, Nationalism, Internationalism.

**Concepts of Political Sociology** : Political culture, elite theory, Max Weber and Bureaucracy

**Political Thinkers** : Plato, Aristotle, St. Augustine, St. Thomas Aquinas, Machiavelli, Hobbes, Locke and Rousseau.

**Books Recommended :**

1. R.G. Gettell : *Political Science*

2. J. W. Garner : *Political Science and Government*
3. R. M. MacIver : *The Modern State*
4. G.H. Sabine : *A History of Political Theory*
5. William Ebenstein : *Great Political Thinkers-Plato to the Present*
6. H.G. Laski : *A Grammar of Politics*
7. মুহাম্মদ আয়েশ উদ্দীন : *রাষ্ট্রচিন্তা পরিচিতি*
8. এমাজউদ্দিন আহমদ : *মধ্যযুগের রাষ্ট্রচিন্তা*
9. মোঃ দরবেশ আলী খান : *পেটো ও এরিস্টটলের রাজনৈতিক চিন্তা*
10. সরদার ফজলুল করিম : *পেটোর রিপাবলিক*

**Course Code ..... : Introduction to Psychology      Marks 100, 4 Credits, 60 Lectures**

1. **Introduction:** Definition and nature of Psychology; Psychology as a science; Fields of Psychology; Definition, scope and subject matter of social Psychology. Methods used in Psychology: Experimental, Observational, Clinical, Case histories, Survey method, Sociometry.
2. **Biological Basis of Behavior:** The Major division of Nervous System: The central Nervous System-Brain and Spinal Cord; The Peripheral Nervous System-Somatic and Autonomic System.
3. **Perception:** Definition of perception; Organization of perception; Depth perception; Illusion and hallucination.
4. **Motivation and Emotion:** Definition of motivation; Motivational cycle; Classification of motives-Primary and Secondary motives; Bodily changes in emotion.
5. **Learning:** Definition and factors of learning; Processes of learning: Trial and Error learning, Classical conditioning and Operant conditioning; Insightful learning.
6. **Memory and Forgetting:** Definition of Memory and forgetting; Ways of measuring memory; General causes of forgetting; Techniques of improving memory.
7. **Intelligence:** Definition of Intelligence; Measurement of intelligence-Stanford-Binet intelligence scale and Wechsler intelligence scale.
8. **Personality:** Definition of Personality: Measuring personality: Observation, Rating, Inventories, Projective techniques.

#### **References (Introduction to Psychology)**

1. আফসার উদ্দীন এম ২০০২ সাধারণ মনোবিজ্ঞান। রাজশাহী : রাজশাহী বিশ্ববিদ্যালয় প্রকাশনা বোর্ড।
2. Crider, A.B., Goethals, G.R. Robert D. Kavanaugh.R.D. Solomon, P.R. Psychology, Scott Foresman (1993), Psychology (4<sup>th</sup> ed.) New York; Harper Collins College publishers.
3. Feldman, R.S. (2002), Understanding Psychology (6<sup>th</sup> ed.) New York; Mc Graw Hill; Hisher education.
4. Hilgrad, E.R., Alkimson, R., and Alkinson. R.C. Introduction to Psychology. New York; Harcourt Brace (Latest Edition to be followed).

5. Huffman K. (2004) Psychology in Action (7<sup>th</sup> ed.) U.S.A.; John Wiley and Sons Inc.
6. মন্ডল, যোগেন্দ্র কুমার (২০০৮): সাধারণ মনোবিজ্ঞান; হাসান বুক হাউজ, ঢাকা।
7. Morgan, C.T. and King, R.A. Wisz, J.R. and Shoopier C. (1966) Introduction to Psychology. New York. Mc Graw Hill, Latest ed.
8. Munn. N.L. (1969) Introduction to Psychology; D Boston, Houghton Mifflin Co.
9. Newman, P.R. and Newman, B.M. (1983) Principles of Psychology; Illionis Homewood: The Dorsey Press, Latest ed.
10. Zimbardo, P.G (1979), Psychology and life: Scott, Foresman and Co. (Latest Edition to be followed.)

**Course Code ..... : Principles of Economics**

**Marks 100, 4 Credits, 60 Lectures**

1. **Fundamentals of Economics:** Definition, Nature and Scope of Economics, Scarcity of Resources, Various forms of Economic Organization, Three Fundamental Problems of Economics, Production Possibility Frontier, Opportunity Cost, Efficiency and Equity.
2. **Supply and Demand:** Demand and Quantity Demanded, Demand Schedule, Demand Curve, Supply and Quantity Supplied, Supply Schedule, Supply Curve, Equilibrium of Supply and Demand, Movement along the Supply and Demand Curve and Shift of Supply and Demand Curve and Its Effects on Equilibrium Price and Quantity. Elasticity of Supply and Demand; Determinants of Elasticity of Demand.
3. **The Theory of Consumer Behavior:** Total and Marginal Utility; Law of Diminishing Marginal Utility, Equi-Marginal Utility; Consumer Surplus.
4. **Production and Cost:** Production Function and Technology; Production with One Variable Input; Production with Two Variable Inputs; Returns to Scale; Costs in the Short-run; Costs in the Long-run.
5. **Market Analysis:**
  - A. **Perfect Competition:** Characteristics of Perfect Competition; Average and Marginal Revenue; Individual and Market Supply; Short-run equilibrium of a competitive firm Long run Equilibrium under Perfect Competition.
  - B. **Monopoly:** Average and Marginal Revenue; Supply Curve of the Monopolist; Perfect Competition and Monopoly Compared;
6. **Overview of Macro Economics:** Objective and Instruments of Macroeconomics, National Income Accounting, Gross Domestic Product, Problem of Double Counting, Net Domestic Product, Gross National Product, From GDP to Disposable Income, Net Economic Welfare (NEW).
7. **International Trade:** Domestic Vs. International Trade-Balance of Trade Vs. Balance of Payment-Trend of Changes in International Trade of Bangladesh. Free Trade Vs. Protection, Comparative Advantage Theory.
8. **Growth and Development:** Economic Development and Economic Growth, Measurement of Economic Development, Obstacles to Economic Development.

9. **Money:** Definition and Functions of Money-Importance of Money in Modern Economy-Different Concepts of Money (M1, M2, M3)-Value of Money. Concept, Causes and Effects of Inflation and Deflation.
10. **Government Revenue and Expenditure:** Difference between Public Sector and Private Sector finance, Different Sources of Govt. Revenues, Taxation and Different Kinds of Taxes, Definition of Revenue Budget, Development Budget, Revenue Budget Vs. Development Budget, Surplus, Deficit and Balanced Budget.

**Books Recommended:**

1. N. Gregory Mankiw. **Principles of Economics.** Any Late Edition. South Western College.
2. Michael Parkin. **Economics.** Any Late Edition. Prentice and Hall.
3. Karl Case and Ray Fair. **Principles of Economics.** Any Late Edition. Prentice and Hall.
4. Paul Samuelson and William Nordhaus. **Economics.** Any Late Edition. McGraw Hill.