Kopargaon Taluka Education Society's

K. J. Somaiya College of Arts, Commerce and Science, Kopargaon

CRITERION- 1

CURRICULAR ASPECTS

Key Indicator- 1.3 Curriculum Enrichment

1.3.1 QnM:- Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum

Institution Integrates Cross-Cutting Issues in transacting the curriculum

(Subject / Issue wise)

2018-2019

Kopargaon Taluka Education Society's

K. J. Somaiya College of Arts, Commerce & Science, Kopargaon

Mohiniraj Nagar, Kopargaon, Tal: Kopargaon, Dist: Ahmednagar Pin-423601

Cross-Cutting Issues in Transacting the Curriculum 2018-2019

(Professional Ethics/ Gender/ Human Values/ Environment and Sustainability)

University of Pune
F.Y.B.A. Economics Revised Syllabus.
G-1 Indian Economy – Problems and Prospects
(From June - 2013)
Section – I

1. Developing Economy. **(12)**

1.1 Developed and Developing Economy – Meaning & Concept.

1.2 Basic Characteristics of Indian Economy as a Developing Economy.

1.3 Comparison of Indian Economy with Developed Countries –

a) Population b) Per-capita Income c) Human Development Index.

d) Agriculture e) Industry f) Service Sector.

1.4 Major issues of Development in India

2. Population . **(12)**

2.1 Theory of Demographic Transition.

2.2 Size and Growth of Population.

2.3 Features of Indian population

2.3.1Sex Composition.

2.3.2 Rural Urban Distribution.

2.3..3 Age Composition.

2.3.4 Density of Population.

2.3.5 Occupational Distribution.

2.3.6 Quality of Population.

2.4 Causes of growing Population.- High Birth rate and Decreasing Death rate.

2.5 Problems of Over Population

2.6 Measures for Population Control.

2.7 Population Policy 2005 onward

3. Poverty and Unemployment **(12)**

3.1 Meaning and Concept of Poverty.

3.2 Poverty line- Need of redefining.

3.3 Measurement of Poverty.

3.4 Causes of Poverty.

3.5 Measures of eradication of Poverty.

3.6 Unemployment – Nature & Types, Causes & Measures

4. Agriculture. **(12)**

4.1 Place of Agriculture in Indian economy.

4.2 Agricultural Productivity – Causes of Low Productivity & Measures.

4.3 Green Revolution- Achievements & Failures.

4.4 Sources of Agricultural Finance.

4.5 Agricultural Marketing – Defects & Measures.

4.6 Suicide of Farmer's - Causes and Measures to prevent Farmer's Suicide

4.7 Special Economic Zone- Concept, Features, Problems.

Section – II

5. Industry. **(12)**

5.1 Role of Industrialization.

5.2 Industrial Policy – 1991.

5.3 New Economic Reforms – Concept

i) Liberalization ii) Privatisation, iii) Globalization

5.4 Small and Large Scale Industry – Growth and Problems.

5.5 Growth of Knowledge Based Industry – IT, Software Consultancy.

6. Labour. **(12)**

6.1 Meaning and Classification of Labour.

6.2 Characteristics of Industrial Labour.

6.3 Industrial Dispute :- Causes, Measures for Settlement.

6.4 Social Security Measures in India.

7. Planning. **(12)**

7.1 Meaning, Concept, Need and Objectives.

7.2 Types of Planning – Merits and Demerits.

7.3 Objectives, Achievements, and Failures of 11th Five Year Plan.

7.4 Objectives, of 12th five year plan

8. Economy of Maharashtra. **(12)**

8.1 Salient Features of Economy of Maharashtra.

8.2 Co-operative Movement – Progress, Problems & Prospectus.

F.Y. B.Com.

Compulsory Paper

Subject Name -: Business Economics (Micro)

Course Code -: 103

Objectives -:

1. To expose Students of Commerce to basic micro economic concepts and inculcate an analytical approach to the subject matter.
2. To stimulate the student interest by showing the relevance and use of various economic theories.
3. To apply economic reasoning to problems of business.

Term I

Unit No.	Topic	No. of Lectures
1.	**INTRODUCTION.** 1.1 Meaning, Nature and Scope of Business Economics- (Micro) 1.2 Difference between Micro and Macro Economics. 1.3 Tools for Analysis a. Functional Relationships b. Schedules c. Graphs d. Equations 1.4 Goals of firms a) Economic Goals of Firms 1. Profit Maximization 2. Shareholders Wealth Maximization 3. Management Reward Maximization 4. Growth of the firm 5. Sales maximization 6. Long run survival b) Non-Economic goals 1. Political power, Prestige 2. Social responsibility and welfare 3. Goodwill of employees	12
2.	**DEMAND ANALYSIS** 2.1 Elasticity of Demand, Types of Elasticity, Price Elasticity, Income Elasticity and Cross Elasticity. 2.2 Consumer Behaviour a) Marginal Utility Approach - Limitations b) Indifference Curve Analysis - Concept - Characteristics - Consumer Equilibrium 2.3 Demand Forecasting and Estimation a) Meaning and objectives of Demand Forecasting b) Methods of Demand Forecasting c) Descriptive Analysis of	20

	i) Direct Methods 1) Consumer Survey 2) Expert opinion 3) Simulating market situation 4) Controlled Market Experiments ii) Indirect Methods 1) Simple correlation 2) Trend Projections	
3.	**PRODUCTION AND COST ANALYSIS** 3.1 Production Function – Meaning 3.2 Law of Variable Proportions - The Three Stages 3.3 Law of Returns to Scale - The Three Stages 3.4 Economies and Diseconomies of Scale – Internal and External 3.5 Cost Analysis – Types of Costs a) Types of Costs 1) Total cost 2) Average Cost 3) Marginal Cost 4) Opportunity cost b) Behaviour of Cost Curves 1) In the Short Run 2) In the Long Run	16
	Total	**48**

Unit No.	Term II Topic	No. of Lectures
4.	**REVENUE BEHAVIOUR** 4.1 Meaning and Importance of Revenue Concepts 4.2 Total Revenue (TR), Average Revenue (AR) Marginal Revenue (MR). 4.3 Relationship between Total Revenue, Average Revenue and Marginal Revenue	8
5.	**PRICING UNDER VARIOUS MARKET CONDITIONS** 5.1 Perfect Competition – Features and equilibrium 5.2 Monopoly – Features and equilibrium, Price Discrimination 5.3 Monopolistic competition - Features and equilibrium 5.4 Oligopoly – Features	20
6.	**FACTOR PRICING** 6.1 Marginal Productivity theory of Distribution. 6.2 Rent a) Theories of Rent i) Ricardian Theory of Rent ii) Modern Theory of Rent	20

University of Pune
S.Y.B.A. Economics Revised Syllabus
G-2, Modern Banking
From : June – 2014

PREAMBLE

To create the awareness among the students of Modern Banking System. Banking constitutes important components towards understanding of economics. Clear understanding of the operations of banking their interaction with the rest of the economy is essential to realize how monetary forces operate through a multitude of channels- market, non-market, institutions and among others, the state.

First Term

Chapter No.	Title of the Chapter	Lectures
1	**Evolution of Modern Banking** 1.1 Meaning & Definition of Bank. 1.2 Banking in Europe, USA & Asia. 1.3 Evolution of Banking in India. 1.4 Structure of Indian Banking System	12
2	**Functions of Commercial Banks** 2.1 Primary Functions-Accepting Deposits, Granting Loans & Advances. 2.2 Secondary Functions-Agency Functions, General Utility Functions 2.3 Methods of Remittances.	12
3	**Principles of Commercial Banks** 3.1 Liquidity, Profitability and Safety- Meaning & Concept. 3.2 Multiple Credit Creation-Process & Limitations. 3.3 Components of Balance Sheet of Commercial Banks	12

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3	**Principles of Commercial Banks** 3.1 Liquidity, Profitability and Safety- Meaning & Concept. 3.2 Multiple Credit Creation-Process & Limitations. 3.3 Components of Balance Sheet of Commercial Banks	12

4	**Operation & Types of Accounts** 4.1 Opening and operating of Deposit Account. 4.2 Closure and Transfer of Accounts 4.3 Types of Account Holders - Individual & Institutional 4.4 No Frills Account, Escrow Account	12

Second Term

5	**Negotiable Instruments** 5.1 Promissory Note, Bill of Exchange and Cheque - meaning, Definition & Characteristics 5.2 Types of Cheque – Bearer, Order & Crossed 5.3 Types of Crossing- General & Special 5.4 Endorsement- Definition, Types & Effects	12
6	**New Technology in Banking** 6.1 E-Banking – Need and Importance 6.2 Meaning, concept and operation of - 6.2.1 Automated Teller machine- ATM 6.2.2 Credit Card 6.2.3 Debit Card 6.2.4 Tele Banking 6.2.5 Mobile Banking 6.2.6 Net Banking 6.2.7 Society for worldwide Interbank Financial Telecommunication 6.2.8 Core Banking 6.2.9 RTGS	12
7	**Reserve Bank of India** 7.1 Functions 7.2 Money Measures- M0, M1, M2, M3, M4 7.3 Monetary policy- Meaning & objectives	12

University of Pune
S.Y.B.A. Economics Revised Syllabus
S-1, Micro Economics
From : June – 2014

Preamble

As a foundation course, in this Paper, student is expected to understand the behavior of an economic agent, namely, a consumer, a producer, a factor owner and the price fluctuation in a market. The chapter incorporated in this Paper deal with the nature and scope of economics, the theory of consumer behavior, analysis of production function and equilibrium of a producer, the price formation in different markets structures and the equilibrium of a firm and industry. In addition, the principles of factor pricing and commodity pricing as also the problems of investment and welfare economics have been included.

First Term

Chapter No.	Title of the Chapter	Lectures
1	**Introduction** **1.1** Micro Economics – Meaning, Nature Scope, importance & limitations,. 1.2 Basic Economic Problems. 1.3 Tools of Economic Analysis – Functional relationships, Schedules, Graphs & Equations. 1.4 Variable – Dependent and Independent variable- Exogenous & Endogenous.	**10**
2	**Demand Analysis** 2.1 Utility – Meaning, Concept & Assumptions 2.2 Cardinal Utility- Law of Diminishing Marginal Utility. 2.3 Ordinal Utility – Indifference curve - Concept and Properties, Consumer Equilibrium 2.4 Demand- concept & law 2.5 Elasticity of Demand 2.5.1 Price Elasticity-Definition, Types, Determinants, Importance. 2.5.2 Income Elasticity - Types & Importance, 2.5.3 Cross Elasticity- concept	**18**

3	**Supply Analysis** 3.1 Meaning, Concept & Determinates. 3.2 Law of Supply. 3.3 Elasticity of Supply.	08
4	**Theory of Production** 4.1 Production function. 4.2 The law of Variable Proportions. 4.3 Law of returns to scale. 4.4 Revenue concept-Total, Average &Marginal Revenue. 4.5 Cost concepts: Fixed & Variable Cost, Opportunity cost, Average & Marginal cost, Total cost.	12

Second Term

5	**Market Structure** 5.1 Meaning & Classification 5.2 Perfect Competition: Concept- Characteristics, price determination in short run and long run, equilibrium of the firm and industry 5.3 Monopoly- Concept, Characteristics and short and long run Equilibrium. Price discrimination 5.4 Monopolistic Competition : Concept, Characteristics, short & long run Equilibrium, Selling cost- concept 5.5 Oligopoly – Concept, Characteristics 5.6 Duopoly – Concept, Characteristics	20
6	**Factor Pricing** 6.1 The Marginal Productivity Theory of Distribution. 6.2 Rent – Recardian Theory of Rent, Modern Theory of Rent, Quasi Rent 6.3 Wages –Modern Theory of Wages, Collective Bargaining , Supply curve of Labour	20

University of Pune
S.Y.B.A. Economics Revised Syllabus
S-2, Macro Economics
From : June 2014

PREAMBLE

On account of the growing influence and involvement of the State in economic fields, macroeconomics has become a major area of economic analysis in terms of theoretical, empirical as well as policy-making issues. Macroeconomics has an extensive, substantive as well as methodological content. It deals with the functioning of the economy as a whole, the objective of the course is to familiarize the students the basic concept of Macro Economics and application. Macro economics has an extensive, substantive as well as methodological content. It deals with the functioning of the economy as a whole, including how the economy's total output of goods and services and employment of resources is determined and what causes these totals to fluctuate. The Paper entitled Macroeconomics‖ is designed to make an undergraduate student aware of the basic theoretical framework underlying the field of macroeconomics.

First Term

Chapter No.	Title of the Chapter	Lectures
1	**Introduction** 1.1 Meaning, Nature, Scope, Importance and Limitation of Macroeconomics 1.2 Difference between Micro and Macro Economics	08
2	**National Income** 2.1 Concepts: National Income, Gross National Product, Net National Product, Per Capita Income, Disposable Income. 2.2 Importance of National Income. 2.3 Methods of National Income Measurement 2.4 Difficulties in Measurement of National Income 2.5 Circular Flow of National Income	14

3	**Supply Analysis** 3.1 Meaning, Concept & Determinates. 3.2 Law of Supply. 3.3 Elasticity of Supply.	08
4	**Theory of Production** 4.1 Production function. 4.2 The law of Variable Proportions. 4.3 Law of returns to scale. 4.4 Revenue concept-Total, Average &Marginal Revenue. 4.5 Cost concepts: Fixed & Variable Cost, Opportunity cost, Average & Marginal cost, Total cost.	12

Second Term

5	**Market Structure** 5.1 Meaning & Classification 5.2 Perfect Competition: Concept- Characteristics, price determination in short run and long run, equilibrium of the firm and industry 5.3 Monopoly- Concept, Characteristics and short and long run Equilibrium. Price discrimination 5.4 Monopolistic Competition : Concept, Characteristics, short & long run Equilibrium, Selling cost- concept 5.5 Oligopoly – Concept, Characteristics 5.6 Duopoly – Concept, Characteristics	20
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University of Pune
S.Y.B.A. Economics Revised Syllabus
S-2, Macro Economics
From : June 2014

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3	**Theory of Employment** 3.1 Say's Law of Market 3.2 Classical Theory of Employment 3.3 Criticism by Keynes on Classical Theory 3.4 Keynesian Theory of Employment	12
4	**Consumption and Investment** 4.1 Meaning of Consumption Function 4.2 Average and Marginal Propensity to Consume 4.3 Psychological Law of Consumption 4.4 Factors influencing Consumption Function 4.5 Saving- concept & Function 4.6 Investment- Meaning & Types 4.7 Investment Multiplier- Concept and Limitations 4.8 Principle of Acceleration - Concept	14
	Second Term	
5	**Value of Money** 5.1 Money- Definition and Functions 5.2 Quantity Theory of Money 5.3 Cash balance approach	12
6	**Inflation and Deflation:** 6.1 Inflation - Meaning and Causes 6.2 Demand Pull and Cost Push Inflation 6.3 Effects of Inflation 6.4 Measures to control Inflation 6.5 Deflation- Meaning, Causes and Consequences	12
7	**Business Cycles** 7.1 Meaning and Features of Business Cycle 7.2 Phases of Business Cycle 7.3 Causes and Effects of Business Cycle. 7.4 Control of Business Cycles- Monetary and Fiscal Controls	12

Savitribai Phule Pune University

T.Y. B.A. Economics
General Paper III

G.3 Economic Development & Planning

(From June 2015)

Revised Syllabus

PREAMBLE:

The Study of Economic Development has gained importance because of stained interest of the developing countries in uplifting their economic conditions by restructuring their economics to acquire greater diversity, efficiency and equity in Consonance with their priorities. While few success stories can be counted, many have grappled with chronic problems of narrow economic base, inefficiency and low standard of living. For this and other reasons, their have been many approaches to economic development. In recent times, besides hard core economic prescriptions to development, concern hitherto relegated to background, like education, health, sanitation and infrastructural development, have found place of pride in explaining the preference of various economies incorporated in this paper are devoted to the theories of economic development, approaches to economic development, social and institutional aspects of development, constraints on development process, macro economic policies, roll of foreign capital and economic planning etc. in developing countries.

Section I	Lectures
1. Economic Development and Growth 1.1 Meaning of Economic Development and Growth 1.2 Indicators of Economic Growth 1.3 Indicators of Economic Development 1.4 Differences between Economic Development & Growth	10
2. Developing Countries 2.1 Concept- Developed, Developing Countries 2.2 Characteristics of Developing Countries 2.2.1 Economic Characteristics 2.2.2 Demographic Characteristics 2.2.3 Technological Characteristics 2.2.4 Socio - Cultural Characteristics 2.2.5 Other Characteristics	14
3. Constraints on Development Process 3.1 Vicious Circle of Poverty 3.2 Population Explosion 3.3 Low Productivity of Agriculture	12

3.4 Scarcity of Capital
3.5 Inappropriate Technology
3.6 Socio- Cultural Constraints
3.7 Political and Administrative Constraints
3.8 External Bottleneck

4. Theories of Economic Development 12
4.1 Classical Theories- Adam Smith, Ricardo & Malthus
4.2 Karl Mark's Theory of Economic Development
4.3 Schumpeterian Theory of Economic Development

Section II

5. Approaches to Economic Development 10
5.1 Big Push Theory
5.2 Balanced Growth
5.3 Imbalanced Growth

6. Foreign Capital and Development 14
6.1 Meaning & Role of Foreign Capital in Economic Development
6.2 Problems of Foreign Capital
6.3 Private Foreign Investment- Types & Role
6.4 Public Foreign Investment-Types
6.5 Foreign Aid- Tide and Untied

7. Macro Economic Policy 12
7.1 Monetary Policy- Objectives, Instruments and Limitations
7.2 Fiscal Policy- Objectives, Instruments and Limitations
7.3 Fiscal Policy in Cyclical Fluctuations

8. Economic Planning
8.1 Meaning & Definition
8.2 Need of Planning
8.3 Objective of Economic Planning- Economic, Social and Political
8.4 Inclusive Growth Approach & 11th five year plan
8.5 National Institution for Transforming India Aayog (NITI AYOG)

Basic Reading List

- Adelmen, I. (1961) Theories of Economic Growth and Development, Stanford University Press,Stanford.
- Behrman, S. and T.N Srinivrsan,(1995) Handbook of Development Economic, Vol. 1 to 3, Elsevire, Amsterdam,

Savitribai Phule Pune University

T.Y. B.A. Economics
Special Paper III

S.3 International Economics

(From June 2015)

Revised Syllabus

PREAMBLE

This course provides the students a thorough understanding and deep knowledge about the basic principles that tend to govern the free flow of trade in goods and services at the global level. The contents of the Paper spread over various modules, lay stress both on theory and applied nature of the subject that have registered rapid changes during the last decade. Besides this, the contents prepare the students to know the impact of free trade and tariffs on the different sectors of the economy as well as at the macro level. The students would also be well trained about the rationale of recent changes in the export import policies of India. This paper has become relatively more relevant from the policy point of view under the present waves of globalization and liberalization both in the North and in the South.

Section I

No of Lectures

1. Introduction 12
1.1 International economics- meaning, Scope & Importance
1.2 Inter-regional and international trade
1.3 Importance of International Trade

2.Theories of International Trade 12
2.1 Theory of absolute cost advantage and comparative cost advantage
2.2 Heckscher-Ohlin theory
2.3 Leontief's paradox, Rybczynski theorm, Intra-Industry Trade

3. Gains from Trade 12
3.1 Measurement of gains, static and dynamic gains
3.2 Terms of trade – Importance, types and determinants
3.3 Causes of unfavorable terms of trade to developing countries.

4. Balance of Payments 12
4.1 Balance of trade and Balance of payments- Concepts and components
4.2 Equilibrium and disequilibrium in balance of payments; causes and consequences
4.3 Measures to correct deficit in the balance of payments

Section II

5. Trade policy & Exchange Rate 12
5.1 Free trade policy - case for and against
5.2 Protection Policy – case for and against
5.3 Types of tariffs and quotas
5.4 Exchange rates-Fixed and flexible

6. India's Foreign Trade and Policy 12

6.1 Growth of India's foreign trade
6.2 Changes in the composition and direction of foreign trade since 2000-2001
6.3 Foreign Trade policy 2015-2020.
6.4 India and WTO

7. Export Promotion measures 12

7.1 Export promotion - Contribution of SEZ
7.2 Role of multinational corporations in India.
7.3 FEMA-provisions and impact
7.4 Convertibility of Indian rupee

8. Regional and International Co-operation 12

Nature and Functions of-
8.1 South Asian Association for Regional Co-operation (SAARC)
8.2 Brazil, Russia, India, China and South Africa (BRICS)
8.3 European Economic Community (EEC)

BASIC READING LIST

1. Kenan, P.B. (1994), The International Economy, Cambridge University Press, London.
2. Kindlberger, C.P. (1973), International Economics, R.D. Irwin, Homewood.
3. Krugman, P.R. and M. Obstgeld (1994), International Economics : Theory and Policy, Glenview, Foresman.
4. Salvatore, D.L. (1997), International Economics, Prentice-Hall, Upper Saddle River, N.J.
5. Sodersten, Bo (1991), International Economics, Macmillan Press Ltd., London.
6. International Economics , M.L. Jhingan

ADDITIONAL READING LIST

1. Bhagwati, J. (Ed.) (1981), International Trade, Selected Readings, Cambridge University Press, Mass.
2. Greenaway, D. (1983), International Trade Policy, Macmillan Publishers Ltd., London.
3. Joshi V. and I.M.D. Little (1998), India's Economic Reforms, 1999-2001, Oxford University Press, Delhi.
4. Panchmukhi, V.R. (1978), Trade Policies of India : A Quantitative Analysis, Concept Publishing Company, New Delhi.
5. Patel, S.J. (1995), Indian Economy Towards the 21st Century, University Press Ltd., India.
6. Misra and Puri, Indian Economy, Himalaya Publishing House
7. Dangat Nilesh (2015), 'International Economics' Success Publication, Pune.
8. Gite T.G. (2015), 'International Economics' (Marathi Edition), Success Publication, Pune.

Savitribai Phule Pune University

T.Y. B.A. Economics
Special Paper IV

S 4. Public Finance

(From June 2015)
Revised Syllabus

PREAMBLE

Role and functions of the Government in an economy has been changing with the Passas of time. The term 'Public Finance' has traditionally been applied to the package of those policies and operations which involve the use of tax and expenditure measures while budgetary policy is an important part to understand the basic problems of use of resources, distribution of Income, etc. There are vast array of fiscal institutions -tax systems, expenditure programs budgetary procedures, stabilization instruments, debt issues, levels of government, etc., which Raise a spectrum of issues arising from the operation of these institutions. Further, the existence of externalities, concern for adjustment in the distribution of income and wealth, etc. require political processes for their solution in a manner which combines individual freedom and justice.

Section I

No of Lectures

1 Public Finance 10

1.1The role of Government in an economy
1.2 Meaning, Nature, Scope and Importance of Public Finance
1.3 Private Finance and Public Finance
1.4 Principle of Maximum Social Advantage- Dr. Dalton

2. Public Expenditure 12

2.1 Meaning and Principle of Public Expenditure
2.2 Classification of Public Expenditure
2.3 Trends of Public Expenditure in India.
2.4 Causes of increase in Public Expenditure
2.5 Effects of Public Expenditure

3. Public Revenue 14

3.1 Sources of Public Revenue
3.2 Meaning and Objectives of Taxation
3.3 Principles of taxation- Benefit approach, Ability to pay
3.4 Concepts- Impact of Tax, incidence of Tax, Shifting of Tax and Taxable Capacity
3.5 Indian Tax Structure- Direct and Indirect tax, Progressive, proportional and Regressive

4. Public Debt 12

4.1 Meaning and types of Public Debt
4.2 Sources of internal and external Public Debt
4.3 Effects of Public Debt
4.4 Methods of repayment

Section II

5. Budget 12

5.1 Meaning, nature and objectives of Budget
5.2 Types of Budget – Revenue, Capital, Surplus, Deficit and Balance Budget
5.3 Preparation of Indian Central Budget
5.4 Gender Budget

6. Deficit Financing 12

6.1 Meaning, Objectives
6.2 Need, Process and Causes
6.3 Trends in India Deficit finance since 2001
6.4 Effects of Deficit Financing

7. Centre-State Financial Relationship 12

7.1 Constitutional Provisions
7.2 Role and Working of finance Commission
7.3 Recommendation of 13th and 14th finance Commission
7.4 Centre- State Conflict

8. Fiscal Policy 12

8.1 Meaning, Role and Objectives of Fiscal Policy
8.2 Review of Indian Fiscal Policy since 2001
8.3 Fiscal Policy in developing economy
8.4 Limitations of Fiscal policy

BACIC READING LIST

1. Jha R., (1998) Modern Public Economics, Routledge London
2. Bhargavre P.K., (1984) some Aspects of Indian Public Finance, Uppal Publishing House New Delhi.
3. Government of India (1985) Long Term Fiscal Policy, New Delhi.
4. Government of India (1992) Reports of the tax Reforms committee- interim and Final, (chairman: Raja J. Chelliah).
5. Srivastava, D.K., (Ed) (2000) Fiscal Federalism in India, Har-Anand Publication, Ltd. New Delhi.
6. Datt R., (2001), second Generation Economics Reforms in India, Deep and Deep Publications, New Delhi
7. Bhatia H.L. (1984) Public Finance, Vikas Publishing House Pvt.Ltd. New Delhi

ADDITIONAL READING LIST:-

1. Musgrave and Musgrave, (1989) Public Finance in Theory and Practice Mc Graw- Hill International Edition
2. Tyagi B.P., (1992-93), Public Finance, jai Prakash Nath Co. Meerat, U.P.
3. Datta / Sundaram (2009), Indian Economy S.Chand And Co. Ltd New Delhi.
4. Rasal Rajendra (2015), 'Public Finance'(Marathi Edition), Success Publication, Pune

M.A. Economics Part I Semester I
Core Course

EC-1001 Micro-Economic Analysis–I

(This course will have *FOUR* credits.)

1: Introduction (6 Lectures)

1.1 The Basic Micro- Economic Problems of Scarcity and Choice.
1.2 Market and Price Mechanism
1.3 Disturbances to Equilibrium, Floor Price, Ceiling Price.

2. Consumer Theory (**14** Lectures)

2.1 The Concept of and Measurement of Utility: Cardinal and Ordinal.
2.2 Theory of Consumer Choice: Marginal Utility Theory, Indifference Curve Approach, Income and Price Expansion Paths, Demand Curve.
2.3 Income and Substitution Effects: Slutskey and Hicksian approach.
2.4 Theory of Revealed Preference, Index Numbers.
2.5 Concept of Elasticity: Price, Income and Cross Elasticity.
2.6 Concept of Consumers' Surplus.
2.7 Preference Ordering

3. Production Theory (**14** Lectures)

3.1 Production Function – One Input, Two Inputs: Isoquants.
3.2 Law of Variable Proportions, Returns to the Variable Factor, Returns to Scale, Cobb- Douglas Production Function.
3.3 Producer's Equilibrium with one and two inputs.
3.4 Cost Curves, Total, Average and Marginal Cost, Short Run and Long Run Costs, Economist concept of cost.
3.5 Concept of Total Revenue, Average Revenue and Marginal Revenue
3.6 Derivation of Supply curve, Firm and Industry, Short Run and Long Run.
3.7 Concept of Producers' Surplus

UNIVERSITY OF PUNE
REVISED SYLLABUS FOR M.A. ECONOMICS
CREDIT & SEMESTER SYSTEM
From June 2013

M.A. Economics Part- I Semester II
Core Course

EC-2001 Micro Economic Analysis – II
(This course will have *FOUR* credits.)

1. Classification of Markets *(4 Lectures)*

1.1 Classification of Markets.
1.2 Perfect Competition - Short Run and Long Run Equilibrium

2 Monopoly *(10 Lectures)*

2.1 Short Run and Long Run Equilibrium of a Single Firm an Industry under competitive conditions
2.2 Equilibrium of a Firm under Monopoly (Short Run and Long Run)
2.3 Price Discrimination under Monopoly, different types.
2.4 Comparison of Monopoly and Perfectly Competitive Market outcomes.
2.5 Regulation of Monopoly Power.

3. Imperfect Competition *(10 Lectures)*

3.1 Monopolistic Competition, Price and Non-price competition, Equilibrium.
3.2 Product Differentiation, Selling Costs and Excess Capacity.
3.3 Oligopoly, Basic market structure, Non-collusive oligopoly, Cournot- Bertrand Solution.
3.4 Collusive Oligopoly, Cartels, Price and Output Determination
3.5 Game Theory, Basic Concepts, Dominant Strategy Equilibrium, Nash Equilibrium, Repeated and Sequential Games.

4. Alternative Theories of the Firm *(6 Lectures)*

4.1 Goal of Profit Maximization and Alternative Theories of the Firm.
4.2 Baumol's Sales Revenue Maximization Model.

5. Theory of Distribution and Welfare Economics *(10 Lectures)*

5.1 Marginal Productivity Theory.
5.2 Product Exhaustion Theorem. (Euler's Theorem)
5.3 Piguo's Welfare Theorem
5.4 Pareto Optimality
5.5 Social Welfare Function, Compensation Criteria.
5.6 Arrow's Impossibility Theorem.

M.A. ECONOMICS (PART – I) –Semester – I
Core Course
EC-1002 Public Economics I
(This course will have *FOUR* credits.)

PREAMBLE

Role and functions of the Government in an economy have been changing with the passage of time. The term 'Public Finance' has traditionally been applied to the package of those policies and operations which involve the use of tax and expenditure measures while budgetary policy is an important part to understand the basic problems of use of resources, distribution of income, etc. There are vast areas of fiscal institutions — tax systems, expenditure programmes, budgetary procedures, stabilization instruments, debt issues, levels of government, etc., which raise a spectrum of issues arising from the operation of these institutions.

1: Introduction **(10** Lectures)

1.1 Role of Government in Organized Society

1.2 Changing Perspective — Government in a Mixed Economy: Public and Private Sector

1.3 Government as an agent for Economic Planning and Development

1.4 Private Goods, Public Goods, and Merit Goods

2: Rationale for Public Policy **(10** Lectures)

2.1 . Allocation of Resources — Provision of Public Goods.

2.2 Voluntary Exchange Models

2.3 Impossibility of decentralized provision of Public Goods

2.4 contributions of Samuelson and Musgrave Demand Revealing Schemes for public goods Contributions of Clarks, Groves

2.5 Leyard, Tiebout model, Theory of Club Goods; Stabilization Policy

3: Public Expenditure **(10** Lectures)

3.1 Wagner's Law of Increasing State Activities

3.2 Wiesman- Peacock Hypothesis; Pure Theory of Public Expenditure

3.3 Structure and Growth of Public Expenditure

3.4 Criteria for Public Investment; Social Cost-Benefit Analysis, Project Evaluation, Estimation of Costs, Discount Rate.

3.5 Reforms in Expenditure Budgeting; Programme Budgeting and Zero Base Budgeting. Outcome of Budget and performances.

M.A. Economics Part- I Semester II
Core Course

EC-2002 Public Economics II

(This course will have *FOUR* credits.)

1. Public Debt (10 Lectures)

1.1 Classical view of Public Debt;

1.2 Compensatory aspect of Debt Policy

1.3 Sources of Public Debt; Debt through created Money

1.4 Public Borrowings and Price Level

1.5 Crowding Out of Private Investment and Activity

1.6 Principles of Debt Management and Repayment

1.7 Burden of Public Debt on Indian Economy.

2. Fiscal Policy (10 Lectures)

2.1 Objectives of Fiscal Policy, Interdependence of Fiscal and Monetary Policies

2.2 Fiscal Policy for Stabilization - Automatic vs. Discretionary Stabilization.

2.3 Budget – Meaning and Components. Preparation, Presentation and Execution of Budget.

2.4 Economic Classification of Budget.

2.5 Budget Deficits and Their Implications.

2.6 Trends in Expenditure of Union, State and Local Bodies since 1991.

2.7 Balanced Budget Multiplier.

3 Indian Fiscal Federalism (10 Lectures)

3.1 Fiscal Federalism in India;

3.2 Vertical and Horizontal Imbalance

3.3 Assignment of Function and Sources of Revenue

3.4 Constitutional provisions; Finance Commission and Planning Commission

3.5 Devolution of Resources and Grants

3.6 Theory of Grants; Resource transfer from Union to States — Criteria for Transfer of Resources

3.7 Centre-State Financial Relations in India

3.8 Problems of States' Resources and Indebtedness

3.9 Transfer of resources from Union and States to Local Bodies.

M.A. Economics Part I Semester I
Core course

EC 1003- International Trade
(This course will have *FOUR* credits.)

1 – Overview of Classical and Modern Trade Theories **(18 lectures)**

1.1 Ricardo and the concept of Comparative Cost Theory

1.2 Opportunity Cost –Heckscher Ohlin Theorem,

1.3 Verification of Physical Criterion and Price Criterion,

1.4 Leontief Paradox – Factor Price Equalization and explanation with Edgeworth Box Diagram

1.5 New theories of Trade, Product Life Cycle and Technology Gap Models,

1.6 Preference similarity and Intra-Industry Trade,

1.7 Economies of Scale and Monopolistic Competition –

1.8 Krugman- Theory of Economic Geography

1.9 Neo-Heckscher Ohlin theorem

2 – Terms of Trade **(4 lectures)**

2.1 Concepts of Net Barter Terms of Trade,

2.2 Gross Barter Terms of Trade, Factors affecting Terms of Trade

2.3 Terms of Trade and Economic Development

3 – Trade Policy **(8 lectures)**

3.1 Free Trade vs. Controlled Trade,

3.2 Tariffs and Non-Tariff Barriers on Trade,

3.3 Effects of Tariffs under Partial Equilibrium. (Price Effect, Terms of Trade Effect, Competitive Effect, Income Effect, Revenue Effect)

3.4 Effects under General Equilibrium, Stolper – Samuelson Theorem

4 GATT, WTO and world Trade **(10 lectures)**

4.1 International Trade Agreements.

4.3 Dunkel Proposal.

4.3 WTO- Important Agreements under, Major developments since 1995, Expected effects on the Indian Economy.

M.A. Economics Part- I Semester II
Core Course

EC - 2003- International Finance
(This course will have *FOUR* credits.)

1. Balance of Payments

(8 Lectures)

1.1 Balance of Trade and Balance of Payments- Meaning, Structure and Components

1.2 Balance of Payments Disequilibrium- Causes of Disequilibrium;

1.3 Correction of Disequilibrium-Automatic Correction, Deliberate Correction,

1.4 Foreign Trade Multiplier- Meaning and Working- Implications of Foreign Trade Multiplier- Limitations of Foreign Trade Multiplier.

1.5 Policies for Internal and External Balance-Fiscal and Monetary Policy Under Fixed and Floating Exchange Rates

1.6 Devaluation of Indian Rupee- Devaluation of 1966 and 1991.

2. Foreign Exchange

(10 lectures)

2.1 Functions of Foreign Exchange Market- Transfer of Purchasing Power, Provision of Credit, Provision of Hedging Facilities

2.2 Transactions in the Foreign Exchange Market- Spot and Forward and Exchanges, Futures, Swap Operation, Arbitrage

2.3 Determination of Rate of Exchange- Purchasing Power Parity Theory, Balance of Payments Theory, Monetary Models.

2.4 Exchange Control-Scope of Exchange Control, Objectives and Methods of Exchange Control.

2.5 Exchange Rate Systems- Fixed and Flexible Exchange Rates-Case for and against Fixed and Flexible Exchange Rates

2.6 Current and Capital Account Convertibility –Meaning, Benefits, Pre-requisites and Problems

2.7 Currency Exchange Risk and their Management

2.8 Foreign Exchange Management Act- Objectives and Features

M.A. Economics Part- I Semester I
[Non-core course]

EC- 1005 Labour Economics

(This course will have *FOUR* credits.)

Lectures.

1 Introduction. (8)

1.1 Meaning- Concept, Significance and Pecularities of Labour.

1.2 Nature, Scope and Importance of Labour Economics.

1.3 Characteristics of Indian Labour Market.

2 Wage Determination **(8)**

2.1 Marginal Productivity Theory, Theory of Collective Bargaining, Modern Theory of Wages.

2.2 Minimum Wage and Fair Wage.

2.3 Wage Determination in – Organised- Unorganised Sector.

2.4 Evolution and Features of Wage Policy in India.

3 Migration and Absenteeism **(8)**

3.1 Approaches to Labour Migration trends & effects of Migration.

3.2 Absenteeism to Industrial Labour in India, causes, effects and remedies.

3.3 Labour turnover - Trends in Labour Turnover in India.

4 Industrial Relations. **(8)**

4.1 Labour Unions in India- Growth, Pattern, Structure and Achievements of Labour Union in India.

4.2 Causes of Industrial Disputes and their settlement and preventive mechanism.

4.3 Current trends in Collective Bargaining

4.4 Social Security Measures.

M.A. Economics Part- I Semester II
Non-Core course

EC.2004- Agricultural Economics

(This course will have *FOUR* credits.)

1 – Introduction. (8)

1.1 Place of Agriculture in Indian economy.

1.2 Trends .Agriculture Productivity

1.3 Agricultural Development under Five Year Plans.

1.4 S.E.Z Policy. – Agriculture

2 Agriculture Labour (8)

2.1 Problems of Agriculture Labour.

2.2 Efficiency of Agriculture Labour

2.3 Impact of Mechanization on Agriculture Labour.

2.4 National Employment Guarantee Scheme.

3 Agricultural credit. (8)

3.1 Co-operative Credit Structure.

3.2 Role of NABARD

3.3 Role of Commercial Banks.

3.4 Micro Finance --Meaning, Role, and Trends.

3.5 Issues of Agriculture Subsidies.

4 Agriculture Marketing. (8)

4.1 Problems of Agriculture Marketing in India.

4.2 Agriculture -Marketing and Price System in India

4.3 Problems of Agriculture – Export- Imports.

4.4 Processing of Farm Products.

4.5 Agreements of WTO in Agriculture

5 Sustainable Agriculture. (8)

5.1 Bio Technology – Meaning and Trends

5.2 Organic Farming – Present status and Future.

5.3 Contract Farming - Present Status and Future.

UNIVERSITY OF PUNE
M.A. ECONOMICS (PART –II) Semester – III
EC-3001 Macro Economics I
Core Course - (CREDIT SYSTEM)
(This course will have *FOUR* credits.)
(From June 2014)

PREAMBLE

Macroeconomics or aggregative economics analyses and establishes the functional relationship between the large aggregates. The aggregate analysis has assumed such a great significance in recent times that a prior understanding of macroeconomic theoretical structure is considered essential for the proper comprehension of the different issues and policies. Macroeconomics is not only a scientific method of analysis; but also a body of empirical economic knowledge. The paper entitled "Macro Economic Analysis" equips the students at the postgraduate level to understand systemic facts and latest theoretical developments for empirical analysis.

1. National Income **15**

1.1 Gross Domestic Product, Gross National Product, Net Domestic Product

1.2 Nominal and Real domestic product. Price Indexes and GDP deflator.

1.3 Concept of disposable Income and Relationships between Income & consumption,

1.4 Saving, Investment, Government Expenditure, Taxes, Imports & Exports.

1.5 National Accounts Statistics-system of national income accounting

2: Aggregate Supply & Aggregate Demand **15**

2.1 Difference between Potential Output and Actual Output- Classical Approach

2.2 Determination of output and employment Effects of change in Aggregate Demand and Supply Curves - Classical Approach

2.3 Keynesian approach, Determination of Equilibrium of Aggregate Demand and Supply

2.4 Keynesian approach-neutrality of money Multiplier Effect

2.5 Multiplier effect with inclusion of Government sector. (Automatic stabilizers, balanced budget multiplier)

3. Brief structure of IS-LM Model **15**

3.1 Derivation of IS curve and LM curve

3.2 Equilibrium in the Goods and Assets under fixed and flexible prices

3.3 Derivation of aggregate demand schedule Monetary and Fiscal policy-The transmission Mechanism-Liquidity Trap

UNIVERSITY OF PUNE
M.A. ECONOMICS PART – II Semester – IV
EC – 4001 Macro-Economics II
Credit system Core Course
(This course will have *FOUR* credits.)
(From June 2014)

PREAMBLE

Macroeconomics or aggregative economics analyses and establishes the functional relationship between the large aggregates. The aggregate analysis has assumed such a great significance in recent times that a prior understanding of macroeconomic theoretical structure is considered essential for the proper comprehension of the different issues and policies. Macroeconomics now is not only a scientific method of analysis; but also a body of empirical economic knowledge. The paper entitled "Macro Economics equips the students at the postgraduate level to understand systemic facts and latest theoretical developments for empirical analysis.

I: Money and Liquidity 15

1.1 Definitions of Money, Money ness and liquidity. Measures of Money Supply
1.2 Liquidity measures according to Reddy Committee Report.
1.3 The debate relating to the definition of money
1.4 Liquidity theory, Gurley and Shaw Hypothesis- Alternative money stock measures
1.5 The quantity and components of money stock in India and broad trend in them

2: Demand for Money and Price 15

2.1 Nominal v/s Real Cash Balance
2.2 Neo Classical theory, Keynes's Theory, Friedman's Theory.
2.3 The Quantity Theory of Money Approach. QTM and Income Equation
2.4 Fishers QTM, Cambridge Cash Balance
2.5 QTM as the theory of Price level
2.6 Baumol-Tobin theory Issues regarding endogenous and exogenous supply of money

3: Money Supply and Inflation 15

3.1 Goals Targets, Indicators and instruments of Monetary Policy
3.2 Theory of Money Supply: high Powered Money

University of Pune
M.A Economics Part II Semester III
EC-3002 Growth and Development – I
Core Course CREDIT SYSTEM
(This course will have *FOUR* credits.)
(From June 2014)

Preamble:

Growth and Development is one of the most important areas of economic exploration in the last 50-60 years. Although relatively recent in origin this subject occupies a significant position in economic theory and practice. India being a developing country, this subject becomes extremely relevant for both teachers and students. The syllabus of Semester III includes the evolution of growth models as well as important concepts such as poverty, inequality and population dynamics in the context of developing countries.

1. Development and Underdevelopment: An Overview 20

1.1 Concepts of growth and Development
1.2 Problems in defining economic development
1.3Characteristics of LDCs – structural view of underdevelopment
1.4 The world distribution of income and Development gap
1.5 Per capita income as an index of development
1.6 Difficulties of measurement and comparability in the calculation of per capita according to exchange rate and PPP
1.7 Alternative measures of development gap – HDI

2 Poverty and inequality 10

2.1 Defining poverty and problems of measurement
2.2 Income distribution - Income inequality, measurements of inequality, understanding inequality in developed and underdeveloped worlds
2.3 Impact of inequality on the process of development.
2.4 Contemporary debater on poverty in India

3 Theories of Economic Growth and Development: 15

3.1.The Harrod Domar growth model and its application to LCD's
3.2 Solow model of economic growth
3.3 the Cobb Douglas Production Function
3.4 marx Schumpeter Gerschenkron – surplus labour
3.5 Big push (Rosenstein–Rodan) –
3.6 Balanced growth : (Nurkse) & Unbalanced growth (Hirschman)
3.7 The process of cumulative causation (Myrdal)
3.8.The centre and periphery hypothesis – the dependency school

4 Population growth and economic development 15

University of Pune
M.A Economics Part II Semester IV
EC-4002 Growth and Development –II
Core Course
(This course will have *FOUR* credits.)
(From June 2014)

Preamble:

Growth and Development is one of the most important areas of economic exploration in the last 50-60 years. Although relatively recent in origin this subject occupies a significant position in economic theory and practice. India being a developing country, this subject becomes extremely relevant for both teachers and students. The syllabus of Semester IV includes the practical aspects of the process of growth and development – including the role of agriculture and industry, external trade and resource mobilization and the role of the state and the markets.

1 The role of agriculture and Industry in development **15**

1.1. Role of Agriculture in development 'Market surplus' Size of holding Price policy
1.2. Disguised unemployment
1.3. Role of industry – Major reasons for industrialization in LDCs
1.4. The Role of Infrastructure – social and physical infrastructure – education and health infrastructure

2 Policy Environment for growth and development **15**

2.1 The infant industry argument – The employment argument
Police Environment
2.2 Export promotion Vs import substitution
2.3. Monetary Policy – trade policy
2.3 Fiscal Policy – Inflation, savings and growth
2.4 Non –inflationary finance of investment – Inflation and credit – Inflation and growth

3 Trade and development **15**

3.1 Trade as an engine of growth - foreign borrowing – Savings – Investment gap – The foreign exchange gap
3.2 foreign borrowing and debt – servicing problem
3.3 types and measurement of international capital flows
3.4 The role of IMF, World Bank, FII and FDI

4 The role of the government **15**

University of Pune
M.A Economics Part II Semester III
EC-3003 Modern Banking
Core course
(This course will have *FOUR* credits.)
(From June 2014)

Preamble-

The course intends to make students aware about the changing scenario of the modern banking role, structure, performance and the current problems faced by the banking sector in India and also in the world. It also tries to throw light on the future prospects and role of modern banking sector at the global level. Students are supposed to study the current affairs and events happening in the money market and capital market at the national and international level.

15

1. Introduction-

1.1 Nature, structure and role of financial system in economic development.
1.2 Functions of financial system
1.3 Theories of financial development-Credit Creation Theory, Financial Regulation and Financial Liberalization Theory.
1.4 Investment policy of a bank- liquidity, safety and profitability.
1.5 Balance sheet of a commercial bank. **20**

2. Modern Banking in India-

2.1 Evolution, role and functions of modern banks in India
2.2 Money market and capital market
2.3 Changing trends in banking sector since 1991.
2.4 Comments on the present status of cooperative banks, RRB
2.5 Foreign banks in India and their impact on Indian banking sector
2.6. Provisions of the Banking Regulation Act
2.7 Progress and present status of E-Banking in India
2..8 Current challenges faced by banking sector- Mergers and amalgamations, Consolidations, Financial Inclusion, NPA. **10**

3. Non-banking Financial Institutions in India-

3.1 Nature, types and significance of NBFIs in India
3.2 Performance of the NBFIs in the public, private and foreign collaboration sector – LIc, GIC, Provident Fund, Small Savings, Mutual Funds, Pension fund **15**

4. International Financial Markets-

4.1 Nature and role of foreign exchange market,
4.2 Recent trends in the exchange rates and its impact on Indian economy
4.3 Forms of foreign capital – Foreign Direct Investment [FDI], Pros and cons for FDI in India,

University of Pune
M.A Economics Part II Semester IV
EC-4003 Research Methodology
Core Course- (CREDIT SYSTEM)
(This course will have *FOUR* credits.)
(From June 2014)

Preamble –

Students who complete their post graduation in economics are mentally equipped to pursue research in the same discipline. It is generally accepted that the research is nothing but the extension and application of knowledge in a certain specialized field. Therefore regular and external students who do their post graduation will be given an opportunity to get exposed to a few elements of social science research. Elementary knowledge of research methodology shall consolidate and deepen their understanding of various branches of Economics.

1. **Introduction to Research** **15**
   - 1.1 Meaning and types of research
   - 1.2 Social Science. Research- Meaning Objectives, Nature, importance, utility, Limitations and difficulties.
   - 1.3 Stages involved in designing research.
2. **Research Techniques** **15**
   - 2.1 Data Collection - Sources of Data
   - 2.2 Primary - Interviews, Questionnaire, Observation, Schedule.
   - 2.3 Secondary Data Collection.
   - 2.4 Case studies & Historical methods
   - 2.5 Hypothesis - Definition, Formulation and Role.
   - 2.6 Sampling Technique - Types of Samples, Size of Samples
3. **Analysis of Data** 15
   - 3.1 Classification and Tabulation.
   - 3.2 Graphs and Diagrams.
   - 3.3 Measures of Central Tendencies. Mean, median mode
   - 3.4 Dispersion. & Correlation.
   - 3.5 Percentage. Bi-variate presentation.
   - 3.6 Hypothesis Testing. Chi Square test.
4. **Information Systems & report writing** **15**
   - 4.1 Information Systems and knowledge management.
   - 4.2 Global Information - Internet surfing, downloading, blogs, mails.
   - 4.3 Computerized data processing- Excel, SPSS.
   - 4.4 Stages of report writing..
   - 4.5 Presentation - Power Point

University of Pune
M.A Economics Part II Semester III
EC- 3004 DEMOGRAPHY
Non- Core Courses- (CREDIT SYSTEM)
(This course will have *FOUR* credits.)
(From June 2014)

The main objective of this paper is to make the students aware of the importance of population in economic development and the various theories that explain the growth of population in a country. The paper also enlightens the students on the quantitative and the qualitative aspects and characteristics of the population through various demographic techniques. In recent times, gender characteristics of the population have acquired importance and these have also been included in the framework of study. Migration and urbanization are the characteristics of structural change taking place in a society. Their study is essential to understand the dynamics of this change. The paper exposes the students to sources of population and related characteristics and also to the rationale, need and evolution of population policy.

1. **Demography** 15
   - 1.1 Demography : Nature and Scope
   - 1.2 Development of population studies in India- relationship with other disciplines
   - 1.3 Sample surveys dual report system
   - 1.4 World population growth and distribution
   - 1.5 Population growth in developed and developing countries
2. **Population theories** 15
   - 2.1 Malthusian theory
   - 2.2 Classical and Neo-classical schools of thought –
   - 2.3 Optimum population theory
   - 2.4 Biological theories.
   - 2.5. Theory of demographic transition
3. **Population structure and characteristics** **15**
   - 3.1 Census- growth rate and population - Sex ratio in India – factors affecting sex ratio , age structure
   - 3.2 Meaning and measures of Mortality – infant mortality – child mortality - causes of death.
   - 3.3 Fertility Meaning – factors affecting fertility - social and cultural factors

University of Pune
M.A Economics Part II Semester IV
EC-4004 Rural Development
None Core Course
(This course will have *FOUR* credits.)
(From June 2014)

PREAMBLE

The course on Rural Development attempts to sensitize students about the dynamics of changes in the rural economy. It includes the study of problems faced by rural population and also includes the critical review of various schemes and projects that benefit the rural population. Emphasis may be laid on the study of rural development as an integral part of overall socioeconomic development. The treatment of topics shall be in the context of Indian economy and society.

1. Rural Development **15**

1.1 Concept, Scope, Objectives and Importance of Rural Development.

1.2 Various approaches to Rural Development. Gandhian Approach. PURA.

1.3 Structure of Rural Economy of India

1.4 Rural Administrative machinery. 73rd Constitutional Amendment

2. Aspects of Rural Development. **20**

2.1 Rural Infrastructure – Roads, Railway development, Irrigation, electricity, housing, sanitation facilities, communication links, Education, health and family welfare, HDI in rural India

2.2 Agricultural development in India . Land use pattern. Land Reforms. Changes in cropping pattern. Farm laborers. Farm sector vs. non-farm sector

2.3 Rural Indebtedness – magnitude, causes and remedial measures.

2.4 Role of non-institutional sources of credit Cooperatives

2.5. Role of Commercial banks. RRBs. NABARD. SHGs.

2.6 Microfinance institutions in India. Kisan Credit Cards

2.7 Rural Industrialization and agro-based industries. Cottage industries. Growth, problems and solutions.

2.8 Development of Rural entrepreneurship

3. Problems of Rural Development. **10**

3.1 Rural unemployment. Magnitude of the problem, causes, remedies, Status of women & gender bias, Women empowerment.

F.Y.B.A. Economics

G-1 Indian Economic Environment

Annexure –II

1) Title of the course:

Class: F.Y.B.A.

Subject: Economics.

Title: Year of Implementation: From June - 2019

2) Preamble of the syllabus:

The proposed curriculum is with an objective to enhance the existing syllabus, make it contextual as well as applicable and to incorporate all the latest changes in the national economy. The board examined the short comings of the existing syllabus and expressed the need to change it. While doing so the board analyzed other curricula of existing universities in respective subjects in terms of content, relevance, quality and pattern of teaching that has been synthesized in the present proposal. While framing the draft of syllabus, guidance from industrial experts and professionals was seeked.

The present era is that of structural transformation especially within the country. Moreover fast changing international scenario and approach of other countries towards our human resource makes it mandatory for the educational system to impart latest knowledge to our students, so that they are prepared to merge themselves in the challenging economic and corporate environment.

Hence, a change in the paper and restructuring of syllabus becomes imperative. The syllabus needs to be holistic in nature. It should be contextual and clear the basics of economics but at the same time it should teach application of the theories in day to day life.

In the modern world, competition is an inseparable part of our lives. To inculcate a competitive spirit among the students, the syllabus should include all the recent advancement with in and out of the country with its pros and cons.

3) Objectives of the paper

- To familiarize the students with the recent developments in the Indian Economy
- To provide the students with the background of the Indian Economy with focus on contemporary issues like economic environment.
- To help the students to prepare for varied competitive examinations
- To enable students to understand and comprehend the current business scenario, agricultural scenario and other sectorial growth in the Indian context. To make the student aware of the developments such as MSMEs, Digital Economy, E-Banking, BPO & KPO, etc.

Programme Outcome:

- Ability to develop an understanding of the economic environment and the factors affecting economic environment.
- Ability to develop awareness on the various new developments in the different sectors of an economy – agriculture, industry, services, banking, etc.
- Ability to compare and contrast Indian Economy with other world economies.
- At the end of the course, the student should be able discuss and debate on the various issues and challenges facing the Indian Economic Environment.

4) Introduction:

Semester system with the pattern of 70:30

5) Eligibility:

Students who have passed 12th standard from any stream with minimum 35% of marks in all the subjects. (as per the rule of affiliating SPPU)

6) Examination:

A) Pattern of examination: 70:30

i) Internal university examination of 70 marks with internals of 30 marks

ii) Pattern of question paper: pattern for 70 marks

- Question Number 1: 8 questions to be answered out of 10 with total marks 16
- Question Number 2: 4 questions to be answered out of 6 with total marks of 16
- Question Number 3: 3 questions to be answered out of 4 with total marks of 18
- Question Number 4: 2 questions to be answered out of 3 with total marks of 20

iii) Duration for 70 marks: 3 Hrs

iv) Pattern for 30 marks:

- Internal exam (20 marks)
- PPT (oral or poster)/ Project work/Assignments/visits (10 marks)

v) Unit wise classification of marks

Unit	Name of the Chapter	Distribution of marks
Semester 1		
Unit 1	Introduction	23
Unit 2	Agricultural Environment	23
Unit 3	Industrial Environment	24
	Total	**70**
Semester 2		
Unit 1	Service Sector Environment	20
Unit 2	Banking Environment	25
Unit 3	Overview of Indian economy	25
	Total	**70**

B) Standard of Passing:

To pass, the candidate must obtain at least 40% in individual subjects, in internal assessment and in university examination each in all the papers.

C) ATKT rules

As per the rules of SPPU, a student can have maximum two papers as backlog and go to second year.

D) Award of Class:

i. Those successful candidates who obtained 40 % and above of the total aggregate marks in all subjects for internal assessment and university examination taken together at one and same sitting, shall be placed in Pass Class.

ii. Those successful candidates who obtained 50 % and above of the total aggregate marks in all subjects for internal assessment and university examination taken together at one and same sitting, shall be placed in Second Class.

iii. Those successful candidates who obtained 55 % and above of the total aggregate marks in all subjects for internal assessment and university examination taken together at one and same sitting, shall be placed in Higher Second Class.

iv. Those successful candidates who obtained 60 % and above of the total aggregate marks in all subjects for internal assessment and university examination taken together at one and same sitting, shall be placed in First Class.

v. Those successful candidates who obtained 70 % and above of the total aggregate marks in all subjects for internal assessment and university examination taken together at one and same sitting, shall be placed in First Class with

E) External students:

The students who appear for the examinations without attending any college and take admission in the university as external students will be considered as external students.

F) Setting of question paper/pattern of question paper

Question papers will be set by the panel of paper setters appointed by Savitribai Phule Pune University.

G) Verification/ revaluation

Verification and or revaluation will be done by panel appointed by Savitribai Phule Pune University.

7) Structure of the course

a) Compulsory paper:

Only one paper will be given without and optional subject

b) Optional paper

No subjects are optional.

c) Medium of instructions:

Medium of instruction for the paper will be both Marathi and English.

Structure of the entire course

		BA Economics	
FY			
SY	G1	Indian Economic Environment	2019-20
SY	G2	Financial System	2020-21
SY	S1	Micro Economics	2020-21
TY	S2	Macro Economics	2020-21
TY	G3	Public Finance	2021-22
TY	S3	International Economics	2021-22
TY	S4	Economics of Development	2021-22

8) Equivalence of previous syllabus with the proposed syllabus

The revised syllabus has changes in the name of the paper, topics and sub topics offered as compared to the old syllabus. The paper will make the syllabus more comprehensive and modified to suitably align with the changing Indian scenario. The paper will set an apt background for students to comprehend knowledge of economics in their academic career and apply the knowledge in their life.

9) University terms

Academic calendar of the affiliating university will be followed.

10) Subject wise detail syllabus

Semester 1		
Units	**Name and sub titles of the Chapter**	**No of lectures**
Unit 1	**Introduction**	**16**
	1.1 Meaning, Factors affecting Economic Environment- Economic, Political, Technological, Social & Cultural	08
	1.2 Challenges to Indian Economy: Natural Resources, Energy Resources, Education, Health, Environment	04
	1.3 Comparison of Indian Economy with the World Economy- Population, Agriculture, Industry and Service Sector	04
Unit 2	**Agricultural Environment**	**16**
	2.1 Role of Agriculture in Indian Economy	04
	2.2 Challenges to Indian Agriculture-Productivity, Rural Credit, Marketing, Rural Entrepreneurship	08
	Recent Trends in Indian Agriculture: Cropping pattern, Technology, Crop Insurance, Water Management, Agri-Business	04
Unit 3	**Industrial Environment**	**16**
	3.1 Role of Industry in Indian Economic Development	04
	3.2 Industrial Policy Resolution, 1991- Liberalization, Privatization and Globalization (LPG)	03
	3.3 Challenges to Indian Industry-Labour & Employment, Regional Imbalance, Finance, Technology	03
	3.4 Micro, Small and Medium Enterprises (MSME)- Definition & Role	03
	3.5 Recent trends in Indian Industry- Indian Multinationals & New Policies	03
Semester 2		
Unit 1	**Service Sector Environment**	**12**
	1.1 Role and Growth of Service Sector in Indian Economy	02

K.J.Somaiya College of Arts, Commerce & Science Kopargaon

Faculty of Commerce & Management

Cross Cutting Issues in Core Subjects

F.Y.B.Com 2013 Pattern

Sr. No	Class	Subject	Course Syllabus	Cross Cutting Issue
1	F.Y. B.Com. 2013 Pattern	Financial Accounting.	Piecemeal Distribution Of Cash	Professional Ethics
			Amalgamation Of Partnership Firms	Professional Ethics
			Conversion Of A Partnership Firm Into A Limited Company	Professional Ethics
			Computerized Accounting Environment	Professional Ethics
			Introduction And Relevance Of Accounting Standards	Professional Ethics
			Royalty Accounts [Excluding Sub-Lease]:	Professional Ethics
			Hire Purchase And Instalment System:[Excluding H. P. Trading]	Professional Ethics
			Departmental Accounts	Professional Ethics
2	F.Y. B.Com. 2013 Pattern	Business Economics (Micro)	Introduction	
			Demand Analysis	Professional Ethics
			Production And Cost Analysis	Professional Ethics
			Revenue Behaviour	Professional Ethics
			Pricing Under Various Market Conditions	Professional Ethics
			Factor Pricing	Professional Ethics
3	F.Y. B.Com. 2013 Pattern	Business Mathematics And Statistics	Pre-Requisites (For Objective Type Questions Only)	Professional Ethics
			Interest	Professional Ethics
			Shares And Dividends	Professional Ethics
			Population And Sample	Professional Ethics
			Measures Of Central Tendency	Professional Ethics
			Profit And Loss	Professional Ethics
			Linear Programming Problems (For Two Variables Only)	Professional Ethics
			Measures Of Dispersion	Professional Ethics
			Correlation And Regression	Professional Ethics

			Index Number	Professional Ethics
4	F.Y. B.Com. 2013 Pattern	Computer Fundamentals	Introduction To Computer Fundamentals	Professional Ethics & Skill enrichment
			Basics Of Operating System	Professional Ethics
			Introduction To Business Communication Tools	Professional Ethics
			Introduction To Computer Network	Professional Ethics
			Use Of Computer In Commerce	Professional Ethics
			Internet And Internet Application	Professional Ethics & Skill enrichment
			Electronic Payment System	Professional Ethics
			Introduction To Html.	Professional Ethics
			Introduction To Web Page Design	Professional Ethics & Skill enrichment
			Designing The Web Pages	Professional Ethics & Skill enrichment
			Internet Security	Professional Ethics
5	F.Y. B.Com. 2013 Pattern	Organizational Professional Ethics	Modern Office	Professional Ethics
			Office Organization	Professional Ethics
			Office Manager And Organizational Skills	Skill enrichment
			Office Services	Professional Ethics
			Office Records Management	Professional Ethics
			Office Communications	Professional Ethics
			Public Relations :	Professional Ethics
			Office Automation	Professional Ethics
6	F.Y. B.Com. 2013 Pattern	Marketing And Salesmanship	Basics Of Marketing	Professional Ethics
			Marketing Environment	Professional Ethics
			Buyer Behaviour And Market Segmentation	Human Values & Skill enrichment
			Product And Pricing Decision	Professional Ethics
			Logistics And Supply Chain Management	Professional Ethics
			Market Promotion Mix	Professional Ethics
			Rural Marketing–	Professional Ethics Human Values
			Services Marketing	Professional Ethics

Head
Department of Commerce
K. J. Somaiya College, Kopargaon

Coordinator
IQAC, K. J. Somaiya College
Kopargaon, Dist. A.Nagar

Principal
K. J. Somaiya College of Arts
Commerce & Science, Kopargaon

F.Y. B.Com.

Compulsory Paper

Subject Name -: Financial Accounting.

Course Code -: 102

Objectives -:

1. To impart the knowledge of various accounting concepts
2. To instill the knowledge about accounting procedures, methods and techniques.
3. To acquaint them with practical approach to accounts writing by using software package.

Term I

Unit No.	Topic	No. of Lectures
1.	**Piecemeal Distribution of Cash** Meaning and Introduction, Surplus Capital Method and Maximum Loss Method	12
2.	**Amalgamation of Partnership Firms:-** Meaning and Introduction, Objectives, Methods of accounting	12
3.	**Conversion of a partnership firm into a limited company** Meaning and introduction, objectives, effects, methods of calculation of purchase consideration (Net Asset and Net Payment method), accounting procedure in the books of the firm and balance sheet of new company	12
4.	**Computerized Accounting Environment** Meaning and Introduction, application of accounting software package, Voucher entry through software package.	12
	Total	**48**

Term II

Unit No.	Topic	No. of Lectures
5.	**Introduction and Relevance of Accounting Standards** Overview of Accounting Standards in India-Concept, Need, Scope and Importance. Study of AS- 1, AS- 2, AS- 4 and AS- 9	10
6.	**Royalty Accounts [excluding sub-lease]:** Royalty, Minimum Rent, Short Workings, Recoupment of Short Working, Lapse of Short Working. Journal Entries and Ledger Accounts in the Books of Landlord and Lessee.	12
7.	**Hire Purchase and Installment System:[Excluding H. P. Trading]** Basic Concepts and Distinction, Calculation of Interest and Cash Price, Journal Entries And Ledger Accounts in The Books of Purchaser and Seller.	16
8.	**Departmental Accounts** Meaning and Introduction, Methods and Techniques, Allocation of expenses, Inter Departmental Transfers, Provision for unrealized profits	10
	Total	**48**

Notes:-

1. Question Paper for Term and Annual Examination should consist of :
   Theory Questions: -30%
   Problems:- 70%
2. There will be minimum two practicals.
3. Accounting practical be conducted in Computer or Commerce Laboratory only.
4. Students are expected to study and practice the application of accounting software packages.
5. Colleges are expected to use only licensed copy of software.
6. Practical examination need to be conducted in the computer laboratory.
7. Each student should be given separate set of transactions for practical examination.
8. For practical examination, internal and external examiner shall be appointed by the college.

Recommended Books

1. Financial Accounting: By P. C. Tulsian (Tata McGraw-Hill Publishing Co. Ltd. New Delhi)
2. Financial Accounting: By A. Mukharji & M. Hanif (Tata McGraw-Hill Publishing Co. Ltd. New Delhi)
3. Financial Accounting: By S.N. Maheshwari & S.K. Maheshwari (Vikas Publishing House Pvt. Ltd)
4. Financial Accounting: By Dr. K.N. Jagtap, Dr. S. Zagade & Dr. A.H. Gaikwad (Success Publications, Pune)
5. Advanced Accounts: By M.C. Shukla & S.P. Grewal (S.Chand & Co. Ltd. New Delhi)
6. Advanced Accountancy: By S.P. Jain & K.N. Narang (Kalyani Publishers, New Delhi)
7. Advanced Accountancy: By R.L.Gupta & M. Radhaswamy (Sultan Chand & Sons, New Delhi)

Journals:-

1. The Chartered Accountant: Journal of the Institute of Chartered Accountants of India.
2. The Accounting World : ICFAI Hyderabad

F.Y. B.Com.

Compulsory Paper

Subject Name -: Business Economics (Micro)

Course Code -: 103

Objectives -:

1. To expose Students of Commerce to basic micro economic concepts and inculcate an analytical approach to the subject matter.
2. To stimulate the student interest by showing the relevance and use of various economic theories.
3. To apply economic reasoning to problems of business.

Term I

Unit No.	Topic	No. of Lectures
1.	**INTRODUCTION.** 1.1 Meaning, Nature and Scope of Business Economics- (Micro) 1.2 Difference between Micro and Macro Economics. 1.3 Tools for Analysis a. Functional Relationships b. Schedules c. Graphs d. Equations 1.4 Goals of firms a) Economic Goals of Firms 1. Profit Maximization 2. Shareholders Wealth Maximization 3. Management Reward Maximization 4. Growth of the firm 5. Sales maximization 6. Long run survival b) Non-Economic goals 1. Political power, Prestige 2. Social responsibility and welfare 3. Goodwill of employees	12
2.	**DEMAND ANALYSIS** 2.1 Elasticity of Demand, Types of Elasticity, Price Elasticity, Income Elasticity and Cross Elasticity. 2.2 Consumer Behaviour a) Marginal Utility Approach - Limitations b) Indifference Curve Analysis - Concept - Characteristics - Consumer Equilibrium 2.3 Demand Forecasting and Estimation a) Meaning and objectives of Demand Forecasting b) Methods of Demand Forecasting c) Descriptive Analysis of	20

	i) Direct Methods 1) Consumer Survey 2) Expert opinion 3) Simulating market situation 4) Controlled Market Experiments ii) Indirect Methods 1) Simple correlation 2) Trend Projections	
3.	**PRODUCTION AND COST ANALYSIS** 3.1 Production Function – Meaning 3.2 Law of Variable Proportions - The Three Stages 3.3 Law of Returns to Scale - The Three Stages 3.4 Economies and Diseconomies of Scale – Internal and External 3.5 Cost Analysis – Types of Costs a) Types of Costs 1) Total cost 2) Average Cost 3) Marginal Cost 4) Opportunity cost b) Behaviour of Cost Curves 1) In the Short Run 2) In the Long Run	16
	Total	**48**

Unit No.	Term II Topic	No. of Lectures
4.	**REVENUE BEHAVIOUR** 4.1 Meaning and Importance of Revenue Concepts 4.2 Total Revenue (TR), Average Revenue (AR) Marginal Revenue (MR). 4.3 Relationship between Total Revenue, Average Revenue and Marginal Revenue	8
5.	**PRICING UNDER VARIOUS MARKET CONDITIONS** 5.1 Perfect Competition – Features and equilibrium 5.2 Monopoly – Features and equilibrium, Price Discrimination 5.3 Monopolistic competition - Features and equilibrium 5.4 Oligopoly – Features	20
6.	**FACTOR PRICING** 6.1 Marginal Productivity theory of Distribution. 6.2 Rent a) Theories of Rent i) Ricardian Theory of Rent ii) Modern Theory of Rent	20
	6.3 WAGES - i) Backward sloping Supply curve of Labour. ii) Collective Bargaining & Trade Unions 6.4 INTEREST - a) Theories of Interest – i) Loanable Fund Theory of Interest ii) Keynes Liquidity Preference Theory of Interest 6.5 PROFIT - a) Theories of Profit – i) Dynamic Theory of Profits ii) Innovation Theory of Profit iii) Risk and Uncertainty Theory of Profit	
	Total	**48**

Recommended Books

1. Economics – Samuelson P. A. and Nordhaus W. D. TataMcgrew Hill Publishing Co. Ltd. N.Delhi.
2. A text Book of Economic Theory – Stonier A. W. and Hague D. C. Longman Green and Co. London
3. Business Economics – V. G. Mankar, Macmillan India Ltd. N. Delhi.
4. Vyavasaik Arth Shastra (Sukshm) Dr. T. G. Gite, Atharv Publication. Pune
5. Modern Micro Economics – Theory and Applications H.L. Ahujna S. Chand and Co Ltd. N Delhi.
6. Business Economics – Dr. Girija Shankar – Atharv Publication, Pune.
7. Principals of Economics – N.Gregory Mankiw 6th edition 2012 Cengage learning india pvt ltd Delhi
8. Understanding Microeconomics- Robert L. Helibroner and Lester C. Thurow. Prentice Hall International Inc. London.
9. Micro Economic Theory An Analytical Approach – J M Joshi and R. Joshi Wishwa Prakashan (Division of Wiley Eastern Limited) N. Delhi.
10. Business & Managerial Economics (in the global Context) Sampat Mukherjee. New Central Book Agency, Calcutta.
11. Micro Economics Theory and Application D.N.Dwivedi Second Edition PEARSON.

