

DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper | Max. Marks | L | T | P | Total Credits |
|-------------|-----------------------|------------|---|---|---|---------------|
| ECO-CC-141  | RESEARCH METHODOLOGY  | 100        |   |   |   | 4             |

**PREAMBLE:** The objective is to equip the students with the basic understanding of research methodology and to provide an insight into the application of modern tools of analysis and interpretation.

- UNIT-1** Meaning, objective, motivations and types of research; Research Approaches; Significance of Research; Research methods v/s Methodology. Defining the research problem, selecting the problem; Research design; Sampling design. **(18 Hours)**
- UNIT-2** Review of literature; Formulation of statistical hypotheses - Null and alternative; Testing of hypothesis; Mechanics of writing a research report. **(14 Hours)**
- UNIT-3** Basic concept of sampling- random & non random sampling; simple random, stratified random and PPS sampling; Concept of an estimator and its distribution. **(14 Hours)**
- UNIT-4** Methods of data collection: Different methods of collection of primary and secondary data; Guideline for constructing questionnaire or schedule. **(14 Hours)**

**Essential Readings:**

- Das Gupta S., Methodology of Social Science Research
- Goode and Hatt, Methods in Social Research
- Gopal, M. H., Introduction to Research Procedure in Social Sciences
- Tandon, B. C., Research Methodology

**Suggested Readings:**

- Srivastava, S. S., Survey Techniques
- Sadhu and Singh, Research Methodology in Social Science
- Roy, Ramendu & Banerjee, S., Fundamentals of Research Methodology
- Kothari, C. R., Research Methodology Methods and Techniques, New Age International Publishers.
- Kumar Ranjit: Research Methodology: A Step-By-Step Guide for Beginners, sage Publications India Pvt. Ltd.

## DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper | Max. Marks | L | T | P | Total Credits |
|-------------|-----------------------|------------|---|---|---|---------------|
| ECO-CC-142  | INDIAN ECONOMY        | 100        |   |   |   | 4             |

**PREAMBLE:** The paper is on overall social, political and economic environment influencing policy decisions. To develop all these themes, the course is divided into specific modules.

- UNIT-1** Demographic feature of Indian population, Population policy of India, Problems of Migration & Urbanization, Regional imbalances. Sustainable development- indicators of developments- PQLI, HDI; Gender development indices. **(15 Hours)**
- UNIT- 2** Unemployment in India; Nature, estimates and classification of unemployment; effects of the problem, factors responsible for unemployment; Poverty in India – Trend & causes of poverty; Suggestions of poverty alleviation; Measures and policies undertaken by the government for poverty alleviation. **(15 Hours)**
- UNIT-3** Role of capital and credit; organized and unorganized capital markets. Sources of rural & agriculture credit; regional rural banks (RRB), Role of NABARD; Agricultural markets and marketing efficiency; Objectives of agricultural price policy - Instruments and evaluation; Food security in India. Role of F.D.I. in agriculture sector. **(15 Hours)**
- UNIT- 4** National Institution for Transforming India (NITI Aayog), National Development Council (NDC), Competition commission of India (CCI), developing grass-root organizations for development - Panchayats, NGOs and Pressure groups, self helps group. Public private partnership (PPP), Special economic zone (SEZ), Knowledge commission. Latest finance commission. **(15 Hours)**

### Essential Readings:

- Dantwala, M.L. (1996), Dilemmas of Growth: The Indian Experience, Sage Publications, New Delhi.
- Datt, R. (Ed.) (2001), Second Generation Economic Reforms in India, Deep & Deep Publications, New Delhi.
- Brahmananda, P.R. and V.R.Panchmukhi (Eds.) (2001), Development Experience in the Indian Economy: Inter-State Perspectives, Bookwell, Delhi.
- पन्त, जे. सी. भारतीय अर्थव्यवस्था, साहित्य भवन पब्लिकेशन, आगरा।
- दत्त एवं सुंदरम भारतीय अर्थव्यवस्था— एस.चन्द एण्ड कम्पनी प्रा. लि., नई दिल्ली।
- मिश्र एवं पूरी भारतीय अर्थव्यवस्था हिमालया पब्लिकेशन्स, नई दिल्ली।
- लाल एवं लाल एस. एन एस. के. भारतीय अर्थव्यवस्था शिव पब्लिशिंग हाउस, इलाहाबाद।
- आर. एस. कुलश्रेष्ठ, औद्योगिक अर्थशास्त्र, साहित्य भवन पब्लिकेशन्स, आगरा।

### Suggested Readings:

- Bardhan, P.K. (9th ed.) (1999), the Political Economy of Development in India, Oxford Uni. Press, New Delhi.
- Bawa, R.S. and P.S.Raikhy(1997), Structural Changes in Indian Economy, Guru Nanak Dev Uni. Press Amritsar.
- Ahluwalia, I.J. and I.M.D. Little (Eds.) (1999), India's Economic Reforms and Development (Essay in honor of Manmohan Singh), Oxford University Press, New Delhi.

## DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper    | Max. Marks | L | T | P | Total Credits |
|-------------|--------------------------|------------|---|---|---|---------------|
| ECO-CC-143  | REVIEW OF PUBLISHED WORK | 100        |   |   |   | 4             |

**PREAMBLE:** This paper is meant to develop skill of writing a literature review of Research student to use critically a Segment of a published body of knowledge through summary classification and comparison of previous research studies and to present a Review of literature.

- UNIT-1** Definition of literature review, Objectives of literature review, Scope & length of literature review, Types of literature review designs. **(14 Hours)**
- UNIT-2** Mechanics of literature review- identification of Resources for locating reading and organizing resources Like Centre for Research Quality, Library database, referred journal Articles, verification of Peer Reviewed Articles, Trusted Websites, Internal source with guidance of Supervisors. **(15 Hours)**
- UNIT-3** Literature Review Process- collection of material to be reviewed, reading & taking notes, organizing notes in to sections, syntheses the matter, (with reference to the questions what has been done before? What have other said? What is the relevance? What is the difference? Whether your agreement or disagreement? What are the flaws? **(15 Hours)**
- UNIT-4** Synthesization of precious research work done, arrangement of research work by theme and author, table of content, synthesis- citation salad, plop quotations, fixing the errors Report Writing. **(16 Hours)**

**Essential Readings:**

- Research Design: qualitative, quantitative and mixed approach, sage publication, New Delhi.
- The craft of research boot, Wayne c and Gregory (sage study skill series) Uni. Of Chicago press.

**Suggested Readings:**

- Making sense: A Student guide to writing and style –oxford university press publication.
- The informed writer: using sources in the disciplines, Bazerman, charls.
- Website: [www.reiding.ac.uk/study advice](http://www.reiding.ac.uk/study%20advice).

## DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper                 | Max. Marks | L | T | P | Total Credits |
|-------------|---------------------------------------|------------|---|---|---|---------------|
| ECO-CC-144  | Research and Publication Ethics (RPE) | 100        |   |   |   | 2             |

**PREAMBLE:** The objective is to equip the students with the basic understanding for about publication ethics and publication