F.Y. B.Com.
Optional Paper
Subject Name -: Business Mathematics and Statistics
Course Code -: 104 (A)

Objectives -:

1. To prepare for competitive examinations
2. To understand the concept of Simple interest, compound interest and the concept of EMI.
3. To understand the concept of shares and to calculate Dividend
4. To understand the concept of population and sample.
5. To use frequency distribution to make decision.
6. To understand and to calculate various types of averages and variations.
7. To understand the concept and application of profit and loss in business.
8. To solve LPP to maximize the profit and to minimize the cost.
9. To use correlation and regression analysis to estimate the relationship between two variables.
10. To understand the concept and techniques of different types of index numbers.

FIRST TRM

Medium for this subject shall be ENGLISH only

Unit 1. Pre-requisites (For objective type questions only) **(10)**

1. Natural Numbers and Integers
2. H.C.F and L.C.M.
3. Fractions- addition, subtraction multiplication and division of two or more fractions
4. Laws of Indices
5. Ratio and Percentage
6. Proportion and partnership

Unit 2. Interest **(08)**

1. Simple Interest
2. Compound interest (nominal and effective rate of interest)
3. Equated Monthly Installments (EMI) (Reducing and flat rate of interest)
4. Examples

Unit 3. Shares and dividends **(06)**

1. Concept of Shares, face value, market value, Net Asset Value
2. Equity Shares and Preference shares
3. Dividend
4. Bonus Shares
5. Examples

Total [24]

Unit 4. Population and Sample **(08)**

1. Definition and concept of Statistics
2. Scope of Statistics in Economics, Management Science and Industry
3. Concept of Population and Sample
4. Methods of Sampling: Simple Random Sampling and Stratified Random Sampling (Description of procedures only)

Unit 5. Measures of central tendency **(16)**

1. Variables Qualitative and Quantitative, Raw data, Classification of data,
2. Frequency distribution, cumulative frequency distribution,
3. Histogram (finding mode graphically) Ogive curves and its uses.
4. Measures of central tendency: Mean, Median for ungrouped and Grouped data.
5. Examples

Total [48]

SECOND TERM

Unit 6. Profit and Loss **(12)**

1. Concept of Cost Price, Marked Price and Selling Price
2. Trade Discount and Cash Discount
3. Commission and Brokerage
4. Examples

Unit 7. Linear Programming Problems (For two Variables only) **(12)**

1. Definition and terms in a L.L.P.
2. Formulation of L.L.P.
3. Solution by Graphical Method
4. Examples

Total [24]

Unit 8. Measures of dispersion **(08)**

1. Concept of Dispersion
2. Measures of Dispersion – Range, Variance and Standard Deviation (S.D.) for Grouped and ungrouped data
3. Measures of relative dispersion- Coefficient of range and coefficient of Variation
4. Examples

Unit 9. Correlation and Regression **(08)**

1. Concept of Bivariate data, correlation using scatter diagram
2. Karl Pearson's Coefficient correlation for ungrouped data
3. Spearman's Rank correlation coefficient
4. Concept of regression, lines of regression
5. Regression as prediction Model
6. Examples

Unit 10. Index number **(08)**

1. Concept of Index Number

2. Construction of Price Index Number
3. Laspeyre's, Paasche's and Fisher's Method
4. Family Budget and Aggregate Expenditure Method
5. Concept of – Cost of Living /Consumer Price Index Number, SENSEX and NIFTHY
6. Examples

Total [24]

Grand Total [48]

Recommended Books:

1. Practical Business Mathematics by S.A.Bari (New Literature Publishing Company)
2. Business Mathematics by V.K.Kapoor (Sultan Chand And Sons)
3. Fundamentals of Statistics by S.C.Gupta (Himalaya Publishing House)
4. Basic Statistics by B.L.Agrawal (New Age International Publishers)
5. Statistical Methods by S.P.Gupta (Sultan Chand And Sons)

F.Y. B.Com.

Optional Paper

Subject Name -: Computer Fundamentals

Course Code -: 104 (B)

Objective:

1. To make the students familiar with Computer environment.
2. To make the students familiar with the basics of Operating System and business communication tools.
3. To make the students familiar with basics of Network, Internet and related concepts.
4. To make awareness among students about applications of Internet in Commerce.
5. To enable students to develop their own web site.

Term - I

Unit No.	Topic	Lectures
1.	**Introduction to Computer Fundamentals** Introduction to Computer Computer System Hardware Computer Memory Input and Output Devices Interaction between User and Computer Introduction to Free and Open Source Software Definition of Computer Virus, Types of Viruses, Use of Antivirus software	[10]
2.	**Basics of Operating System** Definition of Operating System Objectives, types, and functions of Operating Systems Working with Windows Operating System: Introduction, The Desktop, Structure of Windows, Windows Explorer, File and Folder Operations, The Search, The Recycle Bin, Configuring the Screen, Adding or Removing New Programs using Control Panel, Applications in windows (Paint, Notepad, WordPad, Calculator)	[12]
3.	**Introduction to Business Communication Tools** **MS-Word**: Introduction, Starting MS-Word, MS-Word Screen and its Components, Elementary Working with MS-Word **MS-Excel**: Introduction, Starting MS-Excel, Basics of Spreadsheet, MS-Excel Screen and Its Components, Elementary Working with MS-Excel **MS-Powerpoint**: Introduction, Starting MS-PowerPoint, Basics of PowerPoint, MS-PowerPoint Screen and Its Components, Elementary Working with MS-PowerPoint	[12]
4.	**Introduction to Computer Network** Introduction Importance of Networking Computer Network (LAN, WAN, MAN) Network Components (Hub, Switch, Bridge, Gateway, Router, Modem) Network Topology, Wireless Networks	[06]
5.	**Use of Computer in Commerce**	[08]

	Data Processing, Files and Records, File Organization (Sequential, Direct/Random, Index) Computer Applications in Business – Need and Scope Computer Applications in various fields of Commerce: Personnel Administration, Accounting, Cost and Budgetary Management, Purchasing, Banking, Insurance and Stock-broking, e-governance Introduction to E-Commerce, Evolution of E-Commerce, Role of E-Commerce, E-Commerce Framework, E-Commerce Categories	

Term - II

Unit No.	Topic	Lectures
1.	**Internet and Internet application** Introduction, Internet evolution Working of Internet, Use of Internet Overview of World Wide Web (Web Server and Client) Introduction to Search engine and Searching the Web Downloading files Introduction to Web Browsers Working with E-mail (creation and use of the same)	[08]
2.	**Electronic Data Interchange** Introduction to EDI EDI Architecture Financial EDI Overview of the technology involved in EDI	[04]
3.	**Electronic Payment System** Introduction to EPS Introduction to EFT (Electronic Fund Transfer) Introduction to SET (Secure Electronic Transaction) Business requirement addressed by SET Introduction to Digital Signature and Digital Certificates , Stages of SET Types of Payment System: Digital Cash, Electronic Cheque, Smart Card, Credit/Debit Card	[08]
4	**Introduction to HTML.** Introduction to HTML. Working of HTML Creating and loading HTML page, tags Structure of on HTML, Document, Stand Alone Tags Formatting text, Adding Images Creating hyper Links, Tables Sending E-mails through Web Page Sample web pages	[10]
5.	**Introduction To Web page Design** Introduction to Web design, Types of Web Pages Web design Pyramid Building web sites	[07]
	Web development process model	
6.	**Designing The web pages** Page size, Page type, Page margin, Entrance page Exit page, Graphics in Webpage design Animation Effect, Sound Effect Color Effect Uploading the web site (Web space, Domain Name, Hosting the web site)	[03]
7.	**Internet Security** Security, Privacy Ethical Issues & Cyber Law	[03]

Reference Books

1. Computer Fundamentals by: Anita Goel, Pearson Education India ISBN: 9788131742136
2. Connecting with Computer Science, by Greg Anderson, David Ferro, Robert Hilton, Course Technology, Cengage Learning,ISBN:9781439080351
3. Fundamentals of Computer : For undergraduate courses in commerce and management, ITL Education Solutions Limited, Pearson Education, ISBN:9788131733349
4. Introduction to Computer Science, 2/e, ITL Education Solutions Limited, Pearson Education, ISBN:9788131760307
5. Frontiers of Electronic Commerce, Ravi Kalakota, Andrew B. Whinston, Pearson Education, ISBN:9788177583922
6. Internet: The Complete Reference, Margaret Levine Young, Tata McGraw Hill Education Private Limited, ISBN: 9780070486997
7. Murach's HTML, XHTML and CSS: Training & Reference, Anne Boehm, Shroff/Murachs Publication, ISBN-9789350230954
8. On the Way to the Web: The Secret History of the Internet and Its Founders, A. Banks, Apress Publication, ISBN: 9781430208693
9. Computers and Commerce: A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remingto, Arthur L. Norberg, MIT Press (MA),ISBN:9780262140904

Guidelines for Examination:

1. Term End Exam (20 Marks):
   To be conducted by college as per rules provided by University of Pune.

2. Annual Exam (80 Marks):
   To be conducted by University of Pune at the end of the academic year.
   Passing marks for the course are 40 (Out of which **minimum 32** marks are compulsory in Annual Examination).

F.Y. B.Com.
Optional Paper
Subject Name -: Organizational Skill Development.
Course Code -: 105 – a.

Objective:

1. To orient the students towards the concept of Organization and Modern Office.
2. To acquaint the students with the role of and Functions of Office Manager.
3. To develop the insights regarding Organizational Skills for Office Managers.
4. To know the functioning of Modern office appliances equipments and e- format records

Unit No.	Term I Topic	No. of Lectures
1.	**Modern Office** 1.1 Introduction, Definition, Characteristics, Importance and Functions 1.2 Traditional and Modern Concepts of Office 1.3 Office Location Meaning, Objectives , Principles of Office Location Office Layout – Meaning , Objectives , Principles and Layout ,Modular and Structured Furniture 1.4 Factors of Good Ambience Office Lighting, ventilation. Temperature, Sanitation, Interior Decoration, Noise and Cleanliness.	12
2.	**Office Organization** 1.1 Definition, Importance of office organization, 1.2 Principles, Steps. 1.3 Types of Organization 1.4 Concept and Functions of Office Administrator.	12
3.	**Office Manager and Organizational Skills** 3.1 Office Manager – Role, duties and responsibilities 3.2 Qualification, Qualities and skills of an office manager 3.3 Time Management –Definition, Need, Principles, advantages and Disadvantages, Time Management techniques. 3.4 Goal Setting-Concept of goal-setting - Importance of goals, SMART(Specific, Measurable, Achievable, Realistic, Time-bound) goals , Do's and Don'ts about goals.	12
4.	**Office services** 4.1 Mail Routine , Courier Services its need and Importance 4.2 Office Forms - objectives, advantages and types of office forms 4.3 E-forms – advantages. Organizational Web Page – Contents, advantages, Internet/Web basedapplications of office activities. 4.4 Office Stationary and Supplies - Importance of stationary, Essentials of	12

F.Y. B.Com.
Optional Paper
Subject Name -: Marketing and Salesmanship
[Fundamentals of Marketing]
Course Code -: 106 – c.

Objectives -:

1) **General Objective of the Paper.**
   a) To create awareness about market and marketing.
   b) To establish link between commerce/Business and marketing.

2) **Core Objectives of the paper.**
   a) To understand the basic concept of marketing.
   b) To understand marketing philosophy and generating ideas for marketing research.
   c) To know the relevance of marketing in modern competitive world.
   d) To develop an analytical ability to plan for various marketing strategy.

Term I

Unit No.	Topic	No. of Lectures
1	**Basics of marketing** 1.1) Market – Marketing – Introduction, Meaning, Definition, Scope, Types and Significance. 1.2) Marketing Management – Introduction, Meaning, Definition, Scope, and Significance. 1.3) Functions of Marketing – Basic Functions, Functions of Exchanges, and Subsidiary Functions. 1.4) Marketing Mix - Introduction, Meaning, Definition, Scope, and Significance.	
2	**Marketing Environment** 2.1) Introduction – Definition and Nature. 2.2) Factors Constituting Marketing Environment. 2.3) Micro and Macro Environment. 2.4) Impact of Marketing Environment on Marketing Decisions.	
3	**Buyer Behaviour and Market Segmentation** 3.1) Introduction – Meaning, Definition, Scope and Significance of Buyer Behavior. 3.2) Determinants of Buyer Behaviour, Stages of Buyer Behaviour – Buying Process.. 3.3) Introduction, Meaning, Importance of Market Segmentation. 3.4) Bases for Segmentation – Qualities of Good Segmentation.	
4	**Product and Pricing Decision** 4.1) Concept of Product – Product Classification. 4.2) Factors Considered For Product Management – Role of Product Manager. 4.3) Factors Affecting Pricing Decisions – Pricing Objectives. 4.4) Pricing and Product Life Cycle – Pricing Methods.	
	Total	**48**

	a good system of regulating stationary, purchases, storage, Record of stationary,	
	Total	**48**

Unit No.	Term II Topic	No. of Lectures
5.	**Office Records Management** 5.1 Introduction - Need - Objectives - Kinds of Records. 5.2 Organization of records department. 5.3 Classifying and Indexing of Records and Files. Principles - Retention and disposition of records. 5.4 Digitalization of Records: Meaning, advantages, process, utility and feasibility.	**12**
6.	**Office Communications** 6.1 Meaning and Elements of Office Communications, 6.2 Channels of Communication – Internal and External 6.3 Significance and barriers to effective communications 6.4 Recent trends in modern communications such as Fax - E-Mail, Internet, Intranet,www(World Wide Web),Tele conferencing, Video Conferencingas means of Communication	**12**
7.	**Public Relations :** 7.1 Definition, nature, Scope of PR with customers, investors , employees, government offices and others 7.2 Objectives, importance and functions 7.3 Role of Public Relation Officer in Modern Office 7.4 – Modern methods of Public Relations	**12**
8	**Office Automation** 8.1 Office Automation – meaning, scope,feasibility, and advantages 8.2 Different types of modern appliances and machines used in Offices. 8.3 Computerization of office activities - LAN – WAN 8.4 Accounting Packages, Payroll Accounting, Inventory statements, - Vouchers –Invoices - Salary - Maintenance of records and Accounting Books and preparation of financial Report, Leave accounting, Attendance.	**12**
	Total	**48**

Term II

Unit No.	Topic	No. of Lectures
5	**Logistics and Supply Chain Management –** 5.1) Introduction – Definition – Objectives – Scope and Significance 5.2) Market Logistics Decisions – Channel Structure. 5.3) Designing Distribution Channels. 5.4) Types of Marketing Channels.	
6	**Market Promotion Mix –** 6.1) Promotion Mix – Meaning, Scope and Significance. 6.2) Factors Affecting Market Promotion Mix 6.3) Advertisement and sales Promotion – Meaning and Definition. Means and Methods of Sales Promotion. 6.4) Advertising Meaning and Goals – Advertising Media– Meaning, Types, Advantages and Limitations.	
7	**Rural Marketing–** 7.1) Introduction – Meaning – Definition – Features – Importance – 7.2) Rural Marketing Mix – Importance, Elements, Scope 7.3) Present Scenario of Rural Market – 7.4) Problems And Challenges of Rural Market –	
8	**Services Marketing –** 8.1) Introduction – Meaning – Definition – Features – Importance of Services – Significance of Services in Marketing. 8.2) Classification of Services – Marketing of Industrial Goods Services, Marketing of Consumer Goods Services. 8.3) Marketing Mix for Services 8.4) Services Marketing And Economy – Scope of Services Marketing in Generation of Job Opportunity, Role of Services in Economy, Services Quality	
	Total	**48**

Recommended Books

Sr. No.	Name of the Book	Publisher	Author
1	Marketing Management	Macmillan Publication	V.S.Ramaswamy S. Namakumari
2	Principals of Marketing	Prentice- Hall of India Pvt. Ltd.	Philip Kotler Gary Aramstrong
3	Rural Marketing	Dorling Kindersley (India) Pvt.Ltd.Pearson	Pradeep Kashyap
4	Marketing Management	Himalaya Publishing House	Dr.K.Karuna Karan
5	Marketing in India	Vikas Publishing House	S. Neelamegham
6	Basics of Marketing Management	S. Chand	Dr.R.B.Rudani
7	Services Marketing	Himalaya Publishing House	V. Venugopal Raghu V.N.

K.J.Somaiya College of Arts, Commerce & Science Kopargaon

Faculty of Commerce & Management

Cross Cutting Issues in Core Subjects

S.Y.B.Com 2013 Pattern

Sr. No	Class	Subject	Course Syllabus	Cross Cutting Issue
1	S.Y. B.Com. 2013 Pattern	Business Communication	Introduction Of Business Communication	Professional Ethics
			Methods And Channels Of Communication	Professional Ethics
			Soft Skills:	Skill Enhancement
			Business Letters	Professional Ethics
			Types And Drafting Of Business Letters	Professional Ethics & Skill enhancement
			Job Application Letters	Professional Ethics
			Internal And Other Correspondence	Professional Ethics
			New Technologies In Business Communication	Professional Ethics
2	S.Y. B.Com. 2013 Pattern	Corporate Accounting	Accounting Standards	Professional Ethics
			Company Final Accounts	Professional Ethics
			Company Liquidation Accounts	Professional Ethics
			Computerized Accounting Practices	Professional Ethics
			Accounting For Amalgamation, Absorption And External Reconstruction Of Companies	Professional Ethics
			Accounting For Internal Reconstruction	Professional Ethics Professional Ethics
			Holding Company Account	Professional Ethics
			Valuations Of Shares	Professional Ethics
3	S.Y. B.Com. 2013 Pattern	Business Economics (Macro)	Basic Concepts Of Macro Economic	Professional Ethics Professional Ethics
			National Income	Professional Ethics Professional Ethics
			Money	Professional Ethics
			Value Of Money	Professional Ethics
			Inflation And Deflation	Professional Ethics Professional Ethics
			Trade Cycle	Professional Ethics

				Professional Ethics
			Theories Of Output And Employment	Professional Ethics
			Public Finance	Professional Ethics
4	S.Y. B.Com. 2013 Pattern	Business Management	Overview Of Management	Professional Ethics
			Planning & Decision Making	Professional Ethics
			Organization & Staffing	Professional Ethics
			Direction & Communication	Professional Ethics
			Motivation	Professional Ethics Professional Ethics
			Leadership	Professional Ethics
			Co-Ordination And Control	Professional Ethics Professional Ethics
			Recent Trends In Business Management	Professional Ethics
5	S.Y. B.Com. 2013 Pattern	Elements Of Company Law	Introduction To The New Act & Concept Of Companies	Professional Ethics Professional Ethics
			Formation And Incorporation Of A Company	Professional Ethics
			Documents Relating To Incorporation And Raising Of Capital	Professional Ethics
			Capital Of The Company	Professional Ethics
			Forfeiture, Surrender & Transfer Of Shares	Professional Ethics
			E-Governance And E-Filing	Professional Ethics
			Management Of Company	Professional Ethics
			Key Managerial Personnel (Kmp)	Professional Ethics
			Company Meetings	Professional Ethics
			Revival And Re-Facilitation Of Sick Companies	Professional Ethics
6	S.Y. B.Com. 2013 Pattern	Marketing And Salesmanship	Basics Of Cost Accounting	Professional Ethics
			Elements Of Cost	Professional Ethics
			Material Control	Professional Ethics
			Material Accounting	Professional Ethics
			Inventory Control	Professional Ethics
			Labour Cost, Remuneration And Incentives	Professional Ethics Professional Ethics
			Other Aspects Of Labour	Professional Ethics
			Direct Cost	Professional Ethics

Coordinator
IQAC, K. J. Somaiya College
Kopargaon, Dist. A.Nagar

Principal
K. J. Somaiya College of Arts
Commerce &

S.Y. B.Com.

Compulsory Paper

Subject Name -: Business Communication.

Course Code -: 201.

Objectives of the Course:

1. To understand the concept, process and importance of communication.
2. To develop awareness regarding new trends in business communication.
3. To provide knowledge of various media of communication.
4. To develop business communication skills through the application and exercises.

Medium of Instruction : English

Unit No.	TERM: I	Periods
1	**Introduction of Business Communication:** Introduction, Meaning, Definition, Features, Process of Communication, Principles, Importance, Barriers to Communication & Remedies.	12
2	**Methods and Channels of Communication:** Methods of Communication-Merits and Demerits&Channels of Communication in the Organisation and their Types, Merits & Demerits	10
3	**Soft Skills:** Meaning, Definition, Importance of Soft Skills **Elements of Soft Skills:** 1) Grooming Manners and Etiquettes 2) Effective Speaking 3) Interview Skills 4) Listening 5) Group Discussion 6) Oral Presentation	16
4	**Business Letters:** Meaning, Importance, Qualities or Essentials, Physical Appearance, and Layout of Business Letter	10
	Total Periods	48
	TERM: II	
5	**Types and Drafting of Business Letters:** **1)** Enquiry Letters **2)** Replies to Enquiry Letters **3)** Order Letters **4)** Credit and Status Enquiries **5)** Sales Letters **6)** Complaint Letters **7)** Collection Letters **8)** Circular Letters	16
6	**Job Application Letters:** Meaning, Types & Drafting of Job Application Letters, Bio-Data/Resume	08

	/Curriculum Vitae	
7	**Internal and other Correspondence:** 1) Office Memo (Memorandums) 2) Office Orders 3) Office Circulars 4) Form Memos or Letters 5) Press Releases	12
8	**New Technologies in Business Communication:** Internet: Email, Websites, Electronic Clearance System, Writing a Blog Social Media Network: Twitter, Facebook, LinkedIn, YouTube, Cellular Phone, WhatsApp Voice Mail Short Messaging Services Video Conferencing Mobile	12
	Total Periods	48

Recommended Books:

1. Asha Kaul (1999), "Business Communication", Prentice Hall of India, New Delhi.
2. Chaturvedi P. D. & Chaturvedi Mukesh (2012), "Managerial Communication", Pearson, Delhi.
3. Madhukar R. K. (2005), "Business Communication", Vikas Publishing House Pvt. Ltd., New Delhi.
4. Mamoria C. B. & Gankar S. V. (2008), "Personnel Management", Himalaya Publishing House, Mumbai.
5. Nawal Mallika (2012), "Business Communication", Cengage Learning, Delhi.
6. Rajendra Pal & Korlahalli (2007), "Essentials of Business Communication", Sultan Chand & Sons, New Delhi.
7. Sharma R. C. & Krishan Mohan, "Business Correspondence & Report Writing", Tata McGraw Hill Publishing Co. Ltd.
8. Sinha K. K. (2003), "Business Communication", Galgotia Publishing Company, New Delhi.
9. Sinha K. K. (2008), "Business Communication", Galgotia Publishing Company, New Delhi.
10. Vasishth Neeru& Rajput Namita (2006), "Business Communication", Kitab Mahal, Allahabad.

Assessment Pattern

Internal Assessment (Term End Examination)	:	20 Marks
Practical Examination	:	20 Marks
Annual Examination	:	60 Marks
Total Marks	:	**100 Marks**

S.Y. B.Com.

Compulsory Paper

Subject Name -: Corporate Accounting

Course Code -: 202

Objectives:-

To enable the students to develop awareness about Corporate Accounting in conformity with the provisions of Companies Act and Accounting as per Indian Accounting Standards.

1. To make aware the students about the conceptual aspect of corporate accounting
2. To enable the students to develop skills for Computerized Accounting
3. To enable the students to develop skills about accounting standards

Term – I

Unit	Topic and Contents	No. of Lectures
1.	**Accounting Standards:-** Detailed Study of Accounting Standards 5, 6, 10, 14, 21 with Practical Examples numerical case studies, Application nature.	08
2.	**Company Final Accounts:-** Preparation of Final Accounts- Forms and contents as per Provisions of Companies Act (As Amendment upto the beginning of the relevant academic year) As per Revised Schedule- VI	14
3.	**Company Liquidation Accounts:-** Meaning of Liquidation- Modes of winding up – (a) Preparation of Liquidator final statement of Account (b) Preparation of Statement of Affairs and Deficiency Account.	12
4.	**Computerized Accounting Practices:-** Conceptual background - (a) Inventory Accounting (b) Payroll Accounting (c) MIS Reports including Demonstration and Hands Experience.	14
	Total	48

Term – II

Unit	Topic and Contents	No. of Lectures
5.	**Accounting for Amalgamation, Absorption and External Reconstruction of Companies:-** Meaning- Vendor and Purchasing Companies- Purchase Consideration- Accounting entries- and Preparation of Balance Sheet after Amalgamation, Absorption and External Reconstruction.	14
6.	**Accounting for Internal Reconstruction:-** Meaning- Alteration of Share Capital, Reduction of Share Capital-Accounting Entries and preparation of Balance Sheet After Internal Reconstruction	10
7.	**Holding Company Account:-**	14

	Preparation of consolidated Balance sheet of Holding Company with one subsidiary only. Adjustment of inter company transactions, unrealized profit of stock.	
8.	**Valuations of Shares:-** Concept of Valuation, Need for Valuation, Special Factors affecting Valuation of Shares, Methods of Valuation - (a) Net Assets Method, (b) Yield Basis Method, (c) Fair Value Method.	10
	Total	48

Notes:-

1. Question Paper for Termend and Annual Examination should consist of :
   Theory Questions : - 30%
   Problems :- 70%
2. In the Question Paper of Annual Examination, the weightage to the syllabus should be as follows:
   i) 40% on the total syllabus of the First Term.
   ii) 60% on the total syllabus of the Second Term.
3. Colleges are required to use only licensed copy of software.

Recommended Books:-

1. Advanced Accounts: By M.C. Shukla & S.P. Grewal (S.Chand & Co. Ltd.)
2. Advanced Accountancy: By S.P. Jain & K.N. Narang (Kalyani Publishers)
3. Advanced Accountancy: By R.L.Gupta & M. Radhaswamy (Sultan Chand & Sons)
4 Company Accounts: By S.P. Jain & K.L. Narang
5 Advanced Accounts: By Paul Sr.
6 Corporate Accounting: By Dr. S. N. Maheshwari & S.K. Maheshwari
7 Corporate Accounting: By Mukharji & Hanif
8. Corporate Accounting: By Dr. K. N. Jagtap, Dr. S. D. Zagade, Dr. H. M. Jare
9. Accounting Standard: By D. S. Rawat.
10. Accounting Standards –as issued by Institute of Chartered Accountants of India.

Journals:-

1. The Chartered Accountant : Journal of the Institute of Chartered Accountants of India.
2. The Accounting World : ICFAI Hyderabad
3. Journal of Accounting & Finance : Accounting Research Association of Jaipur.

S.Y. B.Com.

Compulsory Paper

Subject Name -: Business Economics (Macro)

Course Code -: 203

Objectives:

1. The objective of the course is to familiarize the students the basic concept of Macro Economics and application.
2. To Study the behavior of the economy as a whole.
3. To Study the relationship among broad aggregates.
4. To apply economic reasoning to problems of the economy.

Term – I

Sr. No	Topic	No. of Lectures
UNIT- 1	**Basic Concepts of macro Economics** 1.1 Meaning of Macro Economics 1.2 Nature and Scope of Macro Economics 1.3 Significance and limitations of Macro Economics 1.4 Difference between Micro and Macro Economics	08
UNIT- 2	**National Income** 2.1 Meaning & Importance of National Income 2.2 Concept - a) Gross National Product (GNP) b) Net National Product (NNP) c) Income at Factor cost or National Income at Factor Prices d) Per Capita Income e) Personal Income (PI) f) Disposable Income(DI) 2.3 Measurement of National Income – Circular Flow of Income-Two sector model 2.4 Difficulties in Measurement of National Income	14
UNIT- 3	**Money** 3.1 Meaning and functions of Money 3.2 Demand for Money – Classical and Keynesian Approach 3.3 Supply of Money a) Role of Central Bank – Credit Control- Quantitative and Qualitative b) Reserve Bank of India's New Money Measures 3.4 Role of Commercial Banks – Process of Multiple Credit Creation and its limitations	12
UNIT- 4	**Value of Money** 4.1 Meaning & Concept of Value of Money 4.2 Quantity Theory of Money 4.3 Cash Balance approach – Cambridge Equation - Pigou, Marshall, Keynes 4.4 Milton Friedman's Approach 4.5 Difference between Quantity Theory and Cash Balance Approach	14

	Theory	
	Term - II	
UNIT- 5	**Inflation and Deflation** 5.1 Inflation and Deflation – Meaning, Causes and effects 5.2 Demand Pull and cost Push inflation 5.3 Inflationary Gap 5.4 Philips Curve – Supply side Economics 5.5 Stagflation	10
UNIT- 6	**Trade Cycle -** 6.1 Meaning, Definition and features of Trade Cycle 6.2 Phases of Trade Cycle 6.3 Policy for control of Trade Cycle – Monetary and Fiscal Measures	12
UNIT- 7	**Theories of Output and Employment** 7.1 Classical Theories of Employment – Says , Pigoue , Fisher 7.2 Keynesian Criticism on Classical Theories of Employment 7.3 Keynesian Theory of Employment	12
UNIT-8	**Public Finance** 8.1 Meaning, Nature and Scope of Public Finance 8.2 Principle of Maximum Social advantage-Dr. Dalton's Approach 8.3 Public Revenue and Expenditure 8.4 Types of Taxation 8.5 Principles of Taxation 8.6 Effects of Taxation 8.7 Causes of increasing Public Expenditure	14

Basic Reading List

1. Ackey, G (1976) Macro Economics Theory and Policy, Macmillan Publishing Company, New York
2. Ahuja H. L. (2002) Macroeconomics Theory and Policy, Chand and Co. Ltd New Delhi.
3. D'souza Errol (2008) Macroeconomics : Person Publication, New Delhi.
4. Gupta S.B. (1994) Monetary Economics, S. Chand and Co. Delhi
5. Jingan M.L. (2002) Macro Economic Theory, Vrinda Publication,Delhi
6. Vaish M. C. (2002) Macro Economic Theory, Vikas Publishing House, N. Delhi
7. Shapiro E (1996) Macro Economic Analysis; Galgotia Publication, New Delhi

ADDITIONAL READING LIST

1. Dillard, D. (1960), The Economics of John Maynard Keynes, Crossby Lockwood and Sons,London.
2. Day A.C.L. (1960) Outline of Monetary Economics, Oxford University Press, Oxford
3. Higgins, B. (1963), Economic Development: Principles, Problems and Policies, Central Book Depot, Allahbad.
4. Keynes, J.M. (1936), The General Theory of Employment, Interest and Money, Macmillan, London.
5. Kindleberger, C.P. (1958), Economic Development, McGraw-Hill Book Company, New York.
6. Lucas, R. (1981), Studies in Business Cycle Theory, MIT Press, Cambridge, Massachusetts.

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S.Y. B.Com.

Compulsory Paper

Subject Name -: Business Management

Course Code -: 204

Objective:

1. To provide basic knowledge & understanding about business management concept.
2. To provide an understanding about various functions of management.

UNIT NO	CHAPTER	PERIODS
	TERM-I	
Unit –I	**OVERVIEW OF MANAGEMENT** Meaning, Definition, Management: Is it Science, Art or profession? Characteristics of Professional Management. The need of Management Study. Process of Management, Level Of Management, Managerial Skills, Challenges before management , Brief Review of Management Thought with reference to FW Taylor & Henry Fayol	12
Unit –II	**PLANNING & DECISION MAKING.** Planning-Meaning, Definition, Nature, Importance, Forms, Types Of Planning, Steps in Planning, Limitations Of Planning. Forecasting-Meaning & Techniques. Decision Making- Meaning, Types Of Decisions & Steps In Decision Making.	12
Unit III	**ORGANIZATION & STAFFING** Meaning, Process & Principles, Departmentalization, Organization Structure, Authority and Responsibility, Delegation of authority, Difficulties in delegation of Authority, Centralization verses Decentralization, Team Work. Staffing-Meaning, Need & Importance of Staffing, Recruitment-Sources and Methods of Recruitment.	12
Unit IV	**DIRECTION & COMMUNICATION** Direction- Meaning, Elements, Principles, Techniques & importance.. Communication-Meaning, Types, Process of Communication & importance of effective Communication. Barriers to Communication.	12
	Total	**48**
	TERM-II	
UNIT-V	**MOTIVATION** Meaning, importance, Theories of motivation, Maslow's Need Hierarchy Theory, Herzberg's Two factors Theory, Douglas Mc Gregor's Theory of X & Y & Ouchi'Theory Z. McClelland's Theory.	12
UNIT-VI	**LEADERSHIP** Meaning, Importance, Qualities & Functions of a Leader, Leadership Styles for Effective Management .Contribution of Mahatma Gandhi, Dr. Babasaheb Ambedkar & Pandit Jawaharlal Neharu	12

Unit- VII	**CO-ORDINATION AND CONTROL** Meaning and Need , Techniques of establishing Co-ordination, difficulties in establishing co-ordination, Control-Need, steps in the process of control & Techniques.	12
Unit-VIII	**RECENT TRENDS IN BUSINESS MANAGEMENT** Business Ethics, Corporate Social Responsibilty, Corporate Governance, Disaster Management, Management of Change	12
	Total	48

Recommended Books:

1. Principles of Management - Koontz & O'Donnel
2. The Management Process - R S Davar
3. Essentials of Management - Koontz & O' Donnel Tralei McGrow Hill Publishing House
4. Business Administration - Mritunjoy Banerjee
5. Principles & Practice - T N Chhabra, Dhanapat Rai & Co.of Management.
6. Management – LM .Prasad.
7. Super Highway: Bill Gates Foundation
8. Makers of Modern India - NBT Publishers
9. Indian Business leaders

S.Y. B.Com.
Compulsory Paper
Subject Name -: Elements of Company Law.
Course Code -: 205

Objectives:

1) To impart students with the knowledge of fundamentals of Company Law.
2) To update the knowledge of provisions of the Companies Act of 2013.
3) To apprise the students of new concepts involving in company law regime.
4) To acquaint the students with the duties and responsibilities of Key Managerial Personnel.
5) To impart students the provisions and procedures under company law.

Sr. No.	Term – I Topic	Lectures
Unit 1	**Introduction to the New Act & Concept of Companies:** 1.1. Background and Salient Features of the Act of 2013, Overview of the changes introduced by the Act of 2013; 1.2. Nature and types of Companies, Definitions and important features of a Company- Distinction between a company and a partnership - Lifting or Piercing the Corporate Veil 1.3. Types of Companies based on various criteria including one man company, dormant company, sick and small company, associate company. 1.4. Distinction between private and public company (Advantages, Disadvantages and privileges of both the companies) - Conversion of a private company into a public company - Conversion of a public company into a private company.	13
Unit 2	**Formation and Incorporation of a Company:** 2.1. Stages in the Formation and Incorporation. 2.1.1. Promotion: Meaning of the term 'Promoter' / Promoter Group - Legal Position of Promoters, Pre-incorporation contracts. 2.1.2. Registration/ Incorporation of a company : - Procedure, Documents to be filed with ROC. Certificate of Incorporation- Effects of Certificate of Registration. 2.1.3. Floatation/ Raising of capital. 2.1.4. Commencement of business.	8
Unit 3	**Documents relating to Incorporation and Raising of Capital:** 3.1 **Memorandum of Association**: Meaning and importance- Form and contents- Alteration of memorandum. 3.2 **Articles of Association:** Meaning- Relationship of and distinction between Memorandum of association and Articles of association- Contents and form of Articles- Alteration of articles- Doctrine of constructive notice- Doctrine of Indoor Management. 3.3 **Prospectus:** Meaning and Definition- Contents- Abridged form of	07

	prospectus- Statutory requirements in relation to prospectus- Deemed prospectus- Shelf prospectus - Statement in lieu of prospectus- Mis-statement in a prospectus and Liabilities for Mis-statement.	
Unit 4	**Capital of the Company** 4.1 Various Modes for Raising of Share Capital including private placement, public issue, rights issue, bonus shares. 4.2 ESOS, Sweat Equity Shares, Buy-back of shares. 4.3 Allotment of Shares: Meaning- - Statutory provisions for allotment, improper and irregular allotment- Consequences of irregular allotment. 4.4 Calls On Shares: Meaning- Requisites of a valid call, Calls in advance 4.5 Share Certificates: Meaning, Provisions regarding issue of share certificates - Duplicate Share Certificate. 4.6 Share Capital – Meaning, Structure (Kinds) – Concept of Securities – Definition, Nature and Kinds of Shares.	**14**
Unit 5	**Forfeiture, Surrender & Transfer of Shares** 5.1 Forfeiture and Surrender of Shares: Meaning of forfeiture of shares: - Conditions/Rules of valid forfeiture- Effect of forfeiture- Re-issue of forfeited shares- Annulment of forfeiture- 5.2 Surrender of shares 5.3Transfer and transmission of shares - meaning and procedure distinction between transfer and transmission 5.4 Nomination of shares	**6**
	Term – II	
Sr. No.	**TOPIC**	**Lectures**
Unit 6	**E-Governance and E-Filing:** 6.1 Introduction- Meaning of E-Governance 6.2 Advantages of E-Governance, 6.3 Basic understanding of MCA Portal 6.4 E-filing (Ss. 397 to 402), DIN-Directors Identification Number (Ss. 153-159)	**06**
Unit 7	**Management of Company:** 7.1 Board of Directors: Definition, Powers, Restrictions, Prohibition on Board. (Ss. 179 to 183) 7.2 Director: Meaning and Legal position of directors. 7.3 Types of Directors – Types including Executive, Non-Executive, Independent, Additional, Alternate, Interested, Nominee Director, Related Party Transactions (Ss. 188) 7.4 Appointment of Directors, Qualifications and Disqualifications. 7.5 Powers, Duties, Liabilities of Directors, Remedies for Breach of Duties. 7.6 Loans to Directors (S. 185), Remuneration of Directors	**10**
Unit 8	**Key Managerial Personnel (KMP)** 8.1 Meaning, Definition and Appointments of Managing Director,	**10**

	Whole Time Director, Manager, Company Secretary Term of office/ Tenure of appointment, Remuneration – 8.2 Distinction between Managing Director, Manager and Whole Time Director - Role (Powers, Functions of above KMP) 8.3 Corporate Social Responsibility (CSR) [U/S 135] – Concept who is Accountable, CSR Committee, Activities under CSR, 8.4 Role of Board of Directors. 8.5 Prevention of Oppression and Mismanagement (Ss. 241 to 246)	
Unit 9	**Company Meetings:** 9.1 Board Meeting – Meaning and Kinds 9.2 Conduct of Meetings - Formalities of valid meeting [Provisions regarding agenda, notice, quorum, proxies, voting, resolutions (procedure and kinds) minutes, filing of resolutions, Virtual Meeting] 9.3 Meeting of Share Holders General Body Meetings, Types of Meetings A. Annual General Meeting (AGM), Ss. 96 to 99 B. Extraordinary General Meeting (EOGM) – S. 100 9.4 Provisions regarding convening, constitution, conducting of General Meetings contained in Ss. 101 to 114	**12**
Unit 10	**10.1 Revival and Re-habilitation of Sick Companies (S. 253-269)** **10.2 Compromises, Arrangements and Amalgamation:** Concept and Purposes of Compromises, Arrangements, Amalgamation, Reconstruction – Fine distinction between these terms.: **10.3 Winding –up**: Meaning of winding-up, Dissolution of company, Conceptual understanding of winding-up by the Tribunal, Compulsory winding-up, Members' voluntary winding-up, Creditors' voluntary winding-up	**10**

Recommended Books

1) Bharat's – Companies Act, 2013 with comments, Edited by: Ravi Puliani, Advocate Mahesh Puliani, Bharat Law House Pvt. Ltd., New Delhi, 19th Edition, 2013.
2) Introduction to Company Law, Karn Gupta, Publication: LexisNexis, 2013, Gurgaon, Haryana, India.
3) The Companies Act, 2013. With notes to Legislative Clauses. 2014 Edition. Corporate Professionals – where excellence is Law, CCH – a Wolters Kluwer business. Wolters Kluwer (India) Pvt. Ltd., DLF – Cyber City, Gurgaon, Haryana (India)
4) Insights into the New Company Law – PrachiManekar LexisNexis, Gurgaon, Haryana, India, 2013.
5) Taxman's, Company Law Ready Reckoner, V.S. Datey, Printed at – Tan Prints (India) Pvt. Ltd. Jhajjar, Haryana, India., 13th September, 2013.
6) Analysis of Companies Act, 2013, Corporate Professionals – where excellence is Law., CCH – a Wolterskluwer business., Corporate Professionals India Pvt. Ltd., New Delhi, India., Published by – Wolters Kluwer (India) Pvt. Ltd., 2013.

S.Y. B.Com.

Cost and Works Accounting Special Paper I

Subject Name -: Cost and Works Accounting.

Course Code -: 206 – E.

Objectives:

To Impart The Knowledge Of:

1. Basic Cost concepts.
2. Elements of cost.
3. Ascertainment of Material and Labour Cost.

SR. NO.	TOPIC	LECTURES
Unit 1	**Basics Of Cost Accounting**	16
1.1	Concept of Cost, Costing, Cost Accounting and Cost Accountancy.	
1.2	Limitations of Financial Accounting.	
1.3	Origin of Costing.	
1.4	Objectives of Costing.	
1.5	Advantages & Limitations of Costing.	
1.6	Difference Between Financial Accounting and Cost Accounting.	
1.7	Cost Units and Cost Center.	
Unit 2	**Elements Of Cost**	16
2.1	Material, Labour and other Expenses.	
2.2	Classification of Costs.	
2.3	Preparation of Cost Sheet, Quotation, Tenders.	
Unit 3	**Material Control**	16
3.1	Need and Essentials of Material Control.	
3.2	Functions of Purchase Department.	
3.3	Purchase Procedure.	
3.4	Purchase Documentation.	
3.5	Stock Levels.	
3.6	Economic Order Quantity. (EOQ)	

Term – II

SR.NO.	TOPIC	LECTURES
Unit 4	**Material Accounting**	16
4.1	Stores Location and Layout.	
4.2	Types of Stores Organization.	
4.3	Classification and Codification of Material.	
4.4	Stores and Material Records – Bin Card, & Store Ledger etc.	
4.5	Issue of Material and Pricing Methods of Issue of Material:- (a) FIFO. (b) LIFO. (c) Simple Average Methods. (d)Weighted Average Methods.	
4.6	Stock valuation, Use of computer in store Accounting.	

	Introduction to JIT, CAM and ERP.	treatment Introduction to- Just In Time(JIT) CAM(Computer Aided Manufacturing) Enterprise Resource Planning (ERP)	direct cost and recent trends in cost and management accounting

Teaching Methodology

Unit No.	Total Lectures	Innovative Methods to be used	Films Shows and AV Applications	Project	Expected Outcome
1	16	Invite a storekeeper in the classroom to provide practical knowledge about which records are to be maintained in the store department and pricing methods for issue of material	Youtube Lectures and relevant multimedia compact discs(CD)	Visit small industries for understanding which records are to be maintained in store department	Understanding various methods used in the pricing of the issue of materials
2.	16	Powerpoint presentation and guest lecture	You Tube clippings of methods of remuneration, time keeping and time booking and their methods	1)Calculation of wage payment and incentives. 2)Preparation of a specimen of pay slip.	Enabling to calculate wage payment and incentives.
3	10	Powerpoint presentation and group discussion.	You Tube clippings of Labour turnover, Job Analysis & Job Evaluation Merit Rating.	Analysis and evaluation of jobs in any organisation.	Understanding the process of job analysis, job evaluation and merit rating.
4	6	Guest lecture, powerpoint presentation and group discussion.	You Tube clippings of Labour turnover, Job Analysis & Job Evaluation Merit Rating.	Read articles on the recent trends in cost accounting from Journals, e-journals and web resources.	Insight into recent processes used for cost reduction.

Methods of Evaluation

Subject	Internal Evaluation	External Evaluation	Suggested Add-On Course
Unit I Unit II Unit III Unit IV	Multiple Choice Questions, Written Test, Internal Examination, Powerpoint Presentations, Orals, Assignments, Tutorials etc.	SPPU	Two industrial visits and subsequently reports on these visits.

References

K.J.Somaiya College of Arts, Commerce & Science Kopargaon

Faculty of Commerce & Management

Cross Cutting Issues in Core Subjects

T.Y.B.Com 2013 Pattern

Sr. No	Class	Subject	Course Syllabus	Cross Cutting Issue
1	T.Y.B.Com 2013 Pattern	Business Regulatory Framework	Law Of Contract - General Principles	Professional Ethics
			Law Of Partnerships:	Professional Ethics
			Sale Of Goods.(Sale Of Goods Act,1930)	Professional Ethics
			E-Contracts (E-Transactions/E-Commerce.)	Professional Ethics
			The Consumer Protection Act, 1986	Professional Ethics
			Intellectual Property Rights : (Iprs)	Professional Ethics
			Negotiable Instruments Act, 1881:	Professional Ethics
			Arbitration & Conciliation:	Professional Ethics
2	T.Y.B.Com 2013 Pattern	Advanced Accounting –	Accounting Standards & Financial Reporting (Introduction To Ifrs-Fair Value Accounting)	Professional Ethics
			Final Accounts Of Banking Companies	Professional Ethics
			Insurance Claim Accounts	Professional Ethics
			Final Accounts Of Co-Operative Society	Professional Ethics
			Computerized Accounting Practices	Professional Ethics
			Branch Accounts	Professional Ethics
			Single Entry System	Professional Ethics
			Analysis Of Financial Statements	Professional Ethics
3	T.Y.B.Com 2013 Pattern	Indian & Global Economic Development	Introduction	Skill Enrichment
			Agricultural Development In India Since Independence	Business Ethics
			Industrial Development In India Since 1991	Organisational Behaviour
			Infrastructure In India Since 1991	Skill Enrichment
			Human Resource Development	Professional Ethics
			Global Economic Development And Foreign Capital	Professional Ethics
			Foreign Trade And Balance Of Payment	Professional Ethics
			Regional & International Economic Co-Operation	Professional Ethics

			Importance, Objectives, Structure And Functions Of	
4	T.Y.B.Com 2013 Pattern	Auditing & Taxation -	Introduction To Principles Of Auditing And Audit Process.	Professional Ethics
			Checking, Vouching And Audit Report	Professional Ethics
			Company Auditor	Professional Ethics
			Tax Audit	Professional Ethics
			Audit Of Computerized Systems	Professional Ethics
			Computation Of Taxable Income Under The Different Heads Of Income	Professional Ethics
			Computation Of Total Taxable Income Of An Individual	Professional Ethics
			Miscellaneous	Professional Ethics
			Income Tax Authorities	Professional Ethics
			Overheads	Professional Ethics
5	T.Y.B.Com 2013 Pattern	Cost And Works Accounting. Special Paper Ii	Accounting Of Overheads	Professional Ethics
			Accounting Of Overheads	Professional Ethics
			Activity Based Costing	Professional Ethics
			Methods Of Costing	Professional Ethics
			Contract Costing	Professional Ethics
			Process Costing	Professional Ethics
			Service Costing	Professional Ethics
			Marginal Costing	Professional Ethics
6	T.Y.B.Com 2013 Pattern	Cost And Works Accounting Special Paper Iii	Budgetary Control	Professional Ethics
			Uniform Costing And Inter-Firm Comparison	Professional Ethics
			Introduction To Management Information System In Costing	Professional Ethics
			Standard Costing	Professional Ethics
			Farm Costing	Professional Ethics
			Cost Accounting Record Rules & Cost Audit	Professional Ethics
			Cost Audit (Legal Provisions)	Professional Ethics

K. J. SOMAIYA COLLEGE Dept. of Commerce KOPARGAON

Head
Department of Commerce
K. J. Somaiya College, Kopargaon

Coordinator
IQAC, K. J. Somaiya College
Kopargaon, Dist. A.Nagar

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K. J. Somaiya College of Arts
Commerce & Science, Kopargaon

T.Y. B.Com.

Compulsory Paper

Subject Name -: Business Regulatory Framework (Mercantile Law)

Course Code -: 301.

Objectives:-

1. To acquaint students with the basic concepts, terms & provisions of Mercantile and Business Laws.
2. To develop the awareness among the students regarding these laws affecting business, trade and commerce.

Term I

Unit No.	Topic	Lectures
1	**Law of Contract - General Principles.**(Indian Contract Act, 1872) • Definition, Concept and kinds of contract • Offer and Acceptance. • Capacity of parties. • Consideration. • Consent and free consent. • Legality of object and consideration. • Void Agreements. • Discharge of contract. • Breach of contract and remedies (Including damages, meaning, kinds and rules for ascertaining damages)	20
2	**Law of Partnerships:** **2.1. Indian Partnership Act 1932:** Partnership; Definition and Characteristics, Types of Partners, Rights, Duties and Liabilities of Partners, Dissolution of Partnership. **2.2. Limited Liability Partnership Act 2008:** Limited Liability Partnership (LLP); Concept, Nature and Advantages, Difference between LLP and Partnership Firm, Difference between LLP and company, Partners and designated partners, Incorporation of LLP, Partners and their relations, Liability of LLP and Partners (Section 27). Financial Disclosure by LLP, Contributions (Section 32), Assignments and Transfer of Partnership Rights (Section 42) Conversation to LLP (Section 55), Winding-up and dissolution (Section 63 & 64)	04 05
3	**Sale of Goods.(Sale of Goods Act,1930)** Contract of sale-Concept and Essentials. Sale and agreement to sale. Goods-Concept and kinds. Conditions and warranties. (Definition, Distinction, implied conditions and warranties)Transfer by non-owners. Rights of Unpaid Seller and Remedial Measures.	14
4	**E-Contracts (E-Transactions/E-Commerce.):** • Significance of E-Transactions /E-Commerce. ▪ Nature.	05

T.Y. B.Com.

Compulsory Paper

Subject Name -: Business Regulatory Framework (Mercantile Law)

Course Code -: 301.

Objectives:-

1. To acquaint students with the basic concepts, terms & provisions of Mercantile and Business Laws.
2. To develop the awareness among the students regarding these laws affecting business, trade and commerce.

Term I

Unit No.	Topic	Lectures
1	**Law of Contract - General Principles.**(Indian Contract Act, 1872) • Definition, Concept and kinds of contract • Offer and Acceptance. • Capacity of parties. • Consideration. • Consent and free consent. • Legality of object and consideration. • Void Agreements. • Discharge of contract. • Breach of contract and remedies (Including damages, meaning, kinds and rules for ascertaining damages)	20
2	**Law of Partnerships:** **2.1. Indian Partnership Act 1932:** Partnership; Definition and Characteristics, Types of Partners, Rights, Duties and Liabilities of Partners, Dissolution of Partnership. **2.2. Limited Liability Partnership Act 2008:** Limited Liability Partnership (LLP); Concept, Nature and Advantages, Difference between LLP and Partnership Firm, Difference between LLP and company, Partners and designated partners, Incorporation of LLP, Partners and their relations, Liability of LLP and Partners (Section 27). Financial Disclosure by LLP, Contributions (Section 32), Assignments and Transfer of Partnership Rights (Section 42) Conversation to LLP (Section 55), Winding-up and dissolution (Section 63 & 64)	04 05
3	**Sale of Goods.(Sale of Goods Act,1930)** Contract of sale-Concept and Essentials. Sale and agreement to sale. Goods-Concept and kinds. Conditions and warranties. (Definition, Distinction, implied conditions and warranties)Transfer by non-owners. Rights of Unpaid Seller and Remedial Measures.	14
4	**E-Contracts (E-Transactions/E-Commerce.):** • Significance of E-Transactions /E-Commerce. ▪ Nature.	05

	▪ Formation. ▪ Legality. ▪ Recognition. (Chapter 4.Sec.11-13 of I T Act,2000 relating to attribution, acknowledgement, dispatch of E-Records) • Digital Signatures –Meaning & functions, Digital Signature certificates [Sections 35-39] • Legal issues involved in E-Contracts.	
	Term II	
5	**The Consumer Protection Act, 1986** • Salient features of the C.P. Act. • Definitions-Consumer, Complainant, Services, Defect & Deficiency, Complainant, unfair trade practice, restrictive trade practice. • Consumer Protection Councils. • Procedure to file complaint & Procedure to deal with complaint & Reliefs available to consumer.(Sec.12 to14) • Consumer Disputes Redressal Agencies. (Composition, Jurisdiction, Powers and Functions.)	12
6	**Intellectual Property Rights : (IPRs)** • WIPO: Brief summary of objectives, organs, programmes& activities of WIPO.TRIPS: As an agreement to protect IPR-Objectives & categories of IPR covered by TRIPS. • Definition and conceptual understanding of following IPRs under the relevant Indian current statutes. • Patent: Definition & concept, Rights & obligation of Patentee, its term. • Copyright: Characteristics & subject matter of copyright, Author & his Rights, term. • Trademark: Characteristics, functions, illustrations, various marks, term, internet domain name- Rights of trademark holder. • Design: Importance, characteristics, Rights of design holder. • Geographical Indications, Confidential Information & Trade Secrets, Traditional knowledge—Meaning & scope of these IPRs.	16
7	**Negotiable Instruments Act, 1881:** • Concept of Negotiable Instruments: Characteristics, Meaning Important relevant definitions under the Act • Definitions, Essentials of promissory note, bill of exchange and cheque. Distinction between these instruments. Crossing of cheques – It's meaning and types. • Holder and holder in due course, Privileges of holder in due course. • Negotiation, endorsement, kinds of endorsement. • Liabilities of parties to negotiable instruments. • Dishonour of N. I., kinds, law relating to notice of dishonour. Dishonour of cheques.	14
8	**Arbitration & Conciliation:** • Concept of Arbitration & Conciliation. • Definition & Essentials of Arbitration Agreement.	06

T.Y. B.Com.

Compulsory Paper

Subject Name -: Advanced Accounting.

Course Code -: 302

Objectives:-

- ❖ To impart the knowledge of various accounting concepts
- ❖ To instill the knowledge about accounting procedures, methods and techniques.
- ❖ To acquaint them with practical approach to accounts writing by using software package.

Unit No.	TERM - I Topic and Contents	No. of Lectures
1.	**Accounting Standards & Financial Reporting (Introduction to IFRS-Fair Value Accounting):-** Brief Review of Indian Accounting Standard :- AS- 3, AS-7, AS-12, AS-15 AS-17 to AS-25 simple practical examples of application nature.	12
2.	**Final Accounts of Banking Companies :-** * Introduction of Banking Company - Legal Provisions - Non Performing Assets (NPA) - Reserve Fund - Acceptance, Endorsements & Other Obligations - Bills for Collection - Rebate on Bills Discounted - Provision for Bad and Doubtful Debts - Preparation of Final Accounts in vertical form as per Banking Regulation Act 1949. * Introduction to Core Banking System.	12
3.	**Insurance Claim Accounts :-** **A. Claim for Loss of Stock** - Introduction - Procedure for Calculation - Average Clause - Treatment of abnormal items of goods - Under & Overvaluation of Stock. **B. Claim for Loss of Profit** - Introduction - Indemnity under policy - Some important terms - Procedure for ascertaining claims. **C. Claim for Loss of Fixed Assets** - Introduction - Some important terms - Procedure for ascertaining claims.	12
4.	**Final Accounts of Co-operative Societies :-** a. Credit Co-operative Societies :- b. Consumer Co-operative Societies :- Meaning - Allocation of Profit as per Maharashtra State Co-operative Societies Act. Preparation of Final Accounts of Credit Co-operative Societies and Consumer Co-operative Societies.	12
	TOTAL	48
	TERM - II	
5.	**Computerized accounting practices:-** A. VAT & VAT Report B. Service Tax C. Central Value Added Tax D. Income Tax - Tax Deducted at Source (TDS) Including entries with the help of Accounting Software. (Demonstration and Hands Experience.)	12
6.	**Branch Accounts :-** Stock and Debtors System :- Introduction - Types of Branches - Goods supplied at Cost & Invoice Price.	12

7.	**Single Entry System :-** Conversion of Single Entry into Double Entry :- Introduction - Preparation of Cash Book - Total Debtor Account - Total Creditor Account - Final Accounts.	12
8.	**Analysis of Financial Statements :-** Ratio Analysis :- Meaning - Objectives - Nature of Ratio analysis - Problems on Ratio Analysis restricted to the following Ratio only - *Gross Profit Ratio *Net Profit Ratio * Operating Ratio * Stock Turnover Ratio * Debtor Turnover Ratio * Current Ratio * Liquid Ratio * Debt to Equity Ratio.	12
	TOTAL	48

Allocation of Marks :-

Theory :-	30%
Problems :-	70%
Total :-	100%

Recommended Books:-

1. 1. Advanced Accounts: By M.C. Shukla & S.P. Grewal (S.Chand & Co. Ltd. New Delhi)
2. 2. Advanced Accountancy: By S.P. Jain & K.N. Narang (Kalyani Publishers, New Delhi)
3. 3. Advanced Accountancy: By R.L.Gupta & M. Radhaswamy (Sultan Chand & Sons, New Delhi)
4. Advanced Accounting: By Dr. K.N. Jagtap, Dr. S. Zagade.
5. Student Guide to Accounting Standards : D.S. Rawat (Taxmann, New Delhi)
6. Accounting Standards : Sanjeev Singhal.
7. Principal of Management Accounting : Dr. S.N. Maheshwari.
8. Advanced Management Accounting : Ravi Kishor.

Journals:-

1. The Chartered Accountant: Journal of the Institute of Chartered Accountants of India.
2. The Accounting World : ICFAI Hyderabad

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T.Y. B.Com.

Compulsory Paper

Subject Name -: Indian & Global Economic Development

Course Code -: 303 (A)

Objectives:

1) To expose students to a new approach to the study of the Indian Economy.
2) To help the students in analyzing the present status of the Indian Economy.
3) To enable students to understand the process of integration of the Indian Economy with other economics of the world.
4) To acquaint students with the emerging issues in policies of India's foreign trade.

Unit No.	Topic		Lectures
1	**Introduction**		12
	1.1	Basic Characteristics of the Indian Economy as an emerging economy.	
	1.2	Comparison of the Indian Economy with developed economies with respect to	
	1.2.1	National Income	
	1.2.2	Per-Capita Income	
	1.2.3	Agriculture	
	1.2.4	Industry	
	1.2.5	Service Sector	
2	**Agricultural Development in India Since Independence**		12
	2.1	Place of Agriculture in Indian Economy	
	2.2	Constraints in Agricultural Development	
	2.3	Rural Indebtedness – Causes and measures	
	2.4	Agricultural Marketing – Problems and measures	
	2.5	Price Policy – Minimum Support Price (M.S.P.)	
3	**Industrial Development in India Since 1991**		12
	3.1	Role of Industrialization in Economic development	
	3.2	Role of Small, Medium and Large Scale Enterprises (SMEs) – Problems & Prospects	
	3.3	New Industrial Policy 1991	
	3.4	Evaluation of Industrial Policy 1991	
4	**Infrastructure in India Since 1991**		12
	4.1	Role of Basic infrastructure in economic development of India.	
	4.2	Private v/s Public investment in infrastructure development	
	4.3	Role of Private Sector in infrastructural development	
	4.4	Role of Public Sector in infrastructural development	
	TERM - II		
5	**Human Resource Development**		12
	5.1	Role of Human Resource in Economic Development	
	5.2	Concept of Human Development Index (HDI)	

Unit No.		Topic	Lectures
	5.3	Concept of Human Poverty Index	
	5.4	Concept of Gender – related development index	
	5.5	Gender Employment measures	
6		**Global Economic Development and Foreign Capital**	12
	6.1	Meaning and Challenges of Liberalization, Privatization & Globalization.	
	6.2	Meaning and Role of Foreign Capital	
	6.3	Need for Foreign Capital	
	6.4	Forms of foreign capital	
	6.5	Advantages & Disadvantages of Foreign Capital	
7		**Foreign Trade and Balance of Payment**	12
	7.1	Importance of Foreign Trade in Economic Development.	
	7.2	Concept of Balance of Trade and Balance of Payment	
	7.3	India's Balance of Payment Position since 1991	
	7.4	Convertibility of Indian Rupee – Current & Capital Account	
	7.5	Current Export – Import Policy (EXIM Policy)	
8		**Regional & International Economic co-operation Importance, Objectives, Structure and functions of -**	12
	8.1	South Asian Association for Regional co-operation (SAARC)	
	8.2	International Monetary Fund (IMF)	
	8.3	World Bank or International Bank for Reconstruction and Development (IBRD)	
	8.4	World Trade Organization (WTO)	
	8.5	BRICS – Introduction & Functions	

Recommended Books :

1) Indian Economy – S.K.Misra and V.K.Puri, Himalaya Publishing House, Delhi.
2) International Business Environment – Black and Sundaram, Prentice Hall India.
3) The Global Business Environment – Tayebmonis H. Sage Publication, New Delhi.
4) International Business – Competing in the Global Market place – Charles Hill, Arun kumar Jain, Tata McGraw Hill.
5) International Economics – M.L.Jhingan Vrinda Publications, Delhi.
6) Indian Economy – Ruddar Datta and K.P.M. Sundaram S. Chand and Co. New Delhi.
7) Indian Economy – Problems of Development and Planning A.N.Agarwal, New Age International Publishers.

Economic Survey – Government of India

Journals

Reports, Web sites

Human Development Report

World Bank, World Development Report

T.Y. B.Com.
Compulsory Paper
Subject Name -: Auditing & Taxation
Course Code -: 304

Objectives -: The Study of Various Components of this course will enable the students:

1. To acquaint themselves about the concept and principles of Auditing, Audit process, Assurance Standards, Tax Audit, and Audit of computerized Systems.
2. To get knowledge about preparation of Audit report.
3. To understand the basic concepts and to acquire knowledge about Computation of Income, Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection Authorities under the Income Tax Act, 1961.

Term I Section

Section- I Auditing

Unit No.	Topic	Lectures
1.	**Introduction to Principles of Auditing and Audit Process.** Definition, Nature-objects-Advantages of Auditing-Types of errors and frauds Various Classes of Audit. Audit programme, Audit Note Book, Working Papers, Internal Control-Internal Check-Internal Audit	12
2.	**Checking, Vouching and Audit Report** Test checking-Vouching of Cash Book-Verification and Valuation of Assets and Liabilities. Qualified and Clean Audit Report-Audit Certificate-Difference between Audit Report and Audit Certificate. Auditing and Assurance Standards. (AAS- 1,2,3,4,5,28,29)	12
3.	**Company Auditor** Qualification, Disqualifications, Appointment, Removal, Rights, Duties and liabilities.	08
4.	**Tax Audit** Definition of Accountant-Scope of Auditor's Role under Income Tax Act Compulsory Tax Audit- Certification for Claiming exemptions- Selective Tax Audit Tax Consultancy and Representation- Proforma of Computerized Systems.	08
5.	**Audit of Computerized Systems** Auditing in an EDP environment-planning an audit in a computer Environment - problems encountered in an EDP environment- General EDP Control – EDP Application Control- System Development- Data transfer- Audit practice in relation to computerized systems-Computer Assisted Audit Techniques (Factors and Preparation of CAAT)	08
	Total	48

Term II

Section - II Income Tax

Unit No.	Topic	Lectures
1.	**Important Concepts and Definitions under Income Tax Act-1961.** Income, Person, Assessee, Assessment year, Pervious year, Agricultural Income, Exempted Income, Residential Status of an Assessee, PAN, TAN	08

2.	**Computation of Taxable Income under the different Heads of Income** **a. Income from Salary –** Meaning of salary, Salient features of salary Allowances and tax Liability- Perquisites and their Valuation- Deductions from salary. (Theory and Problems) **b. Income from House Property** Basis of Chargeability Annual Value Self occupied and let out property Deductions allowed (Theory and Problems) **c. Profits and Gains of Business and Professions** Definitions, Deductions expressly allowed and disallowed (Theory And Problems) **d. Capital Gains** Chargeability-definitions-Cost of Improvement, Short term and long term Capital gains (Theory only) **e. Income from other sources-** Chargeability - deductions - Amounts not deductible.(Theory only)	08 04 08 04
3.	**Computation of Total Taxable Income of an Individual** Gross total Income-deductions u/s-80C, 80ccc to 80 U – Income Tax calculation- (Rates applicable for respective Assessment year) Education cess	08
4.	**Miscellaneous** Tax deducted at source-Return of Income-Advance payment of Tax-methods of payment of tax-Forms of Return-Refund of Tax. (Theory)	04
5.	**Income Tax Authorities** Structure, Functions and powers of various Income Tax Authorities. (Administrative and Judicial), Central Board of Direct Taxes.	04
	Total	48

List of Practical

Sr. No.	Topic	Particulars	Mode of Practical
1.	Audit & Auditing process	Study of Meaning, Definition, Nature, objectives , Auditing process	Library Assignment/ Guest lecture
2.	Audit Report	Meaning , Qualified & Clean Audit Report, Forms of Audit Report	Library Assignment/ Guest lecture
3.	Tax Audit	Scope Auditor`s Role under Tax Audit	Library Assignment/ Guest lecture
4.	Audit of Computerized System	Auditing in an EDP Environment, Audit Practice in relation to computerized system	Visit to Tax Consultant
5.	Income from Salary	Meaning of salary, Allowance & Tax liability, perquisites & valuation	Visit to Assessee
6.	Income from	Basis of chargeability, Important points	Visit to let out

T.Y. B.Com.

Cost and Works Accounting Special Paper II

Subject Name -: Cost and Works Accounting.

Course Code -: 305 – e.

Objectives -:

1. To provide Knowledge about the concepts and principles application of Overheads
2. To provide also understanding various methods of costing and their applications.

Level of Knowledge -: Basic Knowledge.

Term I

Unit No.	Topic	No. of Lectures
1.	**Overheads:** 1.1.Meaning and definition of overheads. 1.2.Classification of overheads	6
2.	**Accounting of Overheads (Part-I)** 2.1 Collection and Allocation of overheads. 2.2 Apportionment and Re-apportionment of overheads	14
3.	**Accounting of Overheads (Part-II)** 3.1 Absorption - Meaning ,Methods of Overhead Absorption 3.4 Under and Over Absorption of overheads- Meaning, Reasons and Accounting treatment	20
4.	**Activity Based Costing** 4.1 Definitions-Stages in Activity Based Costing 4.2 Purpose and Benefits of Activity Based Costing 4.3 Cost Drivers 4.4 Problems on Activity Based Costing [Simple Problems only]	8
	Total	48

Term II

Unit No.	Topic	Lecture
5.	**Methods of Costing:** 5.1 Introduction to Methods of Costing. 5.2 Job Costing- Meaning, Features, Advantages and Limitations	08
6.	**Contract Costing:** 6.1 Meaning and Features of Contract Costing 6.2 Work Certified and Uncertified, Escalation clause, Cost Plus contract, work-in- progress 6.3 Profit on incomplete contract	16
7.	**Process Costing** 7.1 Meaning and features of process costing 7.2 Preparation of process accounts including normal and abnormal loss/gain 7.3 Joint Products and By Products [Theory Only]	14
8.	**Service Costing:**	10

	8.1 Meaning, Features and Applications. 8.2 Cost Unit-Simple and composite 8.3 Cost Sheet for Motor transport service 8.4 Cost Statement for Hospital and Hotel Organization	
	Total	**48**

Note -: Allocation of Marks -:

a) 50 % for Theory.

b) 50% for Practical Problems.

Areas of Practical Problems

- Accounting & Control of Overhead. [Part I]5
  Primary Distribution of Overheads, Repeated & Simultaneous equation methods only.
- Accounting & Control of Overhead. [Part II]
  Problems on Machine Hour Rate Only.
- Contract Costing - Preparation of Contract Account & Contractive Account [without B/s]Simple Problem without Escalation clause
- Process Costing Simple Problems on Process Costing [Where there is no work in process].
- Service Costing - Cost Sheet for Motor Transport and Hotel and hospital industry Service.

Books Journals and Websites Recommended for Cost and Works Accounting Paper I, II and III

1. Prof. Subhash jagtap -: Practice in Advanced costing and Management Accounting. Nirali Prakashan, Pune
2. Ravi Kishor -: Advanced Cost Accounting and Cost Systems Taxman's Allied Service Pvt. Ltd., New Delhi.
3. S.P. Lyengar -: Cost Accounting Principles and Practice, Sultan Chand & Sons Accounting, Taxman's, New Delhi.
4. Ravi Kishor -: Students Guide to Cost Accounting Taxman's, New Delhi.
5. M.N. Arora -: Cost Accounting Principles and Practice Vikas Publishing House Pvt. Ltd., New Delhi
6. S.N. Maheshwari and S.N. Mittal -: Cost Accounting, Theory and Problems, Mahavir book Depot, New Delhi.
7. B.L. Lall and G.L. Sharma -: Theory and Techniques of Cost Accounting. Himalaya Publishing House, New Delhi.
8. V.K. Saxena and Vashista -: Cost Accounting – Text book. Sultan Chand and Sons, New Delhi
9. V.K. Saxena and Vashista -: Cost Audit and Management Audit. Sultan Chand and Sons, New Delhi
10. Jain and Narang -: Cost Accounting Principles and Practice. Kalyani Publishers
11. N.K. Prasad -: Principles and Practice of Cost Accounting Book Syndicate Pvt. Ltd., Calcutta.
12. N.K. Prasad -: Advanced Cost Accounting Syndicae Pvt Ltd., Calcutta.
13. R.K. Motwani -: Practical Costing. Pointer Publisher, Jaipur
14. R.S.N. Pillai and V. Bhagavati -: Cost Accounting.

T.Y. B.Com.

Cost and Works Accounting Special Paper III

Subject Name -: Cost and Works Accounting.

Course Code -: 306 – e.

Objectives -:

1 To impart knowledge regarding costing techniques.

2 To provide training as regards concepts, procedures and legal Provisions of cost audit.

Level of Knowledge -: Basic Knowledge.

Unit No.	Term I Topic	Lectures
1.	**Marginal Costing:** 1.1 Meaning and concepts- Fixed cost, Variable costs, Contribution, Profit-volume Ratio, Break-Even Point & Margin of Safety. 1.2 Cost-Profit-Volume Analysis- Assumptions and limitations of cost volume analysis 1.3 Application of Marginal Costing Technique:- Make or buy decision, Acceptance of export order & Limiting factors.	18
2.	**Budgetary Control:** 2.1 Definition and Meaning of Budget & Budgetary control 2.2 Objectives of Budgetary control 2.3 Procedure of Budgetary control 2.4 Essentials of Budgetary control 2.5 Advantages and Limitations of Budgetary control 2.6 Types of Budgets.	12
3.	**Uniform costing and Inter-firm Comparison** 3.1 Meaning and ,objectives 3.2 Advantages and disadvantages.	08
4.	**Introduction to management information system in Costing** 4.1 Meaning , objectives and Advantages 4.2 Procedure of MIS	10
	Total	48

Unit No.	Term II Topic	Lecture
5.	**Standard Costing** 5.1 Definition and meaning of standard cost & standard Costing . 5.2 Types of standards, setting up of Material & Labour Standards 5. 3 Difference between Standard Costing & Budgetary Control. 5.4 Advantages and Limitations of standard costing 5.5 Variance Analysis & its Significance 5.6. 1 Meaning, Types and Causes of Material & Labour variances. 5.6. 2 Problems on Material & Labour variances.	16
6	**Farm Costing** 6.1 Meaning and Features of Farm Costing 6.2 Advantages & Limitations of Farm Costing 6.3 Practical Problems	10

7	**Cost Accounting Record Rules & Cost Audit:**	12
	7.1 Introduction to cost accounting record u/s 148 of the companies Act 2013 7.2 Cost records and Verification of Cost Records 7.3 Cost auditor – Appointment- Rights and duties	
8	**Cost Audit (Legal Provisions):**	10
	8.1 Cost Audit - Meaning, Scope, objectives & advantages of Cost Audit. 8.2 Cost Audit Report and Annexure to cost Audit Report. 8. 3 Introduction to Cost Accounting Standards issued by Institute of Cost and Management of India . 8.4 Generally accepted Cost Accounting principles.	
	Total	**48**

Note -:

Allocation of Marks-

a) 50% For Theory.

b) 50% For Practical Problems.

Areas of Practical Problems:

Marginal Costing [problems on P/V Ratio BEP, M/S Angle of incidence

Budgetary Control-[Sales Budget, Cash Budget, Flexible budget .

Standard Costing-Material & Labour Variances only. [Simple problem]

Farm Costing [Farm Cost sheet]

Books Journals and Websites Recommended for Cost and Works Accounting Paper I, II and III

1. Prof. Subhash jagtap -: Practice in Advanced costing and Management Accounting. Nirali Prakashan, Pune
2. Ravi Kishor -: Advanced Cost Accounting and Cost Systems Taxman's Allied Service Pvt.Ltd., New Delhi.
3. S.P. Lyengar -: Cost Accounting Principles and Practice, Sultan Chand & Sons Accounting
4. Ravi Kishor -: Students Guide to Cost Accounting Taxman's, New Delhi.
5. M.N. Arora -: Cost Accounting Principles and Practice Vikas Publishing House Pvt. Ltd., New Delhi.
6. S.N. Maheshwari and S.N. Mittal -: Cost Accounting,Theory and Problems, Mahavir book Depot, New Delhi.
7. B.L. Lall and G.L. Sharma -: Theory and Techniques of Cost Accounting. Himalaya Publishing House, New Delhi.
8. V.K. Saxena and Vashista -: Cost Accounting – Text book. Sultan Chand and Sons, New Delhi
9. V.K. Saxena and Vashista -: Cost Audit and Management Audit. Sultan Chand and Sons, New Delhi
10. Jain and Narang -: Cost Accounting Principles and Practice. Kalyani Publishers
11. N.K. Prasad -: Principles and Practice of Cost Accounting Book Syndicate Pvt. Ltd., Calcutta.
12. N.K. Prasad -: Advanced Cost Accounting Syndicae Pvt. Ltd., Calcutta.
13. R.K. Motwani -: Practical Costing. Pointer Publisher, Jaipur.
14. R.S.N. Pillai and V. Bhagavati -: Cost Accounting.
15. Hornefgrain and Datar -: Cost Accounting and Managerial Emphasis.
16. Dr.J.P.Bhosale -: Management Accounting, Vision Publication

Department of History

List of Courses addresses crosscutting issues as per Syllabus (2013 Pattern)

Sr. No.	Programme Name	Course code	Name of Course	Addressed issue (Professional Ethics, Gender, Human Values, Environment and Sustainability)
1	B. A History	G1	Chh.Shivaji and His Times	Human Values
2	B. A History	G2	Modern India (1857-1950)	Human Values
3	B. A History	Spl-1	Ancient India (3000 B.C. to 1206 AD)	Human Values
4	B. A History	Spl-2	History of Modern Maharashtra (1818 to 1960)	Human Values
5	B. A History	G3	History of The World in 20 Century (1914-1992)	Human Values
6	B. A History	Spl-3	INTRODUCTION TO HISTORY	Human Values
7	B. A History	Spl-4	HISTORY OF ASIA IN 20TH CENTURY (1914 – 1992)	Human Values
8	M.A History	CC-01	History and its Theory	Human Values
9	M.A History	CC- 02	Evolution of Ideas and Institutions in Ancient India	Human Values
10	M.A History	CC-03	Maratha Polity	Human Values
11	M.A History	OC-01	Cultural History of Maharashtra	Human Values
12	M.A History	CC-04	History and its Practice	Human Values
13	M.A History	CC-05	Evolution of Ideas and Institutions in Medieval India	Human Values
14	M.A History	CC-06	Socio-economic History of the Marathas	Human Values
15	M.A History	OC-07	Marathas in 17th and 18th century Power Politics	Human Values
16	M.A History	CC-07	Ancient and Medieval Civilizations of the World	Human Values
17	M.A History	CC-08	Debates in Indian History	Human Values
18	M.A History	CC-09	Economic History of Modern India	Human Values
19	M.A History	OC-14	British Administrative policies in India, 1765-1892	Human Values
20	M.A History	CC-10	History of Modern India (1857-1971)	Human Values
21	M.A History	CC-11	Intellectual History of the	Human Values

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			Modern West	
22	M.A History	CC-12	World after World War II (1945-2000)	Human Values
23	M.A History	OC-19	Maharashtra in the 20th Century	Human Values

List of Courses addresses crosscutting issues as per new syllabus (CBCS- 2019 Pattern)

Sr. No.	Programme Name	Course code	Name of Course	Addressed issue (Professional Ethics, Gender, Human Values, Environment and Sustainability)
1	B.A History	G-1	Early India: From Prehistory to the Age of the Mauryas	Human Values
2	B.A History	G-1	Early India: Post Mauryan Age to the Rashtrakutas	Human Values
3	B.A History	CC-1(3)	History of the Marathas: (1630-1707)	Human Values
4	B.A History	DSE-1A (3)	Medieval India - Sultanate Period	Human Values
5	B.A History	DSE-2A (3)	Glimpses of the Modern World - Part I	Human Values
6	B.A History	SEC -2 A (2)	Tourism Management	Human Values
7	B.A History	CC-2	History of Marathas (1707-1818)	Human Values
8	B.A History	DSE-1B(3)	Medieval India – Mughal Period	Human Values
9	B.A History	DSE-2B (3)	Glimpses Of the Modern World Part-2	Human Values
10	B.A History	SEC-2B (2)	Travel Agency and Tour business	Human Values
11	B.A History	CC- 3(3)	Indian National Movement (1885-1947)	Human Values
12	B.A History	DSE-3 C (3)	Introduction to Historiography	Human Values
13	B.A History	DSE-4 D (3)	8.Maharashtra in the 19th Century	Human Values
14	B.A History	SEC 2 C (2)	Museology Fourier Series	Human Values
15	B.A History	CC- 4(3)	India After Independence-(1947-1991)	Human Values
16	B.A History	DSE-3 C (3)	Applied History	Human Values

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17	B.A History	DSE-4 D (3)	Maharashtra in the 20th Century	Human Values
18	B.A History	SEC 2 D (2)	Archaeology	Human Values
19	M.A History	CC-01	History: Theory and Method	Human Values
20	M.A History	CC-02	Evolution of Ideas and Institutions in Early India	Human Values
21	M.A History	CC-03	Maratha Polity	Human Values
22	M.A History	EC-01	History of the Deccan: Pre-History to Chalukya	Human Values
23	M.A History	CC-04	Approaches to History	Human Values
24	M.A History	CC-05	Ideas and Institutions in Medieval India	Human Values
25	M.A History	CC-06	Socio-Economic History of the Marathas	Human Values
26	M.A History	EC-09	Marathas in 17th and 18th century: Power Politics	Human Values
27	M.A History	CC-07	Cultural History of Maharashtra	Human Values
28	M.A History	CC-08	Intellectual History of the Modern World	Human Values
29	M.A History	CC-09	Economic History of Modern India	Human Values
30	M.A History	EC-18	East Asia: Japan (1853-2000)	Human Values
31	M.A History	CC-10	Modern Maharashtra: History of Ideas	Human Values
32	M.A History	CC-11	Debates in Indian Historiography	Human Values
33	M.A History	CC-12	World after World War II (1945-2000)	Human Values
34	M.A History	EC- 28	Modern India	Human Values
35	M.A History	10091	HUMAN RIGHTS - I	Human Values
36	M.A History	10092	INTRODUCTION TO CYBER SECURITY - I	Professional Ethics
37	M.A History	20091	HUMAN RIGHTS - II	Human Values
38	M.A History	20092	INTRODUCTION TO CYBER SECURITY - II	Professional Ethics
39	M.A History	30092	INTRODUCTION TO CYBER SECURITY - III	Professional Ethics
40	M.A History	30094	SKILL DEVELOPMENT - I	Human Values
41	M.A History	40092	INTRODUCTION TO CYBER SECURITY - IV	Professional Ethics
42	M.A History	40094	SKILL DEVELOPMENT - II	Human Values

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17	B.A History	DSE-4 D (3)	Maharashtra in the 20th Century	Human Values
18	B.A History	SEC 2 D (2)	Archaeology	Human Values
19	M.A History	CC-01	History: Theory and Method	Human Values
20	M.A History	CC-02	Evolution of Ideas and Institutions in Early India	Human Values
21	M.A History	CC-03	Maratha Polity	Human Values
22	M.A History	EC-01	History of the Deccan: Pre-History to Chalukya	Human Values
23	M.A History	CC-04	Approaches to History	Human Values
24	M.A History	CC-05	Ideas and Institutions in Medieval India	Human Values
25	M.A History	CC-06	Socio-Economic History of the Marathas	Human Values
26	M.A History	EC-09	Marathas in 17th and 18th century: Power Politics	Human Values
27	M.A History	CC-07	Cultural History of Maharashtra	Human Values
28	M.A History	CC-08	Intellectual History of the Modern World	Human Values
29	M.A History	CC-09	Economic History of Modern India	Human Values
30	M.A History	EC-18	East Asia: Japan (1853-2000)	Human Values
31	M.A History	CC-10	Modern Maharashtra: History of Ideas	Human Values
32	M.A History	CC-11	Debates in Indian Historiography	Human Values
33	M.A History	CC-12	World after World War II (1945-2000)	Human Values
34	M.A History	EC- 28	Modern India	Human Values
35	M.A History	10091	HUMAN RIGHTS - I	Human Values
36	M.A History	10092	INTRODUCTION TO CYBER SECURITY - I	Professional Ethics
37	M.A History	20091	HUMAN RIGHTS - II	Human Values
38	M.A History	20092	INTRODUCTION TO CYBER SECURITY - II	Professional Ethics
39	M.A History	30092	INTRODUCTION TO CYBER SECURITY - III	Professional Ethics
40	M.A History	30094	SKILL DEVELOPMENT - I	Human Values
41	M.A History	40092	INTRODUCTION TO CYBER SECURITY - IV	Professional Ethics
42	M.A History	40094	SKILL DEVELOPMENT - II	Human Values

List of Add-on/Value Added/ Certificate Courses

Sr. No.	Department	Name of Certificate Course	Course Code	Year of Offering	Addressed issue (Professional Ethics, Gender, Human Values, Environment and Sustainability)
1	History	Travel and Tourism Management	CC. 012	2008-09	Human Values
2	History	Modi Script	CC. 017	2013-14	Human Values

List Showing Curricular and Extra Curricular activities to address Crosscutting Issues (Similar/repeated activities are not listed).

Sr. No.	Name of Activity and Date of Implementation	Addressed issue (Professional Ethics, Gender, Human Values, Environment and Sustainability)	Representative Photograph
1	National Conference topic National Integrity and Sardar Vallabhbhai Patel ' on 7th and 8th January 2019	Professional Ethics, Human Values	

K. J. SOMAIYA COLLEGE Dept. of History KOPARGAON

University of Pune

First Year B.A.

History General Paper No. 1

Chh. Shivaji and His Times

(1630 – 1707)

Objectives :

To Introduce innovative study techniques in the study of History *of Maratha to make it value based, conceptual and thought* provocative. To introduce International elements in the study of Marathas to facilitate comparative analysis of this history. To highlight the importance of past in exploration of present context. To understand the Socio –economic, cultural and political background of 17th century Maharashtra. To increase the spirit of healthy Nationalism & Secularism among the student. To encourage student s to for competitive examinations. To promote interest in the discipline of History. Suggesting the Importance of References.

First Term-

1. Sources. 10

A) Literary Sources.

1) Sanskrit
2) Marathi
3) Hindi
4) Persian

B) Foreign Sources.

1) Portuguese
2) Dutch
3) French
4) English

C) Travellers Accounts.

2. Conceptual study of Chh. Shivaji and his times. 7

1) Bhakti.
2) Watan
3) Saranjam .
4) Mansab
5) Jahagir
6) Jiziya
7) Guerrilla Warfare
8) Maharashtra Dharma

9) Shiledars
10) Swarajya
11) Chauth
12) Inam
13) Baragirs.
14) Sardeshmukhi.

3. Rise and Consolidation of Maratha power. 13
   1) Establishment of the Swarajya
   2) Shivaji - Adilashahi Relations
   3) Shivaji - Mughal Relation s
   4) Shivaji's Coronation.
   5) Karnataka Expedition.

4. Administration Under Chh.Shivaji 8
   1) Central
   2) Provincial
   3) Military
   4) Judiciary.

5. Chh. Shivaji & Foreign Powers. 10
   1) Portuguese.
   2) Dutch.
   3) French.
   4) British.

Second Term.

6. Chh. Sambhaji's Achievments 10
   1) Consolidation of power.
   2) Relations with Mughals.
   3) Relations with Foreign Powers.
   4) Evaluation.

7. Maratha War of Independence . 10
   1) Chh. Rajaram and his Achievements.
   2) Maharani Tarabai & her Achievements.
   3) Contribution of Santaji Ghorpade, Dhanaji Jadhav & Ramchandrapant Amatya.

8. Social Life. 10
   1) Gavgada.
   2) Woman
   3) Religious

9. Economic Life. 10
   1) Agriculture And Revenue System
   2) Sources of income
   3) Trade & Commerce
   4) Currency

10. Arts & Architecture .(Special Ref. to Temple, Gadhi, and Forts) 8

Books for Study :

1. M.G. Ranade-Rise of the Maratha Power.
2. G.S. Sardesai-New History of the Marathas, Vols. I, II and III.
3. J.N. Sarkar-Shivaji and His Times.
4. S.N. Sen-Administrative System of the Marathas.
5. S.N. Sen-Military System of the Marathas.
6. Nadkarni R. V. –Rise and fall of the Maratha Empire.
7. Sarkar J.N.-House of Shivaji.
8. Dr. Balkrishna – Shivaji the Grate.
9. Pagadi Setu Madhavrao – Chh. Shivaji

मराठी ग्रंथ :

१. अ.रा. कुलकर्णी व ग.ह. खरे (संपा.)—मराठ्यांचा इतिहास, खंड १ त ३.
२. प्र.न. देशपांडे—मराठी सत्तेचा उदय आणि उत्कर्ष.
३. वा.कृ. भावे—शिवराज्य व शिवकाल.
४. बेंद्रे, वा.सी. — शिवाजी महाराजांचे विधिचिकित्सक चरित्र.
५. रामचंद्र पंत अमात्य — आज्ञापत्र.

University of Pune

Revised Syllabus (S.Y.B.A. History)
From 2014-15
Special Paper - I, Ancient India (3000 B.C. to 1206 AD)

First Term

Objectives:

To Survey the sources of History of Ancient India. The Course intends to provide an Understanding of the social, economic, religious and institutional bases of Ancient India. The course will study such as agriculture, Industry, trade. To study the development of the concept of Nation- State background of political history. To study ancient Indian Art & Architecture.

Unit - 1) Sources for the study of Ancient Indian History. **10**

a) Archaeological

b) Literary

c) Foreign Accounts

d) Epigraphical

e) Numismatics

Unit - 2) Conceptual study of Ancient Indian History **10**

1) Pre-history 2) Proto-history 3) Age of History 4) Stone Age

5) Bharatvarsh 6) Sabha- Samiti 7) Varnashram 8) Samakaras 9) Dandniti

10) Stupa-chaitya & Vihar 11) Alvars-Nayanars 12) Agraharas

13) Vishti 14) Hero-Stone (Memorial Stones) 15) Saptang theory

16) Mahajanapadas

Unit - 3) The Harappan Civilization **8**

a) Scope and features

b) Socio - Economic & Religious Life

c) Decline

Unit - 4) Vedic Culture **10**

a) Political, Social, Economic & Religious Life

b) Vedic literature

Unit - 5) Economic and religious Transformation **10**

a) Agriculture, Iron Technology, Urbanisation

b) New Religion, sects and its philosophy: Jainism, Buddhism and Charvak: Lokayats

Second Term

Unit - 6) The Mauryan Empire — **10**

a) Rise & Expansion

b) Administration

c) Socio- Economic and Religious Life

d) Decline

Unit - 7) Satvahans — **10**

a) Socio- economic condition

b) Religious

c) Cultural

Unit - 8) The Age of Imperial Guptas — **10**

a) Political backgrounds

b) Administration

c) Socio- Economic and Religious Life

d) Science

Unit - 9) Harshavardhana and his Achievements — **8**

Unit - 10) South Indian Dnyansties and their socio-cultural life — **12**

a) Sangam Age : Brief Survey

b) Chalukyas

c) Pallavas

d) Rashtrakutas

e) Cholas

UNIVERSITY OF PUNE

(Revised Syllabus From 2014-15)

Modern- India (1857-1950)

S.Y.B.A. (History)

General Paper 2

Objectives:-

The course is designed to help the student to know- History of freedom movement of India, aims, objectives problems and progress of Independent India. It aims at enabling the student to understand the processes of rise of modern India. The Course attempts to acquaint student with fundamental aspects of Modern Indian History. To explain the basic concepts/ concerns/ frame work of Indian History.

First- Term

Unit I - Conceptual Study — **8**

1. Modernity
2. Rule of Law
3. Drain of wealth
4. Nationalism
5. Home- Rule
6. Satyagraha
7. Communalism
8. Dyarchy

Unit II - Uprising of 1857 — **10**

1. Causes, course and effects
2. Various Views
3. Causes of failure

Unit III - Social and Religious Movement (Special reference to institutional work) — **10**

1. Brahmo Samaj
2. Arya Samaj
3. Prarthna Samaj

4. Theosophical Society

5. Satyashodhak Samaj

Unit IV - Indian Nationalism 10

1. Rise and Growth

2. Foundation of Indian National Congress.

3. The Moderates and Extremists.

4. Revolutionary Nationalism

Spl. Ref. (Abhinav Bharat, Gadar, Anushilan Samitee, Yugantar, Hindustan Socialist Republican Army)

Unit V - Administrative Policy of the British 10

1. Education

2. Press

3. Famine

4. Local self government

5. Land Revenue systems

Second Term

Chapter VI - Mahatma Gandhi and Indian National movement 10

1. Philosophy

2. Non - Co operation

3. Civil Disobedience

4. Quit India

Chapter VII - Rise and Growth of communalism 10

1. Muslim League

2. Khilafat movement

3. Two Nation Theory

4. Partition

Chapter VIII - Constitutional Development 10

1. Morley Minto Act - 1909

2. Montegue - Chelmsford Act - 1919

3. Provincial Autonomy - 1935

4. Various Constitutional Plans 1942 to 1946 (Crips mission, Wavell plan, Cabinate mission)

5. The last phase - Transfer of power (Mountbatten plan and India's Independence Act - 1947)

Chapter IX - Subaltern Movement 10

1. Dalit Movement

2. Women's Movement

3. Peasant Movement

4. Tribal Movement

5. Workers Movement

Chapter X - India after Independence 8

1. Consequences of partition

2. Integration of princely state: Hyderabad, Junagad & Kashmir.

Books for Study: English

1. Bipinchanda - India's struggle for freedom
2. Bearce, George D - British attitude towards India
3. Bipinchanda - The Rise and Growth of Economic Nationalism
4. Desai A.R. - Social background of India Nationalism
5. Dodwell H.H. - Cambridge History of India Vol V,VI
6. Dutt R.C. - Economic History of India Vol 1,2
7. Gopal S. - British policy in India 1858-1905
8. Majumdar R.C. - British paramountcy and Indian Renaissance Vol IX
9. Menon V.P. - The transfer of power in India
10. Natrajan S. - A century of social Reform In India
11. Overstreet G.D. & Windmiller M. - Communism In India

University of Pune

Revised Syllabus S.Y.B.A. (History, special Paper -II)
From 2014-2015
History of Modern Maharashtra (1818 to 1960)

First Term

Objectives:

The purpose of the course is to enable the students to study the history of modern Maharashtra .To highlight the ideas, institutions, forces and movements that contributes to the modern Maharashtra. To acquaint the students with various interpretative perspectives. To introduce the student to the regional history within a broad national framework.

Unit - 1) Conceptual Study of Modern Maharashtra **15**

1) Modernity 2) Renaissance 3) Nationalism 4) Drain of wealth 5) Moderates 6) Extremist 7) Revolutionary 8) Four Points programme of Lokmanya Tilak 9) Statyagraha 10) Democracy 11) Capitalism 12) Industrialization 13) Urbanization 14) Utilitarianism.

Unit - 2) Maharashtra in Early 19th Century **9**

a) Socio- Political & Economic background.(transition period)

b) British Administration & its Impacts.

Unit -3) Socio-Economic & Religious Reformism **12**

a) Balshastree Jambhekar

b) Jagannath Shankarsheth

c) Bhau Daji Lad

d) Gopal Hari Deshmukh (Lokhiwadi)

e) Mahatma Phule

Unit - 4) Institutional Experiments in Socio- Religious Reformism **12**

a) Paramahamsa Mandai

b) Prarthana Samaj

c) Satyashodhak Samaj

d) Arya Samaj

e) Depressed Classes Mission

Second Term

Unit - 5) Thoughts and work of Intellectuals

a) Mahadev Govind Ranade

b) Gopal Ganesh Agarkar

c) Gopal Krishna Gokhale

d) Rajarshri Chatrapati Shahu Maharaj

e) Maharshi Dhondo Keshav Karve

f) Karmaveer Bhaurao Patil

g) Dr. Babasaheb Ambedkar

h) Maharshi Vitthal Ramji Shinde

16

Unit - 6) Contribution of Maharashtra in Indian Freedom Movement

a) 1818 to 1885 (Uprising of Ramoshi, Bhills, Koli, & Deccan Riots (1875) (b) Revolt of 1857, Moderates, Extremists & Revolutionaries.

b) Non- Cooperation, Civil Disobedence & Quit India Movement

12

Unit - 7) Popular Movements in Maharashtra

a) Non-Brahmin Movement

b) Dalit

c) Peasants

d) Workers

e) Tribals

10

Unit - 8) Maharashtra after independence

a) Marathwada Muktisangram

b) Samyukta Maharashtra Movement

10

MODERN MAHARASHTRA

Book For Study : English :

1. Ballhatchet Kenneth, Social Policy and Social Change in Western India. 1817-1830, OUP, 1961.

HISTORY OF THE WORLD IN 20TH CENTURY (1914-1992)

OBJECTIVES

1. To help the student to know Modern World. To acquaint the student with the Socio-economic & Political developments in other countries. And understand the contemporary world in the light of its background History.

2. To orient the students with political history of Modern World.

3. To acquaint Students about the main developments in the Contemporary World (To understand to important development in 20th century World.)

4. Impart knowledge about world concepts.

5. To enable students to understand the economic transition in World during the 20th Century.

6. Become aware of the principles, forces, processes and problems of the recent times.

7. To acquaint the students with growth of various political movements that shaped the modern world.

8. To highlight the rise and growth of nationalism as a movement in different parts of the world.

FIRST TERM

1. CONCEPTUAL STUDY (08)

- 1.1 Capitalism
- 1.2 Economic Imperialism
- 1.3 Dictatorship
- 1.4 Communism
- 1.5 Socialism
- 1.6 Nazism
- 1.7 Fascism
- 1.8 Cold War
- 1.9 Non – Alignment
- 1.10 Globalization
- 1.11 Feminism
- 1.12 Humanism

2. FIRST WORLD WAR (10)

- 2.1 Causes
- 2.2 Impacts / Consequences
- 2.3 Paris Peace settlement (1919)
- 2.4 League of Nations

3. RUSSIAN REVOLUTION (10)

- 3.1 Socio – Economic and Political background of revolution
- 3.2 Contribution of Lenin and New Economic Policy (NEP)
- 3.3 Contribution of Stalin and Five Year Plan

4. RISE OF DICTATORSHIP (10)

- 4.1 Italy
- 4.2 Germany
- 4.3 Turkestan

5. GREAT DEPRESSION (10)

- 5.1 Nature
- 5.2 Causes
- 5.3 Consequences

SECOND TERM

6. WORLD WAR II (12)

- 6.1 Causes
- 6.2 Emergence and Scope

INTRODUCTION TO HISTORY

OBJECTIVES

1. To orient students about how history is studied, written and understood.
2. To explain methods and tools of data collection
3. To understand the meaning of Evolution of Historiography.
4. To study the Various Views of Historiography.
5. To study the approaches to Historiography.
6. To study the types of Indian Historiography.
7. To describe importance of inter-disciplinary research.
8. To introduce students to the basics of research.
9. To acquaint the student with the recent research in History.
10. Learn how to use sources in their presentation.

FIRST TERM

1. Conceptual Study (08)

1.1 History

1.2 Heuristic

1.3 Archives

1.4 Oral History

1.5 Cronical

1.6 Sanad / Farman

1.7 Marxism

1.8 New Marxism

1.9 Modernism

1.10 Post - Modernism

1.11 Structuralism

1.12 Post – Structuralism

2. NATURE AND SCOPE OF HISTORY (10)

2.1 Meaning and Definition

2.2 Nature and Scope of History

2.3 Importance

3. SOURCES OF HISTORICAL RESEARCH (10)

3.1 Primary and Secondary

3.2 Written and Un- written

3.3 Importance of Sources

4. HISTORICAL RESEARCH (10)

4.1 Selection of Research Problem

4.2 Historical Methods

4.3 External Criticism

4.4 Internal Criticism

4.5 Interpretation

5. MAJOR ARCHIVES IN MAHARASHTRA: BRIEF STUDY (10)

5.1 Mumbai Archives

5.2 Pune Archives

5.3 Bharat Itihas Sanshodhak Mandal, Pune

5.4 Nagpur Archives

5.5 Kolhapur Archives

5.6 V.K.Rajwade Itihas Sanshodhak Mandal, Dhule

5.7 Deccan College

SECOND TERM

6. HISTORY AND SOCIAL SCIENCE (10)

6.1 History and Geography

6.2 History and Political Science

6.3 History and Economics

6.4 History and Sociology

7. SCHOOL OF HISTORIOGRAPHY (10)

7.1 Imperialist

7.2 Nationalist

7.3 Marxist

7.4 Subaltern

7.5 Local History

8. HISTORIANS OF MAHARASHTRA (10)

8.1 V. K. Rajwade

8.2 G. S. Sardesai

8.3 T. S. Shejwalkar

8.4 G. H. Khare

8.5 J. Sarkar

9. INDIAN HISTORIANS (10)

9.1 R. C. Mujumdar

9.2 K. A. Niolkanth Shastri

9.3 D. D. Kosambi

9.4 Romila Thapar

10. HISTORICAL STUDY TOUR OR PROJECT WORK

PROJECT WORK & EVALUATION SCHEME

1. Term end examination of 60 marks shall be held at the end of the first term.
2. Candidate shall submit a report of minimum 3000 words i.e. 10 to 15 pages to the department by end of the February.
3. A viva-voce should be conducted before theory examination and the results should be sent to the University as immediately
4. The result should be prepared as follows:

a) 60 marks of term end examination converted in to 20 marks

b) 50 marks Annual examination for 2 hours conducted by University of Pune Equal weightage for all topics

c) 30 Marks exam should be conducted by the department 20 marks for Project work & 10 marks Viva-voce exam.

BOOKS FOR STUDY

ENGLISH

1.Avneri S., Social and Political Thought of Karl Marx, Cambrige, 1968.

2.Barnes H.E., History of Historical Writing, Dover, NewYork, 1963.

HISTORY OF ASIA IN 20TH CENTURY (1914 – 1992)

OBJECTIVES

1. To orient the students with political history of Asia.

2. To enable students to understand the economic transition in Asia during 20th Centuries.

3. Understand the important developments in the 20th century Asia in a

Thematic approach.

4. To provide students with an overall view and broad perspective different movements connected with Nationalist aspirations in the region of Asia in general.

5. To empower students to cope with the challenges of globalization.

FIRST TERM

1. CONCEPTUAL STUDY (08)

1.1 Long March

1.2 Communism

1.3 Atlantic Charter

1.4 Jenro

1.5 Pan - Islamism

1.6 Yani – Turanism

1.7 Welfare Dictatorship (*Kalyankari Hukumshahi*)

1.8 Mandate System

1.9 White – Paper (*Shwait Patrika*)

1.10 Arab League

1.11 Third World

1.12 Arab Nationalism

2. CHINA (10)

2.1 Achievement of Dr. Sun – Yet - Sen.

2.2 Communist Revolution (1949)

2.3 Indo China War 1962

2.4 China under Communism (1949 – 1992) with reference to Economic and Foreign (Asian Countries) Policy

3. JAPAN (12)

3.1 Japan between two World War

3.2 America occupation, achievement and General Mac Arthur

3.3 Economic development and Foreign Policy 1950 – 1992 (Brief Survey)

4. EGYPT (10)

4.1 Egypt between two world war

4.2 General Nasser and modernization of Egypt

4.3 Suez Crisis

5. OIL DIPLOMACY (08)

5.1 Iran – Reza shah Pahlavi and Modernization of Iran, Iran and Second World War, Iran and Oil Diplomacy.

5.2 Political development in Iraq, Rise of Rashid Ali, 1958 Revolution, Iraq – Iran Conflict.

5.3 Kuwait – Iraq war and its Impact.

SECOND TERM

6. TURKESTAN

6.1 First World War and Turkestan (10)

6.2 Achievement of Kemal Pasha

7. ISRAEL

7.1 Zionist Movement (10)

7.2 Balfour declaration

7.3 British Mandate

7.4 London Round Table Conference, Peel Commission, Rise of Israel.

8. ARAB ISRAEL CONFLICT

8.1 1948 to 1973 Arab Israel Conflict a brief survey (10)

8.2 Rise of Arab Nationalism

9. SAUDI ARABIYA (ARABIA)

9.1 Wahhabi Movement (10)

9.2 Roll of Ibn Saud

9.3 Foreign Policy

10. SOUTH EAST ASIA (08)

10.1 Indonesia

10.2 Vietnam

10.3 Asian

10.4 Foreign Policy of Indian with special reference to south east Asia.

BOOKS FOR STUDY

ENGLISH

1 Bass Claud, Asia in the Modern World.

2 Bernard L: Turkey Today ,The Emergence of Modern Turkey.

3 Beasley, W G : The Modern History of Japan

4.Buchanaa P, A History of the Far East.

5.Clyde P.H. and B.F.Beers, The Far East (1830-1965)

6. Fisher S N : The Middle East

7.Gaikwad D.S., Civil Right Movement in America, Deep and Deep Publication, New Delhi, 1987.

8. Main ,E : Iraq: From Mandate to Independence.

9. North M : The History of Israel

10. Yale William, Near West.

Semester I: Core Paper No. 1

Credits: 4

Course Title: History and its Theory

Objectives

The paper is designed to provide adequate conceptual base, bring better understanding of history and its forces, help interrogate existing paradigms and challenge the outdated, help in developing critique, help research in terms of formulating hypotheses and develop broad frames of interaction with other social sciences and attain certain level of interdisciplinary approach.

Course Content

1. History:
   a) Definition, nature, functions, concepts
   b) Modes of interaction with Humanities and Social Sciences

2. History and its theories
   a) Greco-Roman
   b) Church
   c) Arab

3. Emergence of Modern theories of history
   a) Rationalist, Romanticist, Idealist
   b) School of Scientific History
   c) Materialist Theory of history
   d) Positivism

4. Structuralism, Post-structuralism, Post modernism

5. Subaltern Studies

Select Readings

English

Barry, Peter, *Beginning Theory: An introduction to literary and cultural theory*, Manchester University Press, New York, 1995.
Carr, E.H., *What is History*, Penguin Books, Harmondsworth, 1971.
Childs, Peter, *Modernism*, Routledge, London, 2000.
Collingwood, R.G., The *Idea Of History*, Oxford University Press, New York, 1976.
Eagleton, Terry, *Ideology*, Verso, 1991.
Encyclopaedia of Social Sciences
Foucault, Michel, *The Archeology of Knowledge*, translated by Sheridan Smith, Tavistock Publications, London 1982.
Hamilton,Paul, *Historicism*, London, Routledge, First Indian Edition, 2007.

Semester I: Core Paper No. 2

Credits: 4

Course Title: Evolution of Ideas and Institutions in Ancient India

Objectives

The course intends to provide an understanding of the social, economic and institutional bases of Ancient India. It is based on the premise that an understanding of Ancient Indian history is crucial to understand Indian history as a whole.

Course content

1. Defining Ancient India
   a) Historiography (colonial, nationalist)
   b) Terminology ('Hindu', 'Ancient', 'Early')

2. Sources: Perceptions, Limitations, Range
   a) Archaeological
   b) Literary sources (Sanskrit, Prakrit, Pali; Religious, non-religious)
   c) Inscriptions
   d) Foreign accounts

3. Political Ideas and Institutions
   a) Lineage Polities (Rig Vedic)
   b) Pre-State formations (Janapadas, Mahajanapadas)
   c) Early State Formations (From Mahajanapadas to Maurya)
   d) Administrative Institutions (Kingship: Rajanya-Samrat, Sabha and Samiti to Council of ministers
   e) Saptanga Theory

4. Social ideas and institutions
   a) Kin and Lineage society
   b) The emergence of caste based societies, marginalization and subordination
   c) Social protest and the emergence of new social and religious forms
   d) Concept of Kaliyuga and post-Mauryan social formations

5. Economy
   a) Pre-historic to Chalcolithic developments
   b) Development of Agriculture and Trade (Iron Age, Magadha, Gupta)
   c) Expanding Trade Economy
   d) The Mauryan State

6. Deccan and South India
   a) Sangam Age
   b) The emergence of states in the Deccan – the Satavahanas
   c) Urban economy

Semester I: Core Paper No.3.

Credits: 4

Course Title: Maratha Polity

Objectives

The purpose of the course is to study the administrative system of the Marathas in an analytical way, to acquaint the student with the nature of Maratha Polity, to understand basic components of the Maratha administrative structure, to enable the student to understand the basic concepts of the Maratha polity.

Course content

1. Defining the term 'Maratha Polity'

2. Nature of Sources: Perceptions, Limitations, Range
   a) Literary
   b) Foreign
   c) Archival
   d) Miscellaneous

3. Maratha State
   a) Formation of the Maratha State
   b) Nature

4. Administrative Structure
   a) Administrative Structure of the Deccani Kingdoms: a brief survey
   b) Principles underlying Maratha Administration
   c) Central: the institution of kingship, theory, problem of legitimacy, Ashta Pradhan Mandal
   d) Provincial and Village: administrative units
   e) Fiscal administration: Public income and expendture

5. Socio-Political Power Structure
   a) Religion
   b) Caste
   c) Gota
   d) Watan

6. Administration of Justice
   a) Sources of law
   b) Judicial structure – central, provincial
   c) Judicial institutions – political, traditional
   d) Crime and punishment – police

8. Military system
   a) Infantry
   b) Cavalry
   c) Navy

Semester I: Optional Paper No. 1

Credits: 4

Course Title: Cultural History of Maharashtra

Objectives:

To introduce the student to regional history within a broad framework of Indian culture; to enable the student to understand the internal dynamics of Marathi culture.

Course content

1. Defining the term 'culture'

2. Maharashtra as a cultural region
   a) Physical and geographical features
   b) Origin of Marathi people
   c) Nomenclature of Maharashtra
   d) Origin of Marathi language

3. Maharashtra Dharma
   a) Meaning
   b) Different views

4. Movements and cults: philosophy and teaching
   a) Nath
   b) Mahanubhav
   c) Varkari
   d) Ramdasi
   e) Datta
   f) Sufi
   g) Shakti

5. Literature
   a) Bhakti
   b) Bakhar
   c) Panditi
   d) Shahiri
   e) Folk

6. Interaction with Islamic Culture
   a) Language
   b) Literary forms
   c) Socio-cultural practices

7. Art and Architecture
   a) Art: Visual and Performing Art
   b) Architecture: Religious, Secular, Military

Semester II: Core Paper No. 5

Credits: 4

Course Title: Evolution of Ideas and Institutions in Medieval India

Objectives

The course examines the nature of medieval Indian society, economy, state formations, and the main religious currents of the time. It is seen as a continuation of the course on ancient India. It is also seen to be crucial to an understanding of the nature of society, and the problems of the challenge to that society, through colonialism, at a later stage.

Course content

1. Defining medieval India
   a) The Transition to the Medieval
   b) Historiography of the study of Medieval India

2. Sources: Perceptions, Limitations, Range
   a) Persian sources
   b) Regional language sources
   c) Foreign sources: Travellers' accounts, European records

3. The state in medieval India: perceptions and practice
   a) Modern theories of the medieval state: Theocracy, Autocracy, Feudal, Segmentary, Patrimonial-Bureaucratic
   b) Medieval Theories of the State: Farabi, Ghazzali, Shukracharya, Barani, Abul Fazl, Ramachandrapant Amatya
   c) State formation in peninsular India – Chola, Bahamani, Vijayanagar

4. Administrative Systems
   a) Central and Provincial
   b) Mansabdari

5. Medieval Indian society
   a) Social Mobility and Stratification in medieval India
   b) The emergence of new classes: Administrative, agrarian and mercantile classes in medieval India
   c) Bhakti and social change
   d) Sufism
   e) Towards a composite culture

6. Economic institutions
   a) Agrarian systems, north and south India
   b) Trade, internal and external
   c) Financial Institutions: Banking, Bills of Exchange

Select Readings

SEMESTER II

Semester II: Core Paper No. 4

Credits: 4

Course Title: History and its Practice

Objectives

The paper is designed to provide adequate conceptual base, bring better understanding of history and its forces, help interrogate existing paradigms and challenge the outdated, help in developing critique, help research in terms of formulating hypotheses and develop broad frames of interaction with other social sciences and attain certain level of Interdisciplinary approach.

Course content

1.Defining Historical Research Methodology

2. Operations in Research Methodology
   a) Preliminary Operations: Choice of subject, preparation of outline
   b) Analytical Operations: Heuristics and Hermeneutics
   c) Synthetic Operations: Determining and grouping of facts, constructive reasoning
   d) Concluding Operations: Valid generalisations, footnotes and bibliography

3. Schools of History Writing
   1. Indian:
   a) Colonial
   b) Nationalist
   c) Marxist
   d) Subaltern

   2. Non-Indian:
   a) Cambridge
   b) Annales
   c) Dakar

4. Recent developments in methodology
   a) Myth, legend, folklore, oral history: their methodologies
   b) The linguistic turn in history: methodologies of Deconstruction, Post-structuralism, Post-modernism

Select Readings

English

Carr, E.H., *What is History*, Penguin Books, Harmondsworth, 1971.

Semester II: Core Paper No. 6

Credits: 4

Course Title: Socio-Economic History of the Marathas

Objectives

The purpose of the course is to study socio-economic history of the Marathas in an analytical way, to acquaint the student with the components of social structure and their functions, to understand the relationship between religion, caste, customs, traditions, class in 17th and 18th century Maratha Society, to enable the student to understand aspects of economic life, to trace the determinants of changes in social and economic life.

Course Content

1. Defining socio-economic history
   a) Historiography of Socio-economic History.

2. Sources: Perceptions, Limitations, Range
   a) Literary
   b) Foreign
   c) Archival
   d) Miscellaneous

3. Village community
   a) Land Tenures
   b) Residents of the village
   c) Balutedari system

4. Social institutions
   a) Varna and caste
   b) Communities
   c) Marriage'
   d) Family

5. Social Stratification and mobility

6. Fairs and Festivals

7. Education
   a) Educational institutions
   b) Primary education
   c) Higher education

8. Agrarian System
   a) Types of land
   b) Assessment of land
   c) Methods of land revenue collection

9. Trade, Industries and handicraft
   a) Centres of trade
   b) Trade routes
   c) Major and minor industries

10. Currency and Banking
   a) Types of coins
   b) Banking houses

Select Readings

English

Chitnis K.N., *Socio-Economic History of Medieval India*, Atlantic Publishers, Delhi, 2002.
Desai, Sudha, *Social life in Maharashtra under the Peshwas*, Bombay, 1980
Kulkarni, A.R., *Medieval Maratha Country*, Books and Books, New Delhi, 1996.
Kulkarni, A.R., *Medieval Maharashtra*, Books and Books, New Delhi, 1996
Kulkarni A.R., *Maharashtra: Society and Culture*, Books & Books, Delhi, 2000.
Kulkarni A.R., *Explorations in the Deccan History*, Pragati Publications in association with ICHR, Delhi, 2006.
Kumar, Dharma (ed.), *The Cambridge Economic History of India*, Vol. II, Orient Longman, in association with OUP, Delhi, 2005.
Mahajan T.T., *Trade, Commerce and Industries under the Peshwas*, Pointer Publishers, Jaipur, 1989.
Raychaudhuri, Tapan and Habib, Irfan (ed.), *Cambridge Economic History of India*, Vol. I, Orient Longman, in association with OUP, Delhi, 2005.

Marathi

Atre, Trimbak Narayan, Gav-Gada, Varada, Pune, 1995
Bhave, V.K., *Peshwekalin Maharashtra*, Varada, Pune, 1998.
Chapekar, N.G., *Peshwaichya Savlit*, Pune, 1936.
Joshi, S.N., *Marathekalin Samaj Darshan*, Anath Vidyarthi Gruha, Pune, 1960.
Oturkar, R.V., *Peshwekalin Samajik Va aarthik Patravyavahar*, BISM, Pune, 1950.

ALL COURSES ARE OPEN FOR INTERDISCIPLINARY CREDITS

SEMESTER III

Semester III: Core Paper No. 7

Credits :4

Course Title: Ancient and Medieval Civilizations of the World

Objectives

The paper intends to examine Ancient and Medieval civilizations with a view to understand, reinterpret and present them in historical perspective; to enable the student to understand intellectual trends in the modern world; to enable the student to have a better understanding of Indian History in the World context.

Course content

1. Civilization: Concept and Meaning — 02
2. Ancient civilizations: Egypt, Mesopotamia, Persia, India, China — 15
   (a) Political Systems
   (b) Society and Economy
   (c) Religion and Philosophy
   (d) Literature, Art and Architecture, Science and technology
3. Classical Civilizations: Greece and Rome — 08
   (a) Political Systems
   (b) Society and Economy
   (c) Religion and Philosophy
   (d) Literature, Art and Architecture, Science and technology
4. Arabic Culture — 02
5. Medieval West — 13
   (a) Dark Ages
   (b) Feudal System
   (c) Church and State
   (d) Rise of the Nation-States: France and England
   (e) Medieval Economy – Revival of trade and its impact
   (f) Literature, Art and Architecture

Semester II: Optional Paper No. 7

Credits: 4

Course Title: Marathas in 17th and 18th Century Power Politics

Objectives

The course intends to study the role played by the Marathas in the context of India, the changing nature of Maratha State, to understand and analyse the Maratha expansionism and its significance in various spheres.

Course Content

1. Origin and Basis of Maratha political power
2. Ideologies and Institutions of the Marathas
   a) Maharashtra Dharma
   b) Swarajya
   c) Watan
   d) Saranjam
3. Nature of Maratha State
   a) State in the 17th century
   b) State in the 18th century
   c) Excursus of theories on the state
4. Maratha Confederacy
   a) Concept
   b) Nature
5. Maratha Expansionism
   I. Conquest and Stay
      a) Malwa
      b) Bundelkhand
      c) Gujarat
      d) North Karnataka
      e) Orissa

   II. Sphere of Influence
      a) Bengal and Orissa
      b) Rajasthan
      c) Antarveda
6. Incorporation of Maratha State into colonial state

Select Readings

Alavi, Seema (ed.), *The Eighteenth Century in India*, OUP, New Delhi, 2002

Semester III: Core Course No. 8.

Credits :4

Course Title: Debates in Indian History

Objectives:

The course is designed to introduce the student to some of the issues that that have been debated by historians and to introduce some perspectives with reference to Indian History.

Course content:

1. The Aryan Debate — 04
2. The State in Indian History : Debates and Theories — 08
   (a) Ancient State
      i. Pre-State Formation – Mahajanapadas
      ii. State formation – Mauryan State and Gupta Empire
      iii. Decline of the Mauryan State
   (b) Medieval State
      i. Sultanate – Theocratic
      ii. Mughals – Theocratic, Patrimonial-Bureaucratic
      iii. Chola and Vijayanagara – Segmentary
      iv. Marathas
3. Urbanisation and Urban Decay — 08
4. Feudalism — 08
   (a) Concept
   (b) 'Feudalism Debate'
5. Orientalism — 08
   (a) Meaning
   (b) Contribution of Orientalist scholars
   (c) Critique of Orientalism
6. 18th Century Debate — 04

Semester III: Core Paper No. 9

Credits :4

Course Title: Economic History of Modern India

Objectives

To acquaint the student with structural and conceptual changes in Indian economy after coming of the British, to make them aware of the exploitative nature of the British rule, to help them understand the process of internalisation by Indians of new economic ideas, principles and practices.

Course content

1. European economic interests in India and colonial economy
   a) Mercantilist phase
   b) Free trade phase — 06
   c) Financial imperialism phase

2. Agrarian settlements
   a) Permanent settlement
   b) Ryotwari system — 08
   c) Mahalwari system
   d) Commercialization of agriculture and its effects

3. Industry
   a) De-industrialization
   b) Development of modern industry : — 14
   Textile, Mining, Iron and Steel, Shipping
   c) Railways
   d)Labour Issues and Factory Acts 1894-1942

4. Trade : internal and foreign — 04

5. Fiscal System — 04

6. Banking — 04

Select Readings

English

Bagchi, A.K., Private Investment in India, 1900-1939, Cambridge, 1972.

Charlesworth, Neil, British Rule and the Indian Economy 1880-1914, London, 1983.

Semester III: Optional Paper No. 14

Credits :4

Course Title: British Administrative Policies in India, 1765-1892

Objectives

The paper intends to make an in-depth study of various aspects of British administrative policies in India.

Course content

1. Ideological influences on British Administrative Policy — 03
2. Administrative Structure — 04
   a) Charter Acts
   b) Regulating Act
3. Emergence of Executive and Judiciary — 03
4. Economic Policy — 04
   a) Land Revenue
   b) Trade
   c) Industry
5. Social and Educational Policy — 04
6. Famine Policy — 02
7. Policy towards Native rulers — 02
8. Press — 02
9. Bureaucracy — 02
10. India under the Crown — 07
    a) Government of India Act - 1858
    b) Queen's Proclamation
11. Indian Councils Acts of 1861 and 1892 — 07

Select Readings

Ambirajan, S., Classical Economy and British Policy in India,

Bearce, G.D., British Attitude Towards India, London, 1959.

Gopal, S., British Administrative Policies in India, 1857-1905, Oxford, 1965.

Metcalfe, T., Ideologies of the Raj, New Cambridge History of India, Cambridge.

Mishra, B.B., Administration of East India Company, New York, 1960.

Stokes, E., The English Utilitarians and India, Oxford, 1959.

Semester IV: Core Paper no. 10

Credits :4

History of Modern India (1857-1971)

Objectives:

The purpose of this course is to enable the student to study the history of 'Modern India' from an analytical perspective; to make the student aware of the multi-dimensionality of Modern India; to highlight the ideas, institutions, forces and movements that contributed to the shaping of Indian modernity; to acquaint the student with various interpretative perspectives; to help them in articulating their own ideas and views leading to research orientation.

Course Structure:

1. Key concepts in Modern India
   a. Capitalism
   b. Colonialism
   c. Modernity
   d. Rule of Law
   e. Individualism
   f. Utilitarianism
   g. Liberalism
   h. Indian Renaissance
   i. Indian nationalism
   j. Socialism
   k. Communalism
   l. Leftist Thought
2. Indian Revolutionary Movement
   a. In India
   b. In foreign countries
3. Issues and Movements in Modern India
   a. National Movement: a brief survey
   b. Land issues and Peasant movements up to 1920
   c. Labour movements
   d. Tribal movements
   e. Dalit movement
   f. Women's issues

Semester IV: Core Paper no. 12

Credits :4

Course Title: World after World War II (1945-2000)

Objectives

To acquaint the student with the post-World War II scenario and to enable them to understand contemporary world from the historical perspective.

Course content:

1. Cold War: Origin and Nature, Issues — 08
   a) Berlin Crisis (1948)
   b) Korean War
   c) Cuban Crisis
   d) Military Alliances: NATO, CENTO, SEATO, ANZUS, Warsaw Pact
2. Non-Aligned movement — 04
3. Issues in West Asia — 10
   a) Oil Politics
   b) Arab-Israel conflicts
   c) Palestine issue
   d) Suez Crisis
   e) Kuwait – Iraq War and its Impact
4. Developments in South-east Asia — 04
   Vietnam War
5. Towards a Uni-polar World — 10
   a) Reunification of Germany
   b) Disintegration of the USSR and its consequences
6. Globalisation and its Impact — 04
   i. European Union
   ii. BRIC

Select Readings

English

Buzan Barry and Richard Little, International Systems in World History, OUP, 2000.

Cornwall R.D., World History in 20th Century, Longman, London, 1976. Halle, Cold War a History.

Knapp Wilfrid , A History of War and Peace, Oxford , 1967.

Semester IV: Core Paper no. 11

Credits :

Course Title: Intellectual History of the Modern West

Objectives

The paper is seen as a prerequisite for understanding the concepts that are used in history, both of west Europe and India; to acquaint the student with the intellectual activity that played an important role in shaping events; the transition from medieval to modern times.

Course content

1. Renaissance
    a) Background – Scholasticism
    b) Nature — 08
    c) Contribution and Impact
2. Reformation
    a) Background
    b) Nature
    c) Impact — 04
3. Revolution in Scientific thinking and its impact
    a) Copernican Revolution
    b) Galilean Revolution — 06
    c) Newtonian Revolution
4. Intellectual Revolution in 17^{th} & 18^{th} century
    a) Nature and Impact
    b) The Enlightenment – meaning and nature — 04
5. Darwinism and its Impact
6. Major Concept and ideologies
    a) Democracy
    b) Nationalism — 02
    c) Capitalism — 14
    d) Imperialism
    e) Liberalism
    f) Socialism
    g) Totalitarianism
    h) Existentialism

Department of Chemistry

List of Courses addresses Crosscutting Issues as per Syllabus (2013 Pattern)

Sr. No.	Programme Name	Course Code	Name of Course	Addressed Issue (Professional Ethics, Gender, Human Values, Environment and Sustainability
1	B. Sc. Chemistry	C-3	FYBSc: Chemistry Paper III (Practical Course)	Environment and Sustainability
2	B. Sc. Chemistry	CH- 223	SYBSc: Chemistry Practical	Environment and Sustainability
3	B. Sc. Chemistry	CH-347	TYBSc: Physical Chemistry Practical	Environment and Sustainability
4	B. Sc. Chemistry	CH-348	TYBSc: Inorganic Chemistry Practical	Environment and Sustainability
5	B. Sc. Chemistry	CH-349	TYBSc: Organic Chemistry Practical	Environment and Sustainability
6	M. Sc. Organic Chemistry	CHP-107	M.Sc. I: Practical Course (Physical Chemistry)	Environment and Sustainability
7	M. Sc. Organic Chemistry	CHI-127	M.Sc. I: Practical Course (Inorganic Chemistry)	Environment and Sustainability
8	M. Sc. Organic Chemistry	CHO-247	M.Sc. I: Practical Course (Organic Chemistry)	Environment and Sustainability
9	M. Sc. Organic Chemistry	CHO-347	M.Sc. II: Single Stage Preparations	Environment and Sustainability
10	M. Sc. Organic Chemistry	CHO-447	M.Sc. II: Two Stage Preparations	Environment and Sustainability
11	M. Sc. Organic Chemistry	CHO-448	M.Sc. II: Project/Industrial training/ Green Chemistry and Chemical Biology Experiments	Environment and Sustainability

2013 - PAT

F.Y.B. Sc.

Chemistry Paper - III

Practical Course

1. Physical Chemistry : 7 experiments
2. Inorganic Chemistry: 7 experiments
3. Organic Chemistry : 7 experiments

Physical Chemistry (minimum 7 experiments)

1. A) Preparation of lyphophyllic and lypophobic sols, B) purification of prepared sols by hydrolysis
2. To study the role of emulsifying agents in stabilizing the emulsion of different oils
3. Sketch the polar plots of s and p orbitals.
4. Plot the graph of following functions using excel a) exponential function b) logarithmic function c) linear functions
5. To determine the gas constant R in different units by eudiometer method.
6. To determine relative viscosity of given organic liquids by viscometer. (four liquids)
7. Investigate the adsorption of acetic acid by activated charcoal and test the validity of Freundlich /Langmuir adsorption isotherm.
8. To determine ΔH and ΔS for the following chemical reactions
   i) $Zn(s) + CuSO_4\ (aq) \rightarrow Cu(s) + ZnSO_4\ (aq)$
   ii) $3Mg(s) + 2FeCl_3\ (aq) \rightarrow 2Fe(s) + 3MgCl_2\ (aq)$

Inorganic Chemistry (minimum 7 experiments)

A. Compulsory experiments

9. Determination of hardness of water from a given sample of water by EDTA method.
10. Analysis of alkali mixture by volumetric method.

B. Any Three Inorganic qualitative analyses without phosphate and borate removal.

11) Mixture-1 (water soluble)
12) Mixture-2 (water insoluble)
13) Mixture-3 (water insoluble)

C-Any one of the following

14) To standardize NaOH solution & hence find the strength of given HCl solution.

15)To standardize $KMnO_4$ soln. & hence find strength of the given solution

D Any One of the following:

16) Estimation of % purity of a given sample of sodium chloride.

17) Analysis of brass

Organic Chemistry (Minimum 7 experiments)

18. Techniques (**any two**) - To be carried out on micro-scale
    i. Thin layer chromatography
    ii. Crystallization with M.P. and % yield of purified compound
    iii. Distillation with B.P. and % yield of purified compound
    iv. Sublimation with M.P. and % yield of purified compound
19. Estimations (**any one**)
    i. To determine amount of acetic acid in commercial vinegar
    ii. To determine amount of aspirin in APC tablets
20. Organic qualitative analysis of single organic compound at least one belonging from each type (**any four**)

    Type, Preliminary tests, elements, functional group, physical constants

    a. Benzoic acid, Salicylic acid, Cinnamic acid, Phthalic acid, oxalic acid
    b. β-Naphthol, α-naphthol
    c. Aniline, N,N-Dimethyl aniline
    d. Napthalene, Thiourea, Urea, m-Dinitrobenzene, chloroform, ethyl methyl ketone, ethyl acetate, chlorobenzene

2013 - PA

S.Y.B.Sc.

Practical Course in Chemistry CH – 223

A) Physical Chemistry practicals (Any Five)

i. To determine critical solution temperature of phenol water system
ii. To determine molecular weight of given organic liquid by steam distillation
iii. Determination of solubility of benzoic acid at different temperature and to determine ΔH of dissociation process.
iv. To study neutralization of acid (HCl) base (NaOH) and CH_3COOH by NaOH and H_2SO_4 by NaOH.
v. To determine the rate constant (or to study kinetics) of acid catalyzed ester hydrolysis.
vi. To determine the rate constant of base catalyzed ester hydrolysis.
vii. Partition coefficient of iodine between water and carbon tetrachloride.

Aim: To equip students to correlate theoretical and experimental knowledge

Objectives: After completion of practical course student should be able to

i. Verify theoretical principles experimentally
ii. Interpret the experimental data
iii. Improve analytical skills
iv. Correlate the theory and experiments and understand their importance

B) Inorganic Qualitative Analysis (Minimum Five mixtures)

i. One simple mixture (without phosphate or borate)
ii. Two Mixtures containing PO_4^{3-} (With PO_4^{3-} removal)
iii. Two Mixtures containing BO_3^{3-} (With BO_3^{3-} removal)

Inorganic Qualitative Analysis of Binary Mixtures (including phosphate and borate removal).

Sodium carbonate extract is to be used wherever necessary for detecting acidic radicals.

C) Organic Chemistry Practical

a. Organic qualitative analysis of Binary Mixtures without ether separation (**Four only**)

Two: solid-solid, one: solid-liquid, one: liquid-liquid

b. Organic Preparation: (**Any two including Crystallization, MP, TLC**)

i) Pthalic anhydride to pthalamide

ii) Glucose to osazone

iii) Acetanilide to p-bromoactanilide

iv) Benzaldehyde to dibenzylidene acetone

After completion of practical course student should be able to –

i) Verify theoretical principles experimentally.

ii) Acquire skill of crystallisation, record correct m. p. / b. p.

iii) Perform the complete chemical analysis of the given organic compound and should be able to recognize the type of compound.

iv) Write balanced equation for all the reactions, they carry in the laboratory.

v) Perform the given organic preparation according to the given procedure.

vi) Follow the progress of the reaction by using TLC technique.

vii) Set up the apparatus properly for the given experiments.

viii) Perform all the activities in the laboratory with neatness and cleanness.

Ref. 1 Organic Qualitative Analysis: A. I. Vogel

D) Analytical Chemistry Practicals (Any Five)

i. Estimation of sodium carbonate content of washing soda. (Vogel 5th Edition: 10.30 page 295).

ii. Determination of Ca in presence of Mg using EDTA. Ref.2: Page 412

iii. a) Preparation of standard 0.05 N oxalic acid solution and standardization of approx. 0.05N $KMnO_4$ solution.
b) Determination of the strength of given H_2O_2 solution with standard 0.05 N $KMnO_4$solution.

iv. Estimation of Aspirin from a given tablet and find errors in quantitative analysis.

v. Estimation of Al (III) from the given aluminium salt solution by using Erichrome Black–T indicator (Back titration method)

vi. Iodometric estimation of copper.

vii. Report on one day industrial educational visit.

Reference books

1. Analytical Chemistry by G.D. Christian 6th edition.
2. Vogel's Textbook of Quantitative chemical analysis 6th edition R.C. Denney, J.D. Barnes, M.J.K. Thomas

Aim: To equip students to correlate theoretical and experimental knowledge

Objectives: After completion of practical course student should be able to

T.Y.B.Sc.

Physical Chemistry Practicals:CH- 347

Group A:

1. Chemical Kinetics: (Any Five):

1.To study the effect of concentration of the reactants on the rate of hydrolysis of an ester.
2.To compare the relative strength of HCl and H_2SO_4 by studying the kinetics of hydrolysis of an ester.
3.To compare the relative strength of HCl and H_2SO_4 by studying the kinetics of Inversion of cane sugar using Polarimeter.
4.To study the kinetics of iodination of acetone
5.To determine the first order velocity constant of the decomposition of hydrogen peroxide by volume determination of oxygen.
6.To determine the energy of activation of the reaction between potassium iodide and potassium persulphate.
7.To determine the order of reaction between $K_2S_2O_8$ and KI by half-life method.

2. Viscosity:

To determine the molecular weight of a high polymer by using solutions of different concentrations.

3.Adsorption

To investigate the adsorption of oxalic acid /acetic acid by activated charcoal and test the validity of Freundlich / Langmuir isotherm

4. Phenol-water system

To study the effect of addition of salt on critical solution temperature of phenol water System

5. Transport number

To determine the transport number of cation by moving boundary method.

6. Refractometry (any two)

i)To determine the specific refractivity's of the given liquids A and B and their mixture and hence determine the percentage composition their mixture C.
ii) To determine the molecular refractivity of the given liquids A, B, C and D.
iii)To determine the molar refraction of homologues methyl, ethyl and propyl alcoholand show the constancy contribution to the molar refraction by -CH_2 group.

Group B

1. Colorimetry (any two)

i)Determination of λ_{max} and concentration of unknown solution of $KMnO_4$ in 2 N $H2SO_4$
ii)Determination of λ_{max} and concentration of unknown solution of $CuSO_4$.
iii)To titrate Cu^{2+} ions with EDTA photometrically.
iv)To determine the indicator constant of methyl red indicator

2. Potentiometry(any three)

i)To prepare standard 0.2 M Na_2HPO and 0.1 M Citric acid solution, hence prepare four different buffer solutions using them. Determine the pka value of these and unknown solutions.
ii)To determine the concentrations of strong acid and weak acid present in the mixture by titrating with strong base.
iii)To determine the formal redox potential of Fe^{2+}/ Fe^{3+} system potentriometrically

2013 - PA

T.Y.B.Sc.

CH-348 - INORGANIC CHEMISTRY PRACTICALS

A) Gravimetric estimations (Any 3)

1. Fe as Fe_2O_3
2. Nickel as Ni – DMG
3. Al as Aluminum oxide
4. Gravimetric estimation of Ba as $BaSO_4$ using homogeneous precipitation method.

B) Volumetric Estimations (Any 4)

1. Mn by Volhard's method
2. Estimation of NO_2^- by using $KMnO_4$.
3. Estimation of % purity of given sample of Sodium Chloride
4. Analysis of Brass-Estimation of copper by Iodometry
5. Fertilizer analysis (PO_4^{3-})

C) Inorganic preparations (Any 4)

1. Preparation of Hexamminenickel(II), $[Ni(NH_3)_6]^{2+}$.
2. Preparation of Potassium Trioxalatoferrate (III), $K_3[Fe(C_2O_4)_3]$.
3. Preparation of Tetraamminecopper (II) suplhate, $[Cu(NH_3)_4]SO_4$.
4. Preparation of Manganese (III) acetylacetonate $[Mn(acac)_3]$.
5. Preparation of Tris(Thiourea)Copper (I) Chloride $[Cu(Thiourea)_3]Cl$.

D) Colorimetric Estimations (Any 2)

1. Iron by thiocyanate method.
2. Cobalt by using R-nitroso salt method.
3. Titanium by H_2O_2.

E) Separation of binary mixture of cations by Column Chromatography (3 mixtures)

(One mixture should be colorless, Zn + Al, Zn + Mg)

OR

E) Flame Photometry (Any 3)

1. Estimation of Na by flame photometry by calibration curve method.
2. Estimation of Na by flame photometry by regression method.
3. Estimation of K by flame photometry by calibration curve method.
4. Estimation of K by flame photometry by regression method.

F) Qualitative Analysis (4 mixtures including Borates and Phosphates)

G) Visit to a chemical industry and report writing is compulsory.

Reference Books: **Ref. 1** General Chemistry Experiment – Anil J Elias (University press).
Ref. 2 Vogel Textbook of Quantitative Chemical Analysis G.H. Jeffery, J. Basset.
Ref. 3 Quantitative Chemical Analysis S. Sahay (S. Chand & Co.).
Ref. 4 Quantitative Analysis R.A. Day, Underwood (Prentice Hall).
Ref. 5 Practical Chemistry K.K. Sharma, D. S. Sharma (Vikas Publication).
Ref. 6 Vogel's Textbook of Quantitative Chemical Analysis.
Ref. 7 Monograph on Green Chemistry Laboratory Experiments by Green Chemistry Task Force Committee, DST.
Ref. 8"Experimental Methods in Inorganic Chemistry." Tanaka, J. and Suib, S.L., Prentice Hall, New Jersey, 1999.

T.Y.B.Sc. 2013 - PAT

Organic Chemistry Practical (CH-349)

A) Separation of Binary Mixtures and Qualitative Analysis (8 Mixtures)

Solid-Solid (4 Mixtures), Solid-Liquid (2 Mixtures), Liquid-Liquid (2 Mixtures).

At least one mixture from each of the following should be given-Acid-Base, Acid-Phenol, Acid-Neutral, Phenol-Base, Phenol-Neutral, Base-Neutral and Neutral- Neutral.

Name and structure of the separated components of the binary mixture is not necessary. Students are expected to record the- Type, Separation of mixture, Preliminary tests, Physical constants, Elements and Functional groups only. The purified samples of the separated components should be submitted. Separation and qualitative analysis of the binary Mixtures should be carried out on micro scale using micro scale kits.

B) Organic Estimations (Four)

i. Estimation of acetamide.

ii. Estimation of Glucose.

iii. Estimation of Ethyl benzoate.

iv. Determination of Molecular weight of Monobasic acids by Volumetric Methods.

v. Determination of Molecular weight of Dibasic acids by Volumetric Methods.

C) Organic Preparations (Eight)

Preparation of: Adipic acid from cyclohexanone (Oxidation by Con. HNO_3)

Benzoquinone from Hydroquinone (Oxidation by $KBrO_3/K_2CrO_3$)

P-nitroacetanilide from Acetanilide (Nitration)

B-Napthyl ether from B-napthol (Methylation by DMS, NaOH)

Hippuric acid from Glycine (Benzoylation)

P-Iodonitrobenzene from P-Nitroaniline (Sandmeyer Reaction)

Benzoic acid from Ethyl benzoate (Ester hydrolysis)

P-Bromacetanilide from Acetanilide (Bromination)

Paraacetomol from P-Hydroxyaniline (Acetylation)

Ethylbenzene from Acetophenone (Wolff Kishner reduction)

2013 - PAT

M.Sc.-I: Practical

CHP-107: Physical Chemistry Practical (5 Credits)

A) Conductometry: (Atleast three)

1. Hydrolysis of NH_4Cl or CH_3COONa or aniline hydrochloride.
2. Determination of $\lambda 0$ or $\lambda\alpha$ and dissociation constant of acetic acid.
3. Hydrolysis of ethyl acetate by NaOH.
4. Determination of ΔG, ΔH, and ΔS of silver benzoate by conductometry.
5. Determination of critical micellar concentration (CMC) and ΔG of micellization of sodium dodecyl sulphate (SDS).

B) Potentiomerty: (at least three)

1. Stability Constant of a complex ion.
2. Solubility of a sparingly soluble salt.
3. To determine the ionic product of H2O
4. Estimation of halide in mixture.

C) pH metry:

1. Determination of the acid and base dissociation constant of an amino acid and hence the isoelectric point of the acid.
2. Determination of dissociation constants of tribasic acid (phospheric acid)

D) Polarography:

1. Determination of half wave potential E 1/2 and unknown concentration of an ion.
2. Amperometric titration of $Pb(NO_3)_2$ with $K_2Cr_2O_7$.

E) Colorimetry:

1. Analysis of a binary mixture.
2. Copper EDTA photometric titration.

F) Radioactivity: (at least two)

1. Estimation of Mn in tea leaves by NAA.
2. Half-life of a radioactive nuclide and counting errors.
3. Determination of E_{max} of β radiation and absorption coefficients in Al.

G) Chemical Kinetics: (at least two)

1. Kinetic decomposition of diacetone alcohol by dilatometry.
2. Determination of an order of a reaction.
3. Brönsted primary salt effect.

H) Non-Instrumental: (at least five)

1) Determination of surface excess of amyl alcohol or TX-100 surfactant by Capillary rise method.
2) Statistical treatment of experimental data.
3) Determination of molecular weight by steam distillation.
4) Glycerol radius by viscosity.
5) Partial Molar Volume (Polynometry) Determination of the densities of a series of solutions and to calculate the molar volumes of the components.
6) Surface area analysis by BET method e.g. industrial pigment.
7) Analysis of crystal structure from single crystal X-ray pattern.

References:

1. Practical physical chemistry, A. Findlay, T.A. Kitchner (Longmans, Green and Co.)
2. Experiments in Physical Chemistry, J.M. Wilson, K.J. Newcombe, A.r. Denko. R.M.W. Richett (Pergamon Press)
3. Senior Practical Physical Chemistry, B.D. Khosla and V.S. Garg (R. Chand and Co., Delhi.).
4. Experimental Physical Chemistry by D. P. Shoemaker, Mc. Growhill, 7th Edition, 2003.
5. Physical chemistry by Wien (2001)

2013 PAT

M.Sc. -I

CHI-107: Inorganic Chemistry Practical (5 Credits)

Part-I: Ore analysis (at least two of the following) **(Ref. -1)**

a. Determination of Silica and Manganese in pyrolusite ore.
b. Determination of Copper and iron from chalcopyrite ore.
c. Determination of silica and iron from hematite ore.

Part-II: Alloy Analysis (at least two of the following) **(Ref. -1)**

a. Determination of tin and lead from solder.
b. Determination of iron and chromium from mild steel.
c. Determination of copper and nickel from cupronickel.

Part-III: Inorganic Synthesis and Purity with respect to metal (any five) **(Ref. – 2)**

a. $Mn(acac)_3$
b. Chloro penta-ammine cobalt (III) chloride
c. Nitro penta-amminecobalt (III) chloride
d. Nitrito penta-amine cobalt (III) Chloride.
e. Potassium tri-oxalato aluminate
f. Tris(ethylene di ammine) Ni(II) thiosulphate.
e.Bis[TrisCu(I)thiourea]

Part-IV: Ion – exchange chromatography (Any one experiment) **(Ref. -1 and 3)**

a) Separation of mixture of Zn(II) and Cd(II) using Amberlite IRA 400 anion exchanger and quantitative estimation of separated ions Zn(II) and Cd(II)
b) Separation of mixture of Zn(II) and Mg(II) using Amberlite IRA 400 anion exchanger and quantitative estimation of separated ions Zn(II) and Mg(II)

Part-V: Spectrophotometry (all two experiments)

a. Estimation of phosphate from waste water by calibration curve method **(Ref. -4)**
b. Determination of equilibrium constant of M – L systems Fe (III) – Salicylic acid or Fe(III)–Sulphosalicylic acid or Fe(III)–β–resorcilic acid by Job's continuous variation method. (Ref.-3)

c. Determination of iron by solvent extraction techniques in a mixture of Fe(III) +AL(III) or Fe(III) + Ni(III) using 8–hydroxyquinoline reagent. (Ref. -1)

or

c) Determination of Cu(II) by solvent extraction as Dithiocarbamate/8-Hydroxyquinoline complex (Ref-1,3)

Part-VI: Inorganic characterization techniques (any one of the following)

a. Solution state preparation of $[Ni(en)_3]S_2O_3$, $[Ni(H_2O)_6]Cl_2$, $[Ni(NH_3)_6]Cl_2$. Record absorption spectra in solution of all three complexes and analyse it. Arrange three ligands according to their increasing strength depending on your observations. (Ref. -5)

b. Determination of magnetic susptibility (χ_g and χ_m) of mercury tetracyanato cobalt or Fe(acac)$_3$ or Ferrous ammonium sulfate by Faraday or Gouy method. **(Ref. -3)**

Part-VII: Synthesis of Nano materials (any one of the following)

a) Synthesis of nano size ZnO, its characterization by UV-Visible spectroscopy and removal of dye by ZnO-photocatalysis

b) Synthesis of nano size α-Fe_2O_3 and study of adsorption of phosphate on it **(Ref-2)** **(Ref-2)**

Part-VIII: Conductometry (any one of the following).

a) Verification of Debye Huckle theory of ionic conductance for strong electrolytes KCl,$BaCl_2$ K_2SO_4, $K_3[Fe(CN)_6]$ (Ref. -3)

b) Structural determination of metal complexes by conductometric measurement. **(Ref-3)**

c) To study complex formation between Fe(III) with sulfosalicylic acid by conductometry (Ref-3).

Part-IX: (any one of the following)

a) Synthesis and photochemistry of $K_3[Fe(C_2O_4)_3]$ $3H_2O$. **(Ref-4)**

b) Kinetics of substitution reaction of $[Fe(Phen)_3]^{2+}$ **(Ref-3)**

Part-X: Table work

a) Data analysis, error analysis, least squares method. **(Ref-3)**

Reference Books:

1) Text book of Quantitative Analysis, A.I. Vogel 4th cdn (1992).
2) Experimental Inorganic Chemistry, Mounir A. Malati, Horwood Series in Chemical Science (Horwood publishing, Chichester) 1999.
3) Experiments in Chemistry, D. V. Jahagirdar, Himalaya Publishing House
4) General Chemistry Experiments, Anil. J Elias, University press (2002)
5) Ligand Field Theory, B. N. Figgis.

2013-Pt

M.Sc. I

CHO-247: Organic Chemistry Practical **(5 Credits)**

1. **Use of chemistry software like MOPAC, ISIS draw, Chem office**
2. **Purification techniques** (Demonstrations)
   a) Purification of solvents and reagents using techniques like crystallization, distillation, steam distillation, vacuum distillation, drying and storage of solvents, sublimation etc.
   b) Chromatography: TLC, Column, paper
   c) Solvent extraction using soxhlet extractor
3. **Three component mixture separation using ether**. (8 mixtures minimum including amino acid)
4. **Single stage preparations (5 preparations)**
   a) 2-Methoxy naphthalene to 1-formyl-2- methoxy naphthalene
   b) Toluene to 4-methyl acetophenone
   c) Anthranilic acid to 2-iodo /2-choro benzoic acid
   d) Cyclohexanol to cyclohexanone
   e) Benzophenone to diphenyl methane
   f) Benzyl cyanide to henyl acetic acid
   g) Benzaldehyde to chalcone
   h) Gycine to Benzoylglycine
   i) Nitrobenzene to m-di-nitrobenzene
   j) m-di-nitrobenzene to m-nitroaniline
   k) Benzoic acid to ethylbenzoate

CHO-453: Designing Organic Synthesis and Asymmetric Synthesis

[4 credits, 48 Lectures]

1. Designing of organic synthesis: Protection and de-protection of hydroxyl, amino, carboxyl, ketone and aldehyde functions as illustrated in the synthesis of polypeptide and polynucleotide, enamines, Umpolung in organic synthesis, Reterosynthesis. (24L)

2. Principles and applications of asymmetric synthesis: (24L)
stereoselectivity in cyclic compounds, enantio-selectivity, diastereo-selectivity, enatiomeric and diastereomeric excess, stereoselective aldol reactions. Cram's rule, Felkin Anh rule, Cram's chelate model, Asymmetric synthesis, use of chiral auxiliaries, chiral reagents and catalysts, asymmetric hydrogenation, asymmetric epoxidation and asymmetric dihydroxylation. Ref. 3 chapters 33, 34, 35

1. Designing of organic synthesis – S. Warren (Wiley)
2. Some modern methods of organic synthesis – W. Carruthers (Cambridge)
3. Organic chemistry – J. Clayden, N. Greeves, S. Warren and P. Wothers (Oxford Press)
4. Organic synthesis – Michael B. Smith
5. Advanced organic chemistry, Part B – F. A Carey and R. J. Sundberg, 5th edition (2007)
6. Guidebook to organic synthesis-R K Meckie, D M Smith and R A Atken
7. Organic synthesis- Robert E Ireland
8. Strategic Applications of named reactions in organic synthesis-Laszlo Kurti and Barbara Czako

M.Sc. II 2013 - PAT

M.Sc. II: Organic Chemistry Practical

CHO-347: (A) Single stage preparations

[6 Credits]

At least Fourteen single stage and three Isolation of Natural products should carried out. The preparation should be carried out on micro scale.

1. 2-Phenyl indole (Fischer indolc synthesis),
2. 7-Hydroxy -3-methyl flavone (Baker-Venkatraman reaction),
3. Benzyl alcohol and benzoic acid from benzaldehyde (Cannizzaro reaction)
4. 4-Chlorotoluene from p-toluidine (Sandmeyer reaction)
5. Benzilic acid from benzoin (Benzilic acid rearrangement)
6. Benzopinacol (Photochemical reaction),
7. 7-Hydroxy-4-methyl coumarin (Pechmann Reaction)
8. 4-Methyl benzophenone (Friedal Craft reaction)

9. Benzanilide (Beckmann rearrangement)
10. Vanillyl alcohol from vanillin ($NaBH_4$ reduction)
11. 2- and 4-nitrophenols (nitration and separation by steam distillation)
12. Stilbene from benzyl chloride (Wittig reaction)
13. Ethyl cinnamate from benzaldehyde (Wittig reaction)
14. Triphenyl or diphenyl methyl carbinol (Grignard reaction)
15. Benzotriazole
16. 1-Phenyl-3-methyl pyrazol-5-one
17. Glucose pentaacetate
18. 2,4-diethoxycarbonyl-3,4-dimethyl pyrrole from ethyl acetoacetate
19. Quinoline from aniline Skraup synthesis)
20. Benzimidazole from benzyl
21. Cyclohexanol from cyclohexanone (LAH reduction)

B) Isolation of Natural products (Any three)

1. Caffeine from tea leaves (Soxhlet extraction)
2. Piperine from pepper (Soxhlet extraction)
3. Eucalyptus oil from leaves (Steam distillation)
4. Lycopene from tomatoes
5. Trimyristin from nutmeg
6. Cinnamaldehyde from cinnamom
7. Eugenol from clove

References:

1. Practical organic chemistry by Mann & Saunders
2. Text book of practical organic chemistry –by Vogel
3. The synthesis, identification of organic compounds –Ralph L. Shriner, Christine K.F. Hermann, Terence C. Morrill and David Y. Curtin

CHO-447 : Two stage preparations (any Ten) [6 Credits]

1. Benzaldehyde → Benzalacetophenone → Epoxide
2. 4-Nitro toluene → 4-Nitro benzoic acid → 4-Amino benzoic acid
3. Resorcinol → 4-methyl-7-hydroxy coumarin → 4-Methyl-7-acetoxy coumarin
4. Cyclohexanone → Phenyl hydrazone → 1,2,3,4-Tetrahydrocarbazole
5. Hydroquinone → Hydroquinone diacetate → 1,2,4-Triacetoxy benzene
6. Acetanilide → p-Acetamidobenzene sulphonyl chloride → P. Acetamidobenzene sulphonamide
7. p-Amino phenol → p-Acetyl amino phenol → p-Ethoxy acetanilide
8. Hippuric acid → Azalactone → 4-Benzylidene 2-phenyl oxazol-5-one
9. p-Cresol → p-Cresyl benzoate → 2-Hydroxy-5-methyl benzophenone
10. Phthalimide → N-Benzylphthalimide → Benzylamine

11. o-Nitroaniline → o-Phenylene diamine → Benzimidazole
12. Phthalic acid → Phthalimide → Anthranilic acid
13. Benzyl cyanide→ p-Nitrobenzyl cyanide→p-Nitro phenyl acetic acid
14. Hydroquinone → Hydroquinone diacetate → 2,5-Dihydroxy acetopheneone
15. Cyclohexanone→ Enamine→2-Acetyl cyclohexanone
16. α-Pinene→ Disiamyl borane→Pinanol

CHO-448: Project/Industrial training/Green Chemistry and Chemical biology experiments (any Twelve) [6 Credits]

1. Preparation of acetanilide from aniline and acetic acid using Zn dust
2. Base catalyzed aldol condensation using $LiOH.H_2O$ as a Catalyst.
3. Bromination of *trans*-stilbene using sodium bromide and sodium bromate
4. [4+2] cycloaddition reaction in aqueous medium at room temperature
5. Benzil Benzilic acid rearrangement under solvent free condition
6. Thiamine hydrochloride catalyzed synthesis of benzoin from benzaldehyde
7. Clay catalyzed solid state synthesis of 7-hydroxy-4-methylcoumarin
8. Ecofriendly nitration of phenols and its derivatives using Calcium nitrate
9. Bromination of acetanilide using ceric ammonium nitrate in aqueous medium
10. Green approach for preparation of benzopinacolone from bezopinacol using iodine catalyst
11. Preparation of 1, 1-bis-2-naphthol under grinding at room temperature.
12. Solvent free aldol condensation between 3,4-dimethoxybenzaldehyde and 1-indanone
13. Solvent free quantitative solid phase synthesis of azomethines from substituted anilines and substituted benzaldehydes.
14. Sucrose to ethyl alcohol (Baker's yeast)
15. Asymmetric reduction of EAA by using Baker's yeast

Note: i) Project/Industrial training students have to perform 6 practical from the above experiments.

ii) 20% students should be given project or industrial training.

Reference:

1. Comprehensive Practical Organic Chemistry by V.K. Ahluwalia and Renu Aggarwal
2. Monograph on Green Chemistry Laboratory Experiments by Green Chemistry Task Force Committee, DST

List of Courses addresses crosscutting issues as per Syllabus (2013 Pattern)

Sr. No.	Programme Name	Course code	Name of Course	Addressed issue (Professional Ethics, Gender, Human Values, Environment and Sustainability)
1	B. Sc. Mathematics	MT 101	Algebra and Geometry	Professional Ethics
2	B. Sc. Mathematics	MT 102	Calculus and Differential equations	Professional Ethics
3	B. Sc. Mathematics	MT 103	Mathematics Practicals	Professional Ethics
4	B. Sc. Mathematics	MT211	Multivariable Calculus	Professional Ethics
5	B. Sc. Mathematics	MT212(B)	Laplace Transform and Fourier Series	Professional Ethics
6	B. Sc. Mathematics	MT213	Practical based on MT211,MT212(B)	Professional Ethics
7	B. Sc. Mathematics	MT222(B)	Numerical methods and it's applications	Professional Ethics
8	B. Sc. Mathematics	MT221	Linear Algebra	Professional Ethics
9	B. Sc. Mathematics	MT223	Practical based on MT221,MT222	Professional Ethics
10	B. Sc. Mathematics	MT 333	Problem Course on MT 331 and MT 332	Professional Ethics
11	B. Sc. Mathematics	MT 335	Ordinary Differential Equations	Professional Ethics
12	B. Sc. Mathematics	MT 336	Problem Course on MT 334 and MT 334	Professional Ethics
13	B. Sc. Mathematics	MT 337:A	Operations Research	Professional Ethics
14	B. Sc. Mathematics	MT 347:A	Optimization Techniques	Professional Ethics
15	B. Sc. Mathematics	MT 347:D	Graph Theory	Professional Ethics
16	B. Sc. Mathematics	MT 337:F	Number Theory	Professional Ethics

Head
Department of Mathematics
K. J. Somaiya College, Kopargaon

Principal
K. J. Somaiya College of Arts
Commerce & Science, Kopargaon

Faculty of Science

Revised Syllabus

For

B. Sc.
(Physics)

From Academic Year 2013-2014

Structure of Syllabus

UNIVERSITY OF PUNE

Proposed Structure of B.Sc. (Physics) Syllabus

1) Preamble:

The systematic and planned curricula from first year to the third year shall motivate and encourage the students for pursuing higher studies in Physics and for becoming an entrepreneur.

Objectives:

- To provide in depth knowledge of scientific and technological aspects of Physics
- To familiarize with current and recent scientific and technological developments
- To enrich knowledge through problem solving, hand on activities, study visits, projects etc.
- To train students in skills related to research, education, industry, and market.
- To create foundation for research and development in Electronics
- To develop analytical abilities towards real world problems
- To help students build-up a progressive and successful career in Physics

2) Eligibility:

1 **First Year B.Sc.:** Higher Secondary School Certificate (10+2) Science stream or its equivalent Examination as per the University of Pune eligibility norms.

2 **Second Year B.Sc.:** Keeping terms of First Year of B. Sc. with Physics as one of the subjects. Other students if they fulfil the conditions approved by the equivalence committee of Faculty of Science of the University of Pune are also eligible.

3 **Third Year B. Sc.:** Student shall pass all First Year B. Sc. courses and satisfactorily keeping terms of Second Year of B. Sc. with Physics as one of the subjects.

Note: Admissions will be given as per the selection procedure / policies adopted by the respective college, in accordance with conditions laid down by the University of Pune. Reservation and relaxation will be as per the Government rules.

F.Y. B. Sc.

(From Academic Year 2013-2014)

(To be implemented from Academic Year 2013-14

Paper	Title
Paper I	Section I (For Term 1): Mechanics
	Section II (For Term 2): Heat and Thermodynamics
Paper II	Section I (For Term 1): Physics Principles and Applications
	Section II (For Term 2): Electromagnetics
Paper III	(For Term1 and Term 2): Practical

For each theory course: 36 Lectures per term/2 Credits per term

For practical course: 20 practicals/4Credits

S. Y. B. Sc.
(Semester Pattern)
(From Academic Year 2014-2015)

Semester I

Paper	Title
Paper I (PHY211)	Mathematical Methods in Physics I
Paper II (PHY 212)	Electronics I /Instrumentation

Semester II

Paper	Title
Paper I (PHY221)	Oscillations, Waves and Sound
Paper II (PHY 222)	Optics

Practical Course (Annual)

Paper III (PHY 223) (Annual)	Practical

T. Y. B. Sc. (Physics)
(Semester Pattern)

(From Academic Year 2015-2016)

Theory Courses (Semester)	
Semester III	**Semester IV**
PH331: Mathematical Methods in Physics II	PH341: Solid State Physics
PH332: Classical Electrodynamics	PH342: Quantum Mechanics
PH333: Classical Mechanics	PH343: Thermodynamics and Statistical Physics
PH334: Atomic and Molecular Physics	PH344: Nuclear Physics
PH335: Computational Physics	PH345: Electronics II /Advanced Electronics

PH336: Elective I (Select any One)	PH346: Elective II (Select any One)
A: Astronomy and Astrophysics	F: Renewable Energy Sources
B: Elements of Materials Science	G: Physics of Nano materials
C: Motion Picture Physics	H: Microcontrollers
D: Biophysics	I: Electro Acoustics and Entertainment Electronics
E: Medical Electronics	J: Lasers
	K: Methods of Experimental Physics
Practical Courses (Annual)	
PH347: Laboratory Course I	
Phy348: Laboratory Course II	
PH349: Laboratory Course III (Project)	

Examination:

A) Pattern of Examination:

i) F. Y. B. Sc.

(a) There shall be university examination at the end of the academic year for 80 marks for each theory paper.

(b) 20 marks for each paper are allotted to the comprehensive internal assessment of the student by the respective teacher, teaching the course. The teacher shall evaluate the performance of the student for 10 marks in each term; on the basis of written tests. Ordinarily written tests shall consist of (i) multiple choice questions, (ii) True/False, (iii) basic definitions, (iv) tricky computational problems involving minimal calculations. Student is asked to answer 20 questions in 40 minutes. Each question will be of ½ marks. In the same classroom setup, different set of equivalent sets of question papers may be experimented. It will be preferred to have two such tests in each term, per course(one at the middle of the term and one at the end of the term) and average (or best of the two tests) be considered as internal marks out of 10 for that term. Internal Test shall cover the entire syllabus. If teacher prefers to have one test only, it shall be at the end of the term covering the entire syllabus).

(c) Practical examination be conducted by respective colleges at the end of the academic year 80 marks be assigned to practicals and 20 marks for internal examination, journal attendance (Journal 10 marks, Oral 10 marks).

F. Y. B. Sc.
Term -I

Physics Paper I: Section I: Mechanics

Credits: 2

Lectures: 36

Learning Outcomes:

On successful completion of this course students will be able to do the following:

1. Demonstrate an understanding of Newton's laws and applying them in calculations of the motion of simple systems.
2. Use the free body diagrams to analyse the forces on the object.
3. Understand the concepts of energy, work, power, the concepts of conservation of energy and be able to perform calculations using them.
4. Understand the concepts of elasticity and be able to perform calculations using them.
5. Understand the concepts of surface tension and viscosity and be able to perform calculations using them.
6. Use of Bernoulli's theorem in real life problems.
7. Demonstrate quantitative problem solving skills in all the topics covered.

Syllabus:

1. Newton's laws of motion **(6 Lectures)**

1.1 Newton's First and Second Law and their explanation
1.2 Working with Newton's First and Second Law
1.3 Newton's Third Law of motion and its explanation
1.4 Various types of forces in nature (explanation) and concept of field
1.5 Frame of reference (Inertial, Non-inertial)
1.6 Pseudo Forces (e.g. Centrifugal Force)

2. Work and Energy **(8 Lectures)**

2.1 Kinetic Energy
2.2 Work and Work-Energy Theorem
2.3 Calculation of Work done with
i) Constant Force
ii) Variable Force
Illustration
2.4 Conservative and Non-conservative Forces
2.5 Potential energy and conservation of Mechanical energy
2.6 Change in potential energy in rigid body motion
Mass-energy equivalence

3. Elasticity **(8 Lectures)**

3.1 Hook's law and coefficient of elasticity
3.2 Young's modulus, Bulk modulus and Modulus of rigidity
3.3 Work done during longitudinal strain, volume strain, and shearing strain
3.4 Poisson's ratio
3.5 Relation between three elastic moduli (Y, η, K)
3.6 Determination of Y of rectangular thin bar loaded at the centre
3.7 Torsional oscillations
Torsional rigidity of a wire, to determine η by torsional oscillations

4. Surface Tension **(5 Lectures)**

4.1 Surface Tension, Angle of Contact, Capillary Rise Method
4.2 Rise of liquid in a conical capillary tube
4.3 Energy required to raise a liquid in capillary tube

4.4 Factors affecting surface tension
4.5 Jeager's Method for Determination of surface tension
4.6 Applications of Surface Tension

5. Viscosity and Fluid Mechanics **(9 Lectures)**

5.1 Concept of Viscous Forces and Viscosity
5.2 Pressure in a fluid and buoyancy
5.3 Pascal's law
5.4 Atmospheric Pressure and Barometer
5.5 Pressure difference and Buoyant Force in accelerating fluids
5.6 Steady and Turbulent Flow, Reynolds's number
5.8 Equation of continuity
5.9 Bernoulli's Principle
5.10 Application of Bernoulli's equation
i) Speed of Efflux
ii) Ventury meter
iii) Aspirator Pump
iv) Change of plane of motion of a spinning ball.

Reference Books:

1. University Physics: Sears and Zeemansky, XIth edition, Pearson education
2. Concepts of Physics: H.C. Varma, Bharati Bhavan Publishers
3. Problems in Physics: P.K. Srivastava, Wiley Eastern Ltd.
4. Applied Fluid Mechanics: Mott Robert, Pearson Benjamin Cummir, VI Edition, Pearson Education/Prentice Hall International, New Delhi
5. Properties of Matter: D. S. Mathur, Shamlal Chritable Trust New Delhi
6. Mechanics: D.S Mathur, S Chand and Company New Delhi-5.

F. Y. B. Sc.
Term –II

Physics Paper I: Section II: Heat and Thermodynamics

Lectures: 36 **Credits: 2**

Learning Outcomes:

After successfully completing this course, the student will be able to do the following:

1. Describe the properties of and relationships between the thermodynamic properties of a pure substance.
2. Describe the ideal gas equation and its limitations.
3. Describe the real gas equation.
4. Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process.
5. Analyse the heat engines and calculate thermal efficiency.
6. Analyze the refrigerators, heat pumps and calculate coefficient of performance.
7. Understand property 'entropy' and derive some thermo dynamical relations using entropy concept.
8. Understand the types of thermometers and their usage.

Syllabus

1. Equation of state **(8 lectures)**

1.1 Equations of state
1.2 Andrew's experiment
1.3 Amagat's experiment
1.4 Van der Waals' equation of state
1.5 Critical constants
1.6 Reduced equation of state
1.7 Joule-Thomson porous plug experiment

2. Concepts of Thermodynamics **(8 lectures)**

2.1 Thermodynamic state of a system and Zeroth law of Thermodynamics
2.2 Thermodynamic Equilibrium
2.3 Adiabatic and isothermal changes
2.4 Work done during isothermal changes
2.5 Adiabatic relations for perfect gas
2.6 Work done during adiabatic change
2.7 Indicator Diagram
2.8 First law of Thermodynamics
2.9 Reversible and Irreversible processes

3. Applied Thermodynamics **(8 lectures)**

3.1 Conversion of Heat into Work and its converse
3.2 Carnot's Cycle and Carnot's Heat Engine and its efficiency
3.3 Second law of Thermodynamics
3.4 Concept of Entropy
3.5 Temperature-Entropy Diagram
3.6 T-dS Equation
3.7 Clausius-Clapeyron Latent heat equations

4. Heat Transfer Mechanisms **(8 lectures)**

4.1 Heat Engines
   i. Otto cycle and its efficiency
   ii. Diesel cycle and its efficiency

4.2 Refrigerators:

i. General Principle and Coefficient of performance of refrigerator
ii. The Carnot Refrigerator
iii. Simple structure of vapour compression refrigerator

4.3 Air conditioning: principle and its applications

5. Thermometry **(4 lectures)**

5.1 Temperature Scales: Centigrade, Fahrenheit and Kelvin scale

5.2 Principle, construction and working of following thermometers

i. Liquid and Gas Thermometers
ii. Resistive Type Thermometer
iii. Thermocouple as thermometer
iv. Pyre heliometer

Reference Books:

1. Physics: 4th Edition, Volume I, Resnick/Halliday/Krane JOHN WILEY & SONS (SEA) PTE LTD
2. Concept of Physics: H.C. Verma, Bharati Bhavan Publishers
3. Heat and Thermodynamics: Brijlal, N. Subrahmanyam, S. Chand & Company Ltd, New Delhi
4. Heat and Thermodynamics: Mark. W. Zemansky, Richard H. Dittman, Seventh Edition, McGraw-Hill International Editions
5. Thermodynamics and Statistical Physics: J.K. Sharma, K.K. Sarkar, Himalaya Publishing House
6. Thermal Physics (Heat & Thermodynamics): A.B. Gupta, H.P. Roy Books and Allied (P) Ltd, Calcutta.

F. Y. B. Sc.

Term I

Physics Paper II: Section I: Physics Principles and Applications **Credits: 2**

Lectures: 36

Learning Outcomes:

On successful completion of this course students will be able to do the following:

1. To demonstrate an understanding of electromagnetic waves and its spectrum.
2. Understand the types and sources of electromagnetic waves and applications.
3. To understand the general structure of atom, spectrum of hydrogen atom.
4. To understand the atomic excitation and LASER principles.
5. To understand the bonding mechanism in molecules and rotational and vibrational energy levels of diatomic molecules.
6. To demonstrate quantitative problem solving skills in all the topics covered.

Syllabus:

(12Lectures)

1. Physics of Atoms

1. The concept of atom (Atomic Models: Thompson and Rutherford)
2. Atomic Spectra
3. Bohr Theory
4. Hydrogen atom Spectra
5. Frank Hertz experiment
6. The LASER
   Absorption, Spontaneous Emission, and Stimulated Emission, Population Inversion and Laser Action, Applications of Lasers

(10 Lectures)

2. Physics of Molecules

1. Bonding Mechanisms: A Survey
   i. Ionic Bonds
   ii. Covalent Bonds
   iii. Van der Waals Bonds
   iv. The Hydrogen Bond
   v. Metallic Bond
2. Variation of potential energy with inter-atomic distance
3. Concept of Rotational and vibrational energy levels of diatomic molecule

(14 Lectures)

3. Electromagnetic Waves

1. Historical Perspective of Electromagnetic Waves
2. Production of electromagnetic waves : Hertz experiment
3. Electromagnetic spectrum
4. Planck hypothesis of photons (Concept only)
5. Sources of electromagnetic waves : Radio waves, Microwaves, Infrared, Visible light, Ultraviolet, X-rays, Gamma rays
6. Applications
   i. microwave oven
   ii. RADAR
   iii. Pyro electric thermometer
   iv. X-ray radiography and CT Scan
   v. Solar cell

F. Y. B. Sc.
Term I and II

Physics paper III: Practical

Total Practicals: 20 **Credits: 4**

Learning Outcomes:

After successfully completing this laboratory course, the students will be able to do the following:

1. Acquire technical and manipulative skills in using laboratory equipment, tools, and materials.
2. Demonstrate an ability to collect data through observation and/or experimentation and interpreting data.
3. Demonstrate an understanding of laboratory procedures including safety, and scientific methods.
4. Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena.
5. Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.

Syllabus:

1. Mechanics

1. Range and Least Count of Instruments, Measurements using various instruments and error analysis (Vernier caliper, screw gauge, travelling microscope, spectrometer etc.)
2. Determination MI of disc using ring
3. MI of Flywheel
4. Determination of coefficient of viscosity by Poiseulli's method
5. Determination of Y and n by flat spiral spring
6. Determination of Y by bending
7. Surface Tension by Jeager's method.

2. Heat and Thermodynamics

1. Interpretation of isothermal and adiabatic curves on PV diagrams (Theoretical). Theoretical study of Carnot's cycle by drawing graphs of isothermal and adiabatic curves.
2. Temperature coefficient of resistance
3. Study of thermocouple and determination of inversion temperature
4. Thermal conductivity by Lee's method
5. Specific heat of graphite

3. Light

1. Study of spectrometer and determination of angle of prism
2. Spectrometer calibration. Determination of refractive indices of different colours and plotting the graph of refractive index vs wavelength.
3. Study of total internal reflection using LASER
4. Study of polarization of light by reflection
5. Determination of wavelength of LASER light by plane diffraction grating or cylindrical obstacle.

4. Electricity and magnetism

1. Charging and discharging of a capacitor

Revised Syllabus

For

M. Sc.

(Physics)

M.Sc. (Part I) (Revised for 2013-2014 and modified with 6 courses per semester):

To be implemented from Academic Year 2014-2015

M.Sc. (Part II): To be implemented from Academic Year 2014-2015

Structure of Syllabus

Structure of M.Sc. (Physics) Syllabus

(For Affiliated Colleges)
Revised Syllabus to be implemented from June 2014
Total Credits: 100

Semester I

Course Number	Course Name
PHYUT501	Classical Mechanics (4 Credits)
PHYUT502	Electronics (4 Credits)
PHYUT503	Mathematical Methods in Physics (4Credits)
PHYUT504	Atoms and Molecules (4 Credits)
PHYUT505	Experimental Techniques in Physics I(4 Credits)
PHYUP506	Physics Lab I (5 Credits)

Semester II

Course Number	Course Name
PHYUT601	Electrodynamics (4 Credits)
PHYUT602	Solid State Physics (4 Credits)
PHYUT603	Quantum Mechanics I (4 Credits)
PHYUT604	Lasers (4Credits)
PHYUT605	Experimental Techniques in Physics II(4Credits)
PHYUP606	Physics Lab II (5 Credits)

Semester III

Course Number	Course Name
PHYUT701	Statistical Mechanics in Physics (4 Credits)
PHYUT702	Physics of Semiconductor Devices/Quantum Mechanics II (4 Credits)
PHYDT703	Departmental Course I (4 Credits)
PHYDT704	Departmental Course II (4 Credits)
PHYDP705	Special Lab I (4 Credits)
PHYUP706	Physics Lab III (5 Credits)

Semester IV

Course Number	Course Name
PHYUT801	Nuclear Physics (4 Credits)
PHYUT802	Material Science (4 Credits)
PHYDT803	Departmental Course III (4 Credits)
PHYDT804	Departmental Course IV (4 Credits)
PHYDP805	Special Lab II (4 Credits)
PHYUP806	Physics Lab IV: Project (5 Credits)

List of Departmental Courses

Departmental Course I Semester III PHYDT703/PHYDT704 (4 credits)	Departmental Course II Semester IV PHYDT803/PHYDT804 (4credits)
Medical physics I	Medical physics II
Acoustics I	Acoustics II
Energy Studies I	Energy Studies II
Physics of Thin Films	Physics of Nano materials
Astronomy and Astrophysics I	Astronomy and Astrophysics II
Electronic Instrumentation-I	Electronic Instrumentation-II
Communication Electronics	Microwave Physics and Applications
Biomedical Instrumentation I	Biomedical Instrumentation II
Atmospheric Physics I	Atmospheric Physics II
Nuclear Techniques I	Nuclear Techniques II
Microcontroller Based Instrumentation System – I	Microcontroller Based Instrumentation System – II

The college can start any two of the departmental courses in 3rd semester and corresponding two courses shown against the 3rd semester course in 4th semester.

Department of Political Science

List of Courses addresses crosscutting issues as per Syllabus (2013 Pattern)

Sr. No.	Programme Name	Course code	Name of Course	Addressed issue (Professional Ethics, Gender, Human Values, Environment and Sustainability)
1	FYBA	G1	Indian Government and Politics	Human Values
2	SYBA	G2	Government and Politics of U.K., U.S.A	Professional Ethics
3	SYBA	S1	Western Political Thought	Human Values
4	SYBA	S2	Political Sociology	Human Values
5	TYBA	G3	Political Ideologies	Professional Ethics
6	TYBA	S3	Public Administration	Professional Ethics
7	TYBA	S4	International Politics	Professional Ethics
8	MA –I (Sem.I)	PO-C1	Political Theory	Professional Ethics
9	MA –I (Sem.I)	PO-C2	Public Administration	Professional Ethics
10	MA –I (Sem.I)	PO-C3	Political Institutions in India	Professional Ethics
11	MA –I (Sem.I)	PO-O2	Political Thinkers in Modern Maharashtra	Human Values
12	MA –I (Sem.II)	PO-C4	Public policy	Professional Ethics
13	MA –I (Sem.II)	PO-C5	Issues in World Politics	Professional Ethics
14	MA –I (Sem.II)	PO-C6	Comparative Politics	Professional Ethics
15	MA –I (Sem.II)	PO-O5	Political Process in Maharashtra	Professional Ethics
16	MA – II (Sem.III)	PO-C7	Political Thinking In Modern India	Human Values
17	MA – II (Sem.III)	PO-C8	Political Sociology	Human Values
18	MA – II (Sem.III)	PO-C9	Theory Of International Relations	Professional Ethics
19	MA – II (Sem.III)	PO-O10	Indian	Professional Ethics

			Administration	
20	MA – II (Sem.IV)	PO-C10	Traditions Of Political Thought	Human Values
21	MA – II (Sem.IV)	PO-C11	Political Process In India	Professional Ethics
23	MA – II (Sem.IV)	PO-C12	Political Participation	Professional Ethics
24	MA – II (Sem.IV)	PO-O14	Party System In India	Professional Ethics

PRINCIPAL
K. J. Somaiya College
Kopargaon

University of Pune
F. Y. B. A. Political Science
G-1 General Paper
INDIAN GOVERNMENT AND POLITICS
(80. 20 pattern to be implemented from 2013-2014)

COURSE RATIONALE

This paper focuses in detail on the political processes and the actual functioning of the political system .It simultaneously studies in detail the political structure both Constitutional and Administrative. It emphasizes on local influences that derive from social stratification of castes and jatis, from language, religion, ethic and economic determinants and critically assesses its impact on the political processes.

Term I **Period**

Topic 1: Background and the Salient Features of Indian Constitution 12

a) Formation of Constituent Assembly

b) Philosophy of the Preamble for Indian Constitution c) Major Features: Parliamentary Democracy, Federalism, Independent

Judiciary –Social Justice and Social Transformation

Topic 2: Fundamental Rights, Duties and the Directive Principles of State Policy 12

a) Nature of Fundamental Rights –Major Fundamental Rights-Right to Equality, Right to Liberty, Right to Freedom of Religion, Cultural and Educational Rights b) Importance of Fundamental Duties

c) Nature and Significance of Directive Principles of State Policy

Topic 3: Federalism

a) Salient Features of Indian Federalism b) Centre –State Relations 12

c) Issues of Conflict-Water Issue, Border Issue and Sharing of Resources

Topic 4: Structure of Union Government -Legislature-Executive Judiciary

a) Union Legislature - Structure-Powers and Role

b) Union Executive-President, Prime Minister and his Cabinet- 12

Role and Functions

c) Judiciary- Nature of Judiciary, Supreme Court-Powers and Functions

Term II

Topic 5: Structure of State Government -Legislature-Executive –Judiciary

a) State Legislature - b) State Executive-Governor, Role and Functions c) Judiciary- Nature of Judiciary, High Court-Powers 12

b) Topic 6: Party System and Elections

a) Nature and Changing Pattern of Party System

b) Elections- Election Commission :-Major Features of Electoral System and Patterns Of Voting Behavior c) Rise and Role of Regional Parties

Topic 7: Role of Caste and Religion in Indian Politics

a) Caste and Politics of Identity

b) Rise of OBCs 12

c) Religion and Politics of Communalism

4

Topic 8: Issues of Regionalism and Development

a) Causes and Patterns of Regionalism 12

b) Issues of Development-Uneven Development-Leading to Regional Imbalance-Poverty Eradication, Health and Education

University of Pune
S.Y.B.A Political Science

General Paper G-2 (OR)
GOVERNMENT AND POLITICS OF U.K., U.S.A
(80-20 Pattern to be implemented from 2014-2015)

Course Objectives:
This paper studies the major constitutions of the World by adopting a comparative approach. The constitutional and legal provisions, the ideological basis, the institutional arrangement and their social and economic background are to be explained, analyzed and evaluated critically. The historical backgrounds to individual constitutions are to be emphasized to gain an understanding of its evolution. The comparative perspective enables the student to understand the differences and similarities between the various constitutional arrangements. Furthermore the political institutions are to be studied in light of the political process to gain an understanding of the dynamics of actual politics and policy making.

Term-I

	Weightage
Unit: 1 - Constitutions Nature and Evolution (U.S.A, U.K)	12
Unit: 2 - Legislature Parliament (UK): Structure, powers & Role Congress (USA): Structure, powers & Role	12
Unit: 3- Executive Prime Minister & Cabinet (U.K), President and Cabinet (U.S.A)	12
Unit: 4- Judiciary Nature, Power & Functions of Judiciary (U.K & U.S.A)	12

Term-II

Unit: 5- Political Parties Political Parties: Relation between political parties & government. Two party system, features and role of parties in UK, USA	12
Unit: 6- Interest groups Interest groups: their roles and performance in UK and USA	12
Unit: 7- State Governments State Governments in UK and USA	12
Unit: 8- social movements Social Movements: Human Rights, Women's Movement, Ethnic Movements	12

Special Paper-I
WESTERN POLITICAL THOUGHT
(80-20 Pattern to be implemented from 2014-2015)

Course Objectives:
This paper studies the classical tradition in political theory from Plato to Marx with the view to understand how the great Masters explained and analysed political events and problems of their time and prescribed solutions. The texts are to be interpreted both in the historical and philosophical perspectives to understand the universality of the enterprise of political theorizing. The limitations of the classical tradition, namely its neglect of women's concerns and issues and the non-European world are critically examined. The legacy of the thinkers is explained with the view to establish the continuity and change within the Western political tradition.

Term-I	**Weight age**
Unit: 1 - Plato a) Ideal State & Philosopher King b) Views on Education c) Views on Justice & Communism	12
Unit: 2 - Aristotle a) Views on State b) Views on Property, Views on Slavery c) Views on Revolution	12
Unit: 3 - Machiavelli a) Views on Human Nature b) Views on Religion & Morality c) Theory of Statecraft	12
Unit: 4 – J.S.Mil a) Views on Utilitarianism b) Views on Liberty c) Views on Representative Government & State	12
Term-II	
Unit: 5 – Karl Marx a) Historical Materialism b) Theory of Class & Struggle c) Theory of State & Revolution	12
Unit: 6 - Hobbes a) State of Nature b) Views on Human Nature c) Theory of Social Contract	12
Unit: 7 – John Locke a) Theory of Social Contract b) Views on natural Rights c) Views on civil society & State	12
Unit: 8 - Rousseau a) State of Nature & Views on Human Nature b) Theory of General Will c) Theory of Social Contract	12

Special Paper-II

POLITICAL SOCIOLOGY

(80-20 Pattern to be implemented from 2014-2015)

Section I

1. Definition, Nature and Scope of Political Sociology
2. Intellectual Foundation of Political Sociology
a) Marx b) Max Weber c) Behavioral Approach
3. Political Culture.
a) Meaning and Nature
b) Types of Political Culture
4. Political Socialization
a) Process and Agencies of Socialization

Section II
5. Political Ideology
a) Meaning and Nature
6. Political Participation
a) Meaning and Nature
b) Levels of Participation
c) Agencies of Recruitment
7. Legitimacy and Influence
a) Meaning and Nature
b) Types
8. Political Change, Political Development.
a. Meaning and Nature
b. Types of Political Change
c) Concept of Political Development

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE.

POLITICAL SCIENCE

Syllabus for TYBA

80:20 Pattern to be implemented from 2015-16

SYLLABUS FOR TYBA POLITICAL SCIENCE (G-3)

POLITICAL IDEALOGIES

Course Rationale:

This paper studies the role of different political ideologies and their impact in politics. Each ideology is critically studied in its historical context. In course of its evolution and development, the different streams and subtle nuances within each ideology, the changes and continuities in its doctrine and its relevance to contemporary times are highlighted. The close link between an idea and its actual realization in public policy needs to be explained as well. The philosophical basis of the ideologies is emphasized with special emphasis on key thinkers and their theoretical formulations. The legacy of all the major ideologies is to be critically assessed.

SECTION-I

UNIT-I: - Ideology **08**

a) Origin, Meaning, Definition

b) Nature and Scope

UNIT-II: - Nationalism **14**

a) Meaning, Definitions and Elements

b) Progressive and Reactionary

c) Internationalism

UNIT-III: - Democratic Socialism **14**

a) Meaning, Nature and Features

b) Achievements and Limitations

c) Types : Febianism, Syndicalism, Guild Socialism

UNIT-IV: - Fascism **12**

a) Factors responsible for the rise of Fascism

b) Principles

c) Corporate State

SECTION-II

UNIT-V: - Marxism **12**

a) Historical Materialism

b) Theory of Surplus Value

c) Marxian State

UNIT-VI: - Phule-Ambekarism **12**

a) Equality

b) Religion

c) Democracy

UNIT-VII: - Gandhism **12**

a) Truth and Non-Violence

b) Theory of Satyagraha

c) Gram Swaraj

UNIT-VIII: - Feminism **12**

a) Meaning and Nature

b) Liberal Feminism

c) Feminism in India : Caste, Patriarchy, Women's Representation

SYLLABUS FOR TYBA POLITICAL SCIENCE (S-3)
PUBLIC ADMINISTRAION

Course Rationale:

This paper is an introductory course in Public Administration. The essence of Public Administration lies in its effectiveness in translating the governing philosophy into programmes, policies and activities and making it a part of community living. The paper covers personnel public administration in its historical context thereby proceeding to highlight several of its categories, which have developed administrative salience and capabilities to deal with the process of change. The recent developments and particularly the emergence of New Public Administrations are incorporated within the larger paradigm of democratic legitimacy. The importance of legislative and judicial control over administration is also highlighted

SECTION-I

UNIT-I: - Public Administration 12

a) Meaning
b) Nature
c) Scope and Significance

UNIT-II: - New Public Administration 12

a) Evolution
b) Salient Features
c) Goals

UNIT_III:- Approaches to Public Administration. 12

a) Traditional Approach
b) Behavioral Approach
c) System Approach

UNIT-IV: - Governance 12

a) Idea of Good Governance
b) E-Governance
c) Public Private Partnership

SECTION-II

UNIT-V:- Bureaucracy 12

a) Meaning and Definitions
b) Administrative Reforms

UNIT-VI: - Personnel Administration 12

a) Recruitment
b) Training
c) Promotion

UNIT-VII: - Budget 12

a) Meaning and types
b) Budgetary Process in India

7

UNIT-VIII: - Accountability and Control 12

a) Administrative Accountability
b) Legislative Control
c) Judicial Control

SYLLABUS FOR TYBA POLITICAL SCIENCE (S-4)
INTERNATIONAL POLITICS

Course Rationale:

This paper deals with concepts and dimensions of international relations and makes an analysis of different theories highlighting the major debates and differences within the different theoretical paradigms. The dominant theories of power and the question of equity and justice, the different aspects of balance of power leading to the present situation of a unipolar world are included. It highlights various aspects of conflict and conflict resolution, collective security and in the specificity of the long period of the post Second World War phase of the Cold War, of Détente and Deterrence leading to theories of rough parity in armaments.

SECTION-I:

UNIT I :- International Politics 12

a) Nature and Scope

b) Theories of Idealism and Realism

UNIT II :- Approaches to the Study of International Relations 12

a) Power Approach

b) Decision Making Approach

c) System Approach

UNIT III :- Power 12

a) Meaning

b) Elements

c) Changing Nature of the National Power

UNIT IV :- Balance of Power 12

a) Meaning and Nature

b) Characteristics

c) Changing Nature of the Balance of Power

SECTION –II

UNIT V :- Security 12

a) Meaning and definition

b) Regional Security

c) Collective Security

UNIT VI :- Diplomacy 12

a) Meaning

b) Types of Diplomacy

c) Challenges To Diplomacy

9

UNIT VII :- Disarmament 12

a) Meaning and Nature

b) Types of Disarmament

c) Issues and Challenges

UNIT VIII :- Issues in International Politics 12

a) Human Rights –Its variations and Measures

b) Terrorism – Causes and Consciousness

M.A. Political Science

Credit and Semester system (CSS)

Revised syllabus will be implemented with effect from the academic year 2013-2014 at College Centers

Compulsory Paper Semester- I M.A. Part-I (Political Science)

PO-C1 : Political Theory

Objectives: This Course introduces Political Theory as a distinctive area of inquiry that is integral to the study of politics. It highlights contemporary normative debates and places them in a historical perspective. The Course projects the global and interdisciplinary orientation of Political Theory. It also emphasises the interplay of theory and practice in the political process.

1. **Political Theory:** Nature, Significance and Resurgence.
2. **Contemporary Perspectives**: Liberal, Marxist, Feminist and Communitarian.
3. **State and Citizen:** Political Obligation, Resistance and Civil Disobedience.
4. **Key Concepts I**: Liberty, Equality and Fraternity.
5. **Key Concepts II**: Justice, Rights and Duties.
6. **Theories of Democracy**: Liberal, Radical and Cosmopolitan.

Compulsory Paper Semester- I M.A. Part-I (Political Science)

PO-C2 : Public Administration

Objectives: This course seeks to help students understand important concepts, approaches and theories of public administration. The course aims to equip students with understanding of the latest developments in the field of Public Administration. The course will be useful for students who seek to understand and analyze broad transformations in the study of public administration in the course of changes in socio-economic and political life.

1. **Public Administration**: Nature and Scope, Private-Public Debate
2. **Evolution of Public Administration**: Classical, Neo-classical, New Public Administration,
Development Administration.
3. **Major Approaches to the Study of Public Administration:** Bureaucratic Approach, Decision-Making, Systems Approach, Public Choice
4. **Governance**: Good Governance Practices and Reforms, Public Sector in the context of Liberalization.
5. **Accountability and Control**: Administrative and Financial Accountability, Civil Society and Public Administration.
6. **Contemporary Public Administration:** New Public Management, Ethics in Public Administration.

Compulsory Paper Semester- I M.A. Part-I (Political Science)

PO-C3 : Political Institutions in India

Objectives: The course introduces the student to the leading institutions of the Indian political system and to the changing nature of these institutions. Apart from explaining the structure and functions of the main institutions the course will try to acquaint students with the idea of institutional balance of power as discussed in the Indian constitution and as developed during thefunctioning of Indian democracy over the past six decades.

1. Nationalist legacies
a. Unity and Integrity b. Democracy c. Active state
2. Federal institutions
a. 'Strong centre' framework b. Autonomy and devolution c. Multilevel federalism
3. Executive
a. President and prime minister
b. Principle of collective responsibility and accountability to the legislature
c. Role of governor
4. Legislature
a. Composition and powers b. Norms of representation c. Legislative supremacy
5. Judiciary
a. Judicial review
b. Judicial interpretations of FRs and DPSPs and basic structure doctrine
c. Judicial activism
6. New institutional mechanisms of governance
a. Central Information Commission b. Central Vigilance Commission
c. The National Human Rights Commission

Optional Paper Semester- I M.A. Part-I (Political Science)

PO-O2: Political Thinking in Modern Maharashtra

Objectives: The course is an introduction to the political thinking in Maharashtra since the late 19th century. It tries to acquaint students with the main issues and concerns in the public life of a regional society as it shaped in the context of colonialism, nationalism and modernity. The course is woven around thematic issues rather than around individual thinkers in order to help students understand the essentially collective and yet diverse nature of political thought.

1. **Tradition and Reforms:** Chiplunkar, Agarkar
2. **Nationalism and Maharashtra Dharma**-Ranade , Tilak, Shinde
3. **Religion and Society**: Savarkar , Vinoba
4. **Caste Question-** Phule, Ambedkar
5. **Gender Inequalities**: Agarkar, Phule, Tarabai Shinde
6. **Satyagraha and Sarvodaya:** Javdekar, Vinoba

Compulsory Paper Semester- II M.A. Part-I (Political Science)

PO-C4 : Public policy

Objectives: The purpose of this course is to provide students an understanding of the basic concepts, theories and process of public policy. The course also seeks to help students understand policy processes and actors involved in it by studying specific policies. It attempts to help students understand and analyze policy making in practical context.

1. Public Policy
a. Concept, Nature and Scope
b. Evolution of the discipline
2. Approaches to the Study of Public Policy
a. Group Approach
b. Incremental Approach
c. Rational Choice Approach
d. Policy Networks Approach
3. Public Policy Making
a. Process: Agenda, Policy Formulation, Adoption
b. Institutions and Actors
4. Public Policy Implementation
a. Implementation and Evaluation
b. Institutions and Actors
5. Globalization and Public Policy
a. Global Policy Process
b. Role of Transnational Actors
c. Impact of Globalization on policy-making
6. Policy Analysis in India
a. Education- Right to Education
b. Health- National Rural Health Mission (NRHM)

Compulsory Paper Semester- II M.A. Part-I (Political Science)

PO-C5 : Issues in World Politics

Objectives: This course applies the theories and used to illustrate how each level of analysis the international system, the state, and the individual- to help in organizing and conceptualizing the issues. The major issues of the twenty first century- security, economics and transnational issues are presented and analyzed.

1. Foreign Policy Decision Making: State, Sovereignty and Territory-The Structure of Domestic politics- Democracy promotion
2. Transnational Actors: Global IGOs and INGOs- Globalization and Interdependence
3. Environment and Population Pressures: Resource Depletion- Energy Security
4. Power and Security -Nuclear proliferation and the new world order, Information Revolution and Soft Power
5. Coercive Diplomacy and Intervention
6. Twenty first century armed conflict: Civil war, Terrorism, nationalism and ethnic Conflicts

Compulsory Paper Semester- II M.A. Part-I (Political Science)

PO-C6 : Comparative Politics

Objectives: The purpose of this course is to acquaint the students with the sub-discipline of Comparative Politics with the following objectives

(i) To understand the trajectory of the sub-discipline.

(ii) To understand the significance of the comparative methodology

(iii) To understand the dynamics of domestic politics across the countries.

1. Approaches to the Study of Comparative Politics

a. Systems theory and structural functionalism

b. Institutionalism c. Political Economy approach

2. Organizing the state

a. Constitutions and Constitutionalism

b. Unitary State, Federations and Confederations

c. Non-democratic systems

3. Governmental Structures

a. Legislatures and Constitutionalism

b. Bureaucracy and Military c. Judiciary

4. Parties and Groups

a. Electoral Systems and Elections

b. Parties and Party – Systems c. Groups in Politics

5. Political Development

a. Modernization and Development

b. Underdevelopment c. Revolutions

6. Non-state Political Process

a. Social movements b. Non-governmental organizations

Optional Paper Semester- II M.A. Part-I (Political Science)

PO-O5 : Political Process in Maharashtra

Objectives: This course expects the students to study one state in an in-depth manner to understand how the political process evolves at the state level. It will also allow the students to do assignments based on field studies. The study is to be done from socio-historical as well as political economy perspectives. The course seeks to sensitize students to the changes in the political process over the period of over half a century from Congress domination to a bipolar competition and from Maratha hegemony to the crisis of hegemony.

1. Politics before 1960: a) Non-Brahman Movement and its impact on State politics b) Movement for the formation of Maharashtra State

2. Regionalisms and Sub-regionalism: a) Politics of regional and linguistic identity; b) Issue of backwardness and regional imbalances; c) Demand for separate Vidarbha State

3. Caste and Politics: a) Rise of Maratha hegemony; b) Dalits politics; c) Challenges to Maratha hegemony

4. Political Economy: a) The cooperative sector; b) Agrarian interests; c) Rise of urban interests

5. Electoral politics: a) Dominant party system—1957-76; b) Crisis of dominant party system—1977-1995; c) Rise of competitive coalition system—1990 to the present

6. Politics of Local governments: a) Rural local politics after since 1992; b) Politics in Mumbai; c) Politics of urban areas

UNIVERSITY OF PUNE
Political Science
Syllabus for M. A. Part II
Credit and Semester System to be implemented from 2013-14 at college centers
M. A. Part II Semester III

PO-C7: Political Thinking in Modern India

Objectives: The course introduces the student to the key ideas of political thinking in modern India as it shaped in the colonial context. The course is woven around ideas/ issues and **not around individual thinkers.** Students will be encouraged to understand and decipher the diverse and often contesting ways in which ideas of nationalism, democracy and social transformation were discussed by leading Indian thinkers.

1. Imagining the Modern: Rammohan Roy, Nehru
2. The idea of the nation : Tilak, Azad
3. Democracy: Ambedkar, Gandhi
4. Liberty, Equality, Justice: Lohia, Periyar
5. Economic Transformation and Development: M N Roy, Nehru
6. Swarajya and Sarvodaya: Gandhi, Jayprakash Narayan

PO-C8: Political Sociology

Objectives: This Course will introduce the overall scope of the sub-discipline of political sociology. The focus of the course will be on the political sociology of power. The emphasis is on the nature of power in modern societies—more in the form of organizations and social formations than as individual power. Students are also expected to understand different forms of justifications of power and the role of ideology in this regard. State will be studied as a repository of power in society while class and patriarchy are two instances of how the nature of power is shaped by social factors.

1. Meaning and intellectual foundations of political sociology:
a. Origins b. Legacy of Marx and Weber
2. Power and Authority:
a. Meaning and nature of Power and Authority,
b. Sources of power and authority
3. Ideology and Hegemony:
a. Role of Ideology and End of Ideology debate
b. Meaning of hegemony
4. State, Military and bureaucracy:
a. State and Globalization
b. Military and Bureaucracy as apparatuses of state
5. Class:
a. Meaning and nature
b. Criticisms of Marx's class model
6. Patriarchy:
a. Meanings of the term b. Caste, Race, Religion and patriarchy

PO-C9: Theory of International Relations

Objectives: This course introduces the students to the evolution and important theories. Students need a brief history of international politics to understand why we study the subject and how current scholarship is informed by what preceded it. Theories provide interpretative frameworks for understanding what is happening in the world and the levels of analysis. Competing theories are presented.

1. Introduction: The end of the Cold war, the Classical tradition and International Change
2. Realism, Liberalism, Marxism
3. Behaviouralism and Systemic explanations, Structure and Polarity.
4. Geopolitical and Conflict Theories
5. Positivist and Post Positivist debates
a. Critical theory, post-modernism
b. Constructivism and Normative theory.
6. New Issues – Environment, Gender.

PO-O10: Indian Administration

Objectives: The purpose of this course is to provide students with broad understanding of key dimensions of Indian Administration functioning at different levels. The objective of the course is to help students to understand and analyze the administrative reforms introduced recently to make administration people-centric and to what extent that goal has been realized.

1. Evolution
a. Colonial Legacy
b. Context: Value premises, Parliamentary Democracy, Federalism
2. Central Administration
a. Prime Minister, Prime Minister's Office (PMO) and Council of Ministers
b. Central Secretariat and Cabinet Secretariat
3. State Administration
a. Governor- Role and Responsibilities
b. Chief Minister and Council of Ministers
c. State Secretariat and Directorates
4. Restructuring Indian Administration
a. Civil Service Reform in the context of Liberalization
b. New Regulatory Institutions
5. Citizen Centric Administration- Some Initiatives
a. Citizens' Charter
b. Right to Information (RTI)
c. E-Governance
6. Challenges Before Indian administration
a. Governance challenges
b. Socio-economic challenges
c. Political challenges

M. A. Part II Semester IV

PO-C10: Traditions of Political Thought

Objectives: This Course is meant to serve as a window on the major traditions of thought that have shaped political discourse in different parts of the world over the last three millennia. It stresses the great diversity of social contexts and philosophical visions that have informed the ideas of key political thinkers across epochs. The chief objective is to project the history of political thought as a series of critical, interconnected and open-ended conversations about the ends and means of the good life.

1. Ancient Era: Confucius, Plato
2. Medieval Era: Abu Nasr al-Farabi, Thomas Aquinas
3. Early Modern Era: Niccolo Machiavelli, John Locke
4. Modern Era: Jean-Jacques Rousseau, G. W. F. Hegel
5. Industrial Era: John Stuart Mill, Karl Marx
6. Colonial Era: M. K. Gandhi, Frantz Fanon

PO-C11: Political Process in India

Objectives: The course will introduce to the student the key issues and details of the political process in post independence India. It will also try to develop among students a perspective to understand and analyse Indian politics. The aim is to help students understand the expansive meaning of political process as it shapes in the arena of electoral and party politics, in the form of mass mobilizations and as politics of interests.

1. Overview of electoral politics
a. 1951-1967 b. 1968-1989 c. 1990-2009
2. Nature of party system
a. One party dominance
b. Competitive multi party system
3. Politics of Regionalism
a. Politics of language
b. Issues of autonomy and ethnicity
c. Inter- state disputes
4. Role of caste in Indian politics
a. Dalit politics
b. OBC politics
c. Limits of caste politics post1999n
5. Political economy
a. Economic reforms
b. Inequalities and redistribution
6. Politics of mass mobilizations
a. Naxalite movements
b. Farmers' movements
c. NGOs

PO-C12: Political Participation

Objectives: This course is a continuation of the study of power. Political action is seen as integrally related to search for and justifications of power. Political socialization is the process that shapes the durable set of attitudes and beliefs which affect nature and extent of participation. Public opinion also shapes political activity. The course expects that students will go beyond the study of routine participation and understand the relevance of collective action in the form of social movements and/or collective violence.

1. Political Socialization and Political Culture:
a) Meaning
b) Socialization as reservoir of support
c) Idea of civic culture
2. Public Opinion:
a) Meaning and relation with political culture
b) Media and Public Opinion
3. Routine Political participation:
a) Costs and Benefits of political participation
b) Determinants of political participation
4. Women and Politics:
a) Extent of women's participation
b) Measures for ensuring fair participation of women in politics
5. Social Movements:
a) Meanings
b) Typologies
c) New Social Movements
6. Collective Violence:
a) Violence as participation
b) Forms of collective violence

PO-O14: Party System in India

Objectives: The course introduces students to the nature of party system in India and to the functioning of main political parties operating in the system. The course will also acquaint students with analytical perspectives on party politics in India.

1. Early phase of party politics
a. Nationalist movement and issues of representation b. Party politics up to 1950
2. Congress
a. Congress dominance b. Decline of the Congress c. Congress resurgence
3. BJP
a. BJS b. Rise of the BJP c. BJP's stagnation post 1999
4. Other all- India parties
a. Left parties b. BSP
5. State parties
a. Role before 1980 b. Rise of regional parties after 1980
6. Perspectives on party politics in India
a. Dominant party system b. Convergence party system

17.	B. Sc. Computer Science	CS-341	TYBSC CS: OperatingSystem (Sem-IV)	Professional Ethics
18.	B. Sc. Computer Science	CS-342	TYBSC CS: Compilerconstruction (Sem-IV)	Professional Ethics
19.	B. Sc. Computer Science	CS-343	TYBSC CS: ComputerNetworks –II (Sem-IV)	Professional Ethics
20.	B. Sc. Computer Science	CS-344	TYBSC CS: Internet Programming –II (Sem-IV)	Professional Ethics
21.	B. Sc. Computer Science	CS-345	TYBSC CS: ProgrammingIn Java – II (Sem-IV)	Professional Ethics
22.	B. Sc. Computer Science	CS-346	TYBSC CS: ComputerGraphics (Sem-IV)	Professional Ethics
23.	B. Sc. Computer Science	CS-347	TYBSC CS: Practicals Based on CS-331 & CS-341 (Annual Pattern)	Professional Ethics
24.	B. Sc. Computer Science	CS-348	TYBSC CS: Practical Based on CS-335 & CS- 344 & Computer GraphicsUsing Java.	Professional Ethics
25.	B. Sc. Computer Science	CS-349	TYBSC CS: Practicals Based on CS-334 & CS-344 & Project (AnnualPattern)	Professional Ethics
26.	M. Sc. Computer Science	CS-101	FY M.Sc. CS: Principlesof Programming Languages (Annual Pattern)	Professional Ethics
27.	M. Sc. Computer Science	CS-102	FY M.Sc. CS: AdvancedNetworking (Sem-I)	Professional Ethics
28.	M. Sc. Computer Science	CS-103	FY M.Sc. CS: DistributedDatabase Concepts	Professional Ethics
29.	M. Sc. Computer Science	CS-104	FY M.Sc. CS: Design andAnalysis of Algorithms	Professional Ethics
30.	M. Sc. Computer Science	CS-104	FY M.Sc. CS: NetworkProgramming (Sem-I)	Professional Ethics
31.	M. Sc. Computer Science	CS-201	FY M.Sc. CS: DigitalImage Processing	Professional Ethics
32.	M. Sc. Computer Science	CS-202	FY M.Sc. CS: AdvancedOperating Systems	Professional Ethics
33.	M. Sc. Computer Science	CS-203	FY M.Sc. CS: Data Mining and Data Warehousing (Sem-II)	Professional Ethics
34.	M. Sc. Computer Science	CS-204	FY M.Sc. CS: Project	Professional Ethics
35.	M. Sc. Computer Science	CS-206	FY M.Sc. CS: ArtificialIntelligence (Sem-II)	Professional Ethics
36.	M. Sc. Computer Science	CS-301	SY M.Sc. CS: Software Metrics & Project Management (Sem-III)	Professional Ethics
37.	M. Sc. Computer Science	CS-302	SY M.Sc. CS: MobileComputing (Sem-III)	Professional Ethics
38.	M. Sc. Computer Science	CS-303	SY M.Sc. CS: Soft Computing (Sem-III)	Professional Ethics
39.	M. Sc. Computer Science	CS-304	SY M.Sc. CS: Project	Professional Ethics

40.	M. Sc. Computer Science	CS-305	SY M.Sc. CS: Web Services (Sem-III)	Professional Ethics
41.	M. Sc. Computer Science	CS-308	SY M.Sc. CS: Business Intelligence (Sem-III)	Professional Ethics
42.	M. Sc. Computer Science	CS-401	SY M.Sc. CS: IndustrialTraining /Institutional project (Sem-IV)	Professional Ethics

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K. J. Somaiya College of Arts
Commerce & Science, Kopargaon

~~10) Detail Syllabus with Recommended Books:~~

Title : Problem Solving Using Computers and 'C' Programming

Objective :-

i) To develop Problem Solving abilities using computers
ii) To teach basic principles of programming
iii) To develop skills for writing programs using 'C'

Syllabus

Chapter 1 Problem Solving using Computers **[8]**

1.1 Problem-Solving
1.2 Writing Simple Algorithms
1.3 Algorithms
1.4 Flowcharts

Chapter 2 Programming Languages as Tools **[3]**

2.1 Machine language R6(1.5,1.6)
2.2 Assembly language
2.3 High level languages
2.4 Compilers and Interpreters

Chapter 3 Introduction to C **[2]**

3.1 History R3(2-1), R6(1.1)
3.2 Structure of a C program R3(2-2), R6(1.8)
3.3 Functions as building blocks R3(4-1,4-2)
3.4 Application Areas
3.5 C Program development life cycle R6(1.10)
3.6 Sample programs

Chapter 4 C Tokens **[12]**

4.1 Keywords R6 (Ch 2, 3)
4.2Identifiers
4.3Variables
4.4Constants – character, integer, float, string, escape sequences
4.5Data types – built-in and user defined
4.6 Operators and Expressions Operator types (arithmetic, relational, logical, assignment, bitwise, conditional , other operators) , precedence and associativity rules.
4.7 Simple programs using printf and scanf

Chapter 5 Input and Output **[3]**

5.1 Character input and output R6(4.2 - 4.5)
5.2 String input and output
5.3 Formatted input and output

Chapter 6 Control Structures **[10]**

6.1 Decision making structures If, if-else, switch R3(5-2, 5-3), R6(5.2 - 5.8)
6.2 Loop Control structures While, do-while, for R6 (Ch 8)
6.3 Nested structures
6.4 break and continue

13.1 Format of Preprocessor directive R6(14.1 - 14.3)
13.2 File Inclusion directive
13.3 Macro substitution, nested macro, argumented macro

References

1. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, ISBN:9788120305960, PHI Learning
2. How to Solve it by Computer, R.G. Dromey, ISBN:9788131705629, Pearson Education
3. A Structured Programming Approach Using C, Behrouz A. Forouzan, Richard F. Gilberg ISBN:9788131500941, Cengage Learning India
4. Using The GNU Compiler Collection, Richard M. Stallman;The GCC Developer Community Pothi.com
5. Using the Gnu Compiler Collection, Richard M. Stallman, Gcc Developer community ISBN:9781441412768,Createspace
6. Programming in ANSI C, E. Balaguruswamy,ISBN:9781259004612,Tata Mc-Graw Hill Publishing Co.Ltd.-New Delhi

Computer Science: Paper – II : File Organization and Fundamental of Databases

Title : File Organization and Fundamental of Databases

Objective :-

i) To understand data processing using computers
ii) To teach basic organization of data using files
iii) To understand creations, manipulation and querying of data in databases

Syllabus

Chapter 1 File Organization R3
[6]

1.1 Introduction
1.2 Physical / logical files
1.3 Types of file organization (heap,sorted, indexed,hashed)
1.4 Choosing a file organization

Chapter 2 Introduction of DBMS R1(Ch 1) [6]

2.1 Overview
2.2 File system Vs DBMS
2.3 Describing & storing data (Data models (relational,hierarchical, network))
2.4 Levels of abstraction
2.5 Data independence
2.6 Structure of DBMS
2.7 Users of DBMS
2.8 Advantages of DBMS

(Algorithm to derive a Primary Key for a relation)
7.3 Concept of Decomposition
7.4 Desirable Properties of Decomposition (Lossless join & Dependency preservation)
7.5 Concept of Normalization
7.6 Normal forms (only definitions) 1NF, 2NF, 3NF, BCNF
7.7 Examples on Normalization

References

1. Database System Concepts, Henry F. Korth, Abraham Silberschatz, S. Sudarshan, ISBN:9780071289597,Tata McGraw-Hill Education
2. Database Management Systems ,Raghu Ramakrishnan,ISBN:9780071254342, Mcgraw-hill higher Education
3. Database Management Systems,Raghu Ramakrishnan and Johannes Gehrke, McGraw-Hill Science/Engineering/Math; 3 edition, ISBN: 9780072465631
4. Database Systems, Shamkant B. Navathe, Ramez Elmasri, ISBN:9780132144988, PEARSON HIGHER EDUCATION
5. Beginning Databases with PostgreSQL: From Novice to Professional, Richard Stones, Neil Matthew, ISBN:9781590594780, Apress
6. PostgreSQL, Korry Douglas, ISBN:9780672327568, Sams
7. Practical PostgreSQL (B/CD),John Worsley, Joshua Drake, ISBN:9788173663925 Shroff/O'reilly
8. Practical Postgresql , By Joshua D. Drake, John C Worsley **(O'Reilly publications)**
9. "An introduction to Database systems", Bipin C Desai, Galgotia Publications

Important to Note: It is absolutely necessary and essential that all the practicals for Paper III and Paper IV be conducted on Open Source Operating System like Linux. All the practicals related to C needs to be conducted using GCC compiler.

Paper III – Computer Science Practical Paper I

Title : Basic 'C' Programming and Database Handling practicals

Objective :-

i) Design and implement a 'C' programs for simple problems
ii) Understand appropriate use of data types and array structures
iii) Understand use of appropriate control structures

Syllabus

1. Initial 3 practical slots (12 lectures) should be used for teaching basic operating systems commands and use of editors

16	Assignment to query the tables using simple form of select statement Select <field-list> from table [where <condition> order by <field list>] Select <field-list, aggregate functions > from table [where <condition> group by <> having <> order by <>]	4
17	Assignment to query table, using set operations (union, intersect)	4
18	Assignments to query tables using nested queries	4
19	Assignment to query tables , using nested queries (use of 'Except', exists, not exists clauses	4
20	Assignment related to small case studies (Each case study will involve creating tables with specified constraints, inserting records to it & writing queries for extracting records from these tables)	4

Paper IV – Computer Science Practical Paper II#

Title : HTML5 programming and Advanced 'C' Programming practicals

Objective :-

i) Understanding basic HTML designing
ii) Writing C programs using complex data structures such as pointers, structures etc.

Syllabus

1. Initial 3 practical slots (8 lectures) should be used for teaching basic internet usage including use of browsers
2. Last 2 slots (8 lectures) are to be used for revision
3. **Remaining 80 lectures are to be utilised for the following 20 Assignments**

Computer Science : Paper IV : HTML 5 programming and Advanced 'C' Programming practicals		
No	Topic	Lectures
1	Creating simple HTML pages (use of different tags for changing fonts, foreground and background colors etc.))	4
2	HTML programming (use of lists, tables)	4
3	HTML programming using frames	4
4	HTML programming using hyperlinks	4
5	HTML programming (Creation of forms)	4

S.Y.B.Sc. Computer Science Theory Paper I
Semester – 1
CS 211- DATA STRUCTURES USING 'C'
(Compulsory Course)

Total Lectures: 48
Objective:
1. To learn the systematic way of solving problem
2. To understand the different methods of organizing large amount of data
3. To efficiently implement the different data structures
4. To efficiently implement solutions for specific problems

Prerequisites: Knowledge of C Programming Language

1. Introduction to data structures [3]
- 1.1 Concept
- 1.2 Data type, Data object, ADT
  - 1.2.1 Data Type
  - 1.2.2 Data Object
  - 1.2.3 ADT -Definition, Operation, examples on rational number
- 1.3 Need of Data Structure
- 1.4 Types of Data Structure

2. Algorithm analysis [2]
- 2.1 Algorithm – definition, characteristics
- 2.2 Space complexity, time complexity
- 2.3 Asymptotic notation (Big O, Omega Ω)

3. Linear data structures [6]
- 3.1 Introduction to Arrays - array representation
- 3.2 Sorting algorithms with efficiency
  - Bubble sort, Insertion sort, Merge sort, Quick Sort
- 3.3 Searching techniques –Linear Search, Binary search

4. Linked List [8]
- 4.1 Introduction to Linked List
- 4.2 Implementation of Linked List – Static & Dynamic representation,
- 4.3 Types of Linked List
- 4.4 Operations on Linked List
  - create, display, insert, delete, reverse, search, sort, concatenate &merge
- 4.5 Applications of Linked List – polynomial manipulation
- 4.6 Generalized linked list – Concept and Representation

S.Y.B.Sc. Computer Science Theory paper-II

Semester – I

CS-212-Relational Database Management System

(Compulsory Course)

Total Lectures: 48

Objective:-

-To teach fundamental concepts of RDBMS (PL/PgSQL)

-To teach principles of databases

-To teach database management operations

-To teach data security and its importance

-To teach client server architecture

Prerequisites: Knowledge of DBMS

1. **Relational Database Design [14]**

1.1 Preliminaries

Functional Dependencies

Basic concepts : Closure of a set of functional dependencies, Closure of attribute set, Canonical cover, Decomposition.

1.2 PL/PgSqL: Datatypes, Language structure

1.3 Controlling the program flow, conditional statements, loops

1.4 Views

1.5 Stored Functions, Stored Procedures

1.6 Handling errors and exceptions

1.7 Cursors

1.8 Triggers

2 **Transaction Concepts and concurrency control [14]**

2.1 Describe a transaction, properties of transaction, state of the transaction.

2.2 Executing transactions concurrently associated problem in concurrent execution.

2.3 Schedules, types of schedules, concept of Serializability, precedencegraph for Serializability.

S.Y.B.Sc. Computer Science Theory Paper I
Semester II

CS 221 -Object Oriented Concepts using C++

Total Lectures: 48

Objective:-

1. Acquire an understanding of basic object oriented concepts and the issues involved in effective class design
2. Write C++ programs that use object oriented concepts such as information hiding, constructors, destructors, inheritance etc.

Prerequisites: Knowledge of C Programming Language

1. Object oriented concepts [2]

1.1 Object oriented concepts
1.2 Features, advantages and Applications of OOPS

2. Introduction to C++ [6]

2.1 Data types, new operators and keywords, using namespace concept
2.2 Simple C++ Program
2.3 Introduction to Reference variables
2.4 Usage of 'this' pointer
2.5 Classes and Objects
2.6 Access specifiers
2.7 Defining Data members and Member functions
2.8 Array of objects

3. Function in C++ [8]

3.1 Call by reference, Return by reference
3.2 Function overloading and default arguments
3.3 Inline function
3.4 Static class members
3.5 Friend Concept – Function, Class

4. Constructors and destructor [4]

4.1 Types of constructors
4.2 Memory allocation (new and delete)
4.3 Destructor

S.Y.B.Sc.**Computer Science Theory paper-II**

Semester – II

CS - 222: Software Engineering

Total Lectures : 48

Objectives:-

- To teach basics of System Analysis and Design.
- To teach principles of Software Engineering
- To teach various process models used in practice
- To know about the system engineering and requirement engineering
- To build analysis model

Prerequisites: Basic knowledge of DBMS

1. System Concepts [5] (R1 : Chapter 1 & R3 : Chapter 1)

1.1 System Definition

1.2 Characteristics of a System : Organization, Subsystem, Interaction, Interdependence, Integration, Central objective, Standards, Black-box

1.3 Elements of a system : Outputs, Inputs, Processor(s), Control, Feedback, Environment, Boundaries, Interface.

1.4 Types of Systems : Physical & Abstract Systems, Open & Closed Systems, Computer-based Systems (MIS : Management Information System & DSS : Decision Support System)

2. Software and Software Engineering [5] (R2 : Chapter 1)

2.1 The Nature of Software

2.1.1 Defining Software

2.1.2 Software Application Domains

2.1.3 Legacy Software

2.2 Software Engineering

2.3 The Software Process

CS-223 : Data structures Practicals and C++ Practicals

(semester 1)

Objective:-

1. Design and implement Data structures and related algorithms
2. Understand several ways of solving the same problem.

S.Y.B.Sc.(Computer Science) : Paper III : Data Structures using C Assignments		
No	Topic	Lectures
1	Sorting Algorithms – Bubble sort, Insertion	4
2	Recursive Sorting Algorithms – Quick sort , Merge Sort	4
3	Searching Method-Linear search, Binary search	4
4	Static/Dynamic stack implementation, infix to postfix, infix to prefix and evaluation of Postfix.	8
5	Static and Dynamic Queue Implementation – Linear Queue, Circular queue	8
6	Dynamic implementation of Singly Linked List, Doubly Linked List and Circular Linked List.	8
7	Polynomial addition (Using Linked list).	4
8	Binary Search Tree Traversal: Create, add, delete, and display nodes.	8
9	Adjacency matrix to adjacency list conversion, in degree, out degree	4
10	Graph: DFS, BFS.	4

CS-224:Database Practicals & Mini Project using Software Engineering techniques

(Semester 1)

Title: Database Assignments and Mini Project using Software Engineering techniques

Objective:-

- Understanding the use of cursors, triggers, views and stored procedures
- Understanding the steps of system analysis and design
- Understanding Data requirements for a specific problem domain
- Designing Data base as per the Data requirements
- Designing queries as per the functional requirements

No	Topic	Lectures
1	Simple Queries	4
2	Nested Queries, using aggregate functions	4
3	Queries using Views	8
4	Queries using loops and conditional statements	8
5	Stored Function	12
6	Exception Handling	4
7	Cursors and Triggers	12

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Systems Programming
Code No. : CS-331

Semester III **Total Lectures : 48**

Aim : To understand the design and implementation issues of System programs that play an important role in program development.

Objectives :

- To understand the design structure of a simple editor.
- To understand the design structure of Assembler and macro processor for an hypothetical simulated computer.
- To understand the working of linkers and loaders and other development utilities.
- To understand Complexity of Operating system as a software.

.

1. Introduction **[4]**

1.1. Types of program – System program and Application program.
1.2. Difference between system programming and application programming.
1.3. Elements of Programming environment - Editor, Preprocessor, Assembler, Compiler, Interpreter, Linker and Loader, Debugger, Device drivers, Operating System.
1.4. Simulation of simple computer smac0 (hypothetical computer) -Memory, Registers, Condition Codes, Instruction format, Instruction Set, smac0 programs.

2. Editors **[2]**

2.1 Definition, need/purpose of editor.
2.2 Types of editor- Examples ed, sed, VIM & emacs
2.3 Structure of editor

3. Assembler **[10]**

3.1 Definition.
3.2 Features of assembly language, advantages
3.3 Statement format, types of statements – Imperative, Declarative, Assembler Directive.
3.4 Constants and Literals.
3.5 Advanced assembler directives (LTORG, ORIGIN, EQU),
3.6 Design of assembler – Analysis Phase and Synthesis Phase.
3.7 Overview of assembling process
3.8 Pass Structure of Assembler – One pass, Two pass assembler.
3.9 Problems of 1-pass assembler - forward reference, efficiency, Table of Incomplete Instructions.
3.10 Design of 2-pass Assembler – Pass-I and Pass-II
3.11 Data structure of 2-pass assembler.
3.12. Intermediate Code – Need, Forms-variant I and Variant II

4. Macros and Macro Processors **[10]**

4.1 Definition
4.2 Macro definition and call
4.3 Macro expansion – positional and keyword parameters
4.4 Design of Data structures to be used for Macro definition and use
4.5 Nested macro calls
4.6 Advanced macro facilities – alteration of flow of control during expansion, expansion time variable, conditional expansion, expansion time loops. (with examples)
4.7 Design of macro preprocessor – Design overview, data structure, processing of macro definition and macro expansion (Except algorithms)

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Theoretical Computer Science
Code No. : CS-332

Semester III **Total Lectures : 48**

Aim:
To have a introductory knowledge of automata, formal language theory and computability.

Objectives:
- To have an understanding of finite state and pushdown automata.
- To have a knowledge of regular languages and context free languages.
- To know the relation between regular language, context free language and corresponding recognizers.
- To study the Turing machine and classes of problems.

Prerequisite:
- Sets, Operations on sets, Finite & infinite sets Formal Language
- Relation, Equivalence Relation,(reflexive, transitive and symmetric closures)

1. Introduction [3]
1.1 Symbol, Alphabet, String, Prefix& & Suffix of Strings, Formal Language, Operations on Languages.
1.2 Regular Expressions (RE) : Definition & Example
1.3 Regular Expressions Identities.

2. Finite Automata [12]
2.1 Deterministic finite Automaton – Definition, DFA as language recognizer, DFA as a pattern recognizer.
2.2 Nondeterministic finite automaton – Definition and Examples.
2.3 NFA TO DFA : Method (From Book 4)
2.4 NFA with ε- transitions Definition and Examples.
2.5 NFA with ε-Transitions to DFA & Examples
2.6 Finite automaton with output – Mealy and Moore machine, Definition and Examples.
2.7 Minimization of DFA, Algorithm & Problem using Table Method.

3. Regular Languages [5]
3.1 Regular language-Definition and Examples.
3.2 Conversion of RE To FA-Examples.
3.3 Pumping lemma for regular languages and applications.
3.4 Closure properties of regular Languages
(Union, Concatenation, Complement, Intersection and Kleene closure)

4. Context Free Grammar and Languages [12]
4.1 Grammar - Definition and Examples.
4.2 Derivation-Reduction - Definition and Examples.
4.3 Chomsky Hierarchy.
4.4 CFG : Definition & Examples. LMD, RMD, ,Parse Tree
4.5 Ambiguous Grammar : Concept & Examples.
4.6 Simplification of CFG :
- 4.6.1 Removing Useless Symbols,
- 4.6.2 Removing unit productions
- 4.6.3 Removing ϵ productions & Nullable symbols

4.7 Normal Forms :
- 4.7.1 Chomsky Normal Form (CNF) Method & Problem

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Computer Networks -I
Code No. : CS-333

Semester III **Total Lectures : 48**

Pre-requisites: Basics of computer, Knowledge of 'C' for assignment.

Objectives: This course will prepare students in Basic networking concepts.

1. Understand different types of networks, various topologies and application of networks.
2. Understand types of addresses, data communication.
3. Understand the concept of networking models, protocols, functionality of each layer.
4. Learn basic networking hardware and tools.

Ch.No.	Name of Chapter	Reference Book
1	**Chapter 1 Introduction to Computer Networks**	**[Lectures 8]**
1.1	Computer Networks- Goals and applications – Business Application , Home Application, Mobile User, Social Issues	Book 1 CH1 (Pg. No.3 -14)
1.2	Network Hardware - Broadcast and point-to-point	Book 1 CH1 (Pg. No.14-16)
1.3	topologies – star, bus, mesh, ring etc.	Book 2 CH1 (Pg. No. 9-13)
1.4	Network Types-LAN, MAN, WAN, Wireless Networks, Home Networks, Internetwork	Book 1 CH1 (Pg. No.16-26)
1.5	Data Communication-Definition, components, data representation, Data Flow	Book 2 CH1 (Pg. No. 3-7)
1.6	Protocols &Standards De facto and De jure standard,	Book 2 CH1 (Pg. No. 19-20)
1.7	Network Software - Protocol Hierarchies -layers, protocols, peers, interfaces Network architecture, protocol stack, Design issues of the layers –addressing, error control, flow control, multiplexing and demultiplexing, routing Connection-oriented and connectionless service, Service Primitives – listen, connect, receive, send, disconnect and Berkley Socket ,the relationships of services to protocols.	Book 1 CH1 (Pg. No.26-37)
2.	Network Models	[Lectures 5]
2.1	OSI Reference Model - Functionality of each layer	Book 2 CH2 (Pg. No 29-42)

3. Page no listed above may vary according to year of publication of 4th edition but topics remain same.
4. All sub topics listed pages of respective reference books should be covered.

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T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Internet Programming I
Code No. : CS-334

Semester III **Total Lectures: 48**

Aim: To Design dynamic and interactive Web pages.
Objective:

- Learn Core-PHP, Server Side Scripting Language
- Learn PHP-Database handling.

Prerequisite: HTML.

1. **Introduction to web techniques** [8]
1.1 HTTP basics, Introduction to Web server and Web browser
1.2 Introduction to PHP
1.3 What does PHP do?
1.4 Lexical structure
1.5 Language basics
Book 1 chapter 2

2. **Function and String** [10]
2.1Defining and calling a function
2.2 Default parameters
2.3 Variable parameters, Missing parameters
2.4 Variable function, Anonymous function
2.5 Types of strings in PHP
2.6 Printing functions
2.7 Encoding and escaping
2.8 Comparing strings
2.9 Manipulating and searching strings
2.10 Regular expressions
Book 1 chapter 3 and 4

3. **Arrays** [6]
3.1 Indexed Vs Associative arrays
3.2 Identifying elements of an array
3.3 Storing data in arrays
3.4 Multidimensional arrays
3.4Extracting multiple values
3.5 Converting between arrays and variables
3.6 Traversing arrays
3.7 Sorting
3.8 Action on entire arrays
3.9 Using arrays
Book 1 chapter 5

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B.Sc. COMPUTER SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Programming in Java-I
Code No. : CS-335

Semester IV **Total Lectures: 48**

Prerequisite:

- Knowledge of C Programming language

Objective:

- To learn Object Oriented Programming language
- To handle abnormal termination of a program using exception handling
- To create flat files
- To design User Interface using Swing and AWT

1. An Introduction to Java [4]

1.1 A Short History of Java
1.2 Features or buzzwords of Java
1.3 Comparison of Java and C++
1.4 Java Environment
1.5 Simple java program
1.6 Java Tools – jdb, javap, javadoc
1.7 Java IDE – Eclipse/NetBeans (Note: Only for Lab Demonstration)

2. An Overview of Java [4]

2.1 Types of Comments
2.2 Data Types
2.3 Final Variable
2.4 Declaring 1D, 2D array
2.5 Accepting input using Command line argument
2.6 Accepting input from console (Using BufferedReader class)

3. Objects and Classes [8]

3.1 Defining Your Own Classes
3.2 Access Specifiers (public, protected, private, default)
3.3 Array of Objects
3.4 Constructor, Overloading Constructors and use of 'this' Keyword
3.5 static block, static Fields and methods
3.6 Predefined class – Object class methods (equals(), toString(), hashcode(), getClass())
3.7 Inner class
3.8 Creating, Accessing and using Packages
3.9 Creating jar file and manifest file
3.10 Wrapper Classes
3.11 Garbage Collection (finalize() Method)
3.12 Date and time processing

4. Inheritance and Interface [7]

4.1 Inheritance Basics (extends Keyword) and Types of Inheritance
4.2 Superclass, Subclass and use of Super Keyword
4.3 Method Overriding and runtime polymorphism

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Object Oriented Software Engineering
Code No. : CS-336

Semester III **Total Lectures: 48**

Prerequisites
- Knowledge of Object Oriented Concepts
- Knowledge of Classical Software Engineering

Aim
To Understand Object Oriented Modeling techniques and their applicability.

Objectives
- Understanding importance of Object Orientation in Software engineering
- Understand the components of Unified Modeling Language
- Understand techniques and diagrams related to structural modeling
- Understand techniques and diagrams related to behavioral modeling
- Understand techniques of Object Oriented analysis, design and testing

1. Object Oriented Concepts and Principles [4]
1.1 What is Object Orientation ? - Introduction , Object , Classes and Instance , Polymorphism, Inheritance
1. 2 Object Oriented System Development- Introduction, Function/Data Methods (With Visibility), Object Oriented Analysis, Object Oriented Construction
1.3 Identifying the Elements of an Object Model
1.4 Identifying Classes and Objects
1.5 Specifying the Attributes (With Visibility)
1.6 Defining Operations
1.7 Finalizing the Object Definition

2. Introduction to UML [2]
2.1 Concept of UML
2.2 Advantages of UML

3. Basic Structural Modeling [5]
3.1 Classes
3.2 Relationship
3.3 Common Mechanism
3.4 Class Diagram (Minimum three examples should be covered)

4. Advanced Structural Modeling [7]
4.1 Advanced Classes
4.2 Advanced Relationship
4.3 Interface
4.4 Types and Roles
4.5 Packages
4.6 Object Diagram (Minimum three examples should be covered)

5. Basic Behavioral Modeling [9]

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Operating Systems
Code No. : CS-341

Semester IV **Total Lectures : 48**

Aim : To understand the design and implementation issues of Operating System.

Objectives :

- To understand design issues related to process management and various related algorithms
- To understand design issues related to memory management and various related algorithms
- To understand design issues related to File management and various related algorithms

1. Introduction [2]
1.1 Operating System Structure – Simple structure, Layered approach, Micro kernels, Modules
1.2 Virtual Machines – Introduction, Benefits
1.3 System Boot

2. Process Management [4]
2.1 Process Concept – The process, Process states, Process control block.
2.2 Process Scheduling – Scheduling queues, Schedulers, context switch
2.3 Operations on Process – Process creation with program using fork(), Process termination
2.4 Interprocess Communication – Shared memory system, Message passing systems.

3. Multithreaded Programming [2]
3.1 Overview
3.2 Multithreading Models

4. Process Scheduling [8]
4.1 Basic Concept – CPU-I/O burst cycle, CPU scheduler, Preemptive scheduling, Dispatcher
4.2 Scheduling Criteria
4.3 Scheduling Algorithms – FCFS, SJF, Priority scheduling, Round-robin scheduling, Multiple queue scheduling, Multilevel feedback queue scheduling
4.4 Thread Scheduling

5. Process Synchronization [6]
5.1 Background
5.2 Critical Section Problem
5.3 Semaphores: Usage, Implementation
5.4 Classic Problems of Synchronization – The bounded buffer problem, The reader writer problem, The dining philosopher problem

6. Deadlocks [8]
6.1 System model
6.2 Deadlock Characterization – Necessary conditions, Resource allocation graph
6.3 Deadlock Prevention
6.4 Deadlock Avoidance - Safe state, Resource allocation graph algorithm, Banker's Algorithm
6.5 Deadlock Detection
6.6 Recovery from Deadlock – Process termination, Resource preemption

7. Memory Management [11]
7.1.Background – Basic hardware, Address binding, Logical versus physical address space, Dynamic loading, Dynamic linking and shared libraries

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Compiler Construction
Code No. : CS-342

Semester IV **Total Lectures : 48**

Aim :
To understand the various phases of a compiler and to develop skills in designing a compiler

Objective :
- To understand design issues of a lexical analyzer and use of Lex tool
- To understand design issues of a parser and use of Yacc tool
- To understand issues related to memory allocation
- To understand and design code generation schemes

1. Introduction [5]

1.1 Definition of Compiler, Aspects of compilation.
1.2 The structure of Compiler.
1.3 Phases of Compiler – Lexical Analysis,Syntax Analysis, Semantic Analysis, Intermediate Code generation, code optimization, code generation.
1.4 Error Handling
1.5 Introduction to one pass & Multipass compilers, cross compiler, Bootstrapping.

2. Lexical Analysis(Scanner) [5]

2.1 Review of Finite automata as a lexical analyzer,
2.2 Applications of Regular Expressions and Finite Automata (lexical analyzer, searching using RE), Input buffering, Recognition of tokens
2.3 LEX: A Lexical analyzer generator (Simple Lex Program)

3. Syntax Analysis(Parser) [20]

3.1 Definition , Types of Parsers
3.2 Top-Down Parser –
- 3.2.1Top-Down Parsing with Backtracking: Method & Problems
- 3.2.2 Drawbacks of Top-Down parsing with backtracking,
- 3.2.3Elimination of Left Recursion(direct & indirect)
- 3.2.4Need for Left Factoring & examples

3.3 Recursive Descent Parsing : Definition
- 3.3.1Implementation of Recursive Descent Parser Using Recursive Procedures

3.4 Predictive [LL(1)]Parser(Definition, Model)
- 3.4.1Implementation of Predictive Parser[LL(1)]
- 3.4.2 FIRST & FOLLOW
- 3.4.3 Construction of LL(1) Parsing Table
- 3.4.4Parsing of a String using LL(1) Table

3.5 Bottom-Up Parsers
3.6 Operator Precedence Parser -Basic Concepts
- 3.6.1Operator Precedence Relations form Associativity & Precedence
- 3.6.2 Operator Precedence Grammar
- 3.6.3 Algorithm for LEADING & TRAILING(with ex.)
- 3.6.4Algorithm for Operator Precedence Parsing (with ex.)
- 3.6.5Precedence Functions

3.7 Shift Reduce Parser
- 3.7.1Reduction, Handle, Handle Pruning
- 3.7.2Stack Implementation of Shift Reduce Parser (with examples)

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16

TITLE OF PAPER : Computer Networks -II

Code No. : CS-343

Semester IV **Total Lectures: 48**

Pre-requisites: Basics of computer networks covered last semester, Knowledge of 'C'.

Objectives: This course will prepare students in

1. Basic networking concepts.
2. Understand wired and wireless networks, its types, functionality of layer.
3. Understand importance of network security and cryptography.

Ch. No.	Name of Chapter	Reference Book
1.	Wired LANs	[Lectures 9]
1.1	IEEE Standards Data Link Layer, Physical Layer	Book 2 CH13 (Pg. No 395-397)
1.2	Standard Ethernet MAC Sublayer – Frame Format, Frame Length, Addressing, Access Method	Book 2 CH13 (Pg. No 397-402)
1.3	Physical Layer – Encoding and Decoding, 10Base5, 10Base2, 10Base-T, 10Base-F,	Book 2 CH13 (Pg. No 402-405)
1.4	Changes In The Standard – Bridged Ethernet, Switched Ethernet, Full Duplex Ethernet	Book 2 CH13 (Pg. No 406-409)
1.5	Fast Ethernet – Goals, MAC Sublayer,Topology, Implementation	Book 2 CH13 (Pg. No.409-410)
1.6	Gigabit Ethernet – goals, MAC Sublayer, Topology, Implementation	Book 2 CH13 (Pg. No 412-414)
1.7	Ten-Gigabit Ethernet – goals, MAC Sublayer, Physical Layer	Book 2 CH13 (Pg. No 416)
1.8	Backbone Networks Bus Backbone, Star Backbone, Connecting Remote LANs	Book 2 CH15 (Pg. No 456-458)
1.9	Virtual LANs Membership, Configuration, Communication between Switches, IEEE standards Advantages	Book 1 CH1 (Pg. No 458-463)
2.	Wireless LAN	[Lectures 2]
2.1	IEEE 802.11 Architecture – Basic Service Set, Extended Service Set, Station Types	Book 2 CH14 (Pg. No421-422)

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Internet Programming II
Code No. : CS-344

Semester IV **Total Lectures: 48**

Aim: To Design dynamic and interactive Web pages.

Objective:

- Learn different technologies used at client Side Scripting Language
- Learn XML,CSS and XML parsers.
- One PHP framework for effective design of web application.
- Learn JavaScript to program the behavior of web pages.
- Learn AJAX to make our application more dynamic.

1. Web Techniques **[10]**

1.1 Variables
1.2 Server information
1.3 Processing forms
1.4 Setting response headers
1.5 Maintaining state
1.6 SSL
Book 1 chapter 7

2. Handling email with php **[8]**

2.1 Email background
2.2 Internet mail protocol
2.3 Structure of an email message
2.4 Sending email with php
2.5 Email attachments.
2.6 Email id validation and verification
2.7 PHP error handling.
Book 2 chapter 15

3. PHP framework **[4]**

3.1 Introduction to PHP framework.
3.2 Features, Applications.
3.3 One example like JOOMLA,DRUPAL.
Book 11, https://api.drupal.org

4. XML **[8]**

4.1What is XML?
4.2 XML document Structure
4.3 PHP and XML
4.4 XML parser
4.5 The document object model
4.6 The simple XML extension
4.7 Changing a value with simple XML
Book 2 chapter 8

5. WEB DESIGNING TECHNOLOGIES(JavaScript-DHTML) **[10]**

5.1 Overview of JavaScript, DHTML
5.2 Object Orientation and JavaScript

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T.Y. B.Sc. COMPUTER SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : Programming in Java-II
Code No. : CS-345

Semester IV **Total Lectures : 48**

Prerequisite:

- Knowledge of Core Java (CS – 345)

Objectives:

- To learn database programming using Java
- To study web development concept using Servlet and JSP
- To develop a game application using multithreading
- To learn socket programming concept

1. Collection **[6]**

1.1 Introduction to the Collection framework
1.2 List – ArrayList, LinkedList and Vector,Stack,Queue
1.3 Set - HashSet, TreeSet, and LinkedHashSet
1.4 Map – HashMap, LinkedHashMap, Hashtable and TreeMap
1.5 Interfaces such as Comparator, Iterator, ListIterator, Enumeration

2. Database Programming **[10]**

2.1 The design of jdbc, jdbc configuration
2.2 Types of drivers
2.3 Executing sql statements, query execution
2.4 Scrollable and updatable result sets
2.5 Metadata – DatabaseMetadata, ResultSetMetadata
2.6 Transactions – commit(), rollback(), SavePoint
(Database : PostgreSQL)

3. Servlet **[12]**

3.1 Introduction to Servlet and Hierarchy of Servlet
3.2 Life cycle of servlet
3.3 Tomcat configuration (Note: Only for Lab Demonstration)
3.4 Handing get and post request (HTTP)
3.5 Handling a data from HTML to servlet
3.6 Retriving a data from database to servlet
3.7 Session tracking – User Authorization, URL rewriting, Hidden form fields, Cookies and HttpSession

4. JSP **[10]**

4.1 Simple first JSP program
4.2 Life cycle of JSP
4.2 Implicit Objects
4.3 Scripting elements – Declarations, Expressions, Scriplets, Comments
4.4 JSP Directives – Page Directive, include directive
4.5 Mixing Scriplets and HTML
4.6 Example of forwarding contents from database to servlet, servlet to JSP and displaying it using JSP scriplet tag

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T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER :Computer Graphics
Code No. : CS-346

Semester IV **Total Lectures: 48**

Pre – Requisites

- Computer programming skills in C programming language
- Basic understanding of use of data structures
- Basic Mathematical concepts related to matrices and geometry

Objectives

- To study how graphics objects are represented in Computer
- To study how graphics system in a computer supports presentation of graphics information
- To study how interaction is handled in a graphics system
- To study how to manipulate graphics object by applying different transformations
- To provide the programmer's perspective of working of computer graphics

1. Introduction to Computer graphics [4]

1. 1 Introduction to computer graphics & graphics systems
1.2 Components of Computer Graphics Representation, Presentation , Interaction and Transformations
1.3 Applications of Computer Graphics
1.3 Pixel/Point ,Raster v/s Vector ,RGB color model, intensity
1.4 Programming essentials – event driven programming. OpenGL library

2. Input devices and Interaction tasks [4]

2.1 Logical Interaction – Locator, valuator , pick and choice;
2.2 Physical devices used for interaction – keyboard, mouse, trackball,spaceball, tablets, light pen, joy stick, touch panel, data glove;
2.4 Keyboard , Mouse interaction in OpenGL
2.5 Graphical User Interfaces- cursors , radio buttons, scroll bars, menus, icons
2.6 Implementing GUI in open GL

3. Presentation and Output devices [4]

3.1 Presentation Graphics - frame buffer, display file, lookup table;
3.2 Display devices, Random and Raster scan display devices; CRT,
3.3 Hardcopy devices - Plotters and Printers

4. Raster Scan Graphics [10]

4.1 Line drawing algorithms; DDA algorithm, Bresenham's line drawing algorithm, Circle generation algorithm;
4.2 Scan conversions- Generation of the Display, Image compression
4.3 Displaying Lines and characters
4.3 Polygon filling -Scan converting polygons, fill algorithms, Boundary fill algorithm, flood fill algorithm

5. Transformations [7]

5.1 Basic transformations: translation, rotation, scaling; Matrix representations & homogeneous coordinates, Reflection, shear
5.2 Transformation of points, lines, parallel lines, intersecting lines. Viewing pipeline
5.3 Window to viewport co-ordinate transformation. Setting window and viewport in OpenGL.

SAVITRIBAI PHULE PUNE UNIVERSITY
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER : System Programming & Operating System
Code No. : CS-347

Aim:
To understand the process of designing and implementing System programs and operating system components.

Objective :-
1. Design and implement System programs with minimal features to understand their complexity.
2. Design and implement simulations of operating system level procedures.

Syllabus

Sr. No	Topic	Lectures
1	Line Editor	8 lectures
2	SMAC0 simulator	8 lectures
3	Assembler	12 Lectures
4	Macro processor	12 lectures
5	DFA driver	8 lectures
6	Development Utilities	8 lectures
7	Toy shell	8 Lectures
8	CPU Scheduler	12 lectures
9	Deadlock detection	8 lectures
10	Page Replacement Algorithms	12 lectures
11	File Allocation methods	12 Lectures

Examination

Internal Marks : Activity + Labbook(10+10)

External Marks : two programs(35each) oral(5) Activity(5)

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T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER :Lab Course II – Programming in Java
Code No. : CS-348

Aim:
To understand the process of designing and implementing Core and Advanced Java programs.

Objective :-
1. Implement core Java programs to solve simple problems
2. Implement Client and Server end Java programs

Syllabus

Sr. No	Topic	Lectures
Core and Advanced Java		
1	Simple Java programs	8 Lectures
2	Arrays and Packages	8 Lectures
3	Inheritance and Interfaces	8 Lectures
4	Exception Handling	8 Lectures
5	File Handling	8 Lectures
6	GUI designing & Event Handling	8 Lectures
7	Database Programming	8 Lectures
8	Multithreading	4 Lectures
9	Collection	8 Lectures
10	Servlets	8 Lectures
11	JSP	8 Lectures
12	Socket Programming	4 Lectures
Computer Graphics		
1	Simple Graphics program using OpenGL	4 Lectures
2	Using graphics primitives to display graphics	4 Lectures
3	Window to viewport transformations and other transformations	4 Lectures
4	Using simple Keyboard and Mouse interaction	4 Lectures
5	Graphics Mini project	16 Lectures

Examination

Internal Marks : Activity(CG) + Seminar(Enhanced java+ listening) (10+10)

External Marks : two programs(30each) oral(5) Activity(5)+ Labbook(10)

SAVITRIBAI PHULE PUNE UNIVERSITY
Proposed Draft of
T.Y. B. Sc. COMPUTER SCIENCE SYLLABUS
TO BE IMPLEMENTED FROM ACADEMIC YEAR 2015-16
TITLE OF PAPER :Lab Course III – Programming in PHP & Project
Code No. : CS-349

Aim:
To understand the process of designing and implementing Web applications, using PHP.

Objective :-
1. Implement Simple PHP programs to solve simple problems

Syllabus

Sr. No	Topic	Lectures
PHP		
1	String manipulation	8 Lectures
2	Arrays	8 Lectures
3	Inheritance	8 Lectures
4	File Handling	8 Lectures
5	Form designing	8 Lectures
6	Database Connectivity	8 Lectures
7	Sessions and cookies	8 Lectures
8	Java script with AJAX	
Networking		4 Lectures
1	Setting a LAN Environment	4 Lectures
2	Configuring the Server	4 Lectures
3	Use of Service Primitives	12 Lectures
4	Use of Networking Tools	
Project		
1	Choose Project topic and Prepare problem description	
2	Study of Existing System	
3	Identifying users and functionalities of proposed system	
4	Preparing the Design of the proposed system- Data Design Screen and Report Designs	
5	Implementation	

Examination

Internal Marks: Project (20) Continuous Evaluation.

External Marks: One programs (30) (large program on PHP + small program PHP), networking(10) – Internal, Lab book(10), Project(30) -20 Marks External + 10 Marks Internal for Project Demo before Final Practical Exam

CS-101(New): Principles of Programming Languages

[Total Lectures: 48 Hours]

Course Prerequisites:

It is assumed that student learning this course have the following background:

- Experience with an OOP language (such as Java or C++)
- Experience with a procedural language (such as C)
- Working knowledge of C, C++, and Java programming.
- Basic algorithms and data structure concepts.

Why to study this course?

- To allow Informed Design Decisions
- Gives insight when debugging
- Permits effective use of compilers/linkers interpreters and language oriented tools.
- Helps to understand how language features work.
- Learn features, emulate missing features.
- Develop a greater understanding of the issues involved in programming language design and implementation
- Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms
- Implement several programs in languages other than the one emphasized in the core curriculum (Java/C++)
- Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing
- Develop thorough understanding of the compilation process
- To introduce several different paradigms of programming
- To gain experience with these paradigms by using example programming languages
- To understand concepts of syntax, translation, abstraction, and implementation

Course Objectives:

- This course will prepare you to think about programming languages analytically:
  - Separate syntax from semantics
  - Compare programming language designs
  - Learn new languages more quickly
  - Use standard vocabulary when discussing languages
  - Understand basic language implementation techniques
- This course focuses on both:
  - Theory is covered by the textbook readings, lectures, and on the tests
  - Implementation is covered by the homework assignments

[2]

Unit 1. Introduction **[T1 chap. 1]**

- The Art of Language Design [T1 1.1]
- The Programming Language Spectrum [T1 1.2]
- Why Study Programming Languages? [T1 1.3]
- Compilation and Interpretation [T1 1.4]
- Programming Environments [T1 1.5]

Unit 2. Non-Imperative Programming Models: Functional, Logic Languages

CS102 (New) - Advanced Networking

Unit 1. Review of Basic Concepts [3]

TCP/IP Protocol Suite [T1 2.3]
Underlying Technologies : LAN (802.3) T 1 3.1
Wireless Lans (802.11) T 1 3.2
Point-to-point WANS T 1 3.3
Switched WANS T 1 3.4

Unit 2. The Internet Layer Protocols [4]

Review of IPv4 Protocol T 1 7.1,7.2,7.3,7.4,7.5
IPv6 T 1 27.1,27.2
Transition from IPv4 to IPv6 T 1 27.3
ICMPv4 T 1 9.1,9.2,9.3,9.4
ICMPv6 T 1 28.1,28.2,28.3,28.4

Unit 3. Routing Protocols [6]

Forwarding T 1 6.2
Structure of a Router T 1 6.3
Routing Tables T 1 11.1
Intra – And Inter-Domain Routing T 1 11.2
Distance Vector Routing T 1 11.3
RIP T 1 11.4
OSPF T 1 11.6
BGP T 1 11.8
Multicast Routing T 1 .4

Unit 4. The Transport Layer [6]

The Transport Service T 2 6.1
Elements of Transport Protocols T 2 6.2
UDP T 2 6.4.1
TCP T 2 6.5.1 to 6.5.9

Unit 5. Multimedia [3]

Digitizing Audio and Video T 1 25.2
Streaming stored Audio / Video T 1 25.4
Streaming Live Audio / Video T 1 25.5
Real-Time Interactive Audio / Video T 1 25.6
RTP T 1 25.7
RTCP T 1 25.8
Voice Over IP T 1 25.9

Unit 6. Introduction To Security [2]

The need for Security T 3 1.2
Security Approaches T 3 1.3
Principles of Security T 3 1.4
Types of Attacks T 3 1.5

Unit 7. Cryptography: Concepts and Techniques [3]

Introduction T 3 2.1
Plain Text and Cipher Text T 3 2.2
Substitution Techniques T 3 2.3.1,2.3.2,2.3.3,2.3.7
Transposition Techniques T 3 2.4.1,2.4.2,2.4.3
Symmetric and Asymmetric key cryptography T 3 2.6.1,2.6.2

CS-103(New): Distributed Database Concepts

Pre-requisites: Students should be well-versed with the basic and advanced concepts of RDBMS

Objectives:

Main objective is to understand the principles and foundations of distributed databases. This course addresses architecture, design issues, integrity control, query processing and optimization, transactions, and concurrency control & distributed transaction reliability.

Unit 1. Distributed databases: An overview [2]

1.1 Features of distributed Vs centralized databases Chapter 1 from Book 2
1.2 Why DDB? DDBMS
1.3 Promises / problem areas in implementing a DDB Section 1.3,1.5 from Book 1

Unit 2. DDBMS Architecture [4]

2.1 DBMS Standardization Chapter 4 from Book 1
2.2 Architectural models for DDBMS
2.3 DDBMS architecture
2.4 Distributed catalog management Section 21.8 from Book 3

Unit 3. Distributed database design [10]

3.1 Alternative design strategies Chapter 5 from book 1
3.2 Distributed design issues
3.3 Concepts of join graphs Section 4.2.1.2 from book 2
3.4 Fragmentation and allocation Chapter 5 from Book1

Unit 4. Overview of Query processing [4]

4.1 Query processing problems Chapter 7 from book 1
4.2 Objectives of query processing
4.3 Complexity of relational algebra operators
4.4 Characterization of query processors
4.5 Layers of query processing

Unit 5. Query decomposition & data localization [2]

5.1 Query decomposition
Chapter 5.2 Localization of distributed data 8 from book 1

Unit 6. Optimization of distributed queries [10]

6.1 Query optimization Chapter 9 from book1
. Centralized query optimization Join ordering in fragment queries. Distributed query optimization algorithms
6.2 Centralized query optimization
6.3 Join ordering in fragment queries
6.4 Distributed query optimization algorithms

Unit 7. Management of distributed transactions [2]

7.1 Framework for transaction management Chapter 7 from book 2
7.2 Supporting atomicity of distributed transactions
7.3 Concurrency control of distributed transactions
7.4 Architectural aspects of distributed transactions

Unit 8. Concurrency control [6]

8.1 Foundations of distributed concurrency control Chapter 8 from book 2
8.2 Distributed deadlocks

CS-104(New): Design and Analysis of Algorithms

Prerequisites

- Basic algorithms and data structure concepts.
- Basic programming concepts

Objectives

This course will prepare students in

- Basic Algorithm Analysis techniques and understand the use o asymptotic notation
- Understand different design strategies
- Understand the use of data structures in improving algorithm performance
- Understand classical problem and solutions
- Learn a variety of useful algorithms
- Understand classification o problems

Unit 1. Analysis

Algorithm definition, space complexity, time complexity, worst case –best case –average case complexity, asymptotic notation, sorting algorithms (insertion sort, heap sort) , sorting in linear time, searching algorithms, recursive algorithms (Tower of Hanoi , Permutations).

[T1 1.1 , 1.2, 1.3] **[6]**

Unit 2. Design strategies

Divide and conquer-control abstraction, binary search, merge sort, Quick sort, Strassen's matrix multiplication [T1 3.1, 3.2, 3.4,3.5,3.7] **[6]**

Unit 3. Greedy method- knapsack problem, job sequencing with deadlines,minimum-cost spanning trees, Kruskal and Prim's algorithm, optimal storage on tapes, optimal merge patterns, Huffman coding [T1 4.1, 4.2, 4.4, 4.5, 4.6,4.7, 4.8] **[8]**

Unit 4. Dynamic programming- matrix chain multiplication, . single source shortest paths, Dijkstra's algorithm, Bellman- ford algorithm , all pairs shortest path, longest common subsequence, string editing, 0/1 knapsack problem, Traveling salesperson problem.

[T1 5.1, 5.3, 5.6, 5.7, 5.9] **[8]**

Unit 5. Decrease and conquer: - DFS and BFS, Topological sorting, connected components

[T6.1, 6.2, 6.3, 6.4] **[6]**

Unit 6. Backtracking: General method, 8 Queen's problem, Sum of subsets problem, graph coloring problem, Hamiltonian cycle

[T1 7.1 , 7.2, 7.3, 7.4, 7.5] **[4]**

Unit 7. Branch and Bound Technique : FIFO, LIFO, LCBB, TSP problem, 0/1 knapsack problem

[T1 8.1.1, 8.2, 8.3] **[4]**

Unit 8. Transform and conquer:- Horner's Rule and Binary Exponentiation – Problem Reduction –

[T1 9.1, 9.2 ,9.3] **[4]**

Unit 9. Problem classification

Nondeterministic algorithm, The class of P, NP, NP-hard and NP- Complete problems, significance of Cook's theorem [T1 11.1] **[2]**

Text Books

T1. Ellis Horowitz, Sartaj Sahni & Sanguthevar Rajasekaran, Computer Algorithms, Galgotia.
T2 T. Cormen, C. Leiserson, & R. Rivest, Algorithms, MIT Press, 1990 1

References Texts

1) A. Aho, J. Hopcroft, & J. Ullman, The Design and Analysis of Computer Algorithms,

CS-105 (New) : Network Programming

Prerequisites:

- Working Knowledge of C
- Basic Understanding of Networking Concepts
- User Level Knowledge of Linux

Syllabus: **[Total Lectures: 48]**

UNIT 1: Introduction **[2]**

- A Simple Daytime Client, Protocol Independence, Error Handling: Wrapper Functions, A Simple Daytime Server [Book-1]

UNIT 2: Sockets Introduction **[6]**

- Socket Address Structures, Value-Result Arguments, Byte Ordering Functions, Byte Manipulation Functions, inet_aton, inet_addr, and inet_ntoa Functions, inet_pton and inet_ntop Functions, sock_ntop and Related Functions, readn, writen, and readline Functions, isfdtype Function [Book-1]
- What is a Socket?, Using Sockets [Book-2]

UNIT 3: Elementary TCP Sockets **[4]**

- socket Function, connect Function, bind Function, listen Function, accept Function, fork and exec Functions, Concurrent Servers, close Function, getsockname and getpeername Functions [Book-1]

UNIT 4: TCP Client-Server Example **[6]**

- TCP Echo Server: main Function, TCP Echo Server: str_echo Function, TCP Echo Client: main Function, TCP Echo Client: str_cli Function, Normal Startup, Normal Termination, Connection Abort before accept Returns, Termination of Server Process, SIGPIPE Signal, Crashing of Server Host, Crashing and Rebooting of Server Host, Shutdown of Server Host [Book-1]

UNIT 5: I/O Multiplexing: The select and poll Functions **[6]**

- I/O Models, select Function, str_cli Function (Revisited), Batch Input, shutdown Function, str_cli Function (Revisited Again), TCP Echo Server (Revisited), pselect Function, poll Function, TCP Echo Server (Revisited Again) [Book-1]

UNIT 6: Socket Options **[4]**

- getsockopt and setsockopt Functions, Checking If an Option Is Supported and Obtaining the Default, Socket States, Generic Socket Options, IPv4 Socket Options, ICMPv6 Socket Option, IPv6 Socket Options, TCP Socket Options [Book-1]

CS-201: Digital Image Processing

Syllabus: **[Total Lectures: 48]**

UNIT 1. Introduction [3]

- What is Digital Image Processing?
- The origins of Digital Image Processing
- Examples of Fields that use Digital Image Processing
  - Gamma-Ray Imaging
  - X-Ray Imaging
  - Imaging in the Ultraviolet Band
  - Imaging in the Visible and Infrared Bands
  - Imaging in the Microwave Band
  - Imaging in the Radio Band
- Fundamental steps in Digital Image Processing
- Components of an Image Processing System

UNIT 2. Digital Image Fundamentals [6]

- Elements of Visual Perception
- Light and the Electromagnetic Spectrum
- Image sensing and Acquisition
- Image Sampling and Quantization
- Some Basic Relationships between Pixels
- An Introduction to the Mathematical Tools Used in Digital Image Processing
  - Array versus Matrix Operations
  - Linear versus Nonlinear Operations
  - Arithmetic Operations
  - Set and Logical Operations

UNIT 3. Intensity Transformation and Spatial Filtering [7]

- Background
- Some Basic Intensity Transformation Functions
- Histogram Processing
  - Histogram Equalization
  - Histogram Matching (Specification)
  - Local Histogram Processing
- Fundamentals of Spatial Filtering
- Smoothing Spatial Filters
- Sharpening Spatial Filters
- Combining Spatial Enhancement Methods

UNIT 4. Filtering in the Frequency Domain [10]

- Background
- Preliminary Concepts
- Sampling and the Fourier Transform of Sampled Functions
- The Discrete Fourier Transform (DFT) of One variable
- Extension to Functions of Two Variables

CS-202(New): Advanced Operating Systems

Prerequisites:

- Working knowledge of C programming.
- Basic Computer Architecture concepts.
- Basic algorithms and data structure concepts.

Course Objectives:

This course teaches Advanced Operating Systems Concepts using Unix/Linux and Windows as representative examples. This course strikes a delicate balance between theory (covered in TextBook-2, 3) and practical applications (covered in TextBook-1, 4). In fact, most Units start with the theory and then switches focus on how the concepts are implemented in a C program. This course describes the programming interface to the Unix/Linux system - the system call interface. It is intended for anyone writing C programs that run under Unix/Linux. Finally, it concludes with an overview of Windows Threads Management. This course provides an understanding of the functions of Operating Systems. It also provides provide an insight into functional modules of Operating Systems. It discusses the concepts underlying in the design and implementation of Operating Systems.

Syllabus: [03]

Unit 1. Introduction to UNIX/Linux Kernel

- System Structure, User Perspective, Assumptions about Hardware, Architecture of UNIX Operating System (TextBook-3: Chapter Topics: 1.2, 1.3, 1.5, 2.1)
- Concepts of Linux Programming- Files and the Filesystem, Processes, Users and Groups, Permissions, Signals, Interprocess Communication (TextBook-1: Chapter 1- relevant topics)

[13]

Unit 2. File and Directory I/O

- Buffer headers, structure of the buffer pool, scenarios for retrieval of a buffer, reading and writing disk blocks, inodes, structure of regular file, open, read, write, lseek, close, pipes, dup (TextBook- 3: Chapter Topics: 3.1-3.4, 4.1, 4.2, 5.1-5.3, 5.5-5.7, 5.12, 5.13)
- open, creat, file sharing, atomic operations, dup2, sync, fsync, and fdatasync, fcntl, /dev/fd, stat, fstat, lstat, file types, Set-User-ID and Set-Group-ID, file access permissions, ownership of new files and directories, access function, umask function, chmod and fchmod, sticky bit, chown, fchown, and lchown, file size, file truncation, file systems, link, unlink, remove, and rename functions, symbolic links, symlink and readlink functions, file times, utime, mkdir and rmdir, reading directories, chdir, fchdir, and getcwd, device special files (TextBook-4: Chapter Topics: 3.3, 3.4, 3.10-3.14, 3.16, 4.2-4.23)
- Scatter/Gather I/O, Mapping Files into Memory, Advice for Normal File I/O, I/O Schedulers and I/O Performance, Directories, Copying and Moving files, Device Nodes, Out-of-Band Communication (TextBook-1: Chapters: 4 and 7-relevant topics)

CS-203(New): Data Mining and Data Warehousing

Unit 1. **Introduction to Data Mining** [4]

- Basic Data Mining Tasks
- DM versus Knowledge Discovery in Databases
- Data Mining Issues
- Data Mining Metrics
- Social Implications of Data Mining
- Overview of Applications of Data Mining

Unit 2. **Introduction to Data Warehousing** [4]

- Architecture of DW
- OLAP and Data Cubes
- Dimensional Data Modeling-star, snowflake schemas
- Data Preprocessing – Need, Data Cleaning, Data Integration & Transformation, Data Reduction
- Machine Learning
- Pattern Matching [4]

Unit 3. **Data Mining Techniques**

- Frequent item-sets and Association rule mining: Apriori algorithm, Use of sampling for frequent item-set, FP tree algorithm
- Graph Mining: Frequent sub-graph mining, Tree mining, Sequence Mining [16]

Unit 4. **Classification & Prediction**

- Decision tree learning: [3 hrs]
  Construction, performance, attribute selection
  Issues: Over-fitting, tree pruning methods, missing values, continuous classes
  Classification and Regression Trees (CART)
- Bayesian Classification: [6 hrs]
- Bayes Theorem, Naïve Bayes classifier,
- Bayesian Networks
- Inference
- Parameter and structure learning
- Linear classifiers [4 hrs]
- Least squares, logistic, perceptron and SVM classifiers
- Prediction [3 hrs]
- Linear regression [4]
- Non-linear regression

Unit 5 **Accuracy Measures** [4]
Precision, recall, F-measure, confusion matrix, cross-validation, bootstrap

Unit 6. **Software for data mining and applications of data mining** [4]
R, Weka, Sample applications of data mining

Unit 7. **Clustering**

- k-means

CS-204 Project

The Project can be platform, Language and technology independent. Project will be evaluated by project guide. Assessment will be done weekly in the respective batch. Evaluation will be on the basis of weekly progress of project work, progress report, oral, results and documentation and demonstration.

You should fill your status of the project work on the progress report and get the Signature of project guide regularly. Progress report should sharply focus how much time you have spent on specific task. (The format of progress report is given as follow.) You should keep all signed progress report. Project will not be accepted if progress report is not submitted and all responsibility remains with student.

Elective Course [CS-206]: Artificial Intelligence

Prerequisites –

- Concepts of Data structures and Design and Analysis of algorithms

Objectives-

- To understand and gain the knowledge of the subject

Course contents –

Unit 1. Introduction to Artificial Intelligence

- What is AI?
- Early work in AI
- AI and related fields
- AI problems and Techniques

Unit 2. Problems, Problem Spaces and Search

- Defining AI problems as a State Space Search: example
- Production Systems
- Search and Control Strategies
- Problem Characteristics
- Issues in Design of Search Programs
- Additional Problems

Unit 3. Heuristic Search Techniques

- Generate-and-test
- Hill Climbing
- Best First Search
- Problem Reduction
- Constraint Satisfaction
- Mean-Ends Analysis

Unit 4. Knowledge Representation

- Representations and Mappings
- Approaches to Knowledge Representation
- Knowledge representation method
- Propositional Logic
- Predicate logic
- Representing Simple facts in Logic
- Representing Instances and Isa relationships
- Computable Functions and Predicates
- Resolution
- Forward and backward chaining

Unit 5. Slot – and – Filler Structures

- Weak Structures
- Semantic Networks
- Frames
- Strong Structures
- Conceptual Dependencies
- Scripts

Unit 6. Game Playing

- Minimax Search Procedures
- Adding alpha-beta cutoffs
- Uncertianty Reasoning: Basic Probabilty Axioms, Baye's

(CORE) CS 301: Software Metrics & Project Management

No of lectures: 48

Pre-requisites

- Software Engineering
- Basic testing concepts

Objectives

- Software Metrics and Project Management covers skills that are required to ensure successful medium and large scale software projects.
- It examines Requirements Elicitation, Project Management, Verification and Validation and Management of Large Software Engineering Projects.
- Student learn to select and apply project management techniques for process modeling, planning, estimation, process metrics and risk management; perform software verification and validation using inspections, design and execution of system test cases.

[4]

Chapter 1 : Introduction to Project Management

- What is a Project?
- What is Project management?
- Project phases and project life cycle
- Organizational structure
- Qualities of Project Manager

[6]

Chapter 2 : Project Management Components

- Project Integration Management-Project plan development and execution
- Change controls
- Configuration management

[4]

Chapter 3 : Scope Management

- Strategic planning
- Scope planning, definition
- Verification and control

[2]

Chapter 4 : Time management

- Activity planning
- Schedule development and control

(CORE) CS 302: Mobile Computing

No of Lectures: 48

Prerequisites

- Concepts of multiplexing and modulation
- Concepts of Networking
- Conversant with OS internals
- Familiar with event handling
- Web browsers
- Create and Compile Java Programs
- Brief History of wireless communication

Objectives

- To familiarize the students with the buzz words and technology of mobile communication
- Understand the GSM architecture
- Understand the issues relating to Wireless applications

Chapter 1 : Introduction to Mobile Computing [2]

- Introduction and need for Mobile computing
- Mobility and portability
- Mobile and Wireless devices
- Applications
- Brief History of wireless communication

Chapter 2 : Wireless Transmission [3]

- General Concepts of multiplexing and modulation
- Spread Spectrum
- Cellular Systems

Chapter 3 : Medium Access Control Layer [4]

- Why specialized MAC?
  a. hidden and exposed terminals
  b. near and far terminals
- ii. General Concepts and comparison of SDMA, FDMA, TDMA , CDMA [8]

Chapter 4 : Mobile IP

- Goals, assumptions and requirements
- Entities and terminologies
- Agent Discovery
- Registration
- Tunneling and encapsulation

(CORE) CS 303: Soft Computing

No of Lectures: 48

Objective

- To understand the concepts of how an intelligent system work and its brief development process.

Prerequisites

- Probability
- First Order Predicate Logic
- Classical Logic
- Calculus

Description

Intelligent systems can function as intelligent assistants, augmenting or supplementing human expertise while increasing productivity. This course exposes learners to Neural Network, Fuzzy Logic and Genetic Algorithms, which are the major building blocks of Intelligent Systems.

Chapter 1 : Introduction to Fuzzy Logic [16 to 20]

The Illusion : Ignoring Uncertainty and accuracy, Uncertainty and information, Fuzzy set and membership, Chance versus Fuzziness. Classical Sets, Fuzzy Sets, Cartesian Product, Crisp Relations, Fuzzy relations, Tolerance and equivalence Relations, Fuzzy Tolerance and equivalence Relations, Value assignments, Other Forms of the Composition Operations, Features of the membership Function, various forms, Fuzzification, Defuzzification to Crisp set, λ-Cuts for fuzzy Relations, Defuzzification to Scalars, Fuzzy Logic, Approximate Reasoning, Others forms of implication operations, Natural Language, Linguistic Hedges, Fuzzy (Ruled-Based) system, Graphical technique of inference, Membership value assignment-Intuition, Inference.

From Book 1 Chapters 1,2,3,4,5,6

Chapter 2 : Fuzzy System and Classification [10 to 12]

Fuzzy System Simulation- Fuzzy Relation, Equations, Nonlinear Simulation Using Fuzzy Systems, Fuzzy Associative Memories.
Fuzzy Classification- Classification by Equivalence Relations, Cluster Analysis, Cluster Validity, c-Means Clustering, Hard c-Means, Fuzzy c-Means, Classification Metric, Hardening the Fuzzy c-Partition, Similarity Relations from Clustering.
Fuzzy Arithmetic and Extension Principle-Extension Principle, Fuzzy Arithmetic, Interval Analysis in Arithmetic, Approximate Methods of Extension.

From Book 1 Chapters 8, 10, 12

Chapter 3 : Neural Network [20 to 22]

Neural networks: Artificial Neural Network: Definition, Advantages of Neural Networks
Application Scope of Neural Networks

(ELECTIVE) CS 304: Project

- The Project can be platform, Language and technology independent.
- Project will be evaluated by project guide.
- Assessment will be done weekly in the respective batch.
- Evaluation will be on the basis of weekly progress of project work, progress report, oral, results and documentation and demonstration.
- You should fill your status of the project work on the progress report and get the Signature of project guide regularly. Progress report should sharply focus how much time you have spent on specific task. (The format of progress report is given as follow.)
- You should keep all signed progress report.
- Project will not be accepted if progress report is not submitted and all responsibility remains with student.
- Students should prepare design document using SE/UML techniques depends on your project.

About project Report: -

- The report should be typed on A4 size, executive bond paper for the final submission. The report should be in the good quality Rexene bound. We suggest, using one-and-half spaced printing, Times New Roman 12 font sizes for the normal text, 14-16 font sizes for headings & page titles.
- Number of copies:
  For one project you should prepare 2 copies of the project report. One for yourself, one for college (**College copy can be in CD**).

Evaluation for internal 50 Marks

Description	Marks
UML Diagrams	10 M
Technology And Design Based First Demo	15 M
Project Technology Based 2 assignments	10 M
Second Demo	15M

Evaluation for external 50 Marks

Description	Marks
Demo	15 M
Report	15 M
Presentation	15 M
Viva	05M

(ELECTIVE) CS 305: Web Services

No of lectures: 48

Pre-requisites

- Strong knowledge about Java programming.
- Good Understanding of Object Oriented Programming concepts.
- Must be familiar with XML.

Objectives

- To Understand Web Services and implementation model for SOA
- To Understand the SOA, its Principles and Benefits
- Understanding cloud computing as a web service
- Discuss the concept of virtualization and data in cloud.

Chapter 1 : Web Service and SOA fundamentals **[8]**

Introduction, Concept of Software as a Service(SaaS), Web services versus Web based applications, Characteristics of Web services, Service interface and implementation, The Service Oriented Architecture(SOA), Quality of service (QoS), Web service interoperability, Web services versus components, RESTful services , Impact and shortcomings of Web services.

Chapter 2 : Web Services Architecture. **[8]**

Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services, developing web services enabled applications.

Chapter 3 : SOAP: Simple Object Access Protocol **[10]**

Inter-application communication and wire protocols, SOAP as a messaging protocol, Structure of a SOAP message, SOAP communication model, Building SOAP Web Services, developing SOAP Web Services using Java, Error handling in SOAP, Advantages and disadvantages of SOAP.

(ELECTIVE) CS 308: Business Intelligence

No of lectures: 48

Pre-requisites

- Relational database concepts, database design and entity-relationship (E-R) modeling, data normalization, and Structured Query Language (SQL).
- Data Mining techniques

Objectives

- Understand the role of BI in enterprise performance management and decision support.
- Understand the applications of data mining and intelligent systems in managerial work.
- Understand data warehousing and online analytical processing (OLAP) concepts, including dimensional modeling, star and snowflake schemas, attribute hierarchies, metrics, and cubes.
- Learn data analysis and reporting using an available BI software.

Chapter 1 : Introduction to Business intelligence **[6]**

Definition and History of BI, Transaction processing versus analytical processing, BI implementation , Major tools and techniques of BI

Chapter 2 : Data warehousing **[10]**

Definition and concepts, , Data warehouse architecture, ETL process, data warehouse development, Top down vs. Bottom up, Data Mart vs. EDW, Implementation issues, Real-time data warehousing

Chapter 3 : Business performance management **[14]**

Key performance indicators and operational metrics, Balanced scorecard , Six Sigma , Dashboards and scorecards

Chapter 4 : Data Mining for Business Intelligence **[10]**

Data mining process, Data mining methods, ANN for Data Mining

(CORE) CS 401: Full Time Industrial Training/ Industrial Project

Period – Minimum 4 months

1. There will be a teacher coordinator for a group of students. A teacher coordinator will take care of joining letters from students along with other necessary submission listed below.

2. A student will have to submit 2 reports during the period of ITP to the Department of the college.

3. After the completion of the ITP, a student will have to submit a synopsis along with the project completion certificate from the respective industry/research institute /educational institute.

4. A student will submit one hard copy (Student Copy) and a soft copy's (preferably 2 CDs) of the work carried out towards ITP.

5. The project will be graded by the experts (One internal examiner, one external examiner(academic expert) and one industrial expert) as follows:

O – 75 and above	**C**– 50 and above	**F**- A student will have to carry out project once again for a complete semester
A – 65 and above	**D**– 45 and above	
B – 55 and above	**E**– 40 and above	

Important Note: A student can complete ITP with a research project of a teacher / an expert funded by the University of Pune/ a funding agency.

Evaluation for internal 50 Marks will be done according to Progress Report written by Teacher Coordinator

Evaluation for external 50 Marks will be done by Industrial Expert, Academic Expert and One Internal Examiner.

26	M. Sc. Physics	PHYUT503	Mathematical Methods in Physics	Professional Ethics
27	M. Sc. Physics	PHYUT504	Atoms and Molecules	Professional Ethics
28	M. Sc. Physics	PHYUT505	Experimental Techniques in Physics	Professional & Industrial Ethics
29	M. Sc. Physics	PHYUP506	Physics Lab-I	Professional & Industrial Ethics
30	M. Sc. Physics	PHYUT601	Electrodynamics	Professional Ethics
31	M. Sc. Physics	PHYUT602	Solid State Physics	Professional Ethics
32	M. Sc. Physics	PHYUT603	Quantum Mechanics	Professional Ethics
33	M. Sc. Physics	PHYUT604	Lasers	Professional & Industrial Ethics
34	M. Sc. Physics	PHYUT605	Experimental Techniques in Physics II	Professional & Industrial Ethics
35	M. Sc. Physics	PHYUP606	Physics Lab II	Professional & Industrial Ethics
36	M. Sc. Physics	PHYUT701	Statistical Mechanics in Physics	Professional Ethics
37	M. Sc. Physics	PHYUT702	Quantum Mechanics II	Professional Ethics
38	M. Sc. Physics	PHYDT703	Energy-I	Environment and Sustainability Ethics
39	M. Sc. Physics	PHYDT704	Instrumentation-I	Professional & Industrial Ethics
40	M. Sc. Physics	PHYDP705	Special Lab I	Professional & Industrial Ethics
41	M. Sc. Physics	PHYUP706	Physics Lab III	Professional & Industrial Ethics
42	M. Sc. Physics	PHYUT801	Nuclear Physics	Professional Ethics
43	M. Sc. Physics	PHYUT802	Material Science	Professional Ethics
44	M. Sc. Physics	PHYDT803	Energy-II	Environment and Sustainability Ethics
45	M. Sc. Physics	PHYDT804	Instrumentation-II	Professional & Industrial Ethics
46	M. Sc. Physics	PHYDP805	Special Lab II	Professional & Industrial Ethics
47	M. Sc. Physics	PHYUP806	Physics Lab IV: Project	Professional & Industrial Ethics

Kopargaon Taluka Education Society's

K. J. Somaiya College of Arts, Commerce & Science, Kopargaon

Crosscutting Issues in Syllabus of Geography

Crosscutting Issues in 2013 Pattern:

Sr. No.	Class	Course Code	Course Name	Addressed issues
1	B. A. Geography	Gg-220(S-1)	SYBA: Economic Geography OR Tourism Geography	Professional Ethics
2	B. A. Geography	Gg-201(S-2)	SYBA: Fundamentals of Geographical Analysis	Professional Ethics
3	B. A. Geography	Gg-301(S-4)	TYBA: Techniques of Spatial Analysis	Professional Ethics
4	M.A /M.Sc Geography	Gg-105	F Y MA: Practical in Physical Geography (Sem-I)	Professional Ethics
5	M.A /M.Sc Geography	Gg-106	F Y MA: Practical in Human Geography	Professional Ethics
6	M.A /M.Sc Geography	Gg-223	Geography of Rural Settlement	Professional Ethics
7	M.A /M.Sc Geography	Gg-202	F Y MA: Practical in Cartography(Sem-II)	Professional Ethics
8	M.A /M.Sc Geography	Gg-203	F Y MA: Practical in Surveying and Field visit(Sem-II)	Professional Ethics
9	M.A /M.Sc Geography	Gg-204	F Y MA: Geography of Tourism(Sem-II)	Professional Ethics
10	M.A /M.Sc Geography	Gg-207	F Y MA: Practical in Terrain Analysis(Sem-II)	Professional Ethics
11	M.A /M.Sc Geography	Gg-333	S Y MA: Population & Settlement Geography (Sem-III)	Professional Ethics
12	M.A /M.Sc Geography	Gg-302	S Y MA: Interpretation of Topographical Maps & Village Survey / Project work	Professional Ethics
13	M.A /M.Sc Geography	Gg-303	S Y MA: Research Method in Geography(Sem-III)	Professional Ethics
14	M.A /M.Sc Geography	Gg-305	S Y MA: Practical in Watershed analysis(Sem-III)	Professional Ethics
15	M.A /M.Sc Geography	Gg-441	S Y MA: Principles of Regional Geography & Project work	Professional Ethics
16	M.A /M.Sc Geography	Gg-420	S Y MA: Regional Planning and Development(Sem-IV)	Professional Ethics
17.	B. A. Geography	Gg-320(S-3)	TYBA: Population and Settlement Geography	Gender
18.	M.A /M.Sc Geography	Gg.-104	FYMA: Principles of Population and Settlement Geography	Gender

19.	B. A. Geography	Gg-310(G-3)	TYBA: Regional Geography of India OR Human Geography	Human Values
20.	M.A /M.Sc Geography	Gg-321	SYMA: Political Geography	Human Values
21.	M.A /M.Sc Geography	Gg-304	SYMA: Social &Cultural Geography(Sem-III)	Human Values
22.	M.A /M.Sc Geography	Gg-404	SYMA: Geography of Food Security of India	Human Values
23.	M.A /M.Sc Geography	Gg-405	SYMA: Geography of Health	Human Values
24.	M.A /M. Sc Geography	Gg- 407	SYMA: Regional Geography of SAARC countries	Human Values
25.	B. A. Geography	Gg-110 (G-1)	FYBA: Elements of Geomorphology	Environment and Sustainability
26.	B. A. Geography	Gg-210(G-2)	SYBA: Elements of Climatology and Oceanography OR Geography of Disaster Management	Environment and Sustainability
27.	M.A /M.Sc Geography	Gg.-101	FYMA: Principles of Geomorphology(Sem-I)	Environment and Sustainability
28.	M.A /M.Sc Geography	Gg.-102	FYMA: Principles of Climatology(Sem-I)	Environment and Sustainability
29.	M.A /M.Sc Geography	Gg-213	FYMA: Population Geography(Sem-II)	Professional Ethics & Human Value
30.	M.A /M.Sc Geography	Gg-205	FYMA: Geography of Disaster Management (Sem-II)	Environment and Sustainability
31.	M.A /M.Sc Geography	Gg- 313	SYMA: Urban Geography	Environment, Professional Ethics, Human Value
32.	M.A /M.Sc Geography	Gg-103	FYMA: Prin. Of Economic Geography	Environment and Sustainability Professional Ethics
33.	F.Y.B. Com		FYBCOM: Commercial Geography	Professional Ethics

Dr. G. K. Chavhan
Head, Dept. of Geography

Dr. V. C. Thange
IQAC, Coordinator

Dr. B. S. Yadav
Principal

Gg- 220 : Tourism Geography (S-1)

Objective:-

1) To acquaint the student's basic concepts of Geography & Tourism
2) To aware the students with the utility and application of Tourism
3) To help the students & society to understand the interrelationship between tourism and employment generation opportunities.
4) To understand the impact of tourism on Physical and Human Environments.

Section-I				
No.	Unit	Sub-unit	Learning Points	Periods
1	Introduction to Tourism Geography	(A) Introduction and Definition	1.Introduction 2.Definition of Tourists and Tourism	10
		(B) Nature of Tourism Geography	1.Uniqueness 2. Diversity 3.Recreational 4. Dynamic 5.Interdisciplinary 6.Non-Productive 7.Seasonal	
		(C) Scope of Tourism Geography	1 Tourism as a Basic Need of Mankind 2 Tourism and Transportation 3 Natural environment and Tourism 4. Culture and Tourism 5. Religion and Tourism 6. Tourism Products	
		(D) Importance	1 Relation Between Geography and Tourism 2 Importance of Tourism	
2	Concepts and Classification of Tourism	(A) Concepts	1 Geo-Tourism 2 Agro- Tourism 3 Heritage Tourism 4 Adventure Tourism 5 Religious Tourism 6 Health Tourism 7 Sport Tourism 8 Disaster Tourism	15
		(B) Classification Based on a)Nationality	1. International 2. National 3. Regional 4. Local	
		b) Travel Time	1. Long Haul 2. Short Haul.	
		c)Travel Distance	1. Global 2. National 3. Regional 4. Local	

		d) Number Of Tourists	1. Groups 2. Family Members 3. Individual	
		e) Purpose	1. Religious 2. Recreation 3. Heritage 4. Adventure 5. Nature 6. Health 7. Sports	
		f) Approach	1. Eco-tourism as an Approach	
3	Assessing Tourism Potentials -I	Physical Factors (A) Relief	1. Mountain 2. Plateau 3. Plain 4. Sea Beaches 5. River Source 6. Water Fall	10
		(B) Water bodies	1. Lakes/ Dams 2. Hot Spring 3. Natural gassers 4. River –Confluences	
		(C) Climatic	1. Hill Station 2. Snow Fall 3. Rainy Season 4. Sanatoriums	
		(D) Forest	1. National Park 2. Santuaries (With Indian Examples)	
4	Assessing Tourism Potentials -II	Socio- Cultural Factors (A) Religious (B) Historical (C) Socio-Cultural	Pilgrim – All Religious Centers Historical Monuments Culture, Festivals, Sports Centres, Warli Paintings, Ideal Village (With Indian Examples)	10
		Section -II		
5	Transportation and Communication	Infrastructure and Support System	1. Road 2. Rail 3. Water 4. Air 5. Space	10
			1. Guide 2. Telephone/ mobile/ TV 3. Internet 4. Electronic & Printing Media 5. Travel & Tourist Agencies	
6	Accommodation	Accommodation Types	1 Private Hotels, motels, Inn 2 Govt. accommodation- Tourist home, Guest House, Rest house, Youth Hostel, Tents, Caravans and Bed & Breakfast 3. Rail Yatribhavan 4. House boats 5. Dharmashala	10

Gg-201 : FUNDAMENTALS OF GEOGRAPHICAL ANALYSIS

From June 2014

Workload : Six periods per week per batch (12 Students Per Batch)
(Examination for the Course will be conducted at the end of academic year)

Objectives:

1. To enable the students to use various Projections and Cartographic Techniques.
2. To acquaint the students with basic of Statistical data.
3. To acquaint the students with the principles of surveying, its importance and utility in the geographical study.

SECTION- I

No	Topic	Learning Points	Exercises	No. of periods
1	Maps and Scales	1. Maps : Meaning, definition and Types 2. Map Scale : Definition and Types	1. Map : Meaning, Definition and Types. 2. Map Scale : Definition and Types Conversion of Verbal scale to numeric and vice-versa (in British and Metric Systems) i) Construction of simple graphical scale (Two examples) i) Construction of comparative scale (Two examples)	15
2	Map Projection	1. Definition and need of Map Projection 2. Classification of map projection based on method of construction and developable surfaces used.	1. Zenithal Polar projection. i. Zenithal Polar Gnomonic Projection ii. Zenithal Polar Stereographic Projection. 2. Conical Projection : i. Projection with one standard parallel ii. Bonne's Projection 3. Cylindrical Projection i. Cylindrical equal area Projection. ii. Mercator's Projection 4.Covenetional Map Projections i. Mollweide's Projection (Construction of above map projection with properties and uses of each group : one example from each hemisphere).	20
3	Data Representation by various techniques	1. Graphs and Diagrams	1. Simple Line Graph 2. Polygraph 3. Simple Bar Diagram 4. Compound Bar Diagram 5. Pie Diagram (Chart) 6. Choropleth Mapping Plotting & Presentation using computers	15

4	Basic analysis of Statistical Data	1. Population and Sample 2. Statistical Data and Frequency	1. Population, sample, Method of sampling, Characteristics of sample 2. Tally marks and frequency table. 3. Frequency distribution (histogram and polygon) 4. Cumulative Frequency and Ogive curve.	10
		SECTION II		
5	Surveying	1. Directions 2. Definition of Surveying 3. Types of Surveying 4. Measurement of Land	1. Various Methods of deciding North direction True, Magnetic and Grid North 2. Plane Table Survey. i. Radiation Method ii. Intersection methods 3. Prismatic Compass Surveying Methods: ii. Open Travers ii. Close Travers 4.GPS Survey & Plotting Finding Latitude (X), Longitude (Y) and Altitude (Z). Plotting of X and Y on graph paper 5. Dumpy Level Survey Plotting by- i. Rise and Fall Method *ii.* Collimation Plane Method 6. At least exercise involving of actual measurement of piece of a land.	40
6	Field Excursion / Village/ Urban Survey	Visit two places of geographical interest anywhere in the country.	One short tour of two days duration and Preparation of tour report. OR One long tour more than five days and preparation of tour report	20

Note : 1. Use of stencils, log tables, computer and calculator is allowed.
2. Journal should be completed and duly certified by practical in-charge and Head of the Department.
3. Int. and Ext examiner should set jointly the question paper for each batch

Reference Books :

1. Singh Lehraj, (1973) : Map Work and Practical Geography, Central Book Depot – Allahabad
2. D. Y. Ahirrao and E. K. Karanjkhele, (2002) : Pratyakshik Bhugol, Sudarshan – Nashik
3. P. G. Saptarshi and S. R. Jog, Statistical Methods
4. S. N. Karlekar, (2008) : Statistical Methods, Diamond – Pune
5. T. P. Kanetkar and S. V. Kulkarni, (1986) : Surveying and Leveling, Pune Vidyrthi Griha Prakashan – Pune
6. Arjun Kumbhare, Practical Geography
7. Pijushkanti Saha & Partha Basu. (2007), 'Advanced Practical Geography', Books and Allied (P) Ltd, Kolkata

Savitribai Phule Pune University, Pune
T.Y.B.A
Gg. 301: Techniques of Spatial Analysis (S-4)
Effective from-June-2015

Workload: Six periods per week per batch (12 students for per Batch)
(Examination for the course will be conducted at the end of academic year).

Objectives:
1. To Introduce the Students with SOI Toposheets and to acquire the Knowledge of Toposheet Reading/Interpretation.
2. To familiarize the students with the weather instruments and their applications in Geographical phenomena.
3. To acquaint the students with IMD weather maps and to gain the knowledge of weather map Reading / interpretation.
4. To train the students in elementary statistics as an essential part of geography.
5. To awareness about GIS among the students.

Section - I

nit).	Topic	Learning Points	Periods
1	Toposheets	a. Introduction to Survey of India (SOI) toposheets, Marginal Information, Grid reference, Conventional signs and symbols b. Types of toposheet/Indexing of toposheets i. 1: 1000000/Million sheet ii. 1:250000/Degree sheet/Quarter inch sheet iii. 1:100000/Half inch sheet iv. 1:50000/One inch sheet v. 1:25000 vi. 1: 5000	15
2.	Methods of Relief Representation	1. Methods of Relief Representation a. Qualitative :- Hachures, Hill shading, Layer Tint b. Quantitative:- Contours, Form lines, Bench Marks, Spot Heights, Triangulation Mark, Relative Height (r) 2. Representation of Relief features by Contours a. Concave Slope, Convex Slope, Steep Slope, Gentle Slope, Terraced / Uniform b. Conical Hill, Spur, Plateau, Ridge, Saddle, Pass, Cliff & Waterfall 3. Profile a. Drawing and Description of Cross Profile of any Region from toposheet b. Drawing and Description of Longitudinal Profile of a Road or a River	15
3.	Toposheet Reading, Interpretation & data generation	1. Reading of at least three SOI toposheets one each for Plain, Plateau and Mountainous/hilly Region 2. One day field Excursion for Orientation of toposheet, Observation and Identification of Geographical Features and Preparation of a Brief Report	15

UNIVERSITY OF PUNE
MA/MSC Syllabus in Geography (credit system)
Revised Syllabus (from June,2013)
Title: Practicals in Physical Geography

Code No. Gg: 105 **No. of Practicals: 20**
No. of Credits: 04

unit No.	Unit	Subunit	Learning points	Practicals (3 hours duration)
		a. Geomorphology		
1	Drainage Network	1. Stream Ordering	1. Horton and Strahler methods of stream ordering (for a 3 to 5 order drainage basin) 2. Relationship between stream order and number; Bifurcation ratio	03
2	Drainage basin	2. Basin relief analysis	Relief analysis (for a 3 to 5 order drainage basin; based on grid method) 1. Absolute relief map 2. Relative relief map 3. Slope, Aspect map (degrees) 4. Dissection index map 5. Hypsometric integral 6. Basin cross profiles 7. Block Diagram (multiple section)	09
4.	Application of Remote Sensing Techniques in Geography	1. Introduction of Aerial Photographs & Satellite Image 2. Stereoscopic View of Aerial Photographs & Satellite Image and Identification of Geographical features 3. Use of Computer open source software for visualization of Arial Photographs & Satellite Image		15
		Section - II		
5.	Weather Maps & Reading	a. Introduction to Weather Maps b. Symbols in Daily Weather Report used by India Meteorological Department (IMD) c. Isobaric pattern Cyclones, Anti cyclones, V shaped Cyclones, V Shaped Anti Cyclones , Col a. Reading of Weather Map of Three Seasons i. Summer ii. Monsoon iii. Winter b. One day visit to nearby weather station of IMD		12
6.	Geographical Data & Measures of Central Tendency	a. Spatial and Temporal data b. Discrete and Continuous series c. Grouped and Ungrouped data d. Meaning and description of central tendencies- Mean, Mode, Median e. Calculation of Mean, Mode, Median for ungrouped and grouped data (two examples each)		12
7.	Measures of dispersion	a. Variance and Standard deviation for ungrouped and grouped data (two examples each)		06
8.	Correlation & Regression Testing of Hypothesis,	a. Correlation and regression i. Concept of bivariate correlation and regression ii. Meaning of coefficient of correlation iii. Calculation of Pearson's Product-Mount iv. Correlation Coefficient (Two examples) v. Calculation of Spearman Rank order vi. Coefficient (Two examples) b. Parametric and Non-parametric tests i. Chi-square test (One-sample case only) ii. Student's t-test (Comparison of sample means)		10
9	Field Excursion/ Village Survey Report	a. One short tour of two days duration and preparation of tour report OR One long tour of more than five days duration anywhere in the country and preparation of tour report OR Village survey and preparation of report		20

Suggested Reading:

1. Aher A.B., Chodhari A. P. & Bharambe S.N. Techniques of Spatial Analysis Prashant Publication Jalgaon 2015
2. David Unwin, Introductory Spatial Analysis, Methuen, London, 1981.
3. Gregory, S. Statistical Methods and the Geographer, Longman, London, 1978.
4. Hammond R and P.S. McCullagh Quantitative Techniques in Geography: An Introduction, Clarendan Press, Oxford, 1974.
5. John P.Cole and Cuchlaine A. M. King, Quantitative Geography, John Wiley, London, 1968.
6. Johnston R. J., Multivariate Statistical Analysis in Geography, Longman, London. 1973.
7. Koutsoyiannis, Theory of Econometries, Mcmillan, London, 1973.
8. Maurice Yeats, An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York, 1974.

UNIVERSITY OF PUNE
MA/MSC Syllabus in Geography (credit system)
Revised Syallbus (from June,2013)
Title: Practicals in Human Geography

Code No. Gg: 106 **No. of Practicals: 20**
No. of Credits: 04

Unit.No	Unit	Subunit	Learning Points	Practicals (3 hours duration)
a. Economic Geography				
1.	Crop Combination	Methods	1. Weaver's method 2. Thomas' method	02
2.	Agricultural Efficiency	Methods	1. Kendall's method 2. Bhatia's method	02
3.	Measures of Network Structure	Network indices	1. Ratio measure 2. Alpha, beta, gamma, etc. 3. Associated number, cyclomatric number	01
4.	Lorenz Curve Location quotient	Lorenz Curve Location quotient	Calculation and plotting	02
5.	Use of Logarithmic Graph Papers	Exponential and power functions	1. Plotting of suitable economic data on semi-log graph paper 2. Plotting of suitable economic data on double-log graph paper	02

3.	Climatic elements	b. Climatology Preparation of climatic diagrams	1.Climatograph 2. Climograph 3. Simple wind rose 4. Hythergraph	04
4.	Classification of Climate	1.Climatic classification of Koppen and Thornthwaite	1.Determination of climatic type by using Koppen's and Thornthwaite's scheme of classification.	04
		2. Water budget	Construction of water budget diagram using Precipitation & potential evapo-transpiration data	

Reference Books:

1. *King, C. A.M (1966): Techniques in Geomorphology, Edward Arnold, London*
2. *Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co.*
3. *Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad*
4. *Miller, Austin (1953): The skin of the Earth, Methuen & Co. Ltd. London*
5. *Strahler: Physical Geography*
6. *ROBINSON Elements of Cartography 6/e Rep. (2010)*

6.	**b. Settlement and Population Geography**			
	Population Geography	Indices and Projection	1. Age-sex pyramid 2. Child-women ratio 3. Dependency ratio 4. Infant mortality rate 5. Age specific mortality 6. Population growth rate 7. Population projection	03
		Computer Application	Data Analysis and presentation using Computers	05
7.	Settlement Geography	Methods for calculation of Urban data and Dispersion	1. Rank size rule & primate index 2. Calculation of centrality 5. Nearest Neighbor analysis 6. Gravity model	03

Reference Books:

1. *Carter Harold (1977): The study of Urban Geography*
2. *Hans Raj (1978): Fundamentals of Demography*
3. *Hudson F.S. (1976): Geography of Settlements*
4. *Michael E. and E. Hurse: Transportation Geography*
5. *Pollard A. H. and Farhat Yusu: Demographic Techniques*
6. *Singh, R. L. Reading in Rural Settlement Geography*
7. *Yeats, M. H. (1974). An introduction to Quantitative Analysis in Human Geography*
8. Singh, J. and Dhillon (1984): Agricultural Geography.
9. Liendsor, J. M. (1997): Techniques in Human Geography, Routledge.
10. Lloyd, P. and B. Dicken (1972): Location in Space - A theoretical approach to economic geography.Harper and Row, New York

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)

Revised Syllabus (from June,2013)

Code No. Gg: 223

Title: Geography of Rural Settlement

No. of Credits: 03

Total No. of Periods: 45

Unit No	Unit	Subunits	Learning points	Periods
1.	Introduction	1.Definition and Evolution of settlements 2. Place names	1 Definition in different parts of the world 2 Sequence of occupancy from Neolithic 3. Modern periods. 1. Historical 2. Cultural and Geographical aspects of settlements reflected in place names.	2
2.	Growth and Distribution	1. Site, situation, location 2. Growth of Settlements	1. Various factors affecting settlement site and distribution 2. Depression and nucleation, factors affecting dispersion and nucleation- Methods of the measuring degree of dispersion. 1. Factors affecting growth of settlements- 2.System of land division, water rights system of agriculture, land tenancy system	4
3.	Theories of Rural Land Use	1. Factors Affecting 2.Theories	1.Intensity of Land use 2. Labour cost 3. Marketing of product 1.Von Thunen 2. Ricardo	6

9.	Rural Development Planning	Various aspects of rural planning	1. Land use 2. Transport 3. Amenities 4. Population 5. Environment and water	3

Reference Books:

1. Alam S.M. et.al. :Settlement System of India Oxford and IBH PublicationCo., New Delhi 1982.
2. Chisholm M. : Rural Settlement and Land use. John Wiley, New York , 1967
3. Clout H.D.: Rural Geography , Pergamon , Oxford, 1977.
4. Doniel P and Hopkinson M : The Geography of settlement Oliver & Byod, Edinburgh, 1986.
5. Grover N. Rural Settlement – A Cultural Geographical Analysis. Inter India Publication, Delhi, 1985
6. Hudson F.S. :A Geography of Settlements. Macdonald and Evans, New York, 1976.
7. Ramchandran H.: Village clusters and Rural Development. Concept Publication, New Delhi, 1985
8. Rao R.N.. Strategy for Integrated Rural Development. B.R. Publication, Delhi, 1986.
9. Rapoport A. House Form and Culture, Prentice Hall, New Jersey, 1969
10. Sen L.K.(ed) Readings in Micro-level Planning and Rural Growth Centers, National Institute of Community Development, Hyderabad. 1972.
11. Srinivas M.N: Village India, Asia Publication House, Bombay,1968.
12. Wanmati S.: Service Centers in Rural India, B.R. Publication Corporation , Delhi, 1983.

8.	Rural Settlements in Maharashtra	1. Patterns 2. House types 3. Rural transformation	1. Various patterns 2. House types and Settlement patterns in Maharashtra 3. Modern forms of rural settlements	4
7.	Rural House Types	Analysis of rural house types	1. Primitive, Vernacular and Modern high rise affecting rural house types. 2. Physical, Social, Cultural and Economic factors 3. Size, functional use and architectural style. 4. Building material	6
6.	Demographic Characteristics of Rural Settlement	2. Migration 1.Demographic aspects	1. Causes & Consequence of migration in rural areas 2. Seasonal migration. 3. Commuting patterns 1. Age-Sex, Education, Occupation, Caste	6
5	Morphogenesis of Rural Settlements and Transformation	1. Morphogenesis 2. Functional growth	1. Social 2. Cultural 3. Economic organization within villages. 1. Functional growth 2. Socio-economic transformation in rural areas.	6
4.	Rural Economic Activities	Rural Service Centers	1.Functional analysis of service village and Trading Center 2. Centrality and Hierarchy of Rural Service centers 3. Central Place Theory.	8

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)

Revised Syllabus (from June,2013)

Code No. Gg: 202 **Title: Practicals in Cartography**

No. of Credits: 02 **Total No. of Practicals: 15**

Sr. No.	Topic	Subtopics	Learning Points	Practicals (2 hours duration)
1.	Data	Types	Scales of Data Measurement	1
2.	Data representation by various techniques **-I**	Maps Diagrams	Choropleth, Isopleth, Dot 2 & 3 Dimensional diagrams: Circle, Square, Pie chart Sphere, Cube	1 2
3.	Data representation by various techniques **-II**	Plots	Semi log and log on X, Y axis X Y Z plots with Whisker & Box method Scatter diagram, Residual from regression, mapping of residuals	2
4.	Map projections	Fundamental concepts	1.Definition and necessity of projections 2. Developable and non - developable surfaces 3. Types- Perspective and non- perspective, conventional 4. Classification based on i) Developable surfaces used ii) Position of source of light iii) Properties	1

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)
Revised Syllabus (from June,2013)

Code No. Gg: 203 **Title: Practicals in Surveying and Field Visit**

No. of Credits: 03 **Total No. of Practicals: 15**

Sr. No	Topic	Subtopics	Learning Points	Periods
1.	Surveying	Geodetic and plane Survey Terms used in leveling Leveling staff	Definitions and methods Benchmarks, spot heights, reduced levels, interpolation and contouring Types of staves	01
2.	Dumpy level	The Instrument	Various components, Common terms used in dumpy level survey, adjustments in dumpy level	01
3.	Dumpy level	Methods of computation Field survey methods	Collimation method Rise and Fall method Profile drawing Block contouring	05
4.	Transit Theodolite	The instrument	Various components, Least count of instrument, adjustments in thedolite	01
5.	Theodolite	Surveying & plotting	Intersection method Tacheometric method	05

Reference Books :

1. *Saha P.& Basu P. Advanced Practical Geography 2007, Books and Allied (P) Ltd. Kolkatta*
2. *Singh & Kanujia : Map work and Practical Geography.*
3. *Richardus P., Adler Ron K.: Map projections, 1972, North Holland publ. Co.Amsterdam*
4. *Maling D.H. ,1973 Co ordinate systems and map projections, George Philip, London.*

5.	Construction	Graphical construction	Graphical construction and uses of following projections 1.Polyconic projection 2. International map projection (Modified polyconic) 3. Universal Transverse Mercator (UTM) projection 4. Mollweide projection.	8

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)
Revised Syllabus (from June,2013)

Code No. Gg: 203 **Title: Practicals in Surveying and Field Visit** **Total No. of Practicals: 15**

No. of Credits: 03

Sr. No	Topic	Subtopics	Learning Points	Periods
1.	Surveying	Geodetic and plane Survey Terms used in leveling Leveling staff	Definitions and methods Benchmarks, spot heights, reduced levels, interpolation and contouring Types of staves	01
2.	Dumpy level	The Instrument	Various components, Common terms used in dumpy level survey, adjustments in dumpy level	01
3.	Dumpy level	Methods of computation Field survey methods	Collimation method Rise and Fall method Profile drawing Block contouring	05
4.	Transit Theodolite	The instrument	Various components, Least count of instrument, adjustments in thedolite	01
5.	Theodolite	Surveying & plotting	Intersection method Tacheometric method	05

Reference Books :

1. Saha P.& Basu P. *Advanced Practical Geography 2007*, Books and Allied (P) Ltd. Kolkatta
2. Singh & Kanujia : *Map work and Practical Geography.*
3. Richardus P., Adler Ron K.: *Map projections, 1972, North Holland publ. Co.Amsterdam*
4. Maling D.H. ,*1973 Co ordinate systems and map projections, George Philip, London.*

5.	Construction	Graphical construction	Graphical construction and uses of following projections 1.Polyconic projection 2. International map projection (Modified polyconic) 3. Universal Transverse Mercator (UTM) projection 4. Mollweide projection.	8

6.	Field visit	Survey of a selected field	Detailed Dumpy level/Theodolite survey of a selected field (Coastal beach, River profiling, village plan map), Report writing	02

Reference Books :

1. Singh & Kanujia : Map work and Practical Geography.
2. Maslov A.V. Gordeev A.V.,Batrakov Yu.G. Geodetic surveying,1984, Mir Publishers, Moscow
3. Kanetakar T.P. & Kukarni S.V. 1986. Surveying & leveling, Pune Vidyarthi Griha Prakshan, Pune
4. V. Natarajan P., Adler Ron K. Advanced Surveying, B.1 Publ. Bombay
5. Richardus P., Adler Ron K.: Map projections, 1972, North Holland publ. Co.Amsterdam
6. Maling D.H. ,1973 Co ordinate systems and map projections, George Philip, London.
7. Rangwala S.C. 2011. Surveying and Leveling, Charotar Publishing HousePvt. Ltd. Anand,(GJ)

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)
Revised Syllabus (from June,2013)

Code No. Gg: 204 **Title: Geography of Tourism**

No. of Credits: 03 **Total No. of Periods: 45**

Sr. No	Topic	Subtopics	Learning Points	Periods
1	Basics of tourism:,	Definition of tourism	Factors influencing tourism: historical, natural, socio-cultural and economic; motivating factors for pilgrimages; leisure, recreation; elements of	4
2	Geography of tourism:	its spatial affinity; areal and locational dimensions comprising physical, cultural, historical and economic;	Tourism types: cultural, eco – ethno coastal And adventure tourism, national and international tourism; globalization and tourism.	6
3	Indian Tourism	regional dimensions	tourist attraction; evolution of tourism, promotion of tourism. Case studies from India	15
4	Infrastructure and support system	accommodation and supplementary accommodation; other facilities	Tourism circuits-short and longer Detraction - Agencies and intermediacies - Indian hotel industry.	15
5	Impacts of tourism:	physical, economic and social and perceptional positive and negative impacts;	Environmental laws and tourism-Current trends, spatial patterns and recent changes; Role of foreign capital & impact of globalization on tourism	15

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)

Revised Syllabus (from June,2013)

Code No. Gg: 207
No. of Credits: 03

Title: Practicals in Terrain Analysis

Total No. of Periods: 45

Sr. No	Topic	Subtopics	Learning Points	Periods
1.	Data sources	Topographic Map Aerial Photographs Satellite images	Construction of Superimposed ,Projected and Composite profiled from contours –its interpretation and preparation of elevation map of the area Stereoscope view and calculation of % overlapped area- Measurements with parallax bar of same area IRS data products, mapping and interpretation	10
2.	Spatial Terrain maps	Slope, Relative relief and %dissection Index	Preparation of Slope, Relative relief and %dissection Index and area measurement under each category	10
3.	Relationship between terrain parameters	Slope, Relative relief and %dissection Index	Matrix calculation of area under Slope, Relative relief and %dissection Index And preparation of observation table	08
4	Thalweg Analysis	Long profiles	Construction and interpretation of long profiles of rivers	02
5.	Digital Terrain analysis I	*Preparation of DEM from contours and point elevation data*	Preparation of Grid elevation data *TIN model and interpolation of Grid* *3 D perspective views and view shed analysis*	05

6.	Digital Terrain analysis II	Digital Terrain analysis using GIS softwares	Determination of Primary attributes any 4	05
7.	Digital Terrain analysis III	Digital Terrain analysis using GIS softwares	Determination of Secondary attributes any 4	05

References

1. Brändli, M., 1997. Modelle und Methoden für die Extraktion geomorphologischer und hydrologischer Objekte aus digitalen Geländemodellen. Unpublished . Geographisches Institut der Universität Zürich.
2. Burrough, P. A., McDonnell, R. A., 1998. Principles of Geographical Information Systems. New York: Oxford University Press.
3. Chilès, J., Delfiner, P., 1999. Geostatistics: Modeling Spatial Uncertainty. New York: John Wiley and Sons.
4. Foley, J.D., van Dam, A., Feiner, S.K., Hughes, J.F., 1992. Computer Graphics: Principles and Practice. Reading: Addison-Wesley. [Second Edition, Revised Fifth Printing.]
5. Goodchild, M.F., 1980. Algorithm 9: Simulation of Autocorrelation for Aggregate Data. Environment and Planning, 12, 1073-1081.
6. Kotz, S., Johnson, N. L., 1985. Encyclopedia of Statistical Sciences. New York: John Wiley and Sons.
7. Longley, Paul A., Goodchild, Michael F., Maguire, David J., Rhind, David W., 1999. Geographical Information Systems. Principles, techniques, applications and management. New York: John Wiley and Sons. [2 volumes. 580 pages. 2nd edition]
8. Moore, I. D., 1996. Hydrological Modeling and GIS. In: M. F. Goodchild, L. T. Steyaert, B. O. Parks, C. Johnston, D. Maidment, M. Crane, and S. Glendinning, ed. GIS and Environmental Modeling: Progress and Research Issues. Fort Collins, Colorado: GIS World Books.
9. Quinn, P., Beven, K., Chevalier, P., Planchon, O., 1991. The Prediction of Hillslope Flow Paths for Distributed Hydrological Modelling Using Digital Terrain Models. Hydrological Processes, 5(1), 59-79.
10. Sigle, M., Hellwich, O., Köstli, A., 1992. Intersection and Combination of Digital Elevation Models - Methods and Applications. International Archives of Photogrammetry and Remote Sensing, 29(B4), 878-882.
11. Sutherland, I.E., Sproull, R.F., Schumacker, R.A., 1974. A Characterization of Ten Hidden-Surface Algorithms. ACM Computing Surveys, 6(1), 1-55.
12. Wilson, J. , Gallant, J., 2000. Terrain Analysis: Principles and Applications. New York: John Wiley and Sons.
13. Yoeli, P., 1985. The Making of Intervisibility Maps with Computer and Plotter. Cartographica, 22(3), 88-103.

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-III: Revised Syllabus (from June-2014)

Code No. Gg: 333 **Title: Practicals in Population and Settlement Geography**

No. of Credits: 03 **Total Periods : 45**

Sr. No.	Topic	Sub-Topic	Learning Points	Period Each Practical of 3 Hours
1	Population Geography	1. Demographic indices	1. Mean age at marriage and fertility relationship 2. Mean age at marriage and infant mortality rate 3. Underweight children of age 1- 47 months and under 5 years mortality rate. 4. % of woman married to blood relative and infant mortality.	8
		2. Determination of Demographic Transition	1. Demographic transition – applied to Maharashtra 2. Pull-push factors affecting volume of migration – simple correlation matrix. 3. Relationship between per capita income and infant mortality	
2	Settlement Geography	Indices	1. Delimitation of CBD by Vance and Murphy 2. Relationship between Basic/ Non-basic ratio and growth rate 3. Relationship between land values and land use. 4. Gravity model by W. J. Relly and Zipf, its application (Potential Population surfaces) 5. Primary Index (Jefferson) Multiple Primacy. 6. Stages according to urbanization Curve. 7. Rate of growth and level of Urbanization. 8. Rank size rule. 9. Huff's Model. 10. Gini's Coefficient concentration index	7

Books :

1. Economic and Political Weekly – Special issue of population survey
2. Liendzore J.M. Techniques in Human Geography
3. Martin Cad : Analytical Urban Geography
4. Siddhart, K and Mukherjee, S (1999) : Cities urbanization and urban system. Transworld Media and Communication, Patana.
5. Chandana, R.C. Population, Geography
6. Yeats, M.H. (1978) : An introduction to quantitative analysis in human geography.

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-III: Revised Syllabus (from June-2014)

Code No. Gg: 302 **Title: Interpretation of Topographical Maps and Village Survey / Project Report**

No. of Credits: 04 **Total Periods : 60**

Sr. No.	Topics	Sub-topics	Learning Points	Practicals (3 hrs)	No: of sheets (minimum)
	a. Interpretation of Topographical Maps (for 50 marks)				
1	Study of S.O.I and O.S Topographical Maps (1: 50,000 Series)	1.Indexing systems and conventional signs and symbols (OS)	1. 15' 15' 2. 7.1/2' 7.1/2' 3. 5' 7.1/2'	4	2 (One each for S.O.I and O.S. sheets)
			1. 4-figure grid 2. 6-figure grid 3. International grid reference		
		2. Grid references.	1. Latitudinal & Longitudinal extension 2. Contour interval		
		3. Locational and Relief aspects of the area	3. Maximum and Minimum heights		
2	Interpretation of S.O.I and O.S. toposheets.	1. Patterns of Relief	1. Distribution of Spot heights, bench marks, Trigonometrical Points etc. 2. Types of Slopes (convex, concave, uniform etc.) 3. Major landforms from contour patterns	10	SOI –3 sheets OS – 3 sheets
		2. Patterns of Drainage network	1. Types-trellis, dendritic, radial, etc. 2. Streams with water, without water. 3. Influence of relief on drainage		
		3. Patterns of Vegetation.	1. Types of vegetation 2. Association of relief and drainage 3. Reserved Forest and Protected Forest		
		4. Patterns of Settlements.	1. Types, amenities, facilities and communication, etc 2. Distribution, relative size, relative distance (dispersed, nucleated etc)		
		5. Patterns in Land Use.	1. Agriculture, mining etc, areal distribution, impact of physical landscape.		
	b. Village Survey / Project Report with oral (for 30 marks)				

3	Physical Survey	Location	1. Location on toposheet (lat. & long), extension, grid reference if available, height above mean sea level, area, site and situation) 2. Map showing physical features surrounding the village./ Project area 3. Position of the village on the cross-section line. 4. Location of the village /Project area shown in the map of catchment area.	6	
		Geology and climate	Information regarding geology, climate, soils and vegetation of the village		
4	Socio-Economic Survey	Population characteristics	1. Population, population structure, facilities available 2. Information regarding households-based on 10% sample survey.		
		Village morphology	1. Plan prepared by pace survey 2. Description of the plan.		

Note:

1. The selection of the village must be based on the availability of S.O.I. toposheet and/ or Cadastral Map.
2. As far as possible the village should be selected from the nearby area, so that the students can undertake at least two field visits.
3. Collection of data / information should be undertaken by the student by visiting the various Government Offices
4. The Village Survey Report should includes all geographical and socio-economic aspects.
5. Appropriate maps, diagrams, graphs, sketches etc should be included.
6. The Report should not preferably exceed 25 pages and **a group of maximum 5 students is permissible.**
7. Village survey is equivalent to 6 Practicals.

Reference Books :

1. Tamaskar B.G. and Deshmukh V.M. (1974), Geographical Interpretation of Indian Topographical Maps.
2. Ramamurthy, K. (1982): Map interpretation, Madras
3. Petrie N. (1992), Analysis and Interpretation of Topographical Maps. Orient Longman Limited Calcutta.
4. Dury G.H. (1960), Map Interpretation. Sir Isaac Pitman and Sons Limited, Pitman House, Bath.
5. Meux A. H. (1960), Reading Topographical Maps. University of London Press Limited
6. Jones P. A. (1968), Field work in Geography. Longmans, Green and Company Limited
7. Archer J. E and Dalton T. H. (1968), Field work in Geography B.T. Batsford Limited London
8. Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London.
9. Gupta, K. K. and Tyagi, V. C. (1992): Working with maps, Survey of India Publication, Dehradun
10. Vaidyanadhan. R. (1968). Index to a set of 60 topographical maps, CSIR, New Delhi

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-III: Revised Syllabus (from June-2014)

Code No. Gg: 303 **Title: Research Method in Geography**

No. of Credits: 03 **Total Periods : 45**

Sr. No.	Topic	Sub-topic	Learning Points	Lectures
1.	Surveying And Map projections	Definition Importance and types	1. Plane and geodetic Survey 2. Methods of Survey 3. Principles and methods of Dumpy level and theodolite survey 4. UTM projection	6
2.	SOI Toposheet	Interpretation and use	1. Indexing system of SOI Toposheet 2. Data base creation for physical and cultural features 3. Drainage basin demarcation, terrain cross profiles	6
3.	Aerial photographs and satellite images	Interpretation and use	1. Concept of stereoscopic view 2. Geometry of Aerial photograph: flight line, overlap, fiducial marks, Measurement of relative heights 3. Data base creation from aerial photographs and satellite images	6
4.	Statistical methods	Application	1. Nature of data Geographical data. 2. Descriptive and inferential statistics 3. Bivariate and multivariate correlation analysis 4. Testing of hypothesis: parametric and non parametric tests (Chi squared, ks, t, f)	6
5.	GIS	Use of GIS	1. Use of GIS in spatial data analysis and modelling	5
6.	Field work	Components	Field sampling Questionnaire, interviews, measurements and field mapping.	5
7.	Report writing	Technique	Research problem, survey of literature, research methods applied, analysis, conclusions References and Bibliography	6

Reference Books:

1. Shaw G and Wheller D. (1985): Statistical techniques in geographical analysis. John Wiley and sons, New- York
2. Sumner G J (1978): Mathematics for physical geographers. Edward Arnols
3. Karlekar Shrikant and Kale Mohan (2005): Statistical analysis of Geographical data, Dimond publication
4. P. A. Burrough and R.A. McDonnell, Principle of Geographical Information System, 2000, Oxford University Press.
5. Geoge Joseph (2003): Fundamental of Remote Sensing, Universities Press, Hyderabad.
6. Ebdon David (1989): Statistical for Geographers
7. King, (1975): Statistical Geography
8. Norcliffe G. B. (1977): Inferential statistics for Geographers (Hutchinson, London)
9. Rogerson P. A. (2001): Statistics for Geography (SAGE pub., London, New Delhi}
10. Singh & Kanauja : Map work and Practical Geography.
11. Maslov A. V.Gordeev A. V. Batrakov Yu. G. (1984) : Geodetic surveying, Mir Publishers, Moscow
12. Kanetkar T. P. & Kulkarni S.V. 1986. Surveying & leveling, Pune Vidyarthi Griha Prakshan, Pune
13. V. Natarajan P., Adler Ron K:. Advanced Surveying, B. 1 Publ. Bombay
14. Richardus P., Adler Ron K (1972) : Map projections, North Holland publ. Co. Amsterdam
15. Maling .H. (1973) : Co ordinates systems and map projections, George Philip, London.

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MA/MSc Syllabus in Geography (Credit System)

Sem-III: Revised Syllabus (from June-2014)

Code No. Gg: 305

No. of Credits: 03

Title: Practicals in Watershed analysis

Total Periods : 45

Ex No.	Topic	Sub topic	Learning points	Practical(3hrs)
1	Delineation of Watershed/Drainage basin	Delineation of Watershed/Drainage basin from toposheet	3 to 5 th order basin delineation from Toposheet	1
2	Basin perimeter, shape and area	Basin perimeter, shape and area	Calculation of Basin perimeter, shape and area	1
3	Linear aspects of Drainage basin	Stream ordering(Strahler's method)	Stream ordering, Numbering, Measurement and calculation of Stream length, Mean stream length, Stream length ratio, Bifurcation ratio	2
4	Relief aspects of Drainage basin	Relief ratio, relative relief, Ruggedness number	Calculation of Relief ratio, relative relief, Ruggedness number	2
5	Aerial aspects of Drainage basin	Drainage density, Drainage frequency, Texture ratio, Form factor, circularity ratio, Elongation ratio,	Calculation of Drainage density, Drainage frequency, Texture ratio, Form factor, circularity ratio, Elongation ratio,	2
6	Preparation of DEM	Digitization of contours from Toposheet	Preparation of TIN model and Grid based DEM	2
7	Software based	Delineation of watershed	DEM based	2
8		Digitization of layers	Point ,line and Polygon	
9		Finding ridge line and valley floor	Finding ridge line and valley floor within basin/Watershed	
10	Profile drawing	DEM based	Set of Profiles at an equal interval 5 to 8 profiles	1
11	Hypsometric Integral	DEM based	Plotting of Hypsometric curve and Calculation of Hypsometric Integral	2

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MA/MSc Syllabus in Geography (Credit System)
Sem-IV: Revised Syllabus (from June-2014)

Code No. Gg: 441 **Title: Principles of Regional Geography and Project Work**

No. of Credits: 04 **Total Periods : 60**

Theory of Principles of Regional Geography = 2 credits.

Project Work = 2 credits.

Sr. No.	Topic	Learning Points	Periods
01.	Introduction	1. Definition and Concept of Regional Geography. 2. Principles and importance of Regional Geography.	5
2	Regionalisation and Planning	1. Regional Approach 2. Planning through Regionalisation	5
3	Theoretical Structure of Planning	1. Central Place Theory 2. Growth Pole Theory 3. Gunnar Myrdal's Cumulative Causation. 4. Application of these theories in India.	7
4	Regional Disparities	1. Causes, Effects of Regional Disparities. 2. Remedies on Disparities.	5
5	Presentation	Student Presentation on any one topic related to Regional Geography with issues and solutions.	8

Reference Books:

1. Chandana, R. C. (2000): Regional Planning - A Comprehensive Text, Kalyani Publishers, Ludhiana
2. Friedmann, J Alanso W (1967): Regional Development and planning - A Reader, MIT Press Mass
3. Mishra R. P (Ed.) (1992): Regional Planning, Concepts, Techniques, Policies and Case Studies, Concept Pub. New Delhi.
4. Dube K. N. (ed) (1990): Planning and Development in India, Asia Publishing House, New Delhi
5. Govt. of India (1986), Regional Plan 2001 - National Capital Region, NCRPB, Ministry of Urban Development, New Delhi
6. Bhat, L. S. (1973): Regional Planning in India, Statistical Publishing Society, Kolkata.
7. MacLeod and Jones M. (2001): Renewing The Geogrpahy of Regions, Environment and Planning.

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-IV: Revised Syllabus (from June-2014)

Title: Regional Planning and Development

Code No. Gg: 420 **Total Periods : 45**

No. of Credits: 03

Sr. No.	Topic	Learning Points	Periods
01.	Concept and Role of Regional Planning	1. The Concept and Need of Regional Planning 2. Role of Geography in Regional Planning. 3. Approaches in Regional Planning. 4. Hierarchy of Planning 5. Types of Planning 6. Levels of Planning	7
02.	Region	1. Concept of a Region. 2. Type of a Region. 3. Concept of Planning Region. 4. Indicators of Developments 5. Measurement of Regional Development.	5
3	Surveys of Regional Planning	1. Regional, 2. Techno-Economic 3. Diagnostic surveys.	6
4	Methodology and Techniques	1. Methodology of regional Planning 2. Techniques of regional planning. 3. New trend in regional planning	6
5	Planning Strategies	1. Concept of Planning Strategies in Regional Development. 2. Concentration versus dispersal 3. Case studies from developed and developing countries.	8
6	Regional Policies	1. Regional Policies in India's Five Year Plans. 2. Experience of Regional Planning in India. 3. Multilevel planning (State, District and Block Level Planning).	10
7	Regionalisation	1. Concept of Regionalisation. 2. Planning of Metropolitan regions. 3. Planning of tribal, Hilly areas, command areas, river basins. 4. National Capital Region.	10

Reference Books:

1. Chandana, R. C. (2000): Regional Planning - A Comprehensive Text, Kalyani Publishers, Ludhiana
2. Friedmann, J Alanso W (1967): Regional Development and planning - A Reader, MIT Press Mass
3. Mishra R. P (Ed.) (1992): Regional Planning, Concepts, Techniques, Policies and Case Studies, Concept Pub. New Delhi.
4. Dube K. N. (ed) (1990): Planning and Development in India, Asia Publishing House, New Delhi
5. Govt. of India (1986), Regional Plan 2001 - National Capital Region, NCRPB, Ministry of Urban Development, New Delhi
6. Bhat, L. S. (1973): Regional Planning in India, Statistical Publishing Society, Kolkata.

Savitribai Phule, Pune University, Pune
T.Y.B.A
Gg-320: Population and Settlement Geography (S-3)
Effective from-June-2015

Objective:-

1. To provide an understanding of spatial and structural dimensions of population
2. To familiarizing the students with global and regional level problems.
3. To acquaint the students with the spatial, political and structural characteristics of human settlement under varied environmental conditions.

Section-A. Population Geography

nit	Topic	Sub Topic	Learning Points	Periods
1	Introduction	Nature and Scope	Definitions, Nature and Scope of Population Geography	10
		Source of Population Data	Census, National Sample Survey, Sample Registration Survey, NFHS, DLHS Data, Demographic Surveys and other Sources	
2	Population Dynamics	Spatial Pattern of Distribution	1) Determinates of Distribution and Density of Population 2) Distribution of Population – World & Indian Scenario 3) Population Growth- Global & Indian Trend	10
		Composition of Population	Population Composition: Age and Sex, Rural-Urban &Economic	
3	Demographic Attributes	Human Migration	1. Migration-Classification, Determinants and Consequences of Migration. 2.Measures – Fertility, Morbidity and Mortality, Marital Status 3.Human Development Index 4. Illegal Migrations and its Impacts Migration and its Impacts on Smarts Cities and Smart Villages	14
		Theories of Population Growth	1) Demographic Transition Model [DTM] 2) Malthus: Population Theory	
4	Population Policies	Population Policies and Programmes	1.Population Policies in the Context of Growth, Structure, Distribution &Quality Life 2. Evolution of Family Welfare Programme in India 3.National Population Policies in India [After 1991]	11

Section-B- Settlement Geography

5	Introduction of Settlement Geography	Definition, Nature and Scope	Definition, Nature and Scope of Settlement Geography	12
		Characteristics	1) Characteristics of Settlement Geography 2) Branches of Settlement Geography	
6	Man-Environment Relationship	Factors Influencing the Growth and Distribution of Settlements.	1. Physical 2. Economic 3. Social 4. Political	10
7	Settlement	Site and Structure	Site, Situation, Type, Size, Spacing and Patterns	12

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MA/MSC Syllabus in Geography (credit system)
Revised Syllabus (from June,2013)

Title: Principles of Population and Settlement Geography **No. of Periods: 60**

Code No. Gg: 104
No. of Credits: 04

Unit No.	Unit	Sub Unit	Learning Points	No.of periods
1	Introduction	Evaluation of Settlement & Population Geography	1. Evaluation of Settlement Geography 2. Evaluation of Population Geography 3. Changes in the approaches to the study of Population and Settlement	04
2.	Man-environment Relationship	Factors influencing the growth and distribution of Settlements.	1. Physical 2. Economic 3. Societal	04
3.	Settlement Patterns	Changes in the Shelter and Patterns of Settlement.	1.Various patters of Settlement. 2. Effects of technology on shelter and pattern from Neolithic to Modern period.	06
4.	Dispersion and Nucleation	Factors influencing the dispersion and nucleation	1. Physical 2. Social 3. Economic 4. Method of Measuring degree of dispersion, Nearest Neighbors Method.	08

Concepts of Settlement and Urbanization

Various Concepts with examples

of Settlements

1. Urbanization
2. Centrality
3. City Region
4. Urban Fringe
5. Rank-size Rule
6. Smart City Concept
7. Smart Village
8. C.B.D.
9. Hierarchy of Settlement

Suggested Readings

1. Beaujeu-Gamier, J. : Geography of Population (Translated by Beaver, S.H.) Longmans, London, 1966.
2. Census of India 2001 Series-I India Provisional Population Totals. Published by Registrar General & Census Commissioner, India, 2001.
3. Census of India, 1991 India : A State Profile Published by office of the Registrar General of India, Census Operations, New Delhi.
4. Chandna, R.C. : Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi, 2000.
5. Clark J.I: Population Geography, Permagon Press, New York, 1965.
6. Sundram K.V. & Nangia Sudesh, (editors): Population Geography, Heritage Publishers, Delhi, 1986.
7. Peters: G.L. and Larkim R.P: Population Development nexus in India: challenges for the new millennium. Tata McGraw Hill Publishing Co. Ltd., New Delhi 2001.
8. Srinivasan K. and M. Vlassoff Population Geography: Problems, Concepts and Prospects New York, 1969.
9. Trewartha, G.T. : A Geography of Population : World Patterns, John Wiley & Sons, Inc., New York, 1972.
10. Trewartha, G.T. : The More Developed Realm: A Geography of its Population, Pergamon Press, Oxford, 1978.
11. Trewartha, G.T.: The Less Developed Realm - A Population Geography, McGraw-Hill, New York, 1972.
12. UNDP: Human Development Report, Oxford University Press 2001.
13. Zelinsky, W. : A Prologue to Population Geography, Prentice-Hall, Englewood Cliffs, 1966.
14. Carter H.: The Study of Urban Geography, Edward Arnold, London, 1972.
15. Chisholm, M.: Rural Settlement and Land Use, Hutchinson, London,1970.
16. Clout, R.D. :Rural Geography, Pergamon Press, London,1970.
17. Deshpande, C.D.: Shehre, Continental Prakashan, Pune, 1983 (Marathi).
18. Dickinson, R.E. City, Region and Regionalism, Kegan Paul, Trench, Trubner & Co., London, 1947.
19. Misra, H.N.(ed.) : Rural Geography, Heritage Publishers, New Delhi,1987.
20. Money, D.C. : Patterns of Settlements, Evan Brothers, London, 1972.
21. Mukerji, R.K. : Man and His Habitation, Popular Books, Bombay, 1968.
22. Nangia S.: Delhi Metropolitan Region, Rajesh Publications, 1976.
23. Perpillou, A.: Human Geography, Longmans, London, 1966.
24. Singh, R.L.: Readings in Rural Settlement Geography, Banaras Hindu University, Department of Geography, Varanasi, 1972.

Savitribai Phule Pune University, Pune
T.Y.B.A
Gg.: 310 Regional Geography of India (G-3)
June 2015

Objective : -

1. To acquaint the students with geography of our Nation.
2. To make the student aware of the magnitude of problems and Prospects at National level.
3. To help the students to understand the inter relationship between the subject and the society.
4. To help the students to understand the recent trends in regional studies.

SECTION - I

Sr. No.	Topic	Sup Topic	Learning Points	Periods
1	Introduction	Location , Extent and Geopolitical Significance	1.Historical Background 2.Location and Extent 3.Relationship with Neighboring Countries 4.Geopolitical Importance of Indian Ocean.	10
2	Physiography	Major Physiographic Regions and their Importance	1. The Northern Mountains 2.The North Indian Plains 3.The Peninsular Plateau 4.The Costal low lands 5.The Islands	12
3	Drainage	Drainage System of India The Himalayan River System The Peninsular River System	1.The Indus , The Ganga , The Brahmaputra 2.East Flowing Rivers- Mahanadi, Godavari, Krishna, Kaveri. 3.West Flowing Rivers- Narmada, Tapi, Mahi 4.Rivers of the Sahyadri - Amba & Damanganga	12
4	Climate	Characteristics , Origin and Mechanism of Monsoon, Various Seasons	1. Characteristics of Indian Climate 2.Role of Various Controlling Factors on Climate of India 3.Monsoon: Origin and Mechanism 4.Various Seasons and Weather Associated with them	11

SECTION – II

5	Soils and Natural Vegetation	Types and Distribution	Types of Soils and its Distribution Soil Degradation and Conservation Types of Natural Vegetation and its Distribution	12

5.	Concepts related to Settlement	1. Various Concepts 2. Settlement Theory	1. Nodality 2. Centrality 3. Range 4. Threshold & Hierarchy 5. Rank-size distribution	08
6.	Concentration of Population and Levels of Urbanization	1. Urbanization 2. Factors of Urban Growth	1. Christaller and Losch's Model Concept of Urbanization 1.Improvement in transportation & Communication. 2.Changes in Industrial Production. 3.Industrialization 4.Food supply and Public hygiene	08
7.	Population Distribution	Factors influencing the Distribution of Population	1. Physical 2. Economic 3. Social 4. Political	08
8.	Theories of Population Growth	1. Thomas Malthus 2. Ricardo 3. Demographic Transition Model	1. Concept 2. Scope 3. Applications 4. Relevance	08
9.	Population as a resource	Various aspects of population	1. Size 2. Growth 3. Age 4. Education	06

6	Minerals and Energy Resources	Mineral Resources Energy Resources	Deforestation and Conservation 1.Mineral Resources & its distribution Iron ore, Manganese, Bauxite, Copper 2.Energy Resources- a)Major Conventional & its Distribution Coal, Mineral Oil, Natural Gas b)Non-conventional - Hydroelectricity, Solar energy, Wind energy, Biogas, Atomic energy	12
7	Agriculture	Significance and Recent Trends in Agriculture	1. Significance of Agriculture in Indian Economy 2. Green Revolution 3. White Revolution 4.Blue Revolution 5. Livestock Resources, 6.Tissue Culture & Horticulture 7. Poly House and Agriculture	11
8	Planning and Development	Regional Planning and development	1.Concept, Objectives, Need, Nature of Regional Planning 2.Experience of Regional Planning in India 3.Regional Development of Maharashtra	10

Suggested Readings:

1. *Aher A.B , Chaodhari A. P & Chaodhari Archna. Regional Geography of India Prashant Publication Jalgaon 2015*
2. *Deshpande C.D: India-A Regional Interpretation Northern Book Centre, New Delhi.1992.*
3. *Farmer, B.H.: An Introduction to South Asia. Methuen, London, 1983.*
4. *Govt. of India: India - Reference Annual, 2001 Pub. Div, New Delhi, 2001.*
5. *Govt. of India: National Atlas of India, NATMO Publication, Calcutta..*
6. *Learmonth, A.T.A. et.al(ed.) : Man and Land of South Asia Concept, New Delhi, 1965.*
7. *Mitra, A.: Levels of Regional Development India Census of India, Vol I, Part I-A (i) and (ii) New Delhi, 1967.*
8. *Routray, J.K.: Geography of Regional Disparity Asian Institute of Technology, Bangkok, 1993.*
9. *Shafi, M: Geography of South Asia, McMillan & Co., Calcutta, 2000.*
10. *Singh, R.L.(ed.): India: A Regional Geography. National Geogphical Society. India, Varanasi, 1971.*
11. *Spate, O.H.K. and Learmonth, A.T.A.; India and Pakistan - Land, People and Economy Methuen & Co., London, 1967.*
12. *P. G. Saptarshi, J. C. More, V. R. Ugale & A. H. Musmade :A Geographical Region of India : Diamond Publication (2009) (Marathi)*
13. *Patil S. G., Suryawanshi R. S., Pachame S., Choudhar A. H. : Economic Geography, Atharav Prakashan, Pune. (2014) (Marathi)*
14. *Aher A. B. , Arekar R.: Commercial Geography , Atharav Prakashan, Pune. (2013) (Marathi).*
15. *Datt & Sundaram, Indian Economy (S.C.A.)*

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-III: Revised Syllabus (from June-2014)

Code No. Gg: 321 **Title: Political Geography**

No. of Credits: 03 **Total Periods : 45**

Sr. No	Topic	Sub- Topic	Learning Points	Periods
1	Introduction to political Geography	Nature, Scope, Development	1) Definition 2) Geography & politics 3) History & development of political Geography	5
2	Approaches to the Study of Political Geography	Types of Approaches	1) Whittlesey's landscape approach 2) Functional approach 3) Centrifugal & centripetal forces, analysis of external functions, 4) Unified Field Theory	6
3	Concept of Nation & State	Geographical Perspective	1) Territoriality 2) State & Nation 3) State formation. 4) Nation building / Nationalism	5
4	Frontiers & Boundaries	1. Definition. 2. Classification	1) Definition of frontiers & boundaries 2) Distinction between frontiers & boundaries 3) Genetic, functional & morphological classification of boundaries	7
5	Global Geo-Strategic View	Land, Sea, & Air Power	Views of Mahan, Mackinder, Spyk man & Cohen	5
6	Resource Development & Power	Resources & National Strategy	1) Classification of resources 2) Resources & National strategy 3) Resource management & power of Nation	5
7	Geopolitical Significance of Indian Ocean	Geopolitics Indian Ocean Border States and England	Political Geography of SAARC region.	5
8	Political Geography of India	Contemporary Issues	1) Changing political map of India. 2) Unity in diversity. 3) Stability & instability in state politics 4) Interstate water & language Disputes. 5) Problems of border states of India 6) Emergence of new states.	7

Reference Books :

1. Alexander L.M (1963): World Political Patterns, Ram McNally, Chicago.
2. Political Geography By Sudeepta Adhikari, Rawat Publication.
3. Dikshit R.D (1996): Political Geography: A Contemporary Perspective, Tata McGraw Hill, New Delhi.
4. Dikshit R.D (1999): Political Geography: A Century of Progress, Sage, New Delhi.
5. De Blij. H. J And Glassner, M. (1968) Systematic political Geography, John Wiley, New York.
6. Pounds N.J.G (1972): Political Geography, McGraw, New York.
7. Taylor, R.J.(1989) Political Geography, Longman UK.

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-III: Revised Syllabus (from June-2014)

Code No. Gg: 304 **Title: Social and Cultural Geography**

No. of Credits: 03 **Total Periods : 45**

Sr. No.	Topic	Subtopics	Learning points	Periods
01	Introduction	Nature, Scope andDevelopment	1. Definitions 2. Early Contributions 3. Subject Matter 4. Conceptual and Methodological approaches 5. Trends and Developments	04
02	Philosophical bases Social and Cultural Geography	Bases and Concepts	1. Materialism, Idealism,Phenomenalism, Existentialism, Structuralism,Radicalism, liberalism, Positivism, Humanism 2. Origin and Diffusion of Culture	05
03	Space and Society	Structure and Processes of Social Patterns	1. Individual's space- Intimate, Personal, Socialand Public Space. 2. Theoretical space – Organic, Perceptive andSymbolic space 3. Interaction and Social relations	06
04	Social Groups	1. Activities 2. Concepts 3. Processes 4. Types and Structure	1. Groups in Society 2. Social Structure, 3. Models of Assimilation andSegregation 4. Industrialization, Migration, Urbanization, Modernization, Globalization	07
05	Socio- Cultural Regions	1. Origin anddiffusion ofculture 2. Bases ofregion formation	1. Cultural Diversities 2. Role of Race, Religion, Caste, Ethnicity, Tribe 3. Language and Dialect 4. Literacy, Education,Economic Activities, Class and Power 5. Transformations and Changes. 6. Cultural regions of the World and India	07
06	Social Well-being	1. Concepts 2. Components and Indicators 3. Measurementand Patterns	1. Quality of Life and Human Development 2. Components of Regional and SocioCultural Indicators 3. Human Development Index. 3. Methods of Measuring well-being byweighingIndicators. 4. Patterns of social well-being –States, Indiaand World	08
07	Human Settlements	1. Relation to Ideology, Social Structure and Technology.	1. Social areas in Urban and Rural Settlements. 2. Social and Physical Infrastructure. 3. Rural urban contrasts- Housing, Health,Education, Social structure, Economic andCulturalCharacteristics. 5. Impact of Technologyon HumanSettlements. 4. Redistribution of Resource for Social Justice, Equality and Welfare.	08

Reference Books:

1. AnandAijazuddin (1999) : Social Geography, Rawat Publications, New Delhi
2. Bulsara, J. F. (1970) : Patterns of Social Life in Metropilitan Areas, Popular Prakashan, Bombay
3. Censys of India (1974) : Economic and Socio-Cultural Dimensions of Rationalization Census Centenary, Monograph No. 7, Govt. of India, New Delhi
4. Coates, B. E. et. al. (1977) : Geography and Inequality, Oxford University Press, London
5. Orang, Mike (1998) : Cultural Geography. Routledge Publication, London

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-IV: Revised Syllabus (from June-2014)

Title: Geography of Food Security of India

Code No. Gg: 404

Total Periods : 45

No. of Credits: 03

Sr. No.	Topics	Learning points	Periods
1.	Introduction	1.Concept of food security. 2. Importance and availability of food. 3. Accessibility, utilisation food stability 4. Hunger and Malnutrition.	6
2	Economics of Food	1.Economic Growth. 2. Physical Factors affecting food security. 3. Agricultural productivity, Land Availaility, Land degradation. 4. Land rights and holding.	7
3.	Food Crops	1. Food and cash crops. 2. Distribution of major food and cash crops. 3. Production of food crops. 4. Availability of food for masses. 5. Socio-economic factor in food security.	8
4.	Food Sovereignty	1. Concept of food justice. 2. Food Sovereignty. 3. Economic constraint on access and availability, 4. Social injustice- gender inequalities. 5. Food Security conditions in India at national and state level.	10
5	India's Food Security Bill	1. India's Food Security Bill 2013. 2. Benefits and detriments of Food Security Bill. 3. Importance of Food Security in India.	8
6.	Pedagogy	1. Regional and National news analysis from magazines, journals and newspapers is essential. 2. An interdisciplinary approach will be useful in knowing the multi-dimensions of food security. 3. Study of spatio-temporal aspects by various physical and socio-economic maps.	6

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-IV: Revised Syllabus (from June-2014)

Title: Geography of Health

Code No. Gg: 405

Total Periods : 45

No. of Credits: 03

Sr. No.	Topic	Sub topic	Learning points	No of Lectures
1	Geography of health	Definition and approaches to study	Definition, development, achievements and challenges, approaches to geography of health care	5
2	Geographical factors	Geographical factors affecting human health	Geographical factors affecting human health and diseases arising from them	5
3	Classification of diseases	genetic, communicable, non – communicable, occupational, deficiency diseases, WHO classification of diseases	genetic, communicable, non – communicable, occupational, deficiency diseases, WHO classification of diseases	5
4	Ecology, etiology, transmission of major diseases	Diffusion of diseases and causes	Diffusion of Diseases and causes of the same. Deficiency disorders and problems of malnutrition	6
5	Health care systems in India		Socio-political context – Sources of health care – Demand and supply	6
6	Rural environment and health		Custom, social practice and disease 2.2. Food habit and health- 2.3. Environment and health – 2.4.Health problems of tribal	6

			communities with special reference to India	
7	**Urban environment and health**		Occupational health hazards Environmental Pollution and related impact on health in urban and peri-urban are . Relevant case studies.	6
8	Significance of primary health care centers		Planning of health care centers and health services.	6

References:

1. Akhtar, R. and Learmonth, A.T.A. (eds) (1956): Geographical Aspects of Health and Disease in India, Concept Pub. Co.
2. McGlashan, N.D(ed)(1972): Medical Geography: Techniques and Field Studies, Methuen.
3. Pacione, M. (1986):.Medical Geography: Problems and Prospect, Croom. Helm.
4. Smith, D.M.(1977): Human -Geography, A Welfare Approach, Arnold Heinemann.
5. McGlashan, N.D. and Blunde J.R.(eds)(1983):Geographical Aspects of Health, Academic Press.
6. Trevethick, R.A.(1973): Environmental and Industrial Health Hazards, William Heinemann Medical Books Ltd.
7. Bhat, V.N. (1980):Public Health in India, Amar Prakashan.
8. Banerji, D. (1985):Health and Family Planning Services in India, Lok Prakash, New Delhi.

Books for further reading:

1. Anthamatten P, (2011), Introduction to the Geography of Health, Rawat Publications, Jaipur
2. Pyle, G. F.(1979): Applied Geography, Wiley & Sons.
3. Howe, G.M.(1977): A World Geography of Human Diseases, Academic Press.
4. Denton, J.A. (1978) : Medical Geography, Houghton Mifflin, U.S.A.
5. Eyles, J. and Wood, K.(1983):The Social Geography of Medicine and Health, Croom Helm.
6. Bastide, R.(1972): The Sociology of Mental Disorder, Routledge and Kegan Paul.
7. Banerji, D. (1986) :Social Sciences and Health Services in India, Lok Prakashan, New Delhi.
8. Mishra, R.P.(1970): Medical Geography of India, National Book Trust of India.
9. Mishra, R.P.(2002)), Geography of health : a treatise on geography of life and death in India, Concept Publishing Co., New Delhi

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-IV: Revised Syllabus (from June-2014)

Title: Regional Geography of SAARC Countries

Code No. Gg: 407 **Total Periods : 45**

No. of Credits: 03

Sr. No.	Topic	Learning Points	Periods
01.	Introduction	1. History of SAARC Organisation. 2. Importance and Relevance of SAARC Countries 3. General Locations of SAARC Countries- India, Pakistan, Nepal, Bhutan, Bangladesh, Shrilanka, Maldives. 4. Strategic location of India. 5. Salient Features of SAARC Organisation.	8
02.	India	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of India.	8
03	Pakistan	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of Pakistan	6
04	Bangladesh	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of Bangladesh	6
05	Nepal	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of Nepal	5
06	Bhutan	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of Bhutan	3
07	Shrilanka	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of Shrilanka	3
08	Maldives	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of Maldives	3
09	Afghanistan	Physiography, Climate, Drainage, Vegetation, Agriculture, Economic, Demographic and Cultural Aspects of Afghanistan	3

N.B. According need of topics, maps are expected.

Reference Books :

1. Agrawal A. N. - Indian economy, Problems of Development and Planning.
2. Chopra S. N. - India, An Area Study.
3. Dubey and Negi - Economic Geography of India.
4. Gopal Singh - India.
5. Memoria I.B. - Geography of India.
6. R. L. Singh - Regional Geography of India.
7. Sharma and Continuo - Economic and Commercial Geography of India.
8. Regional and Geographic and Economic books on respective SAARC Countries.
9. Various websites related to the countries.

UNIVERSITY OF PUNE
F.Y.B.A.
Gg- 110 -Elements of Geomorphology (G-1)
Revised Syllabus (from June, 2013)

Objectives:

I. 1. To introduce the students to the basic concepts in Geomorphology.
II. To introduce latest concept in Geomorphology
III. To acquaint the students with the utility and application of Geomorphology in different regions and environment.
IV. To make the students aware of the need of protection and conservation of different landforms

Section I			
Unit No.	**Unit**	**Sub Unit**	**No. of periods**
1	Introduction to Geomorphology	a. Introduction to Physical Geography and its branches b. Geomorphology- Definition, Nature and Scope	8
2	Fundamental Concepts of The Earth	a. The Earth Size, Shape, Radius, Circumference, Parallels of Latitudes and Meridians of Longitudes. b. Time: Local time and Standard time, Time Zone and International Date Line.	6
3	The Earth	a. The earth – its Interior, Composition & Structure b. Origin of Continents and Ocean basin i. Wegener's Continental Drift Theory ii. Theory of Plate Tectonics- iii. Theory of Sea Floor Spreading	5 6
4	Rocks	a. Rock- Definition and origin. b. Type of Rocks- Igneous, Sedimentary and Metamorphic rocks	5 5
5	Crustal Movements	a. Internal Movements- Definition, Causes b. Classification of Movements i. Slow movements- Folding and Faulting ii. Rapid movements – Volcanism and Earthquakes	5 5

		Section II	5
6	Weathering	a. Definition of Weathering, b. Type of Weathering- Mechanical, Chemical, biological and Anthropogenic weathering c. Hydrological cycle	6
7	Agents of Erosions and Depositions	Landforms created by following agents a. Rivers. b. Sea-waves.	6
8	Mass Wasting	Concept – Type – Soil Creep, Landslides, Debris flows, Avalanches, Mud Flow	8
9	Slopes	Meaning & Definition of slopes, Types and slope segments Concave, Convex , Terraced, Rectilinear	6
10	Applications of Geomorphology	a.Human Activity: i. Settlement ii. Transport iii. Landuse iv. Mining v. Resource Evaluation b.Environmental Hazards & Assessment: i. Landslides ii. Tsunami iii. Soils Degradation iv. Floods c. Watershed Management: d.Field Visit (Not more than two days) for observations and identification of landforms.	6 5 4 4

Gg 210: Elements of Climatology and Oceanography (G2)

Objectives:

1. To introduce the students to the basic principles and concepts in Climatology and Oceanography.
2. To acquaint the students with the applications of Climatology and Oceanography in different areas and environment.
3. To make the students aware of the Planet Earth and thereby to enrich the student's knowledge.

	Section I - Climatology		
No.	Unit	Sub Units	Periods
1	Introduction to Climatology and Atmosphere	1. Definition, nature and scope 2. Importance of Climatology in modern times. 3. Weather and climate, elements of weather and climate 4. Composition and structure of the atmosphere	10
2	Insolation	1. Heat budget of the Earth. 2. Factors affecting horizontal distribution of temperature. 3. Inversion of temperature, lapse rate and its types. 4. Global warming.	8
3	Atmospheric Pressure and Wind System	1. Vertical and horizontal distribution of pressure. 2. Formation of pressure belts and their relation with winds. 3. Concept of pressure gradient. 4. Type of winds- planetary winds, periodic winds (Monsoon winds), local winds - land and sea breezes, mountain and valley winds. 5. El Niño and La Niña	10
4	Atmospheric Moisture and Precipitation	1. Sources of moisture, methods to express humidity of the air- absolute and relative humidity. 2. Forms of precipitation- rain, snow, dew, hail and fog. 3. Types of clouds- high, medium low clouds.	10
5	Atmospheric Disturbances	1.Cyclones- tropical and temperate and associated weather conditions. 2.Anticyclones and associated weather conditions.	7

UNIVERSITY OF PUNE
MA/MSC Syllabus in Geography (credit system)
Revised Syllabus (from June,2013)
Title: Principles of Geomorphology

Code No. Gg:101 **No. of Periods: 60**
No. of Credits: 04

No. of Credits: 1.	Topic	Sub Unit	Learning points	No of Periods
	Fundamentals of Geomorphology	1. Nature and scope 2. Concepts	1. Definition and history of Geomorphology 1. Uniformateriarism and Catastrophism 2. Geomorphic (Cyclic, Graded and Steady) and Spatial Scale 3. Geological time scale 4. Process Geomorphology	6

Section II – Oceanography			
6	Oceanography	1. Definition, nature and scope. 2. Relevance of Oceanography on earth	8
7	Submarine Relief	1. General idea of ocean relief. 2. Relief of Atlantic, Pacific and Indian oceans.	8
8	Properties of Ocean Water	1. Properties of ocean water- temperature, density. 2. Salinity- meaning and causes. 3. Salinity of oceans, seas, and lakes with examples.	10
9	Movements of Ocean Water	1. Waves- Characteristics of sea waves, tsunamis. 2. Ocean currents- meaning, causes, types. 3. Ocean currents of Atlantic, Pacific and Indian Oceans 4. Effects of ocean currents. 5. Tides- meaning, causes, types. 6. Equilibrium theory of tides.	12
10	Coastal Environment	1.Significance of Coastal Environment. 2.Oceans as Storehouse of Resources for the future	7

Reference Books:

Critchfield, H.J., 1997. General Climatology, Prentice Hall of India Pvt. Ltd, New Delhi.
Dasgupta, A. and Kapoor, A.N., Principles of Physical Geography.
Grald, S., General Oceanography.
Ttrewartha, G., Introduction to Weather and Climate.
King, C.A.M., Oceanography for Geographers.
Lake, P., Physical Geography.
Lutgens, F.K. and Tarbuck, E.J., 2007. The Atmosphere, Pearson Prentice Hall,
Pirie, R.G., Oceanography (Contemporary).
Ross, D.A., 1988. Introduction to Oceanography. Prentice Hall, New Jersey.
Sharma, R.C. and Vatel. M.,- Oceanography for Geographers.
Strahler, A.A. and Strahler, A. N., 2002. Physical Geography: Science and Systems of the Human Environment, John Wiley and Sons, INC.
Strahler, A.H. and Strahler, A. N., 1992. Modern Physical Geography, John Wiley and Sons, INC.
Strahler, A.N., 1965. Introduction to Physical Geography, John Wiley and Sons, INC.
Ahirrao, W.R., Alizad, S.S. and Dhapte, C.S., 1998. Climatology and Oceanography, Nirali Prakashan, Pune.
Bhagvat Arvind and Karlekar Shrikant : Prakrutik Bhuvidnyan
Datye and Datye : Sugam Prakrutik Bhuvidyan.

Various websites of internet.

3.	Climatic Geomorphology	1.Denudational Processes 2.Weathering and Mass movement	1. Weathering 2. Mass Movement 3. Erosion 4. Definitions and Comparison of these processes 1. Types of Weathering- Physical, Chemical, Biotic 2. Types of Mass Movement – Slides, falls, flows and creep	06
4.	Fluvial Processes	Work of River	1. Drainage Basin and Drainage Patterns 2. Davisian Cycle of river erosion and Concept of Peneplanation 3. Mechanics of Erosion , Transportation and Deposition 4. Erosional Landforms	08
5.	Glacial Processes	Work of Glacier	1. Types of Glaciers 2. Mechanics of Erosion, Transportation and Deposition 3. Erosional Landforms 4. Depositional Landforms	06
6.	Arid and Semi Arid Processes	1. Work of Water in Desert 2. Work of Wind in Desert	1. Landforms produced by Water in the Desert 2. Concept of Pediplanation 3. Mechanics of Erosion , Transportation and Deposition	06

2.	Tectonism and Geomorphology	1.Interior of the Earth. Sources of Knowledge	1. Inferred Knowledge (Density, Temperature, Pressure) 2. Surface Expressions (Seismic Wave Evidences) Holmes Convection Current Theory	04
		2. Endogenic Forces	1. Epiorogenic and Orogenic Movements 2. Compression, Tension 3. Folds, Types and Landforms 4. Faults, Types and Landforms	02
		3. Isostasy	1. Views of Airy and Pratt 2. Gravity Anomalies 3. Global Isostatic adjustments	02
		4.Wegener's Continental Drift Theory	1. Theory, Supporting Evidences and Validity	04
		5. Sea Floor Spreading 6. Plate Tectonics	1. Palaeomagnetism 2. Oceanic Relief 3. Sea Floor Spreading 4. Plate Boundaries, 5. Mechanics and Movements of Plates 6. Zone of Collision and Associated Landforms	04

2.	Tectonism and Geomorphology	1.Interior of the Earth. Sources of Knowledge	1. Inferred Knowledge (Density, Temperature, Pressure) 2. Surface Expressions (Seismic Wave Evidences) Holmes Convection Current Theory	
		2. Endogenic Forces	1. Epiorogenic and Orogenic Movements 2. Compression, Tension 3. Folds, Types and Landforms 4. Faults, Types and Landforms	04
		3. Isostasy	1. Views of Airy and Pratt 2. Gravity Anomalies 3. Global Isostatic adjustments	02
		4.Wegener's Continental Drift Theory	1. Theory, Supporting Evidences and Validity	02
		5. Sea Floor Spreading 6. Plate Tectonics	1. Palaeomagnetism 2. Oceanic Relief 3. Sea Floor Spreading 4. Plate Boundaries, 5. Mechanics and Movements of Plates 6. Zone of Collision and Associated Landforms	04
3.	Climatic Geomorphology	1.Denudational Processes 2.Weathering and Mass movement	1. Weathering 2. Mass Movement 3. Erosion 4. Definitions and Comparison of these processes 1. Types of Weathering- Physical, Chemical, Biotic 2. Types of Mass Movement – Slides, falls, flows and creep	06
4.	Fluvial Processes	Work of River	1. Drainage Basin and Drainage Patterns 2. Davisian Cycle of river erosion and Concept of Peneplanation	
			3. Mechanics of Erosion , Transportation and Deposition 4. Erosional Landforms	08
5.	Glacial Processes	Work of Glacier	1. Types of Glaciers 2. Mechanics of Erosion, Transportation and Deposition 3. Erosional Landforms 4. Depositional Landforms	06
6.	Arid and Semi Arid Processes	1. Work of Water in Desert 2. Work of Wind in Desert	1. Landforms produced by Water in the Desert 2. Concept of Pediplanation 3. Mechanics of Erosion , Transportation and Deposition	06

7.	Coastal Processes	Work of Waves and Tides	1. Mechanics of Erosion , Transportation and Deposition 2. Erosional Landforms 3. Depositional Landforms	06
8.	Hill slopes	Slope Profiles: Elements Facets and Segments	Models of Slope development 1.Evolution: Slope decline 2.Slope Replacement 3.Parallel Retreat	06

Reference Books:

1. Thornbury, W. D. (Rep.2011): Principles of Geomorphology, John Wiley and Sons, New York.
2. Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
3. Kale, V. S. and Gupta, A. (Rep.2011): Introduction to Geomorphology, Orient Longman, Calcutta.
4. Savindra Singh (Rep. 2011): Geomorphology, Prayag Pustak Bhawan, Allahabad
5. Spark B. W. (1972): Geomorphology, Longman, New York
6. Steers, A. (1958). The Unstable Earth, Methuen, London
7. Ollier, C. D. (1981) Tectonics and Landforms, Longman , London
8. Strahler A. H and Strahler, A. N. (1992) : Modern Physical Geography, John Wiley, New York
9. Wooldridge and Morgan: Geomorphology
10. Holmes: Physical Geology
11. Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.

UNIVERSITY OF PUNE
MA/MSC Syllabus in Geography (credit system)
Revised Syllabus (from June,2013)
Title: Principles of Climatology

Code No. Gg: 102
No. of Credits: 04

No. of Periods: 60

Unit. No	Unit	Sub unit	Learning Points	No of periods
1.	Introduction	Nature and Scope	Weather, Climate, Subdivisions of Climatology. Development of Modern Climatology. Tropical Climatology	04
2.	Earth's atmosphere	1.Composition 2. Vertical structure	Physical properties, Chemical composition Temperature changes, Vertical variations in the composition, Ionosphere and aurora	06
3.	Insolation and Heat Balance	1. Solar radiation 2. Distribution 3. Effect of Atmosphere 4.Terrestrial Radiation	Electromagnetic spectrum, Factors affecting insolation. Latitudinal and Seasonal, variation of insolation Scattering, Diffusion Absorption Reflection, Albedo Green House Effect. Heat Budget Latitudinal Heat Balance Atmospheric window.	07

4.	Temperature	Basic concepts	Difference between Heat and Temperature Controls of temperature Horizontal and Vertical distributions, Inversion of temperature	06
5.	Air pressure and wind	Basic concepts	Pressure measurement and Units, Factors affecting air pressure, Pressure changes with altitude, Observed distribution of surface pressure. Wind observation and measurement, Factors affecting wind. Geostrophic wind, Gradient wind	09
6.	Circulation of the Atmosphere	1.Scales of Atmospheric Motion 2. Models of general circulation	Primary, Secondary, Tertiary. Local winds, Idealized circulation, Observed global circulation. Tri-cellular theory, Eddy theory Jet stream and it's effect on the surface weather conditions.	08
7.	Humidity	1. Basic Concepts 2. Hydrological Cycle 3. Condensation 4. Evaporation	Humidity measurement Changes of state of water Factors affecting Condensation Factors affecting Evaporation	06
8.	Stable and unstable Atmosphere	1. Lapse rate 2. Stability	Normal, environmental, dry and wet adiabatic Absolute stability, Absolute instability, Conditional instability.	06

9.	Air masses and Fronts	Basic Concept Methods of Forecasting	Source region ; classification of air masses Modifications: (a) Mechanical (b) Thermodynamic. Characteristics and Types of Fronts	06
10.	Weather Forecasting		Any Two Methods	04

Reference Books:

1. Frederick K. Lutgen, Edward Tar buck: "The Atmosphere An Introduction to Meteorology" Prentice Hall, Englewood Cliffs ,New Jersey 0762 ,1998
2. D. S. Lal: Climatology. Sharda Pustak Bhawan ,11 , University road Allahabad- 211002 Edition 2003
3. Trewartha : Introduction to Weather and Climate.
4. H.J. Critchfield (Rep.2010): General Climatology. Prentice Hall, New Delhi
5. SINGH (SAVINDRA) (Rep.2011)Climatology
6. ROB VAN DEN BERG (2009) Evaluating Climate Change and Development

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)

Revised Syllabus (from June, 2013)

Code No. Gg: 213
No. of Credits: 03

Title: Population Geography

Total No. of Periods: 45

Unit	Unit	Subunit	Learning points	Periods
1.	Introduction	1. Nature and Scope 2 Approaches	1. Definition, nature and scope. 2. Evolution of Population Geography. 3. Recent trends in Population Geography 1.Approaches to the study of Population Geography 2. Population Geography and other disciplines	4
2.	Growth of Population	1. Spatial variation 2. Temporal variation	1. Factors 1. Factors 2. Historical to modern	3
3.	Population Theory	Various theories	1. Malthus Population Theory 2. Marx's Population Theory 3. Optimum Population Theory 4. Demographic Transition Theory.	5
4.	Population Distribution	Distribution of world population.	1.Density of Population 2. Physical factors 3. Socio-economic and Political factors. 4. Demographic factors	4

9.	Population projection	Population projections in historical perspective	1. Use of population projections in planning. 2. Industrial development 3. Agricultural development 4. Education 5. Health 6. Housing. 7. Regional and Urban development 8. Regional and World projections.	4
10.	Population Policies	Population Policies – Post - World War II	1. Population policies after World War II 2. Population policies – with special reference to India	4

Reference Books:

1. Agarwala, S.N. : India's population Problems, Tata McGraw Hill publishing Co. Ltd. , New Delhi.1977
2. Bose Ashis et.al. :Population in India's Development Vikas Publishing House, New Delhi, 1974.
3. Chandna R.C.:Geography of Population : concepts, Determinants and Patterns, Kalyani Publishers, New Delhi,1986.
4. Clarke J.I : Population Geography, Pergamon Press, Oxford,1973.
5. Clarke J.I. (Ed) :Geography and Population -Approaches and Applications, Pergamon Press.Oxford 1984.
6. Crook Nigel :Principles of Population and Development, Pergamon Press New York, 1997.
7. Garnier B.J. :Geography of Population, Longman, London, 1970.
8. Pathak, K.B. and F.Ram : Techniques of Demographic analysis. Bombay: Himalaya Publishing house. 1992.
9. Sundaram K.V. and Sudesh Nangia (Ed): Population Geography, Heritage Publications, Delhi,1986.
10. U N D P: Human Development Report, Oxford, 2002.
11. Woods R.: Population Analysis in Geography, Longman, London, 1970.
12. Zelinsky Wilbur : A Prologue to Population Geography Prentice Hall, 1966.

5.	Fertility	1. Levels and trends of fertility 2. Recent and current fertility differences within countries (developed and developing)	1. Areas of low and high fertility 2. Factors affecting fertility 3. Causes of low & high fertility. 1. Urban Rural status. 2. Educational status 3. Economic status 4. Occupational groups 5. Religious and Ethnic groups	4	
6.	Mortality	Levels and trends	1. Recent mortality levels 2. Factors related to High Mortality in the past 3. Foetal and Infant Mortality 4. Factors in mortality trends in developed countries 5. Factors in mortality levels and trends in developing countries.	4	
7.	Migration	Definition and Types	1. Definition Types- Inter-regional, inter-state, rural-urban, international. 2. Causes and consequences of migration. 3. Lee's Theory of Migration 4. Laws of migration.	4	
8.	Population Composition	Various compositions	1. Sex ratio and sex composition. 2. Age composition 3. Age and Sex pyramid 4. Literacy 5. Economic 6. Occupation composition 7. Urban and Rural 8. Religion 9. Language	4	

5.	Fertility	1. Levels and trends of fertility 2. Recent and current fertility differences within countries (developed and developing)	1. Areas of low and high fertility 2. Factors affecting fertility 3. Causes of low & high fertility. 1. Urban Rural status. 2. Educational status 3. Economic status 4. Occupational groups 5. Religious and Ethnic groups	4
6.	Mortality	Levels and trends	1. Recent mortality levels 2. Factors related to High Mortality in the past 3. Foetal and Infant Mortality 4. Factors in mortality trends in developed countries 5. Factors in mortality levels and trends in developing countries.	4
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8.	Population Composition	Various compositions	1. Sex ratio and sex composition. 2. Age composition 3. Age and Sex pyramid 4. Literacy 5. Economic 6. Occupation composition 7. Urban and Rural 8. Religion 9. Language	4

9.	Population projection	Population projections in historical perspective	1. Use of population projections in planning. 2. Industrial development 3. Agricultural development 4. Education 5. Health 6. Housing. 7. Regional and Urban development 8. Regional and World projections.	4
10.	Population Policies	Population Policies – Post - World War II	1. Population policies after World War II 2. Population policies – with special reference to India	4

Reference Books:

1. Agarwala, S.N. : India's population Problems, Tata McGraw Hill publishing Co. Ltd. , New Delhi.1977
2. Bose Ashis et.al. :Population in India's Development Vikas Publishing House, New Delhi, 1974.
3. Chandna R.C.:Geography of Population : concepts, Determinants and Patterns, Kalyani Publishers, New Delhi,1986.
4. Clarke J.I : Population Geography, Pergamon Press, Oxford,1973.
5. Clarke J.I. (Ed) :Geography and Population -Approaches and Applications, Pergamon Press.Oxford 1984.
6. Crook Nigel :Principles of Population and Development, Pergamon Press New York, 1997.
7. Garnier B.J. :Geography of Population, Longman, London, 1970.
8. Pathak, K.B. and F.Ram : Techniques of Demographic analysis. Bombay: Himalaya Publishing house. 1992.
9. Sundaram K.V. and Sudesh Nangia (Ed): Population Geography, Heritage Publications, Delhi,1986.
10. U N D P: Human Development Report, Oxford, 2002.
11. Woods R.: Population Analysis in Geography, Longman, London, 1970.
12. Zelinsky Wilbur : A Prologue to Population Geography Prentice Hall, 1966.

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)

Revised Syllabus (from June,2013)

Code No. Gg: 205

Title: Geography of Disaster Management

No. of Credits: 03

Total No. of Periods: 45

Sr. No	Topic	Subtopics	Learning Points	Periods
1.	Introduction	Concepts and definitions	Disaster, Hazard, Vulnerability, Resilience, Risks	5
2.	Classification of Disasters	Causes and types	Natural Disasters Earth quakes, Volcano, Landslide, Tsunami, Cyclones, Floods, Droughts Man-made disaster Fire, Terrorism, Food poisoning, strike and lockouts, accidents, fair and festivals, stampedes.	8
3.	Impacts of Disasters	Impacts	Social, Economic, political, environmental, health, psychological Differential impacts: Caste, class, gender, age, location, disability	6

4.	Trends	Global	Urban disasters, Pandemics, complex emergencies, Climate change	6
5.	Disaster management	Disaster cycle Preparedness & Mitigation	Phases of disaster cycle i. Factors of Disaster Management. ii. First Aid. iii. Role of Civilians and NGO'S in Natural & man- made Calamities. iv. Home guard. v. Role of Armed forces in Natural man- made Calamities. vi. Role of Para-Military forces in Natural man- made Calamities. vii. Role of Police forces in Natural man- made Calamities	10
6.	Technologies for Disaster Management	Technologies	Role of IT in Disaster Preparedness Remote Sensing, GIS and GPS Use and Application of Emerging Technologies Application of Modern Technologies for the Emergency communication. · Application and use of ICST for different disasters.	8
7.	Disasters in India	Disasters and management	Various disasters in India and their management issues	2

UNIVERSITY OF PUNE

MA/MSc Syllabus in Geography (Credit System)

Sem-III: Revised Syllabus (from June-2014)

Title: Urban Geography

Total Periods : 45

Code No. Gg: 313

No. of Credits: 03

Sr. No.	Topic	Sub-Topic	Learning Points	Periods
1	Introduction	Nature, Scope and significance of Urban Geography	1. Nature and scope 2. Significance 3. Relation to other disciplines	4
2	Urbanization	Concept and Process	1. Meaning of Urban settlement and urbanization. 2. Brief review of spatial- temporal variations in urbanization in the world 3. Urbanization curve 4. Contemporary factors of urbanization	5
3	Urban Morphology	Models of urban structure	1. Park and Burgess Model 2. Homer Hoyet Model. 3. Harris and Ullman Model 4. Characteristics and demarcation of CBD	5
4	Urban Classification	Criteria Used for Classification Functional Classification	1. Urban functions 2. Functional classification of towns and cities by C.D. Harris and H. J. Nelson	4
5	Urban Demography	Characteristics of urban populations	1. Growth of urban population 2. Density of population in cities. 3. Age, sex and occupational structure	4
6	Rural-Urban fringe	Characteristics and methods of demarcation	1. Meaning of rural-urban fringe. 2. characteristics of rural-urban fringe 3. Concepts of conurbation, megalopolis and satellite towns.	4
7	City and its Region	Concept, characteristics and demarcation	1. Concepts of city region and various synonymous terms used. 2. Criteria used to demarcate the city region	4
8	Central place concepts	Central place theory and urban Hierarchy	1. Christaller's Central Place Theory. 2. Rank-size relationship and rank-size rule 3. Hierarchy of urban settlements	5
9	Contemporary Urban issues	Nature of issues	1. Price of land and vertical and horizontal growth of cities 2. Scarcity of housing and growth of slums 3. Problems of civic amenities 4. Urban transport problem 5. Urban Environmental pollution	5
10	Urban policy and planning	Development policies and	1. Policies of Urban development. 2. Need of city planning	5

UNIVERSITY OF PUNE

MA/MSC Syllabus in Geography (credit system)

Revised Syllabus (from June,2013)

Title: Principles of Economic Geography

Code No. Gg: 103 **No. of Periods: 60**

No. of Credits: 04

Unit No	Unit	Sub unit	Learning points	No. of Periods
1.	Introduction	Nature and Scope	Definition, nature and scope, Recent trends in Economic Geography	06
2.	Hypotheses in Economic Geography	Types of Hypotheses	Formation and Testing of hypotheses	06
3.	Economic Landscape	1.Historical Evolution 2. Location of economic activity	Homestead, Tribal and Village economy, Modern economic landscape. Von Thunen and Weber's models.	10
4.	Resources	Natural and Human Resources	Significance of Natural and Human resources in Economic Development.	04
5.	Factors of Production and related aspects.	1.Land, Labor and Capital 2. Transportation Demand Economies of scale.	Significance of land, labor and capital in different economic activities, Spatial variation in the factor cost, Variation in cost of transportation, spatial variation in demand, Internal and external economies of scale.	10

	3. Elements of city plan 4. Urban development and urban policy in India 5. Use of GIS in urban planing.	
planning		

Reference Books :

1. Carter (1972) : The Study of Urban Geography, Edward Arnold,.London.
2. Hall P. (1992) Urban and Regional Planning, Routledge, London
3. Kundu, A. (1992) : Urban Development and Urban Research in India, Khanna Publication.
4. Singh. K. and Steinberg. F.(eds) (1998) : Landscape of Settlement Prehistory to the present, Routledge, London
5. Brian.R.K. (1996) : Urban India in Crisis. New Age Interns,
6. Northam : Urban Geography : Tim Hall
7. Urban Geography : Urban Geography
8. Johnson : Urban Geography
9. K. Siddharth and S. Mukherji : Cities,. Urbanizations and Urban Systems.
10. Mayer and Kohn : Readings in Urban Geography
11. Roy Turner: Indian's Urban Future.
12. Shah Manzoor Alam : Urbanization in Developing Countries
13. Verma : Urban Geography, Rawat, Jaipur
14. Bhattacharya: Urban development in India, Shree publication.
15. Raj Bala : Urbanization in India.

F.Y.B.Com

COMMERCIAL GEOGRAPHY

Revised Syllabus (from June, 2013)

Objectives:

1. To understand the scope and content of Commercial Geography in relation to spatial distribution of agriculture, forest resources and industrial production.
2. To acquaint the students about dynamic aspects of Commercial Geography.
3. To acquaint the students about dynamic nature of Industrial field in India.
4. To make the students of commerce aware about the relationship between the geographical factors and economic activities

Course Contents:

Section I			
Unit No.	*Unit*	**Sub Unit**	**No. of periods**
I	Introduction to Commercial Geography	a. Definition, nature and scope of Commercial Geography b. Approaches to the study of Commercial Geography	04 04
II	Geographical Environment and Commerce	a. Factors and economic activities of man i. Physical Environment - ii Cultural Environment – b. Determinism and Possibilism.	04 04 02
III	Resources	a. Meaning, Nature & Use of Resources b. Types of Forest, their characteristics, distribution & importance c. Non-conventional Energy Resources – Solar, Wind and Sea-waves d. Farming – Role of Agriculture in Indian economy. Types of Farming – Subsistence & Commercial Farming, Shifting Cultivation, Plantation Farming and Truck Farming.	06 08 03 04
IV	Population	Concept of -optimum population, Over population & under population. Population characteristics of India	06

6.	Economic Development	Spatial and Temporal aspects	Measures of economic development classification of countries. Rostow's and Myrdal's models	10
7.	International Trade	Spatial and Temporal aspects	Factors influencing the International trade, structure, problems and prospects. Ricardo's classical theory.	08
8.	Economic Development in India	1. Regional disparity 2. History of development	Natural and Cultural factors Pre and Post-independence. Impact of Green Revolution, Privatization, Globalization.	06

Reference Books:

1. Hartshorne, T.A. and J.W. Alexander (1988) –Economic Geography, Concept Publishing Co.
2. Janaki. V.A. (1985) –Economic Geography, Prentice Hall.
3. Lloyd, P.and P. Dicken (1972) –Location in space : A theoretical approach to Economic Geography, Harper and Row, New York.
4. McCarty, H.H. and J.B. Lindberg (1966) – A Preface to Economic Geography, Englewood Cliffs, N.J.Prentice.
5. Thomas, Conkling and Yeates (1974) – Geography of Economic Activity, Mc Graw Hill, New York..
6. Knox, P. and J. Agnew (1998) – The Geography of the World Economy. Arnold, London
7. Hanink, D. M. (1997). Principles and Applications of Economic Geography, Economy, Policy, Environment, John Wiley and Sons,New York.
8. Dreze, J. and Sen, A. (1996) – Economic Development and Social Opportunity. Oxford University Press, New Delhi.

Section II			
V	Industries	Role of Industries in Economic Development, Factors of Industrial Location Weber's theory of Industrial Location. Major Industries in India 1. Iron & Steel Industries of India 2. Cotton, Textile Industries of India 3. Automobile Industries of India 4 IT industries of India and Government polices of Maharashtra state	15
VI	Trade and Transport	a. Geographical factors affecting International trade b. India's Foreign trade c. Mode of transportation d. Importance of transportation in Commercial Development. e. Comparison of various modes of transportation	10
VII	Tourism	a. Geographical factors influencing Tourism b. Tourism industry in India c. Domestic and International tourism of India d. Agro-tourism in Maharashtra e. Field visit to nearest places	10
VIII	Methods of Representation of Statistical data	a. Graph: i. Line Graph ii. Bar Graph b. Map: i. Isomaps (Isolines and Isopleths) ii. Choropleth Method c. Divided Circle or Pie diagram Method:	10

Reference Books:

Commercial Geography – Sir Dudley Stamp

Fundamental of Economic Geography – Van Royen & Bengston

Economic Geography – Alexander I.

Economic Geography – Jone & Darkenwald

Agricultural Geography – Morgan W. B. & Munton

Economic Geography – H. Robinson

Commercial Geography – Prof. Mrs. P. N. Padey

KopargaonTaluka Education Society's

K.J.Somaiya college of Arts, Commerce and Science, Kopargaon.

Department of Marathi

List of Courses addresses cross cutting issues as per Syllabus (2013 Pattern)

Sr. No.	Programme Name	Course code	Name of Course	Addressed issue (Professional Ethics, Gender, Human Values, Environment and Sustainability)
1	F.Y.B.A. Marathi	1024 (G1)	व्यावहारिक व उपयोजित मराठी आणि पाठ्यपुस्तक- मराठी विनोदी कथा (SEM-I)	Professional Ethics
2	F.Y.B.A. Marathi	1024 (G1)	व्यावहारिक व उपयोजित मराठी आणि पाठ्यपुस्तक- मातृपंचक (SEM-II)	Professional Ethics
3	S.Y.B.A. Marathi	2027 (G2)	आधुनिक मराठी साहित्य आणि उपयोजित मराठी- चरित्र-जीवनवेध (SEM-III)	Professional Ethics
4	S.Y.B.A. Marathi	2027 (G2)	आधुनिक मराठी साहित्य आणि उपयोजित मराठी- आत्मचरित्र - माझी जडणघडण (SEM-IV)	Professional Ethics
5	S.Y.B.A. Marathi	2028 (S1)	मराठी साहित्यातील विविध साहित्य प्रकार-नाटक - नटसम्राट (SEM-III)	Human Values
6	S.Y.B.A. Marathi	2028 (S1)	मराठी साहित्यातील विविध साहित्य प्रकार- कादंबरी - फकिरा (SEM-IV)	Human Values
7	S.Y.B.A. Marathi	2029 (S2)	अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ.स.१८१८ ते १९२०) (SEM-III)	Human Values
8	S.Y.B.A. Marathi	2029 (S2)	अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ.स.१९२१ ते १९६०) (SEM-IV)	Human Values
9	T.Y.B.A. Marathi	3027 (G3)	आधुनिक मराठी साहित्य आणि व्यावहारिक व उपयोजित मराठी-ग्रंथ परीक्षण व विचारधारा (SEM-V)	Human Values
10	T.Y.B.A. Marathi	3027 (G3)	आधुनिक मराठी साहित्य आणि व्यावहारिक व उपयोजित मराठी प्रवासवर्णन - देशविदेश (SEM-VI)	Human Values
11	T.Y.B.A. Marathi	3028 (S3)	साहित्यविचार भाग -१ (SEM-V)	Professional Ethics

12	T.Y.B.A. Marathi	3028 (S3)	साहित्यविचार भाग -२ (SEM-VI)	Professional Ethics
13	T.Y.B.A. Marathi	3029 (S4)	भाषाविज्ञान - वर्णनात्मक (SEM-V)	Human Values
14	T.Y.B.A. Marathi	3029 (S4)	भाषाविज्ञान -ऐतिहासिक (SEM-VI)	Human Values
15	F.Y.Com Marathi	1521	मराठी-पुनर्रचित अभ्यासक्रम- पाठ्यपुस्तक -यशोगाथा (SEM-I)	Human Values
16	F.Y.Com Marathi	1521	व्यावहारिक आणि उपयोजित मराठी (SEM-II)	Human Values
17	S.Y.B.Sc Marathi	83111	मराठी विज्ञान साहित्य आणि व्यावहारिक मराठी - विज्ञानसृष्टी (SEM-I)	Human Values
18	S.Y.B.Sc Marathi	83112	व्यावहारिक मराठी (SEM-II)	Human Values

प्रा.डॉ.गणेश देशमुख
सहयोगी प्राध्यापक व मराठी विभाग प्रमुख
के.जे.सोमैया महाविद्यालय
कोपरगांव,जि.अ.नगर

Principal
K.J.Somaiya College of Arts
Commerce & Science,Kopargaon

पुणे विद्यापीठ

विषय : मराठी - पुनर्रचित अभ्यासक्रम , जून २०१३ पासून पुढे

प्रथम वर्ष कला - सामान्यस्तर अभ्यासपत्रिका क्रमांक - १ **(1024)**

- अभ्यासक्रमाची उद्दिष्टे-

१ सामान्य स्तर बी. ए. १, २ आणि ३ पर्यंतच्या सामान्य स्तरावरील मराठी या विषयाचा अभ्यास करणा-या विद्यार्थ्यास स्थूलपणे मराठी साहित्य, मराठी भाषा आणि मराठी संस्कृती यांचा क्रमश: परिचय करून देणे.

२ साहित्यासंबंधी - विशेषत: मराठी साहित्यासंबंधी रुची निर्माण करणे.

३ विद्यार्थ्याच्या वाङ्मयीन अभिरुचीचा विकास करणे.

४ आस्वाद घेण्याची डोळस क्षमता विकसित करणे.

५ साहित्याभ्यासातून जीवनविषयक समज विकसित करणे.

६ मराठी साहित्यातील भिन्न भिन्न प्रवाह आणि प्रकार लक्षात घेणे.

७ जागतिकीकरणात विविध क्षेत्रांना सामोरे जाण्यासाठी भाषिक क्षमता विकसित करणे.

८ व्यक्तिमत्त्व विकासात भाषेचे महत्त्व स्पष्ट करणे.

♦♦♦♦♦

- सत्र पहिले

कथासंग्रह/कादंबरी/नाटक/ललितगद्य यापैकी एक पुस्तक आणि उपयोजित मराठी ६० गुण

घटक १ - नेमलेला कथासंग्रह

'मराठी विनोदी कथा ' - संपादक डॉ. द. ता. भोसले ४० गुण

घटक-२ - व्यावहारिक आणि उपयोजित मराठी

अ - व्यक्तिमत्त्व विकास आणि भाषा, ०४ गुण
व्यक्तिमत्त्व विकासात भाषेचे स्थान

ब - भाषिक कौशल्ये- श्रवण कौशल्य, संभाषण कौशल्य वाचन कौशल्य, भाषण कौशल्य, लेखन कौशल्य — ०८ गुण

क - कार्यक्रम संयोजन कौशल्ये- — ०८ गुण

सूत्रसंचालन, प्रास्ताविक, परिचय, स्वागत-सत्कार , मनोगत, आभार इत्यादी.

◆◆◆◆◆

सत्र दुसरे — ८० गुण

घटक - ४ नेमलेला कविता संग्रह ' मातृपंचक ' — ३० गुण
- संपादक डॉ. स्नेहल तावरे, डॉ. वेदश्री थिगळे

घटक - ५
अ. वर्तमानपत्रासाठी बातमी लेखन — ५ गुण
ब. दृक-श्राव्य माध्यंमांसाठी(आकाशवाणी व दूरदर्शन) मुलाखत लेखन — ५ गुण
क. प्रशासकीय इंग्लिश पारिभाषिक संज्ञांचे मराठीकरण करणे. — ५ गुण
ड. अशुद्ध शब्द शुद्ध स्वरूपात लिहिणे. — ५ गुण

- 'मराठी विनोदी कथा' आणि 'मातृपंचक' ही दोन पुस्तके मराठी अभ्यासमंडळाने क्रमिक म्हणून नेमलेली आहेत. दुस-या सत्रात ८० गुणांची विभागणी खालीलप्रमाणे राहील.

- प्रथम सत्र - मराठी विनोदी कथा - २० गुण
  व्यावहारिक आणि उपयोजित मराठी - १० गुण

- द्वितीय सत्र - मातृपंचक - ३० गुण
  व्यावहारिक आणि उपयोजित मराठी - २० गुण

एकूण ८० गुण

S.Y.B.A.(G 2)

द्वितीय वर्ष कला (सामान्य स्तर २)

आधुनिक मराठी साहित्य आणि उपयोजित मराठी

उद्दिष्टे :

१ शुद्धलेखनाची ओळख करून देणे.

२ पारिभाषिक संज्ञांची ओळख करून देणे.

३ चरित्र-आत्मचरित्र या साहित्यप्रकारांच्या तात्त्विक घटकांचे ज्ञान करून देणे.

४ आधुनिक मराठी साहित्यातील निवडक चरित्र-आत्मचरित्रात्मक वेच्यांचे आकलन, आस्वाद आणि मूल्यमापन करण्याची क्षमता विद्यार्थ्यांमध्ये निर्माण करणे.

प्रथम सत्र

एकूण तास: ४८ **गुण: ६०**

१. उपयोजित मराठी

तास : १२ **गुण १५**

१ अर्जलेखन ५

२ अशुद्ध शब्द शुद्ध करून लिहिणे १०

२. 'चरित्र' या साहित्यप्रकाराची तात्त्विक मीमांसा

तास : १२ **गुण १५**

१ चरित्र : संकल्पना

२ चरित्र : साहित्यप्रकाराचे स्वरूप

३ चरित्र : साहित्यप्रकाराची वाटचाल

३. पाठ्यपुस्तक

तास : २४ गुण ३०

जीवनवेध

संपादक : प्रा. डॉ.स्नेहल तावरे

प्रा. डॉ.शिरीष लांडगे

द्वितीय सत्र

एकूणतास: ४८ गुण : ६०

१) व्यावहारिक मराठी

तास : १२ गुण १५

१ सारांश लेखन ५

२ पारिभाषिक संज्ञा १०

२) 'आत्मचरित्र' या साहित्यप्रकाराची तात्त्विक मीमांसा

तास : १२ गुण १५

१ आत्मचरित्र : संकल्पना

२ आत्मचरित्र व आत्मकथन : साम्य-भेद

३ आत्मचरित्र : साहित्यप्रकाराची वाटचाल

३) पाठ्यपुस्तक

तास : २४ गुण ३०

माझी जडणघडण

संपादक : प्रा.डॉ. स्नेहल तावरे

प्राचार्य डॉ. उज्ज्वला देवरे

द्वितीय सत्र

कादंबरी

एकूण तास: ४८ सत्रांत परीक्षा गुण: ६०

१) तात्त्विक मीमांसा

तास : १२ गुण १५

१ : कादंबरी या साहित्यप्रकाराची तात्त्विक मीमांसा

१ कादंबरी या साहित्यप्रकाराची संकल्पना

२ कादंबरीचे घटक

३ कादंबरीचे प्रकार

४ कादंबरी या साहित्यप्रकाराची वाटचाल

२) कादंबरी संहिता

तास : ३६ गुण ४५

फकिरा -अण्णा भाऊ साठे

संदर्भ ग्रंथ

१ अण्णा भाऊ साठे साहित्य समीक्षा - (संपा.) प्रा. रणधीर शिंदे

२ अण्णा भाऊ साठे - बजरंग कोरडे

३ अण्णा भाऊ साठे समाजविचार आणि साहित्य विवेचन - डॉ. बाबुराव गुरव

४ लोकशाहीर अण्णा भाऊ साठे निवडक वाङ्मय - (संपा.) अर्जुन डांगळे

५ ग्रामीण दलित कादंबरी : तुलना (संपा.) डॉ. भास्कर शेळके

६ ग्रामीण दलित साहित्य : डॉ. मधुकर मोकाशी

७ दलित साहित्य : डॉ. नीला पांढरे

८ चरित्र आणि आत्मचरित्र वाङ्मयप्रकारांचे विवेचन - सदा कऱ्हाडे

S. Y. B. A. (S 1)

द्वितीय वर्ष कला (विशेषस्तर १)

मराठी साहित्यातील विविध साहित्यप्रकार

उद्दिष्टे :

१ मराठी साहित्यप्रकारांच्या तात्त्विक घटकांचे ज्ञान देणे.

२ वेगवेगळ्या कालखंडातील मराठीतील अभिजात साहित्यकृतींचा संस्कार घडविणे. साहित्याविषयीची अभिरुची निर्माण करणे.

३ साहित्यकृतीला मुक्त प्रतिसाद देण्याची क्षमता विकसित करणे.

४ साहित्यकृतीचे आकलन, आस्वाद आणि मूल्यमापन करण्याची दृष्टी निर्माण करणे.

५ साहित्याचा सूक्ष्म पातळीवर अभ्यास करण्याची क्षमता विकसित करणे.

६ पदव्युत्तर अभ्यास करण्याची पूर्वतयारी करणे.

सत्र पहिले

नाटक

एकूण तास: ४८

सत्रांत परीक्षा गुण: ६०

१) तात्त्विक मीमांसा

तास : १२

गुण १५

१ : नाटक या साहित्यप्रकाराची तात्त्विक मीमांसा

१ नाटक साहित्यप्रकाराची संकल्पना

२ नाटकाचे घटक

३ नाटकाचे प्रकार

४ नाटक या साहित्यप्रकाराची वाटचाल

२) नाटक संहिता

तास : ३६

गुण ४५

S. Y. B. A. (S 2)

द्वितीय वर्ष कला (विशेषस्तर २)

अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ. स. १८१८ ते १९६०)

उद्दिष्टे :

१ विशेषस्तरावर अभ्यासाचा प्रारंभ होत असताना, मराठी साहित्याच्या ऐतिहासिक परंपरेचे स्थूल ज्ञान करून देणे.

२ विशिष्ट कालखंडाच्या पार्श्वभूमीवर साहित्यामागील प्रेरणा, प्रवृत्तींचे ज्ञान करून देणे.

३ साहित्यप्रकारांच्या विकसनशील परंपरेचे स्थूल ज्ञान करून देणे.

४ पदव्युत्तर अभ्यास करण्याची पूर्वतयारी करणे.

सत्र पहिले

अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ. स. १८१८ ते १९२०)

एकूणतास: ४८ सत्रांत परीक्षा गुण: ६०

१) कालखंड : इ.स. १८१८ ते १८७४

तास : १२ गुण ३०

१ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.

२ या कालखंडातील साहित्य निर्मिती मागील प्रेरणा आणि प्रवृत्ती.

३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

२) कालखंड : इ.स. १८७५ ते १९२०

तास : १२ गुण ३०

१ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.

२ या कालखंडातील साहित्य निर्मिती मागील प्रेरणा आणि प्रवृत्ती.

३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

द्वितीय सत्र

अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ. स. १९२१ ते १९६०)

एकूणतासः ४८ सत्रांत परीक्षा गुणः ६०

१) कालखंड : इ.स. १९२१ ते १९४५

तास : १२ गुण ३०

१ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.

२ या कालखंडातील साहित्यनिर्मिती मागील प्रेरणा आणि प्रवृत्ती.

३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र, ललितगद्य इ. या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

२) कालखंड : इ.स. १९४६ ते १९६०

तास : १२ गुण ३०

१ या कालखंडातील सामाजिक, धार्मिक, राजकीय, सांस्कृतिक आणि वाङ्मयीन पार्श्वभूमी.

२ या कालखंडातील साहित्य निर्मिती मागील प्रेरणा आणि प्रवृत्ती.

३ या कालखंडातील निबंध, कविता, कथा, कादंबरी, नाटक, चरित्र, आत्मचरित्र, ललितगद्य इ. या निवडक वाङ्मयप्रकारांचा स्थूल आढावा.

संदर्भ ग्रंथ

१ मराठी वाङ्मयाचा इतिहास खंड ४,५,६, म.सा.प. पुणे.

२ अर्वाचीन मराठी गद्याची पूर्वपीठिका- गं.बा. सरदार

३ महाराष्ट्र जीवन खंड १ व खंड २ गं. बा. सरदार

तृतीय वर्ष कला (T.Y.B.A)

मराठी (सामान्यस्तर पेपर —३)

प्रथम सत्र

एकूण तासिका— ४८ एकूण गुण — ६०

घटक अ — ग्रंथ परीक्षण

गुण — १५
तासिका — १२

- ग्रंथ परीक्षणाचे स्वरूप स्पष्ट करून ग्रंथ परीक्षणाच्या घटकांचे विवेचन करणे.
- विविध साहित्यप्रकारातील साहित्यकृतींचे परीक्षण कसे करावे ते विद्यार्थ्यांना समजावून सांगणे.
- ग्रंथ परीक्षणांच्या तात्त्विक विवेचनासाठी एकूण ८ गुण असतील तर प्रत्यक्ष साहित्यकृतीच्या परीक्षणासाठी एकूण ७ गुण असतील.

सूचना :—

१. विविध साहित्यप्रकारांतील पुस्तकांचे परीक्षण कसे करावे, यासंबधी सप्रमाण विवेचन वर्गात केले जावे अशी अपेक्षा आहे.

२. विद्यार्थ्यांनी पदवी पर्यंतच्या विद्यापीठीय अभ्यासक्रमात समाविष्ट असलेल्या साहित्यकृतीं व्यतिरिक्त पुस्तकाचे परीक्षण करावे.

घटक ब — निबंध : तात्त्विक विवेचन

गुण — १५
तासिका — १२

- निबंध या साहित्यप्रकाराचे स्वरूप व व्याख्या
- मराठीतील इतर साहित्यप्रकारांच्या तुलनेत निबंधाचे वेगळेपण
- निबंधाचे प्रकार
- निबंध या साहित्यप्रकारामागील प्रेरणा व प्रयोजने

घटक क — निबंधसंग्रह

गुण — ३०
तासिका — २४

'विचारधारा' — संपा— डॉ. स्नेहल तावरे
डॉ. भास्कर शेळके

तृतीय वर्ष कला (T.Y.B.A)

मराठी (सामान्यस्तर पेपर — ३)

द्वितीय सत्र

एकूण तासिका— ४८

घटक अ — प्रवासवर्णन : तात्त्विक विवेचन

गुण — १५
तासिका — १२

- प्रवासवर्णन या साहित्यप्रकाराचे स्वरूप व व्याख्या
- इतर साहित्यप्रकारांच्या तुलनेत प्रवासवर्णनाचे वेगळेपण
- प्रवासवर्णन या साहित्य प्रकारामागील प्रेरणा व प्रयोजने

घटक ब — प्रवासवर्णन साहित्यप्रकाराची वैशिष्टये, व्याप्ती आणि वाटचाल

गुण — १५
तासिका — १२

घटक क — प्रवासवर्णनसंग्रह

गुण — ३०
तासिका — २४

'देशविदेश' — संपा— डॉ. स्नेहल तावरे
डॉ. अशोक शिंदे
डॉ. अरुण कोळेकर

तृतीय वर्ष कला (T.Y.B.A.)
मराठी (विशेषान्तर पेपर - ३) (S-३)
पुनर्रचित अभ्यासक्रम अमलात
२०१५-१६ पासून

साहित्यविचार S-३

प्रथम सत्र

एकूण तासिका— ४८

१. साहित्याचे स्वरूप:—

१) शास्त्रीय साहित्य आणि ललित साहित्य यांमधील भेद

२) साहित्याचे शब्दरूप

३) साहित्यातून व्यक्त होणाऱ्या अनुभवांचे विशेष — वास्तव आणि कल्पित यांचा संबंध, संवेदनात्मकता — भावनात्मकता — वैचारिकता, सेंद्रियत्व, सूचकता, विशिष्ट आणि विश्वात्मकता.

२. साहित्याचे प्रयोजन:—

१) प्रयोजन म्हणजे काय?

२) प्रयोजन आणि परिणाम यांमधील भेद.

३) साहित्याची प्रयोजने —

अ) मम्मटाची प्रयोजने

ब)पाश्चात्यांचीप्रयोजने:— इच्छापूर्ती — जिज्ञासातृप्ती — विरेचन — आत्माविष्कार अनुभवविश्वाची समृद्धी — स्वप्नरंजन—उद्‌बोधन—प्रचार—मनोरंजन—आनंद.

४) या प्रयोजनांचा लेखक व वाचक तसेच कलावादी, जीवनवादी या दृष्टीने विचार.

३. साहित्याची निर्मितीप्रक्रिया:—

१) साहित्याच्या निर्मितीचे स्वरूप

२) साहित्यनिर्मितीच्या शक्ती—१) प्रतिभा २) कल्पनाशक्ती ३) स्फूर्ती

३) प्रतिभाव्यापार व स्वप्नव्यापार

४) साहित्याची निर्मिती प्रक्रिया आणि साहित्यिकाचे व्यक्तिमत्त्व — १) संवेदनक्षमता

२) शैशववृत्ती ३) अनुभव समृद्धी ४) विद्वत्ता ५)लेखकाचा जीवनविषयक दृष्टिकोण. ६) लेखकाचा साहित्यविषयक दृष्टिकोण.

४. साहित्याची भाषा:—

१) व्यवहारभाषा, शास्त्रीय साहित्याची भाषा व साहित्याची भाषा यांच्यातील भेद.

२) शब्दार्थांचा वक्रव्यापार

३) भाषेचे नादरूप

४) अलंकार

५) रूपक

६) प्रतिमा

७) प्रतीक

८) प्राक्कथा

९) शैली विचार — १) लेखक तशी शैली २) आशय तशी शैली ३) साहित्यप्रकार तशी शैली.

द्वितीय सत्र

एकूण तासिका— ४८

५. साहित्याचा आस्वाद:—

१) आस्वाद म्हणजे काय ?

२) आस्वाद प्रक्रिया

३) आस्वादकाला आवश्यक असणारे गुण

४) आस्वादातील अडथळे

६. साहित्याची सामाजिकता:—

१) साहित्य आणि समाज यांचे परस्परसंबंध

२) लेखकाची सामाजिकता

३) भाषेची सामाजिकता

४) कलात्मक अनुभवातील सामाजिकता

५) वाचकाची सामाजिकता

६) साहित्यातील सामाजिकतेला वैश्विक रूप प्राप्त होते काय?

७) बांधीलकीची संकल्पना व साहित्यिकाची बांधीलकी.

७. साहित्यिक अभिरुची

१) अभिरुची म्हणजे काय?

२) अभिरुची आणि सौदर्यदृष्टी.

३) अभिरुची आणि औचित्य.

४) अभिरुची भिन्नतेची कारणे.

५) अभिरुची नियत करणारे घटक — सांस्कृतिक पर्यावरण, आर्थिक पर्यावरण, वाङ्मयीन पर्यावरण.

८. साहित्यप्रकाराची संकल्पना:—

१) साहित्याच्या वर्गीकरणाची शक्याशक्यता

२) साहित्याच्या वर्गीकरणाची आवश्यकता

३) साहित्याच्या वर्गीकरणाची तत्त्वे— माध्यमभिन्नता, प्रस्तुतीकरणाची पद्धती, प्रस्तुतीकर्त्यांचा दृष्टिकोण व प्रस्तुतीकरणाचा काळ

४) साहित्याचे ठळक प्रकार — कथा, कादंबरी, काव्य, नाटक.

संदर्भ साहित्य

१) साहित्यविचार — डॉ. अ. वा कुलकर्णी

२) साहित्यविचार (संपा.) डॉ. द.दि.पुंडे, डॉ.स्नेहल तावरे

३) काव्यशास्त्र प्रदीप — डॉ. स.रा.गाडगीळ

४) वाङ्मयीन शैली आणि तंत्र — म.द.हातकणंगलेकर,

५) साहित्यविचार — भालचंद्र खांडेकर

तृतीय वर्ष कला (T.Y.B.A)

मराठी (विशेषस्तर पेपर —४)

भाषाविज्ञान — S_4

पुनर्रचित अभ्यासक्रम आराखडा

सन २०१५—२०१६ पासून

भाषाविज्ञान— वर्णनात्मक आणि ऐतिहासिक

❖ **अभ्यासक्रमाची उद्दिष्टये:—**

१) भाषेचे स्वरूप व कार्य, भाषेच्या अभ्यासाचे महत्त्व, भाषेच्या अभ्यासाची प्रमुख अंगे जाणून घेणे.

२) भाषा म्हणजे काय व तिचे मानवी जीवनातील कार्य व महत्त्व जाणून घेणे.

३) वेगवेगळ्या भाषाअभ्यासपद्धतींचे वेगळेपण व महत्त्व जाणून घेणे.

४) स्वननिर्मितीची प्रक्रिया समजावून घेणे.

५) वागिंद्रियांची रचना व कार्ये समजावून घेणे.

६) स्वनविज्ञान, स्वनिम संकल्पना आणि मराठीची स्वनिम व्यवस्था जाणून घेणे.

७) मराठीची रूपिमव्यवस्था समजावून घेणे.

८) वाक्यविन्यास व अर्थविन्यास या भाषावैज्ञानिक संकल्पनांचा मराठीच्या संदर्भात स्थूल परिचय.

९) ऐतिहासिक भाषाभ्यासपद्धतीचे स्वरूप व महत्त्व लक्षात घेणे.

१०) भाषाकुलाची संकल्पना जाणून घेवून मराठी भाषेच्या उत्पत्तीचा अभ्यास करणे.

११) मराठी भाषेचा उत्पत्तीकाळ जाणून घेवून तत्कालीन भाषिक स्थित्यंतरांचा आढावा घेणे.

१२) टप्याटप्याने भाषा म्हणून मराठीच्या वाटचालीचा ऐतिहासिक आढावा घेणे.

प्रथम सत्र

एकूण तासिका— ४८

१. **भाषेचे स्वरूप व कार्य :—**भाषा एक सहज क्रिया — भाषा : एक अर्जित वस्तू — संज्ञापन : भाषेचे मुख्य कार्य — संकेत : भाषेचा आधार — शारीरिक आणि मानसिक क्रियांचा संयोग — ध्वनिसंकेत : चिन्ह आणि चिन्हित — संज्ञापनाची अन्य साधने: शरीरस्थित — संज्ञापनाची साधने: शरीरबाहय — भाषा हे सर्वश्रेष्ठ संज्ञापन साधन — संज्ञापनातील क्रिया प्रतिक्रिया — मानवेतर प्राण्यांची भाषा — भाषा : एक सामाजिक संस्था — भाषा आणि व्यक्तिस्वातंत्र्य — भाषेच्या अभ्यासाची आवश्यकता. भाषाअभ्यासाची अंगे, भाषाभ्यास पद्धती —वर्णनात्मक भाषाभ्यासपद्धती, **ऐतिहासिक** भाषाभ्यासपद्धती, तौलनिक भाषाभ्यासपद्धती, समाजभाषाभ्यासपद्धती.

२. **स्वनविज्ञान आणि स्वननिर्मिती :—** वागिंद्रियाची रचना व कार्ये स्वनविज्ञानाचे स्वरूप—स्वन निर्माण करणारी इंद्रिये—जिभेचे महत्त्व—स्वननिर्मितीची प्रक्रिया—मुखमार्ग, नासिकामार्ग आणि पडजीभ— दात आणि ओठ यांचे कार्य—तालुपटाची रचना व कार्य—स्वरांचे स्वरूप, लक्षणे व प्रकार—व्यंजनांचे स्वरूप लक्षणे व प्रकार—स्वरांच्या वर्गीकरणाची तत्त्वे— स्वननिर्मितीमधील 'प्रयत्ना'चे स्वरूप.

३. **स्वनिम विचार :—** स्वनिम निश्चितीचे तत्त्वे, विनियोग संकल्पनेचा स्थूल परिचय, स्वन, स्वनिम व स्वनांतर यामधील परस्परसंबंध, मराठी स्वनिमव्यवस्थेची रूपरेषा, स्वरस्वनिम, अर्धस्वरस्वनिम, व्यंजनस्वनिम यांचे वर्गीकरण.

४. **रूपिम विचार :—** रूपिमचे तत्त्व, रूपिका—रूपिम आणि रूपिकांतर यांमधील परस्परसंबंध, रूपिकांचे प्रकार प्रकृति (धातू) आणि प्रत्यय यांचे वर्गीकरण (आशयबोधक रूपिम व कार्यकारी रूपिम)

द्वितीय सत्र

एकूण तासिका— ४८

५. **वाक्य**विचार — वाक्यविन्यास संकल्पना आणि मराठीतील वाक्यविन्यास व्यवस्था, वाक्याचे घटक

६. **अर्थविचार** — अर्थविन्यास व मराठीतील त्याचे स्वरूप, अर्थ ही संकल्पना, अर्थाचे विविध प्रकार

७. **ऐतिहासिक भाषाभ्यासपध्दती** — सर विल्यम जोन्स यांचा सिद्धांत — ऐतिहासिक भाषाविज्ञानाचे स्वरूप — कार्य, **भाषाकुलाची संकल्पना** — भाषांचे वर्गीकरण — जगातील प्रमुख भाषाकुले — इंडो युरोपियन भाषाकुल — आर्य भाषाकुल व मराठी भाषा — होर्न्ले यांचा अंतर् बहिर् वर्तुळ सिध्दांत.

८. **मराठी भाषेची उत्पत्ती** :— मराठी भाषेची उत्पत्ती व त्यासंबंधीची साधने — मराठी भाषेच्या उत्पत्ती संबंधी विविध सिध्दांत — वैद्य—गुणे वाद, मराठीचे कालिक भेद

पुणे विद्यापीठ

प्रथम वर्ष वाणिज्य

विषय : मराठी - पुनर्रचित अभ्यासक्रम , जून २०१३ पासून पुढे

मराठी : अभ्यासक्रमपत्रिका (1521)

प्रथम सत्र ६० गुण

अ- निबंध लेखन - वैचारिक, ललित आणि वाणिज्य विषयक

ब- पाठयपुस्तक - ' यशोगाथा' - डॉ. प्र. चिं. शेजवलकर

- दुसरे सत्र

व्यावहारिक आणि उपयोजित मराठी

१ निबंधलेखन

२ प्रशासनिक मराठी
   - अ अर्जलेखन
   - ब कार्यालयीन टिपण्णीलेखन,
   - क इतिवृत्त लेखन,
   - ड घोषणापत्रक
   - इ निविदा
   - फ माहितीपत्रक

३ जाहिरात लेखन आणि जाहीर निवेदन

४ वाणिज्यविषयक पारिभाषिक संज्ञा

५ सारांशलेखन

६ भाषांतर (इंग्लिशचे मराठीत)

S.Y. B. Sc.

द्वितीय वर्ष विज्ञान

मराठी विज्ञानसाहित्य आणि व्यावहारिक मराठी

उद्दिष्टे :

१ विद्यार्थ्यांमध्ये मराठी विज्ञानसाहित्याविषयी आवड निर्माण करणे.

२ विद्यार्थ्यांमध्ये वैज्ञानिक जाणिवा निर्माण करून देणे.

३ विद्यार्थ्यांना विज्ञान, उद्योगातील विविध प्रवाह, संधी यांचा परिचय करून देणे.

४ विद्यार्थ्यांमध्ये लेखन, वाचन, आकलन आणि संभाषण ही भाषिक कौशल्ये अधिकाधिक विकसित करणे.

५ भाषिक कौशल्यांचे विविध आविष्कार आणि प्रसारमाध्यमे यांच्या परस्परसंबंधाचे ज्ञान विद्यार्थ्यांना करून देणे.

६ वैज्ञानिक, कार्यालयीन, व्यावसायिक आदी कामकाजात मराठीच्या होणाऱ्या वापराची माहिती देत पारिभाषिक संज्ञांची ओळख विद्यार्थ्यांना करून देणे.

प्रथम सत्र

एकूण तास : ४८ गुण : ४०

१. निबंधलेखन

तास : ०८ गुण १०

विज्ञान, सामाजिक व वैचारिक विषयावर निबंधाचे लेखन करणे.

२. पाठ्यपुस्तक

तास : ४० गुण ३०

विज्ञानसृष्टी

संपादक : प्रा. डॉ. स्नेहल तावरे

प्रा. डॉ. बाळासाहेब गुंजाळ

QIM 1.3.1 List of Courses addresses crosscutting issues as per Syllabus (2013 Pattern)

Sr. No.	Programme Name	Course code	Name of Course	Addressed issue (Professional Ethics, Gender, Human Values, Environment & Sustainability)
	B. Sc. Botany	BO.111	FY BSc Paper I Plant Diversity (Sem- I)	Environment & Sustainability
	B. Sc. Botany	BO.111	FY BSc Paper I Plant Morphology and Anatomy (Sem-II)	Environment & Sustainability
1.	B. Sc. Botany	BO.112	FY BSc Paper II Industrial Botany I (Sem I)	Professional Ethics
2.	B. Sc. Botany	BO.112	FY BSc Paper II Industrial Botany II (Sem II)	Professional Ethics
3.	B. Sc. Botany	BO.113	FY BSc Practical Paper III (Sem I & II)	Professional Ethics
4.	B. Sc. Botany	BO.211	SY BSc Paper I Taxonomyof Angiosperms and Plantcommunity (Sem I)	Environment & Sustainability
5.	B. Sc. Botany	BO.212	SY BSc Paper II PlantPhysiology (Sem I)	Environment & Sustainability
6.	B. Sc. Botany	BO.221	SY BSc Paper I Plant Anatomy and Embryology (Sem II)	Professional Ethics
7.	B. Sc. Botany	BO.222	SY BSc Paper II Plant Biotechnology (Sem II)	Professional Ethics
8.	B. Sc. Botany	BO.223	Practical based on theory courses (Paper I and PaperII)	Professional Ethics
9.	B. Sc. Botany	BO.331	TY BSc Paper I Cryptogamic Botany (Sem III)	Environment & Sustainability
10.	B. Sc. Botany	BO.332	TY BSc Paper II Cell andMolecular Biology (Sem III)	Human Values
11.	B. Sc. Botany	BO.333	TY BSc Paper III Geneticsand Evolution (Sem III)	Human Values
12.	B. Sc. Botany	BO.334	TY BSc Paper IV Spermatophyta and Palaeobotany (Sem III)	Environment & Sustainability
13.	B. Sc. Botany	BO.335	TY BSc Paper V Horticulture and Floriculture (Sem III)	Professional Ethics
14.	B. Sc. Botany	BO.336	TY BSc Paper VI CompuATTional Botany (Sem III)	Professional Ethics
15.	B. Sc. Botany	BO.341	TY BSc Paper I Plant Physiology and Biochemistry (Sem IV)	Professional Ethics
16.	B. Sc. Botany	BO.342	TY BSc Paper II Plant Ecology and Biodiversity (Sem IV)	Environment & Sustainability
17.	B. Sc. Botany	BO.343	TY BSc Paper III PlantPathology (Sem IV)	Environment & Sustainability

18.	B. Sc. Botany	BO.344	TY BSc Paper IV Medicinal and Economic Botany (Sem IV)	Environment Sustainability
19.	B. Sc. Botany	BO.345	TY BSc Paper V Plant Biotechnology (Sem IV)	Professional Ethics
20.	B. Sc. Botany	BO.346	TY BSc Paper VI PlantBreeding and Seed Technology (Sem IV)	Professional Ethics
21.	B. Sc. Botany	BO.347	TY BSc Practical I	Professional Ethics
22.	B. Sc. Botany	BO.348	TY BSc Practical II	Professional Ethics
23.	B. Sc. Botany	BO.349	TY BSc Practical III	Professional Ethics

UNIVERSITY OF PUNE
BOARD OF STUDIES IN BOTANY
Proposed Revised Syllabus for F. Y. B.Sc. (Botany)
To be implemented from June, 2013
PAPER – I
FUNDAMENTALS OF BOTANY
Term – I: Plant Diversity (36 Lectures)

1. **Introduction**: General outline of plant kingdom, Introduction to plant diversity with reference to following groups:-
   Cryptogams: Thallophyta (Algae, Fungi, Lichens, And Bacteria), Bryophyta and Pteridophyta, Phanerogams: Gymnosperms and Angiosperms. **3L**
2. **Algae**: General characters, Outline classification according to G.M. Smith (1955) up to classes with reasons. Life cycle of *Spirogyra*. **6L**
3. **Fungi**: General characters, Outline classification according to G.M. Smith (1955) up to classes with reasons. Life cycle of *Cystopus (Albugo)*. **5L**
4. **Lichens**: General characters, Nature of Association, Types of Lichens on the basis of thallus morphology, Economic importance of lichens. **3L**
5. **Bryophytes**: General characters, Outline classification according to G.M. Smith (1955) up to classes with reasons. Life cycle of *Riccia*. **5L**
6. **Pteridophytes**: General characters, Outline classification according to G.M. Smith (1955) up to classes with reasons. Life cycle of *Nephrolepis*. **6L**
7. **Gymnosperms**: General characters, Outline classification according to Chamberlain (1934) up to classes with reasons. Life cycle of *Cycas*. **5L**
8. **Angiosperms**: General characters, Causes of evolutionary success of Angiosperms, comparative account of monocotyledons and dicotyledons. **3L**

(Note: Development of sex organs not expected, for all the above mentioned life cycles)

REFERENCES:-

1. **Brodie J. and Lewis J.** (2007). (Ed.) Unravelling the algae: the past, present and future of algal systematics. CRC press, New York, pp 335.
2. **Bellinger E.G. and Sigee D.C.** (2010). Freshwater algae: Identification and use as bioindicators, Willey-Blackwell, UK, pp. 271.

PAPER – I
FUNDAMENTALS OF BOTANY
Term – II: Morphology and Anatomy (36 Lectures)

1. **Morphology**: **4L**
   1.1: Introduction, Definition and Scope.
   1.2: Descriptive and Interpretative.
   1.3: Importance in identification, nomenclature, classification, phylogeny and Plant breeding.

2. **Morphology of Vegetative Parts:** **8L**
   2.1: **Root**: Types of roots, Modifications of roots: Epiphytic, Respiratory (Pneumatophores), Parasitic and Storage roots (conical, fusiform and napiform) with examples; functions of root.
   2.2: **Stem**: Modifications of Stem: Phylloclade, Runner, Stolon, Suckers, Offsets, Rhizome, Corm, Tuber and Bulb with examples. Functions of stem.
   2.3: **Leaf**: Parts of typical leaf: petiole, lamina; leaf margins and apices. Types of leaves: simple, compound, venation, phyllotaxy. Modifications: tendrils, spines, scale leaves, phyllode, reproductive and trap leaves (mechanism of trapping in *Nepenthes* only) with examples. Functions of leaf.

3. **Morphology of Reproductive Parts:** **10L**
   3.1: **Inflorescence**: Types of inflorescence: Racemose (raceme, spike, corymb, umbel, catkin, spadix and capitulum), Cymose (solitary, monochasial, dichasial, polychasial), Special types (Verticillaster, Cyathium, and Hypanthodium) Significance.
   3.2: **Flower**: Parts of typical flower, Types of flower (complete, incomplete), symmetry of flower and insertion of floral whorls. Floral whorls: Calyx, corolla, perianth, aestivation, modifications of calyx (pappus, petalloid, spurred), forms of corolla: polypetalous (cruciform and papilionaceous) gamopetalous (infundibuliform, bilabiate), Androecium: structure of stamen, fixation of anthers, cohesion and adhesion; Gynoecium: structure of carpel. Types of placentations.
   3.3: **Fruit**: Types of fruits: Simple and dry: Achene, Cypsela, Legume, Follicle and Capsule, Fleshy: Drupe, berry, Hespiridium and pepo. Aggregate: Etaerio of berries and Etaerio of follicles. Multiple fruits: Syconus and Sorosis.
   3.4: **Seed**: Parts, types, structural modifications for seed dispersal.

4. **Anatomy**: **2L**
   Introduction, Definition, Importance in taxonomy, physiology, ecological interpretations, pharmacognosy and wood identification.

5. **Types of tissues:** Outline with brief description. **6L**
   5.1: **Meristmatic tissues:** - Meristem, characters and types based on origin, position and plane of division, functions.
   5.2: **Vascular tissues:-** Components of xylem and phloem, types of vascular bundles, functions.
   5.3: **Epidermal tissues:-** Epidermis, structure of typical stomata, trichomes, motor cells; functions.
   5.4: **Mechanical tissues:-** Collenchyma, sclerenchyma and xylem with functions.

6. **Internal Organization of Primary Plant Body:** **6L**
   6.1: Internal structure of dicotyledon and monocotyledon root.
   6.2: Internal structure of dicotyledon and monocotyledon stem.
   6.3: Internal structure of dicotyledon and monocotyledon leaf.

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1. College Botany, 2006, Gangulee and Kar. New Central Book Agency (P) Ltd. Kolkata
2. Taxonomy of Angiosperms, 1994, V. N. Naik, Tata Mc Graw Hill Publishing Comp., New Delhi
3. Systematic Botany, 1988, S. C. Dutta, Wiley Eastern Ltd., New Delhi
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5. Taxonomy of Angiosperms, 2010, V. Singh and D. K. Jain, Rastogy Publications, Meerut.
6. Plant Anatomy 2007, B. P. Pandey, S. Chand and Comp. Ltd. New Delhi.
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9. Plant anatomy, 1974, Fahn , A, Pergamon Press Oxford.
10. Anatomy of seed plants, 2006, Esau K., John Wiley & Sons, New York.
11. Taxonomy of vascular plant, 2012, Lawrence GHM, Scientific Publishers, (India) Jodhpur.
12. Plant Anatomy, 1993, Esau K., Wiley Eastern Ltd. New Delhi.
13. Morphology of the angiosperms, 1961, Eames A.J., Mc. Graw Hill, New York.
14. A Text Book of Practical Botany II, 1993, Ashok Bendre & Ashok Kumar. Rastogi Publ., Meerut.
15. Plant Anatomy, 2006, Pijush Roy. New Central Book Agency (P) Ltd. Kolkata.
16. Plant Anatomy, 1989, Chandurkar, P. J., Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
17. Botany for Degree Students, 2003, A. C. Dutta. Oxford University Press, New Delhi.
18. A text book of Botany: Angiosperms, 2011. V. Singh, P. C. Pande & D. K. Jain. Rastogi publications.

PAPER- II

Term I – INDUSTRIAL BOTANY (36 Lectures)

1. **Introduction to Industrial Botany** **2L**

1.1 Concept of Industrial Botany.

1.2 Plant resources and industries: Food, fodder, fibers, medicines, timber, dyes, gum, tannins. (Two examples of each resource and the relevant industries with which they are associated).

2. **Floriculture Industry** **8L**

2.1 Introduction to floriculture.

2.2 Important floricultural crops, open cultivation practices, harvesting and marketing of Tuberose.

2.3 Greenhouse technology: Concept, advantages and limitations.

2.4 Cultivation practices (greenhouse technology), harvesting and marketing of Rose and *Gerbera.*

3. **Plant Nursery Industry** **8L**

3.1 Concept and types of nurseries: ornamental plant nursery, fruit plant nursery, medicinal plant nursery, vegetable plant nursery, orchid nursery, forest nursery (with reference to infrastructure required, outputs, commercial applications and profitability).

3.2 Propagation methods: Seed propagation, natural vegetative propagation and artificial vegetative propagation (Cutting: Stem, Layering: Air layering, Grafting: Stone grafting and Approach grafting, Budding : T-budding).

4 **Plant Tissue Culture Industry**

4.1 Concept of tissue culture. **6L**

4.2 Culture techniques: Types of explants, preparation of media, methods of sterilization, inoculation techniques, incubation and hardening.

4.3 Commercial significance

5. Agri industries:

5.1 Organic Farming: Concept, need of organic farming, types of organic fertilizers, advantages and limitations. **8L**

5.2 Seed industries: Importance of seed industries, seed production, seed processing and seed marketing with reference to cotton. Major seed industries and corporations of India.

6. Mushroom Industries: **4L**

Mushroom cultivation: Plant resources, cultivation practices of Oyster mushroom, uses of mushrooms, value added products, commercial significance.

References:

1. Textbook of Economic Botany, Verma V., Ane Books Pvt. Ltd.
2. Economic Botany in the Tropics, Kochhar, Macmillan Publisher.
3. Economic Botany: Principles and Practices, Gerald E. Wickens, Springer Publication.
4. Floriculture in India, Gurcharan Singh Randhawa and Amitabha Mukhopadhyay, Allied Publishers.
5. Floriculture Marketing in India, Debashish Sengupta and Raj Kamal, Excel Books.
6. Floriculture Hand Book, Eiri, Engineers India Research in Publication.
7. Nursery Management, John Mason, Landlinks Press Publisher.
8. Plant Nursery Management: How to Start and Operate a Plant Nursery, Ray, P.K., Scientific Publishers.
9. Introduction to Plant Tissue Culture (2/e), M. K. Razdan, Science Publishers.
10. Plant Cell and Tissue Culture, Indra K. Vasil, (Eds. - Indra K. Vasil, Trevor A. Thorpe), Springer Publication.
11. The Complete Book on Organic Farming and Production of Organic Compost, NPCS Board of Consultants & Engineers, Asia Pacific Business Press Inc.
12. The Organic Farming Manual: A Comprehensive Guide to Starting and Running a Certified Organic Farm, Ann Larkin Hansen, Storey Publications.
13. Hand Book of Mushroom Cultivation, Processing and Packaging, Engineers India Research In Publishers
14. Growing Gourmet and Medicinal Mushrooms, Paul Stamets, Ten Speed Press Publishers
15. Handbook of Seed Science And Technology: Seed biology, Production, and Technology, Amarjit S. Basra, Food Products Press publishers.

PAPER- II

Term- II: INDUSTRIAL BOTANY (36 Lectures)

1. Bio-fuel Industry **6L**

1.1 Introduction and advantages.

1.2 Concept of biofuel and its need.

1.3 Plants used for biofuel production.

1.4 Biodiesel production from Caster.

1.5 Commercial significance.

2 Bio-pesticide Industry **6L**

2.1 Concept of bio-control; Integrated Pest Management (IPM).

2.2 Importance of bio pesticides.

2.3 Types of bio pesticides: Indiara, Azadiractin.

2.4 Commercial significance.

3. Industrial Mycology

3.1 Introduction **6L**

3.2 Important genera of fungi used in various industries and their products.

3.3 Products and applications of *Trichoderma, Penicillium, Aspergillus* and yeast.

3.4 Commercial significance.

4. Bio-Fertilizer Industry

4.1 Bio fertilizers : concept and need **6L**

4.2 Types of bio-fertilizers: Nitrogen fixing bio fertilizer: *Rhizobium*, Blue green algae. *Anabaena* associated with *Azolla*. Phosphate solubilizing bio-fertilizer: Bacteria and Fungi.

4.3 Commercial significance.

5 Fruit Processing Industry

5.1 Fruit processing: concept and need **6L**

5.2 Cold storage.

5.3 Types of fruit processing (canned fruits, dried fruit chips, fruit pulp, squash, jam, jelly, pickle and ketchups).

5.4 Commercial significance.

6 Plant Pharmaceutical Industry

6L

6.1 Concept and advantages.

6.2 Types of pharmaceutical products: Churna, Asava and Arishta.

6.3 Drug plants with reference to botanical source, active principles and medicinal uses of *Adathoda zeylanica*, *Tinospora cordifolia* and *Asperagus racemosus*.

6.4 Manufacture of *Churna (Triphala churna)*, *Arishta* (*Ashokarishta*) and *Asava* (*Kumariasava*).

6.5 Concept of nutraceuticals and cosmeceuticals.

6.6 Commercial significance of Amla and Aloe.

References:

1. The Complete Book on Organic Farming and Production of Organic Compost, NPCS Board of Consultants & Engineers, Asia Pacific Business Press Inc.
2. The Organic Farming Manual: A Comprehensive Guide to Starting and Running a Certified Organic Farm, Ann Larkin Hansen, Storey Publications.
3. Deore and Laware (2011).Liquid Organic Fertilizer: An Approach towards Organic Vegetable Production. LAP LAMBERT Academic Publishing (2011)
4. A Pharmacognosy and Pharmacobiotechnology. New Age international (P) Limited, Publishers (formerly Wiley Eastern Limited)
5. Kokate C.K. Practical Pharmacognosy, Vallabh Prakashan, New Delhi,
6. Kokate C.K. Purohit A.P. and Gokhale S.B. Pharmacognosy, Nirali Prakashan Pune
7. Trease G.E. and Evans. W.C. Pharmacognosy ELBS Twelfth Edition
8. Tyler V.E. Brady L.R. and Robbers J.E. Pharmacognosy Lea and Febiger. Philadelphia.8th edition KM Varghese and Co. Mumbai,
9. Vaidya S.S. and Dole V.A. Bhaishyajakalpana, Anmol Prakashan, pune
10. Wallis T.E. Text books of pharmacognosy CBS publishers and distributors New Delhi (Latest Edition)
11. Pathak, Khatri, Pathak, 2003, Fundamentals of plant pathology, Agrbios
12. Mehrotra, R.S. 1991, Plant Pathology, Tata Mc-Graw Hill Co. Delhi
13. Chattergee, P.B., 1997,Plant Protection Techniques, Bharati Bhawan, Publ. Patana
14. Agrios, G.N. 2006 Plant Pathology, Elsevier Academic Press.
15. Pandey, B.P. 2009, Plant Pathology, S. Chand Co.

F. Y. B.Sc. BOTANY PRACTICAL PAPER – III

Based on Theory Paper I and Paper II

1. Modifications of root and stem. 1P
2. Study of leaf (parts of leaf, types: simple and compound; sessile and petiolate; venation: parallel and reticulate) (Glossary of terminologies be given with the protocol). 1P
3. Study of Inflorescence. 1P
   a) Racemose: Raceme, Spike, Spadix, Catkin, Umbel and Capitulum.
   b) Cymose: Solitary cyme, Uniparous cyme: helicoid and scorpiod, Biparous cyme and Multiparous cyme.
   c) Special type: Verticillaster, Hypanthodium and Cyathium.
4. Study of flowcr with respect to Calyx, Corolla and Perianth: (Glossary of terminologies is given with the protocol). 1P
5. Study of flower with respect to Androecium and Gynoecium. 1P
6. Study of fruits and seed with suitable examples. 1P
   Simple fruit: fleshy – Berry and Drupe; Dry: Achene, Cypsella and Legume
   Agrregate fruit: Etaerio of follicles and Etaerio of Berries.
   Multiple fruit: Syconus and Sorosis.
   Seed: parts of seed and types of seed (monocotyledonous dicotyledonous, albuminous, exalbuminous)
7. Study of internal primary structure of dicotyledonous root, stem and leaf. e.g. Sunflower. 1P
8. Study of internal primary structure of monocotyledonous root, stem and leaf. e.g. Maize. 1P
9. Study of *Spirogyra*. 1P
10. Study of *Cystopus (Albugo)* 1P
11. Study of *Riccia*. 1P
12. Study of *Nephorlepis*. 1P
13. Study of *Cycas*. 1P
14. Study of plant resources in industries: food, fodder, fiber, medicine, timber and gum (one example of each) 1P
15. Study of artificial plant propagation: 1P
    Stem cutting (demonstration of three subtypes)
    Air Layering, Approach grafting, and T- budding
16. Study of plant tissue culture techniques: Demonstration of various stages. 1P
17. Cultivation of Oyster mushroom and demonstration of value added mushroom products. 1P
18. Study of plant resources used in biopesticides. 1P
    (Indiara, Azadiractin)
19. Study of industrially important fungi and their products. 1P
    Ganoderma: *Ganoderma* tablets, *Aspergillus*: citric acid; *Yeast*: Bakery products; *Penicillium*: Penicillin and *Trichoderma*.
20. Study of types of Biofertilizers: *Rhizobium*, *Azatobacter*, BGA, *Azolla*. Phosphate Solubilizing Bacteria. Green manure (preferably Crotolaria/ Gliricidia/locally availablc material). 1P
21. Preparation of Jam and Squash. 1P
22. A) One botanical excursion to study plant diversity.

    B) Visit to one of the following industries. (Study/project report is compulsory).
    1) Floriculture unit 2) Greenhouse 3) Pharmaceutical industry 4) Nursery and 5) Mushroom cultivation unit.

(Note: Visits mentioned in the practical No. 22 (A & B) are compulsory. It carries 10 marks at the time of annual practical examination.)

University of Pune

S. Y. B. Sc. [Botany]

Class – S.Y. B .Sc. (To be implemented From June 2014)		
Paper	Semester - I	Semester – II
I	Taxonomy of Angiosperms and Plant community	Plant Anatomy and Embryology
II	Plant Physiology	Plant Biotechnology
III	Practicals based on Theory courses (Paper I and II)	

Equivalence of previous syllabus at S.Y.B.Sc. Botany

Paper	2008 Pattern (Implemented from 2009)	2013 Pattern (To be implemented from 2014)
Paper I Semester I	BO-211: Fundamentals of Plant Systematics and Plant Ecology	BO-211: Taxonomy of Angiosperms and Plant community
Paper II Semester I	BO-212:Fundamentals of Plant Physiology	BO-212:Plant Physiology
Paper I Semester I	BO-221: Structural Botany(Anatomy, Embryology and Palynology)	BO-221: Plant Anatomy and Embryology
Paper II Semester I	BO-222: Fundamentals of Plant Biotechnology	BO-222: Plant Biotechnology
Practical Course	Practical based on theory courses (Paper I and Paper II)	Practical based on theory courses (Paper I and Paper II)

S.Y.B.Sc. Botany

(Semester I, Paper I)

Taxonomy of Angiosperms and Plant Community (48 Lectures)

1. Introduction to Plant Taxonomy **3L**

1.1 Definition, scope, objectives and importance

1.2 Identification, classification, nomenclature

1.3 Concept of Systematics

2. Systems of classification **6L**

2.1 Types of systems with their merits and limitations- a)Artificial system- Carl Linnaeus , b)Natural system -Bentham and Hooker, c) Phylogenetic system- Engler and Prantl

3. Taxonomic literature **2L**

Flora, monograph, revisions, manuals, journals, periodicals and references books.

4. Sources of data for Systematics **6L**

4.1 Morphology

4.2 Anatomy

4.3 Cytology

4.4 Embryology

4.5 Phytochemistry

4.6 Molecular biology

5. Botanical Nomenclature **6L**

5.1 History

5.2 Binomial nomenclature

5.3 ICBN- principles

5.4 Rules of nomenclature

5.5 Coining of generic names and specific epithets.

5.6 Ranks and endings of taxa names

5.7 Principle of priority

5.8 Effective and valid publications

5.9 Single and double authority citation

5.10 *Nomina conservanda*

6. Study of Plant Families **11L**

Study of following families with reference to systematic position, salient features, floral formula, floral diagram and any five examples with their economic importance – Annonaceae, Meliaceae, Myrtaceae, Rubiaceae, Solanaceae, Asclepiadaceae, Euphorbiaceae and Amaryllidaceae

7. Computer in taxonomy **4L**

7.1 Concept of herbarium their advantages and limitations

7.2 Digital /e-herbarium and their advantages

7.3 Data bases: concept and needs.

7.4 Use of computer in plant classification

8. Introduction to ecology **5L**

8.1 Definition

8.2 Concept

8.3 Autecology and synecology

8.4 Ecosystem and its components: biotic and abiotic.

8.5 Food chain

8.6 Food web

8.7 Ecological pyramids

9. Ecological grouping of the plants **5L**

Ecological grouping of the plants with reference to their significance of adaptive external and internal features: a) Hydrophytes, b) Mesophytes c)Xerophytes d) Halophytes with examples.

References-

1. Chopra G.L.- Angiosperms
2. Cronquist, A. 1968. The Evolution and Classification of Flowering Plants. Thomas Nel and Sons Ltd. London.
3. Datta S.C.- A Hand Book of Systematic Botany
4. Davis P.H and V.H Heywood 1963. Principles of Angiosperm Taxonomy. Oliver and Boyd London.
5. Gurucharan Singh 2005- Systematics theory and practice (Oxford IBH)
6. Heywood V.H 1967. Plant Taxonomy, London.
7. Lawrence, G.H.M 1951. Taxonomy of Vascular Plants. N.Y.

S. Y. B. Sc. [Botany]

(Semester I, Paper II)

Plant Physiology (48 Lectures)

1. Introduction to Plant Physiology **2L**

Brief history,Scope and applications of plant physiology

2. Plant – water relations **8L**

2.1 Physico-chemical properties of water

2.2 Membrane structure, permeability and aquaporin

2.3 Diffusion – Definition, factors affecting diffusion, importance of diffusion in plants

2.4 Osmosis – Definition, types of solutions – hypotonic, hypertonic and isotonic, endosmosis and exosmosis, concept of osmotic pressure (OP), turgor pressure (TP), wall pressure (WP), Diffusion pressure deficit (DPD), relation between OP, TP and DPD, role of osmosis in plants.

2.5 Plasmolysis – Definition, mechanism, deplasmolysis, significance of plasmolysis

2.6 Imbibition – Concept, mechanism and significance

3. Absorption of water **3L**

3.1 Role of water in plants

3.2 Concept of water potential and capillary water

3.3 Mechanisms of water absorption

3.4 Factors affecting rate of water absorption

4. Ascent of sap **4L**

4.1 Introduction and definition.

4.2 Theories of ascent of sap

4.3 Vital theories: Jamin – Chame theory and Bose theory

4.3.1 Physical force theories: a) Capillary theory, b) Imbibitional theory, c) Atmospheric pressure theory,

4.3.2 Transpiration pull or cohesion-tension theory, evidences and objections

4.4 Factors affecting ascent of sap

5. Transpiration **6L**

5.1 Definition

5.2 Types of transpiration – cuticular, lenticular and stomatal

5.3 Structure of stomata

5.4 Mechanism of opening and closing of stomata –Steward's hypothesis, active K^+ transport mechanism

5.5 Factors affecting the rate of transpiration

5.6 Significance of transpiration

5.7 Antitranspirants

5.8 Guttation

5.9 Exudation

6. Plant growth and plant growth regulators **6L**

6.1 Introduction

6.2 Phases of growth

6.3 Measurement of growth- Arc auxanometer, Bose crescograph, fresh and dry weight method

6.4 Factors affecting growth

6.5 Plant Growth Regulators- Introduction and definition

6.6 Properties and practical applications of auxins, cytokinins, gibberellins, ethylene and abscisic acid

7. Nitrogen metabolism **8L**

7.1 Introduction

7.2 Biological nitrogen fixation

7.2.1 Symbiotic nitrogen fixation, nitrogenase enzyme- structure and function

7.2.2 Non-symbiotic nitrogen fixation

7.3 Denitrification, ammonification and nitrification

7.4 Reductive amination and transamination

7.5 Role of nitrogen in plants

8. Seed dormancy and germination **4L**

8.1 Definition and types of seed dormancy

8.2 Methods to break seed dormancy

8.3 Metabolic changes during seed germination

9. Physiology of flowering **7L**

9.1 Photoperiodism – Concept, definition, short day plants, long day plants and day neutral plants, photoperiodic induction, phytochrome and flowering

9.2 Phytohormones and initiation of flowering

9.3 Applications of photoperiodism

S. Y. B. Sc. [Botany]

(Semester II, Paper I)

Plant Anatomy and Embryology (48 Lectures)

Plant anatomy:

1. Introduction 2L

Definition, scope of plant anatomy and types of tissues

2. Epidermal tissue system 4L

Structure and function of epidermal tissue system, uniseriate and multiseriate epidermis, stomata: structure, types and functions, epidermal outgrowth: glandular and non-glandular

3. Mechanical tissue system 4L

Principles involved in distribution of mechanical tissues – inflexibility, incompressibility, inextensibility and shearing stress, tissues providing mechanical support, their distribution in leaf, stem and root of dicots and monocots.

4. Vascular tissue system 4L

Structure and function of xylem, phloem and cambium

5. Normal secondary growth 5L

Introduction, cambium and its role, process in stems of *Helianthus annus* and *Annona sqamosa*, extrastelar and intrastelar secondary growth, annual rings, periderm, bark, tylosis and lenticel

6. Anomalous secondary growth 5L

Introduction, causes, anomalous secondary growth in dicot stem (*Bignonia*) dicot root (*Raphanus*) and monocot stem (*Dracaena*).

Plant Embryology

7. Introduction 1L

Definition and scope of plant embryology

8. Microsporangium and male gametophyte 5L

a. Microsporangium: structure of tetrasporangiate anther, types of tapetum, sporogenous tissue.

b. Microsporogenesis: process and its types, types of microspore tetrad.

c. Male gametophyte: structure and development of male gametophyte.

10. Megasporangium and female gametophyte: 7L

a. Megasporangium: structure, types of ovules – anatropous, orthotropous, amphitropous, campylotropous, circinotropous.

b. Megasporogenesis: tenuinucellate and crassinucellate ovules, types of megaspore tetrads.

c. Female gametophyte: structure of typical embryo sac, types of embryo sacs with examples – monosporic, bisporic and tetrasporic.

11. Fertilization: 5L

Mechanism of pollination- entomophily, anemophily, hydrophily, zoophily, germination of pollen grain, double fertilization (syngamy and triple fusion) and its significance.

12. Endosperm and embryo 6L

a. Endosperm: Types – nuclear, helobial and cellular.

b. Embryogeny: structure of dicot and monocot embryo and seed formation.

References

1. Plant Anatomy, Chandurkar P J, Plant Anatomy Oxford and IBH publication Co. New Delhi 1971
2. B P Pandey, Plant Anatomy,S Chand and Co. Ltd, New Delhi 1978
3. Greulach V A and Adams J E Plant- An introduction to Modern Biology, Toppen Co. Ltd, Tokyo,
4. Eams and Mc Daniel,An Introduction to Plant Anatomy, McGraw –Hill Book Co. Ltd and Kogakusha Co, Tokyo, Japan
5. Adriance S Foster Practical Plant Anatomy, D Van Nostrand Co. INC, Newyork
6. Esau, Plant Anatomy, Wiley Toppan Co. California, USA
7. Pijush Roy, Plant Anatomy,New Central Book Agency Ltd, Kolkata
8. Pandey S N and Ajanta Chadha, Plant Anatomy and Embryology,Vikas Publishing House,Pvt, Ltd, New Delhi
9. Bhojwani S S and Bhatnagar S P, An Embryology of Angiosperms
10. Maheshwari P, An introduction to Embryology of Angiosperm
11. Nair P K K Essentials of Palynology.

S. Y. B. Sc. [Botany]

(Semester II, Paper II)

Plant Biotechnology (48 Lectures)

1. Introduction 2L

1.1 Biotechnology- Definition, concept and scope

1.2 Interdisciplinary nature of biotechnology

2 . Enzyme Technology 7L

2.1 Introduction, definition and properties of enzymes.

2.2 Classification of enzymes

2.3 Industrial applications of enzymes.

2.4 Production of amylase, proteases and lipase enzyme

2.5 Enzymes immobilization - concept and techniques of immobilization

3. Fermentation Technology. 7L

3.1 Introduction.

3.2 Liquid and solid state fermentations

3.3 Principles of microbial growth

3.4 Bioreactors used in fermentations- stirred tank and tubular tower and digestive tank fermenters

3.5 Media composition for liquid and solid state fermentations

3.6 Industrial applications of fermentation

3.7 Downstream processing- citric acid production.

4. Single cell protein 5L

4.1 Introduction

4.2 Need of proteins in diet

4.4 Production of SCP from algae (*Spirulina*) and fungi (Yeast)

4.5 The economic implications of SCP

4.6 Acceptability of SCP

5. Environmental Biotechnology 6L

5.1 Introduction

5.2 Phytoremediation- definition and concept

5.3 Methods of phytoremediation- Rhizofilteration, phytoextraction, phytostabilization, phytovolatization, phytodegradation,

5.4 Environmental sustainability

6 . Basics of plant genetic engineering 7L

6.1 Introduction and structure of DNA

6.2 Structure of gene in prokaryots and eukaryots- Promoter, coding region and terminator

6.3 General method of gene isolation from the plants-DNA isolation, restriction enzymes, restriction digestion of DNA, DNA electrophoresis, southern hybridization, lygation of DNA fragments

6.4 Gene cloning- vectors used for gene cloning

7. Methods of gene transfer in plants 8L

7.1 Direct gene transfer methods- Electroporation, biolystic gene transfer, liposome mediated transfer.

7.2 Vector mediated gene transfer- *Agrobacterium* mediated gene transfer in plants, Ti-plasmid: structure and functions, Ti plasmid based vectors, advantages.

8. Application of plant genetic engineering in crop improvement. 4L

8.1 Introduction

8.2 Insect pest resistance, abiotic stress tolerance, herbicide resistance, storage protein quality

9. Nano-biotechnology 2L

9.1 Definition and concept

9.2 Applications of nanotechnology in agriculture (fertilizers and pesticides).

REFERENCES:

1. Nanobiotechnology, Concepts, Applications and perspectives, C.M. Niemeyer and C.A. Mirkin ; 2004; WILEY-VCH,.
2. Bionanotechnology: concepts, Lessons from Nature", David.S. Goodsell, 2004 Wiley-Liss
3. Nanobiotechnology Protocols; Sandra J Rosenthal, David W Wright 2005, Humana Press Inc
4. Nanoscale Technology in Biological Systems; R.S. Greco, F.B.Prinz and R.L.Smith 2005 CRC press,.
5. Fundamental Molecular Biology ; Allison LA; 2007
6. Recombinant DNA, Watson et al ; 5th Ed; 2006
7. Techniques for Engineering Genes ; Curell BR et al;2004
8. Techniques for Molecular Biology ; Tagu D & Moussard C; INRA; 2006
9. Gene Cloning and DNA Analysis ; 5th Ed ; Brown TA ; 2006
10. Analysis of Genes and Genomes ; Reece RJ ; Wiley; 2004
11. Recombinant DNA and Biotechnology ; 2nd Ed ; Kreuzer H and Massey A ;ASM;2006
12. Text book of biotechnology, R.C.Dubey, 2009, S.Chand, Delhi

S. Y. B. Sc. [Botany] Paper III

Practicals Based on Theory Paper I and II

a) Taxonomy of Angiosperms and Plant Community

1. Description of flowering plant in botanical terms (01 P)
2. Study of plant families (any four) (03 P)
3. Study of ecological adaptations in Hydrophytes with any two examples (01P)
4. Study of ecological adaptations in Xerophytes with any two examples (01P)
5. Study of vegetation by list count quadrat method. (01P)
6. Study of tools of taxonomy and ecological instruments (any four each) (01P)

b) Plant Physiology

1. Determine water holding capacity (WHC) and pH of soil (pH by pH meter.) (01 P)
2. Study of plasmolysis in suitable plant material (01 P)
3. Determination of Diffusion Pressure Deficit (DPD). (01 P)
4. Determine rate of transpiration under different conditions of Sunlight, Shade and wind (01 P)
5. Demonstration Experiments. (Compulsory Practical) (01 P)
   a. Curling Experiment
   b. Imbibition in seeds
   c. Arc Auxanometer
   d. Effect of auxins on rooting
   e. Transpiration pull
   f. Spectrophotometer
   g. Portable leaf area meter
   h. Conductivity meter
   i. Centrifuge
6. Assessing seed viability by TTC method

c) Plant Anatomy and Embryology (01 P)

1. Study of epidermal tissue system – non-glandular and glandular trichomes, multilayered epidermis, typical stomata (dicot and monocot). (01 P)
2. Study of mechanical tissues and their distribution in root, stem and leaves. (01 P)
3. Study of normal secondary growth in dicot stem – *Annona* /*Moringa*. (01 P)
   (Double stained temporary preparation).

4. Study of anomalous secondary growth in *Bignonia* and *Dracaena* stem. (01 P)
   (Double stained temporary preparation).
5. Study of tetrasporangiate anther and types of ovules. (01 P)
6. Study of dicot and monocot embryo. (01 P)

b) Plant Biotechnology

1. Production of citric acid by *Aspergillus niger* and estimation of citric acid by titration method. (02 P)
2. Production of single cell protein production i.e. *Spirulina* / yeast and study of commercial products (01 P)
3. Demonstration of fermentation and fermentation products (01 P)
4. Demonstration of separation of plasmid DNA by agarose gel electrophoresis (01 P)
5. Demonstration of enzyme immobilization (01 P)

N.B. Botanical excursion tour and submission of at least five correctly identified wild plant photographs is compulsory.

SAVITRIBAI PHULE UNIVERSITY OF PUNE

T. Y. B. Sc. Botany Revised Syllabus

Theory Courses New Syllabus to be implemented from June 2015				
Paper	**Course**	**Semester III**	**Course**	**Semester IV**
I	BO. 331	**Cryptogamic Botany**	BO.341	**Plant Physiology and Biochemistry**
II	BO. 332	**Cell and Molecular Biology**	BO.342	**Plant Ecology and Biodiversity**
III	BO. 333	**Genetics and Evolution**	BO.343	**Plant Pathology**
IV	BO. 334	**Spermatophyta and Palaeobotany**	BO.344	**Medicinal and Economic Botany**
V	BO. 335	**Horticulture and Floriculture**	BO.345	**Plant Biotechnology**
VI	BO. 336	**Computational Botany**	BO.346	**Plant Breeding and Seed Technology**

Practical Based on theory Courses

Practical No	Course	Practicals Based on
Practical I	**BO.347**	BO.331: Cryptogamic Botany BO. 332: Cell and Molecular Biology BO.341: Plant Physiology & Biochemistry BO.345: Plant Biotechnology
Practical II	**BO.348**	BO.333: Genetics and Evolution BO.334: Spermatophyta and Palaeoboatny BO.342: Plant Ecology and Biodiversity BO.346: Plant Breeding and Seed technology
Practical III	**BO.349**	BO.335: Horticulture and Floriculture BO.336: Computational Botany BO343: Plant Pathology BO.344: Medicinal and Economic Botany

Proposed Syllabus from 2015-2016 in Botany
T. Y. B. Sc. Semester III
Paper- I: BO : 331 Cryptogamic Botany
(Algae, Fungi, Bryophytes and Pteridophytes)

1. Introduction: Cryptogams- meaning. Types- Lower Cryptogams and Higher Cryptogams, brief review with examples. **02L.**

Algae: **(11L)**

2. Algae: General characters, economic importance and Classification (Chapman and Chapman, 1973) up to classes. **03L.**

3. Study of life cycle of algae with reference to taxonomic position, occurrence, thallus structure, and reproduction of *Nostoc, Chara, Sargassum* and *Batrachospermum.* **08 L.**

Fungi:

(11L)

4. Fungi: General characters, economic importance and Classification. (Alexopoulos, 1979) up to classes.

5. Study of life cycle of fungi with reference to taxonomic position, thallus structure, and reproduction of *Rhizopus, Saccharomyces, Puccinia* and *Cercospora.* **03L.**

Bryophytes: **08 L.**

6. Bryophytes: General characters, economic importance and Classification. (G.M. Smith, 1955) up to classes. **(12L)**

03L.

7. Study of life cycle of Bryophytes with reference to taxonomic position, thallus structure (Morphology and anatomy), reproduction and sporophyte structure of *Marchantia, Anthoceros* and *Polytrichum.*

09 L.

Pteridophytes:

8. Pteridophytes: General characters and economic importance and Classification. (K.R. Sporne, 1975) up to classes. **(12L)**

9. Study of life cycle of Pteridophytes with reference to taxonomic position, Morphology, anatomy, reproduction, gametophytes and sporophyte of *Psilotum, Selaginella* and *Marsilea.* **03L**

(Development of sex organs and sporophyte is not expected.) **09 L.**

Reference Books :

1. **Vashistha B. R. et al.,** Botany for degree students-Algae
2. **Das, Datta and Gangulee**-College Botany Vol I
3. **Sharma, O.P.** -Algae
4. **Vashishta B.R. et al.,** Botany for degree students- Fungi
5. **Sharma, P.D.**-The Fungi
6. **Sharma, O.P.**-Fungi
7. **Chopra G.L. and Yadav D.L.** A Text book of Bryophytes.
8. **Parihar, N.S.** An introduction to Embryophyta: Bryophyte-I
9. **Puri Prem.** Brayophytes, Atmaram and Sons. Delhi.
10. **Vashishta B.R.** Botany for degree students Bryophytes- Vol-III
11. **Parihar N.S.** 1991. Bryophyta. Central Book Depot, Allahabad.
12. **Puri P.** 1980. Bryophytes. Atma Ram and Sons, Delhi.
13. **Alexopoulus C.J , Mims C.W. and Blacwel M.I** 1996. Introductory Mycology. John Wiley and Sons Inc.
14. **Kumar H.D.** 1988. Introductory Phycology. Affiliated East-West Press Ltd., New Delhi.
15. **Sporne K.R.** 1991. The Morphology of Pteridophytes. B.I Publishing Pvt. Ltd. Bombay.

Practicals - 06

(Finalize the practicals after discussion in workshop).

1. Study of **Algae** with respect to systematic position thallus structure and reproduction of *Nosotc, Chara, Sargassum and Batrachospermum.*
2. Study of **Fungi** respect to systematic position thallus structure and reproduction of *Rhizopus, Saccharomyces* and *Puccinia.*
3. Study of **Bryophytes** with respect to systematic position thallus structure and reproduction of of *Marchantia, Anthoceros and Polytrichum.*
4. Study of **Pteridophytes** with respect to systematic position, sporophyte - morphology and anatomy, reproductive structures of *Psilotum, Selaginella* and *Marsilea.*
5. Excursion tour.

Paper II: BO.332: CELL AND MOLECULAR BIOLOGY

Chapter 1 Cell Biology: An Introduction **2L**

1. Definition and brief history
2. Units of measurement of cell
3. Prokaryotic and Eukaryotic Cell
4. Cell biology and other Biological Sciences

Chapter 2 Cytoplasmic Matrix **2L**

1. Physical nature of cytoplasmic matrix
2. Chemical organisation- organic and inorganic compounds of cytoplasmic matrix

Chapter 3 Plant Cell- Cytoplasmic Constituents

15L

Morphology, Ultrastructure, Chemical composition, Functions of Cell wall, Plasma membrane, Endoplasmic Reticulum, Golgi apparatus, Lysosomes, Microbodies, Mitochondria, Plastids, Vacuoles, Ribosomes

Chapter 4 Plant Cell- Nucleus and Chromosomes

5L

Nucleus- Morphology, Ultrastructure, Nucleoplasm, Nucleolus, Functions

Chromosome- Number, Morphology, Structure, Karyotype and ideogram, Chemical composition, Euchromatin and Heterochromatin, Giant chromosomes

Chapter 5 Molecular Biology

1L

Definition, History, Scope and Importance, Central Dogma of Molecular Biology

Chapter 6 Nature of Genetic Material

5L

Characteristics of genetic material, Physical and Biological evidences to prove DNA as genetic material, Chargoff's Law, Franklin and Wilkion's Work, Watson and Cricks Model of DNA, Forms of DNA- A, B and Z, C-Value Parodox, RNA as genetic material-TMV

Chapter 7 DNA Replication

3L

Introduction and types, Messelson and Stahl's Experiment, Molecular mechanism of DNA replication

Chapter 8 DNA Damage and Repair

2L

Introduction, Causes and types, DNA repair system- Photoreactivation, Dark excision repair,

Chapter 9 Gene Organization

3L

Promoter-structure and function in prokaryotes and eukaryotes, Terminators, Units of Gene, Enhancers, Split genes, jumping genes

Chapter 10 Transcription

3L

Structure and role of m-RNA, r-RNA, t-RNA, Transcription apparatus, Mechanism of Transcription in Prokaryotes,

Chapter 11 Genetic Code and Translation

4L

Genetic Code- Definition, Concept, Work of Nirenburg and Khorana, Properties of Genetic code, Translation- Definition, Mechanism of translation- Initiation, Elongation and Termination

Chapter 12 Gene Action and Regulation

3L

Relation of Gene and Enzymes- One gene one enzyme hypothesis, regulation of metabolism, Inducible and Repressible enzymes, Gene regulation- in prokaryotes (Lac Operon Model) and eukaryotes (Britten and Davidson's Model)

Practicals:

1. Cytological techniques-preparation of Fixatives, preparation of stains (Aceto-carmine and Aceto-orcein).
2. Study of various stages of mitosis and meiosis
3. Study of Chromosomes Morphology (from colchicines pretreated Onion root tip cells)
4. Maceration technique for study of plant tissues
5. Study of polytene chromosome from Chironomus larvae
6. Plant Genomic DNA extraction from Cauliflower
7. Estimation of Plant DNA by DPA Method
8. Extraction and estimation of RNA by Orcinol Method

References:

1. Cell and Molecular Biology , S. C. Rastogi
2. Cytology, T. S. Verma and V. K. Agarwal

3. Cell Biology, C. B. Pawar
4. Cell and Molecular Biology, P. K. Gupta
5. Fundamentals of Molecular Biology, Veer Bala Rastogi
6. Fundamentals of Molecular Biology, G. K. Pal and Ghaskadabi
7. Cell Biology, Molecular Biology, Genetic, Evolution and Ecology, Verma and Agarwal
8. Cell and Molecular Biology, Robertis and DeRobertis
9. Molecular Cell Biology, 4th Edition, Lodish S. Baltimore
10. Molecular Biology of Gene, Watson J. D.
11. Biochemistry and Molecular Biology of Plants, Buchanan B. B.
12. Molecular and Cell Biology, Wolfe S.L.

Paper III: BO: 333: Genetics and Evolution

1. Genetics- Introduction **1L**

Definition, Concept of heredity and variations, Branches and Applications of Genetics

2. Mendelism **4L**

Genetical terminology, Selection of experimental material , Monohybrid cross, Law of dominance, Incomplete dominance, Law of segregation/law of purity of gametes, Dihybrid cross, Law of independent assortment, Back cross and Test cross

3. Interactions of genes **6L**

Non-epistatic genetic interactions- complementary genes (9:7), Duplicate Genes (15:1), Epistatic genetic interactions- Masking genes (12:3:1), Supplementary genes (Recessive epistasis) (9:3:4), Inhibitory genes(13:3), Lethal genes (2:1)-Concept, Inheritance of coat colour in mice, Inheritance of sickle cell anemia

4. Multiple alleles **2L**

Definition, Concept, Characters of multiple alleles, Examples of multiple alleles – inheritance of blood group in human, self-incompatibility in **Nicotiana and** eye colour in **Drosophila**

5. Linkage and Crossing over **4L**

Linkage- Definition and Types, Crossing over: Definition and Types, Construction of a linkage map by two point test cross and three point test cross

6. Quantitative and Cytoplasmic Inheritance **4L**

Concept of quantitative inheritance, Difference between qualitative and quantitative traits, Inheritance of quantitative trait in Maize (Cob length), Cytoplasmic inheritance – Definition and concept, Chloroplast- Varigation in Four O'clock plants, Mitochondria- Petite mutants in yeast

7. Sex linked inheritance **5L**

Concept of Sex chromosomes and autosomes, Inheritance of X- linked genes - eye colour in **Drosophila**, Inheritance of colour blindness in humans, Inheritance of Y-linked genes - Holandric genes in humans, Sex influenced genes – baldness in humans Sex-limited genes - feathering in domestic fowl

8. Euploidy and Aneuploidy **5L**

Numerical changes in chromosomes- Euploidy and Aneuploidy, Euploidy- Monoploidy, Origin and production, morphology and uses. Polyploidy -Concept and Characteristics of polyploids, Autopolyploidy- Origin and production, effects of autopolyploidy, uses. Allopolyploidy- Concept, synthesized allopolyploidy (wheat and cotton) Evolutionary significance of polyploidy –Aneuploidy, Monosomy and nullisomy- origin and cytology, Trisomy in **Datura** and humans

9. Chromosomal Abberations **5L**

Types of structural changes in chromosomes, Deletion: types, cytology and genetic effects, Duplication: types and cytology, position effect and bar eye phenotype in **Drosophila**, Inversion: types and their cytology, Translocation: types, translocation complexes, Variation in chromosome morphology: Isochromosomes, ring chromosomes and Robertsonian translocation

10. Evolution – Introduction and Theories of Evolution **4L**

The concept of organic evolution, Theories of Evolution, Pre-Darwinian period- Theory of Inheritance of acquired characters (Lamark's), Darwinism- Theory of Natural Selection, Post-Darwinian period- Modern synthetic theory

11. Evidences of Evolution **3L**

Direct evidences and conclusions from fossil records, Indirect evidences, Evidences from Genetics, Evidences from bio-geographical relations

12. Population Genetics and Evolution **5L**

Concept of Mendelian population, Gene pool and its models, Hardy-Weinberg law of gene frequencies, Factors affecting allelic frequency, Genetic polymorphism

Practicals based on Genetics

1. Study of structural heterozygotes (multiple translocations) in **Rhoeo** 1P
2. Induction of tetraploidy in onion root cells and preparation of squash for observation of tetraploid cells 1P
3. Preparation of salivary gland chromosomes in **Chironomous** larvae 1P
4. Estimation of frequency of PTC taste sensitivity, earlobe and rolling tongue in known population 1P
5. Genetic problems on gene mapping using three point test cross data 1P

Paper IV: BO.334: SPERMATOPHYTA AND PALAEOBOTANY)

GYMNOSPERMS: (12L)

1. Introduction, general characters, economic importance and classification according to Chamberlain (1934). **(2L)**
2. Study of life cycle of *Pinus* and *Gnetum* with reference to distribution, morphology, anatomy, reproduction, gametophyte, sporophyte, seed structure and alternation of generations. **(10 L)**

(Developmental stages of sex organs are not expected)

ANGIOSPERMS (24L)

1) Origin of angiosperms:

Origin with reference to time, place and ancestry-

1) Pteridosperms theory 2) Bennettitalean theory 3) Gnetalean theory **(3 L)**

2. Classification

Review of artificial, natural and phylogenetic systems (general account), **(4 L)** Hutchinson systems with reference to outline and assumptions, merits and limitations, Advanced Phylogenetic Group system-III (APG-III).

3) Study of following families according to Bentham and Hooker's System: (14 L)

With reference to systematic position, distinguishing characters, economic importance, general floral formula, floral diagram of following families: Magnoliaceae, Capparidaceae, Rhamnaceae, Leguminosae (Fabaceae), Asteraceae, Acanthaceae, Apocynaceae, Lamiaceae, Nyctaginaceae, Orchidaceae and Cannaceae

4) Plant identification **(3 L)**

Latin diagnosis and recent trends, use of flora, Practicing indented and bracketed keys, Preparation of artificial keys, Plant authentication.

PALAEOBOTANY : (12 L)

1. Geological time scale, Form genera concept. **(1L)**
2. **Fossil-** Definition, process of fossil formation, types of fossils.-Impression, Compression, Petrifaction, Pith cast and Coal ball. **(3L)**
3. **Study of following fossil groups.** **(08 L)**

a) **Psilopsida-** Salient features of order Psilophytales, external and internal morphology of *Rhynia*.

b) **Lycopsida-** Salient features of order Lepidodendrales, external and internal morphology of *Lepidodendron*,

c) **Sphenopsida-** Salient features of Calamitales, external and internal morphology of *Calamites*

d) **Pteridosperms-** External and internal morphology of *Lyginopteris oldhamia*.

e) **Pentoxylae-** Salient feature, external and internal morphology of stem [*Pentoxylon*], Leaf [*Nipaniophyllum*].

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1. **Sporne K.R.** 1991. The Morphology of Pteridophytes. B.I Publishing Pvt. Ltd. Bombay.
2. **Stewart W.N. and Rathwell** G.W. 1993. Paleobotany and the Evolution of plants. Cambridge University Press.
3. **Bhatnagar S.P and Moitra Alok** 1996. Gymnosperms. New Age International Pvt. Ltd. Publishers, New Delhi, 470 pp.
4. **Biswas C and Johari B.M** 2004. The Gymnosperms Narosa Publishing House, New Delhi. 497 pp.
5. **Sporne K.R** 1965. The Morphology of Gymnosperms London, pp. 216.
6. **Bierhorst D.W.** 1971. Morphology of Vascular Plants. New York and London.
7. **Chamberlain C.J** 1934. Gymnosperms-Structure and Evolution, Chicago.
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13. **Vashishta P.C., A.R. Sinha, Anil Kumar.** 2006. Gymnosperms. S.Chand.
14. **Vashishta P.C.** 2006. Pteridophytes. S. Chand.
15. **Parihar N.S.** 1996. Biology and Morphology of Pteridophytes. Central Book Depot, Allahabad.
16. **Arnold C.R.**-An Introduction to Palaeobotany
17. **E.H.N.Andrews**-Studies in Palaeobotany (Botany for Degree Students Vol.-V)
18. **Shukla A.C.** and **Mishra S.P.**- Essentials of Palaeobotany.

19. **Stewart W.N. and Rathwell G.W.** 1993. Paleobotany and the Evolution of plants. Cambridge University Press.
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22. **Heywood V.H** 1967. Plant Taxonomy, London.
23. **Lawrence, G.H.M** 1951. Taxonomy of Vascular Plants.
24. **Lawrence G. H. M** 1955. An Introduction to Plant Taxonomy
25. **Rendle A.B.** 1925. The Classification of flowering plants. 2 Vols. London.
26. **Santapau H.** 1953. The Flora of Khandala on the Western Ghats of India.
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30. **Pande B.P** 1997. Taxonomy of Angiosperms. S.Chand.
31. **Gurucharan Singh 2005-** Plant systematics
32. **Naik V.N. -** Taxonomy of Angiosperms.
33. **Yadav S.R. and Sardesai M.R.-** Flora of Kolhapur District.
34. **Bhagat R.B., Shimpale V.B. and Deshmukh R.B.** Flora of Baramati
35. **Shivrajan V.V.** -Introduction to Principles plant taxonomy
36. **V. V. Sivarajan, N. K. P. Robson** 1991. Introduction to the Principles of Plant Taxonomy II[nd] Edi.
37. **Theodore Cooke (1903)-** The flora of The Presidency of Bombay Vol. I, II, III
38. **Chopra G.L.-** Angiosperms
39. **Datta S.C.-** A Hand Book of Systematic Botany
40. **Priti Shukla** and **Shital Mishra-** An introduction to Taxonomy of angiosperms.
41. **Sharma O.P.** Plant Taxonomy Tata McGraw-Hill Education
42. **Singh, N.P. and S.Karthikeyn** (2000) B.S.I. Calcutta. Flora of Maharashtra State, Dicotyledons. Vol. I and II
43. **Sharma B.D.. Karthikeyan. S. and N P. Singh** (1996) B.S.I., Calcutta Flora of Maharashtra State, Monocotyledons -
44. *Botanical Journal of the Linnean Society*, 2009, 161, 105–121.
45. http://www.mobot.org/MOBOT/research/APweb/

Practical based Gymnosperm Paper IV: BO.334 (1P)

1. Study of *Pinus* with the help of permanent slides and plant material.
i) External morphology, ii) T. S. of stem(Temporary double stained preparation), iii) T. S. of needle(Temporary double stained preparation), iv) Morphology of male cone – T. S. & L. S. Permanent slide, mounting of pollen grains.
v) Morphology of female cone – T. S. & L. S. Permanent slide, vi) Mounting of pollen grains.
vii) V. S. of mature ovule(Permanent slide)
2. Study of *Gnetum* with the help of permanent slides and plant material.
i) External morphology, ii) T. S. of stem
iii) T. S. of leaf (permanent slide), iv) Morphology of male cone
vi) Morphology of female cone
vii) V. S. of mature ovule
3. Study of at least any eight families as per theory course (3P)
4. Identification of plants with the help of regional/local/suitable flora. (1 P)
5. Preparation of an artificial key based on multiple characters/ androecium/gynoecium/ vegetative characters (at least two keys) (1P)
6. Study of the following with the help of slides and/ or specimens.
i) Impression ii) Compression iii) Petrifaction iv) Coal ball v) *Rhynia*
vii)*Lyginopteris viii*) *Pentoxylon* ix) *Nipaniophyllum* x) *Lepidodendron*

Paper –IV BO.335: HORTICULTURE AND FLORICULTURE

Chapter 1 Horticulture- Introduction 4L

Definition, branches, scope and economic importance of horticultural crops, export and import potential of horticultural crops, Horticultural zones of India and Maharashtra, Global and national scenario of horticulture

Chapter 2 Horticultural Plants 4L

Nutritive value of fruits and vegetables, Classification of horticultural crops, Classification of Vegetables, Fruits, Ornamental plants, Spices and Flowers

Chapter 3 Horticulture- Methods of Plant Propagation 6L

A. Sexual propagation- importance, seed viability and treatments
B. Artificial Vegetative Propagation – Importance, Methods- cutting. Layering, grafting and budding.
C. Physiological and Anatomical basis of rooting
D. Role of growth regulators in horticulture

Chapter 4 Special Practices in Horticulture 6L

Training and Pruning- objectives, types, systems of trainings
Fruit crops- Special practices like Bahar treatment, Girdling, Notching, Ringing, Bending, Vegetable crops special practices- Earthing up, Staking, Blanching

Chapter 5 Fruits and Vegetables Production Technology 8L

Introduction, soil and climate requirements, commercial varieties, special practices- harvesting and post harvest management, plant protection methods of following

Fruits- Banana, Mango, Vegetables- Tomato, peas, Beans

Chapter 6 Ornamental Horticulture **5L**

Introduction, Origin and History of Gardens, Famous Indian Gardens, Gardening styles- English garden, Italian Garden, Mughal Garden, Japanese garden, Landscape gardening

Chapter 7 Floriculture **8L**

Introduction, Concept, Definition, Scope and Importance of floriculture, Important floriculture crops and methods of cultivation for cultivation of Aster, Gladiolus, Orchids, Tagetus

Chapter 8 Flower Industry **7L**

A- **Dry Flowers** - Introduction, Indian market of dry flowers, Selection of material, Techniques of drying- Air drying, sun drying, press drying, dessicants, oven and microwave drying methods. Preservation methods, bleaching, dyeing and painting, storage , care of dried flowers, etc.

B- **Cut Flowers** – Introduction, Species and cultivars of Orchids, **Anthuriums** and **Heliconias**, Harvesting - Techniques, mode of harvesting, post harvest handling- conditioning , precooling, pulsing and impregnation, grading, bunching, wrapping packing and cold storage of cut flowers, Indian market of Cut flowers

Practicals

1. Phenology of any two of each: fruit, vegetables and flowering crops
2. Study of garden tools and implements- Sprayer, Duster, Pruning knife, Sprinkler, Micro-irrigation system,
3. Study of garden containers and filling of pots and pits and plantation any one plants of each fruit, vegetable and flowering crops
4. Study of cutting, layering, budding and grafting
5. Study of technique of training and pruning
6. Methods of harvesting of cut flowers and their preservation methods
7. Methods of making dry flowers

- **Visit to any one Nursery unit, Commercial Orchards, fruit market, floriculture Industry and submission of report in Practical Examination**

Reference Books-

1. Horticulture: V. L Sheela, MJP Publications
2. Plant Propagation, Principles and Practices: Hartmann and Koster's
3. Principles of Horticulture and Fruit Growing by Y. N Kunte, M.P Kawathalkar and K.S Yawalkar (Agri- Horticultural Publication House, Nagpur)
4. Arora J. S *Introductory Ornamental Horticulture* Kalyani Publications
5. Bose T. K & Yadav L. P *Commercial Flowers* Naya Prokash
6. Singh B. D *Plant Breeding* Kalyani Publications
7. Chadha K. L & Pareek O. P *Advances in Horticulture* Vol. IV Malhotra Publications
8. Sudheer K. P and Indira V *Post Harvest Technology of Horticultural Crops* New Delhi Publications
9. Adams C. R. Principles of Horticulture, 4th Edt. Elsevier Publication, 2004

PAPER V: BO 336 - COMPUTATIONAL BOTANY

13. Introduction to Biostatistics **3L**

a. Definition
b. Statistical terms : Population, sample, primary and secondary data, qualitative and quantitative data, parameter and statistics, attributes, variables, discrete and continuous variables, statistical error, linear and non-linear functions of statistics, frequency, and its distribution
c. Scope, applications and uses of biostatistics

14. Sample and sampling **4L**

a. Definition
b. Sampling unit, sample and population
c. Types of sampling
   i. Random sampling – with replicates, without replicates, systematic sampling, stratified sampling
   ii. Non-random sampling- Purpose, quota sampling
d. Need of randomness
e. Achieving randomness
   i. Lottery methods
   ii. Use of random number table
f. Merits and limitations of sampling

15. Collection and representation of data **5L**

a. Classification of data
   i. Meaning and need of classification
   ii. Objectives of classification

iii. Classification according to class interval
iv. Overlapping and non-overlapping frequency table

b. Methods of representation of statistical data
   i. Essential features of tabular presentation
   ii. Advantages of tabular presentation
   iii. Graphic representation of data and its advantages
   iv. Types of graphic representation
      1. Histogram
      2. Frequency polygon
      3. Frequency curve
      4. Scatter or dot diagram
   v. Merits and limitations of graphic representation
   vi. Diagrammatic representation of data
      1. Line diagram
      2. Bar diagram
      3. Pie diagram

16. Measures of central tendency of grouped and ungrouped data **4L**

a. Simple arithmetic mean, its merits and limitations
b. Averages of position: Median and mode, their merits and limitations

17. Measures of dispersion

a. Meaning of dispersion **4L**
   i. Range: Computation in individual, discrete and continuous series, coefficient of range, merits and limitations
   ii. Mean deviation and standard deviation: computation for grouped and ungrouped data, merits and limitation
   iii. Variance: Definition, coefficient of variance

18. Correlation and regression

a. Definition and types of correlation
b. Coefficient of correlation and its properties **4L**
c. Methods of studying correlation: Scatter diagram and Karl Pearson's coefficient of correlation
d. Coefficient of determination (r^2)
e. Regression analysis
   i. Definition and types of regression
   ii. Linear regression

19. Probability and types of theoretical probability distribution **4L**

a. Concept of probability
b. Binomial distribution
c. Poisson distribution
d. Normal distribution
   i. Normal distribution curve
   ii. Relationship between normal curve area and standard deviation
   iii. Properties of normal distribution curve

20. Tests of significance of mean **4L**

a. Introduction
b. Statistic and its standard error
c. Meaning of statistical hypothesis, level of significance, null hypothesis and alternative hypothesis
d. Student's 't' test: unpaired and paired test
e. χ^2 test as a test of goodness of fit and its significance

21. Computation of seed testing and plant growth indices **10L**

a. Seed germination and early seedling growth.
   i. Germination percentage
   ii. Mean germination time (MGT)
   iii. Germination index (GI)
   iv. Germination speed (GS)
   v. Vigor index (VI)

b. Seed germination and early seedling growth under stress
   i. Promptness index (PI)
   ii. Germination stress tolerance index (GSI),
   iii. Plant height stress tolerance index (PHSI)
   iv. Root length stress tolerance index (RLSI)
   v. Dry matter stress tolerance index (DMSI)

c. Plant growth indices
   i. Absolute Growth Rate (AGR)
   ii. Crop Growth Rate (CGR)
   iii. Relative Growth Rate (RGR)
   iv. Leaf Area Index (LAI)

10. Analysis of data on vegetation studies **6L**

a. Data obtained from quadrates and transects methods
   i. Frequency
   ii. Percent frequency
   iii. Relative frequency

iv. Density
v. Relative density
vi. Abundance
vii. Dominance

b. Computation of crop/vegetation biomass using satellite data
i. Simple Ratio (SR) or Ratio Vegetation Index (RVI)
ii. Difference Vegetation Index (DVI),
iii. Normalised Difference Vegetation index (NDVI) or greenness index

NOTE – For Biostatistics, emphasis be given on methodology and numerical problem solving rather than derivations and proofs.

Practicals

1. Computation of mean, mode, median, variance and standard deviation from the given data
2. Representation of data by various graphical methods 1P
3. Statistical problem solving based on Student's 't' test and χ^2 test 1P
4. Statistical problem solving based on data for correlation and regression 2P
5. Germination of various seed lots and analysis of data with various seed germination indices 2P
6. Analysis of vegetation data obtained from list count quadrat method for frequency, density, abundance, relative dominance and importance value index. 1P
7. Analysis of satellite data collected on biomass for RVI, DVI, NDVI, TNDVI, and PVI. 1P

OR

Projects (Equivalent to 6 practicals)

1. Study effect of agrochemicals/ mutagens/ plant extracts/ fertilizers/etc/ on seed germination and early seedling growth, analyze data statistically. **OR**
2. Study varietal variation to abiotic stress based on seed germination and early seedling growth analyze data statistically. **OR**
3. Study vegetation by list count quadrat / line/belt transect method and analyze data statistically. **OR**
4. Collect satellite data on vegetation/biomass and compute RVI, DVI, NDVI, TNDVI, and PVI.

References:

1. Introduction to biostatistics, Pranab Kumar Banerjee.
2. Fundamentals of biostatistics, Khan and Khanum
3. Methods in Biostatistics for medical students and research workers, B K Mahajan
4. ABC of Research Methodology and Applied Biostatistics, M N Parikh and Nithya Gogtay
5. Biostatistics in brief, K Viswesara Rao
6. Introduction to Biometry, S G Purohit, V D Ranade and A V Dusane
7. Biostatistics-Basic Concepts and Methodology for the Health Sciences, Wayne W Daniel
8. Basic statistics, B L Agarwal
9. Biostatistics – Principle and Practice, B Antonisamy, Soloman Chrostopher and P Prasanna Samuel
10. Introduction to biostatistics and research methods, PSS Sundar Rao and J Richards
11. Drought stress in peanut, Lambert Publication , Laware And Shinde

SEMESTER IV

Paper I: BO. 341: PLANT PHYSIOLOGY AND BIOCHEMISTRY

Plant Physiology

1) **Photosynthesis:** Structure of a chloroplast, photosynthetic pigments and their role, Photosystems, Light reaction, electron transport chain, Cyclic and Non-cyclic photophosphorylation, Path of carbon in photosynthesis - Calvin cycle, HSK pathway: Salient features of C4 plants, metabolic pathway, CAM pathway, Photo-respiration, Significance of photosynthesis. **(10)**

2) **Respiration:** Structure of a mitochondrion, Respiratory substrates, Types of respiration, Mechanism of aerobic respiration – Glycolysis, TCA cycle. Electron transport system, Chemi-osmotic hypothesis of ATP synthesis, Balance sheet of ATP generation in respiration. Significance of respiration. **(7)**

3) **Translocation of organic solutes:** Definition, Path of translocation, Evidences for phloem transport, Mechanism of translocation – Pressure flow theory, Diffusion, Source to sink relationship, Phloem loading and unloading. **(4)**

4) **Stress Physiology :** Concept of abiotic , biotic and xenobiotic stresses. Types of stresses – Salinity, drought. Effect of stresses on the plant growth. **(3)**

Biochemistry

1) **Carbohydrates:** Definition and classification Properties and functions of carbohydrates. Synthesis and breakdown of starch. **(4)**

2) **Amino acids and proteins:** Definition, synthesis and properties of amino acids. Role of amino acids. Classification of proteins on the basis of structure, properties and functions of proteins. **(5)**

3) **Lipids:** Definition , classification, properties and functions of lipids. Synthesis of lipids, β-oxidation. **(4)**

4) **Enzymology:** Definition and nature of enzymes, active site, Classification (IUB) and properties of enzymes, Co-enzymes. Mechanism of enzyme action- Lock and key hypothesis, Induced fit theory. Factors affecting enzyme activity – pH, temperature, substrate concentration, enzyme concentration. Enzyme inhibitors – Competitive, uncompitative, non-competitive. **(6)**

5) **Secondary Metabolites:** Definition, Types, Metabolic pool and biosynthesis of secondary metabolites through – malonic, mevalonic and shikkimic acid pathways. Role of secondary metabolites. **(5)**

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Lincoln Taiz and Eduardo Zeiger (2003). Plant Physiology (3rd edition), Published by – Panima Publishing Corporation

R. G. S. Bidwell (revised edn.)-Plant Physiology

Verma S.K. and Verma Mohit (2007). A.T.B of Plant Physiology, Biochemistry and Biotechnology, S.Chand Publications.

Leninger A.C (1987). Principles of Biochmistry, CBS Publishers and Distributers (Indian Reprint)

Dennis D.T., Turpin, D.H. Lefebvre D.D. and Layzell D.B. (eds) 1997. Plant Metabolism (Second Edition) Longman, Essex, England.

Galstone A.W. 1989. Life processes in Plants. Scientific American Library, Springer Verlag, New York, USA..

Moore T.C. 1989. Biochemistry and Physiology of Plant Hormones Springer – Verlag, New York, USA.

Singhal G.S., Renger G., Sopory, S.K. Irrgang K.D and Govindjee 1999. Concept in Photobiology; Photosynthesis and Photomorphogenesis. Narosa Publishing House, New Delhi

Taiz L. and Zeiger E. 1998. Plant Physiology (Second Edition). Sinauer Associates, Inc. Publishes, Massachusetts, USA.

Verma S.K. and Mohit Verma 2007. A.T.B of Plant Physiology, Biochemistry and Biotechnology, S.Chand Publications.

Practicals based on Paper I: BO. 341: Plant Physiology and Biochemistry:-

1. Estimation of chlorophyll-a and chlorophyll-b by spectrometric or colorimetric method.
2. Separation of photosynthetic pigments by TLC/Paper chromatography.
3. To determine diurnal fluctuation in TAN values of CAM plants.
4. Estimation of soluble proteins by Lowery *et. al.* method.
5. Separation of amino acids by paper chromatography.
6. Demonstration of
   a. Ringing experiment for path of solute translocation.
   b. Hill reaction

c. Qualitative tests for alkaloids, tannins, glycosides, starch, lipids and proteins.

d. Enzyme activity: catalase

Paper II: BO.342: PLANT ECOLOGY AND BIODIVERSITY

Plant Ecology (24L)

1. Ecology

Introduction, Interrelationship between the living world and the environment, components and dynamism of Ecosystem, homeostasis. **(8L)**

Impact of human activities on environment – Causes, Prevention and control of – Air, water and Soil Pollution

Brief account of environmental toxicology – Eutrophication, bioaccumulation and biomagnifications

2. Environmental Crisis

Desertification, Ozone depletion and Global warming **(3L)**

3. Environmental Impact Assessment

Process, objectives of EIA, Hierarchy in EIA, Historical Review of EIA, Concepts related to EIA, Basic data collection for EIA **(3L)**

4. Environmental Audit

Meaning, need, Audit Protocol, Proccessing, Certification, personnel environmental Audit. **(3L)**

5. Ecology and Economics

Man and Biosphere concept.

Relation between ecology and economics **(3L)**

6. Remote Sensing

Definition, basic principles,

Process of data acquisition and interpretation, **(4L)**

Global positioning System

Application of Remote Sensing in ecology.

Biodiversity (24L)

Introduction to Biodiversity **(02 L)**

Introduction, Concept, Aims and objectives,

Scope and values of Biodiversity. **(05 L)**

Characterization of Biodiversity:

Introduction, need for characterization, various disciplines of Biodiversity- Genetics, Species and Ecosystem. Concept of endemism and phytogeography. **(03 L)**

Biodiversity Loss:

Loss of Species and Genetic Diversity: Introduction, Factors causing loss of species and genetic diversity, Founder Effects, Genetic Drift, Inbreeding Depression, IUCN Categories (RET plants) **03 L)**

Inventorying and Monitoring of Biodiversity:

Introduction, Necessity, planning and approaches to inventorying and monitoring, capacity building. **(11L)**

Conservation of Biodiversity:

Current Practices in Conservation,

In-situ Conservation: International efforts and Indian initiatives; protected areas in India, Concept of Biosphere Reserves and National Parks.

Ex-situ Conservation: Germplasm Collections, Botanical Gardens, Seed Banks, Gene Banks, Pollen Banks, DNA Banks, Wetlands, mangroves and coral reefs.Enlist national agencies playing role in conservation (BSI, NBPGR, ICAR, CSIR, DBT),

Social Approach to Biodiversity Conservation: Sacred Groves, Sthalavrikshas, Chipko Movement, Role of Universities and other Educational Institutions in Biodiversity Conservation

References:

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9. **Global Biodiversity: Status of the Worlds Living Resources** (1992); WCMC; Chapman and Hall,London
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19. **Gadgil M. and Guha R** (1992). This Fissured Land: An Ecological History of India Oxford UniversityPress, New Delhi
20. **Ashish Kothari** (1997)Understanding Biodiversity- Life, sustainability and Equity; Orient Longman

Practicals-Plant Ecology

1. Study of polluted water body with ref. to BOD.
2. Study of physicochemical properties of water body by using Sacchi disc, pH meter and electric conductivity meter.
3. Acquisition of ecological data of particular locality by using GPS/ altimeter/geographicloa maps etc
4. Study of suitable ecosystem by line/belt transect method/ nested quadrate method.
5. Visit to near by locality to study biodiversity and submission of report

Practicals-Biodiversity

1. Study and application of diversity indices to suitable ecosystem/ area.
2. To measure the latitude, longitude and altitude by using GPS

3. Visit to near by conservation institutes/sacred groove and report writing.

PAPER III BO.343:: PLANT PATHOLOGY

1 Fundamentals of plant pathology **5 L**

Introduction, Important terminology- Incitants, Host, Parasite, Pathogen, Inoculum, Penetration, Infection, Incubation, Disease, Disease development, Symptoms, Sign, Endophyte, Predisposition, Suscept, Resistance, Epidemic, Etiology. Economic importance of plant diseases, History of plant pathology, Introduction to Indian Agricultural Research Institute (IARI), International Crop Research Institute for Semi Arid Tropics (ICRISAT), Contribution of Anton DeBary and Prof. B.B. Mundkur.

2 Disease Development **6 L**

Concept of disease cycle, Inoculation, Prepenetration, Penetration, Infection, Dissemination. Epidemics- Forms, Decline,, Exponential model. Disease forecasting, Measurement of plant disease and yield loss.

3 Defence Mechanisms **3 L**

Concept and Definition, Types- Preexisting- Structural and chemical, Induced- Structural and Biochemical

4 Methods of Studying Plant Diseases **5 L**

Macroscopic study, Microscopic study, Koch"s postulates. Culture technique, Media Types and Preparation, Pure culture methods- streak plate, Pour plate, spread plate, Serial dilution.

5 Fungal Plant Diseases **5 L**

Introduction to fungi as plant pathogens. Study of Diseases- Club root of Crucifers, Downy mildew of Grapes, Head smut of Jowar, Leaf spot of Turmeric, Tikka disease of Groundnut with reference to causal organism, symptoms and signs, disease cycle and control measures.

6 Bacterial Plant Diseases **3 L**

Introduction to bacteria as plant pathogens, Study of Diseases- Citrus Canker, Black arm of Cotton with reference to causal organism, symptoms and signs, control measures.

7 Mycoplasma Plant Diseases **3 L**

Introduction to Mycoplasma as plant pathogens, Study of Diseases- Grassy shoot disease of sugarcane, Little leaf of brinjal with reference to symptoms and signs, control measures.

8 Nematodal Plant Diseases **2 L**

Introduction to Nematodes as plant pathogens. Study of Diseases- Root knot disease of vegetables, Ear cockle of Wheat with reference to causal organism, symptoms and signs, control measures.

9 Viral Plant Diseases **3 L**

Introduction to Viruses as plant pathogens. Study of Diseases- Tobacco Mosaic Disease, Bunchy top of Banana with reference to causal organism, symptoms and signs, control measures.

10 Non Parasitic Diseases **4 L**

The impact and abiotic causes- Temperature, Soil moisture and relative humidity, Poor oxygen, Poor light, Air pollutants, mineral deficiencies. Herbicide injury, Study of Tip burn of Paddy, Mango necrosis, Black Heart of Potato, Khaira disease of rice.

11 Principles of Plant Disease Control **5 L**

General account, Quarantine, Eradication, cultural control practices, Biological control, Curative measures, Chemical control, Use of Effective Microorganism Solution (EMS), Microbial Pesticides, IPM

12 Molecular Diagnostics and Transgenic in Crop Protection **4 L**

Introduction, Classical approaches, Use of antibodies, Pathogen derived resistance against bacterial and fungal diseases, Expression of vaccines in plants.

Practicals

1. Preparation of any one culture media for isolation of plant pathogens.
2. Study of Koch's Postulates
3. Culture technique - Streak plate methods, Pour plate methods, Spread plate and Serial dilution method for preparation of pure culture.

4. Study of any two of each fungal, bacterial and mycoplasma diseases.
5. Study of any two viral and non-parasitic diseases of plants.
6. Study of any two of each fungicides and microbial pesticides

- Visit to any Agricultural Research Institute and Plant Pathology Laboratory and submission of report

References:

1. Fungi and Plant Diseases by B. B. Mundkur
2. Plant Pathology, R. S. Mehrotra
3. Principles of Plant Pathology, R. S. Singh
4. Plant Pathology, P. D. Sharma
5. Plant Disease, R. S. Singh
6. Plant Pathology, Mandal and Dasgupta
7. Plant Pathology, G. N. Agrios
8. Agricultural Microbiology, Rangaswamy and Bhagyaraj
9. Fundamentals of Plant Pathology by Ravi Chandra
10. Methods of Microbial and Plant Biotechnology, L. N. Nair
11. Molecular Plant Pathology, 2003. Dickinson, Bios Scientific Publication, London, New York

Paper IV: BO.344: MEDICINAL AND ECONOMIC BOTANY

Medicinal Botany (36L)

1. Introduction to Pharmacognosy

1.1. Origin, history, definition and scope of Pharmacognosy, **(3L)**

1.2. Methods of classification and their significance in the study of drugs of natural origin (alphabetical, biological, chemical, taxonomical, chemotaxonomical and pharmacological)

2. Ayurvedic Pharmacy

2.1 Introduction

2.2 Tridosha concept, Humoral, Indigenous Systems of medicine (Ayurveda, Siddha, Unani,Tibi, Chinese etc.) **(8L)**

2.3 Ayurvedic principles- Ras. Guna, Vipaka, Virya, Prabhava,

2.4 Ayurvedic formulations –Asava, Arishta, Kvatha, Churna, Ksharas, Leha, Vatika, Taila, Bhasma,

3. Analytical Medicinal botany **(6L)**

3.1 Drug adulteration

3.2 Methods of extraction (percolation, maceration, soxchlet extraction etc.) of different classes of phytochemicals from crude drugs.

3.3 Methods of drug evaluation- Morphological, Microscopic, Chemical and Physical methods.

4. Cultivation, collection and processing of herbal drugs from Mentha and Eucalyptus. **(3L)**

4.1 Cultivation- Methods, Factors affecting cultivation

4.2 Collection and Processing- Collection, harvesting, drying, garbling, packing, storage of crude drugs. **(6L)**

5. Study of medicinally important drugs

Study of drugs w.r.t. occurrence, distribution cultivation, microscopic characters, constituents and uses of the following.

Root Rhizome drugs :- *Glycyrrhiza,*
Stem drugs: - *Ephedra,*
Leaf drugs: - *Adhatod,*
Flower drugs: - Clove,
Fruit drugs: - Amla,
Unorganized drugs :- Shilajit and *Acacia* gum,
Contraceptive drugs: - *Dioscorea.* **(8L)**

6. Applied Medicinal Botany

6.1 Study of drugs with respect to Biological source, Geographical distribution, common varieties, macro and microscopic characters, chemical constituents and therapeutic uses, adulterants of the following plants/drugs *Strychnosnux vomica*-Seeds, *Tinospora cordifolia*-Stem

6.2 Concept of active principle, and major metabolic Pathway (Carbohydrates and Proteins) leading to the Production of therapeutically active Chemical Constituents

6.3 Concept, definition and introduction to Biopharmaceutics, Pharmacodynamics and clinical Pharmacokinetics with applications **(2L)**

7. Ethnobotany : Definition, principles, scope and ethnic societies in India. **(2L)**

Economic Botany (12L)

1. Introduction to economic botany and its scope

2. Important Botanical resources- meaning and Mention of only botanical resources any five for non-wood forest products (NWFPs) such as **(4L)**

2.1Paper making and 2.2 Gums

3. Origin, evolution, source & uses of Rice, *Curcma longa,* Safflower, Sugarcane, *Butea monosperma/Samanea saman/ Scleichera oleosa and* Rose. **(6L)**

References:-

1. A Pharmacognosy and Pharmacobiotechnology. New Age international (P)Limited, Publishers (formerly wileyEasterm Limited)
2. **Bruncton J.**: Pharmacognosy, Phytochemistry, Medicinal Plants: Intercept Limited.

3. **Harborne, J. B.** (1973): Phytochemical Methods: A guide to Modern Techniques of plant Analysis. Chapman A ad Hal, London
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1. **Kokate C.K. (2014)**Practical Pharmacognosy, Vallabhprakashan, New Delhi, 5th edition
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3. **Trease G.E. and Evans. W.C.** Pharmacognosy ELBS Twelfth Edition
4. **Tyler V.E Brady L. R and Robbers J.E. (1976).**Pharmacognosy Lea and Febiger. Philadelphia.8th edition KM Varghese and Co.Mumbai,
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11. **Vernma V (2009)**. Textbook of Economic botany
12. **N.D. Prajapati (2010)**A Handbook of Medicinal Plants: A Complete Source Book
13. **Himadri Panda(2002)** The Complete Technology Book On Natural Products (Forest Based)
14. **Pharmacognosy and Phytochemistry** -- Vinod Rangari.

Practicals based Paper VI: BO:346: Medicinal and Economic Botany

1. Study of any six drug plants from theory syllabus (Macroscopic and Microscopic). (2P)
2. Demonstration of Plant extraction methods -Cold and Soxhlet extraction and TLC of any one drug studied in theory. (1P)
3. Study and preparation of ayurvedic formulations - Asav, Arishtha, Churna (1P)
4. Qualitative analysis of Alkaloid, Glycoside and Tannin (1P)
5. Study of stomatal index and vein islet number using suitable plant material using micrometer and camera Lucida. (1P)
6. Survey of local flora with respect their medicinal and economic importance and submission of 10 dry specimens.

Paper V: BO. 345 PLANT BIOTECHNOLOGY

5L

1. Introduction to Biotechnology

Introduction and History of plant Biotechnology

Pioneering work and significant achievements in Indian plant Biotechnology

Global Impact and Current excitements of plant Biotechnology - Plant Health care and plant protection.

15L

2. Plant Tissue Culture

Brief History, Importance of plant tissue culture

Types of culture, basic technique of plant tissue culture, Concept, technique and applications of callus culture, cell suspension culture, protoplast culture, somatic hybridization and cybrids, Haploid production, Micropropagation, embryo culture-and embryo rescue

4L

3. Germplasm and Cryopreservation

In situ and **Ex situ** conservation, techniques of cryopreservation, cold storage, low pressure and low oxygen storage, applications

6L

4. Transgenic Plants as Bioreactors

Metabolic engineering of starch, cyclodextrins, fructans, Bioplastics, Genetically engineered plants as protein factories, Production of therapeutic proteins from plants.

6L

5. Biotechnology of Biological Nitrogen Fixation

Non symbiotic Nitrogen Fixation-Diazotrophs and their ecology, special features,

Mechanism of N_2 Fixation

Nitrogenase and Hydrogenase

Symbiotic N2 Fixation- establishment of symbiosis,

Factors affecting and mechanism of symbiotic N2 Fixation

Genetics of Diazotrophs- Nod genes, Nif gene

Biofertilizers- algal, fungal, phosphate solubilising and organic fertilizers

6. Biotechnology and Society **4L**

Biotechnology- Benefits, GM foods and its safety, patenting of biotechnological inventions, Biotechnology and developing countries, Recombinant foods and religious beliefs, recombinant therapeutic product for human health care, Intellectual property rights

7. Bioinformatics

Introduction, Database and its classification, NCBI, Data retrieval tools, INTREZ, OMIN, BLAST, FASTA, Applications of Bioinformatics **4L**

8. Genomics and Proteomics

Genomics- methods, types and applications, Proteomics- Concept, types and importance **4L**

Practicals

1. Preparation of MS Medium
2. Callus Induction using maize embryo
3. Study of application of biofertilizers- Algal, Fungal, Bacterial, Phosphate Solubilizers and Organic Fertilizers
4. Estimation of Nitrate Reductase enzyme from Legume nodules
5. Study of Transgenic plants- Bt Cotton, Bt Brinjal, Bt Tomato, Golden Rice

- Visit to NCBI and Report preparation

Reference Books:

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2. P.K. Gupta-Elements of Biotechnology
3. Satyanarayana-Biotechnology
4. Kalyan Kumar De-Plant tissue culture
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8. Glick B.R. and Tompson J.E. 1993 Methods in Plant Molecular Biology and Biotechnology CRC Press Boca Raton, Florida.
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11. Ramawat K.G. 2003 Plant Biotechnology, S. Chand & Co. Ltd . Ramnagar New Delhi. 110055
12. Trivedi P.C.2000 Plant Biotechnology, Panima Publishing Carpation, New Delhi.
13. Rajdan- Plant tissue culture.

Paper VI: BO346: PLANT BREEDING AND SEED TECHNOLOGY **(24 L)**

PLANT BREEDING **(2 L)**

1. Introduction, scope and importance **(10 L)**

2. Conventional techniques, methods and practices of breeding

(a) Plant introduction and acclimatization

i. Concept, objectives
ii. Types of plant introduction
iii. Advantage, limitations/ Disadvantages and achievements.

(b) Selection methods

i. Concept,
ii. Types of selections –mass selection, pure line selection and clonal selection.
iii. Advantage and disadvantages/limitations, achievements.

(c) Hybridization
i. Definition and Concept,
ii. Difficulties in crop hybridization and precaution to be taken during hybridization
iii. General procedure of hybridization
iv. Parent selection in a breeding program
v. Criteria for selecting parents

Breeding Methodology
i. Pedigree method
ii. Bulk method
iii. Single-seed descent method
iv. Backcross method, Achievements

(d) Heterosis and hybrid vigour
i. Concept
ii. Causes of heterosis- dominance hypothesis
iii. Applications

3. Alternative breeding techniques

(a) Mutation breeding **(08 L)**
Introduction and concept
Types of Mutation
induced mutagenesis
mutagens used -Chemical and physical mutagens
methods of working
Gamma gardens, concept and design
Applications

(b) **Importance of Polyploidy and aneuploidy in crop improvement**
Properties of polyploids,
Methods of obtaining polyploids
Methods used in obtaining haploids
Production of triploids in plant breeding
Applications and achievements

4. **Breeding for stress tolerance**
Mechanisms and genetic bases of resistance/tolerance to biotic and abiotic stresses in plants, **(4L)**
Breeding for resistance/tolerance.
Molecular Approaches
Characteristics evaluated for drought tolerance
Characteristics evaluated for insect/pest tolerance
Achievements

SEED TECHNOLOGY **(24L)**

1. Introduction: **(2 L)**
Definition of seed,
Stages of Seed Production,
Classes of Seed (nucleus seed, breeders seed, foundation seed, certified seed and truthful seed),
Role of seed technology.

2. Seed certification: **(2 L)**
General procedure of seed certification,
field inspection,
observation during inspection,
field count,
Duties of seed inspector.

3. Seed processing: **(2 L)**
Concept
Principle and techniques of processing of seeds

4. Seed sampling, storage and packaging **(6 L)**
Seed sampling,
Types of seed samples,
Sampling equipments.
Factor affecting seed storage and need of seed storage,
Methods of protection and control,
Air conditioning and dehumidification,
Sanitation and fumigation of seed stores.
Seed sorting and bagging, bag weighing, bag closing, type of bag closer,
Labelling and maintaining lot identify, lot numbers, seed pellets,
Handling and stacking,
Maintenance of seed processing record.

5. Physical purity analysis **(3L)**
Definition of purity components
Procedure
ODV test
Reporting and results.

6. Seed Testing

A. Moisture Testing

By air oven method
Moisture meters. **(3L)**

B. Germination testing

Definition and objectives,
General principles and requirements,
Procedure and methods (Paper, Sand and Soil)
Seedling evaluation. **(3L)**

7. Seed Marketing:

(3L)

Marketing- Basic concepts, supply & demand, price equilibrium, seed transportation, storage, cost & returns, cost processing, packing and marketing, Organization for seed marketing, seed markets in India, structure & working.

Practicals based on Plant Breeding and Seed technology

1. Demonstration of Hybridization Techniques.
2. Effect of chemical mutagens on seed germination and seedling growth.
3. Demonstration of chlorophyll mutation in M2 generation. (Photographs)
4. Polypolidy induction in *Allium cepa* by colchicine.
5. Seed moisture testing by hot air oven method.
6. Demonstration of seed sampling equipments with the help of photographs.
7. Visit to seed processing unit / Seed marketing organization.

References:-

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2. **Giese Arthur** 1979 (Fifth Edition). Cell Physiology, Toppan company Ltd., Tokyo, Japan.
3. **Roy S.C and KKDe** 2005 (Second Edition). Cell Biology, New central Book Agency Private Ltd., Kolkata.
4. **Verma P.S and Agarwal V.K** 2006 Cell Biology, Genetics, Molecular Biology, Evolution, Ecology. S.Chand and Company, New Delhi.
5. **Gerald Karp** 1999 Cell and Molecular Biology- Concept and Expts. John Wiley and Scne Ine., USA.
6. **Verma and Agarwal** – Seed Technology Demand forecasting, Seed pricing, projection of supply and demand for different kind of seeds
7. **Gardner and Simmons Snustad** 2005 (Eighth Edition). Principles of Genetics, John Wiley and Sons, Singapore.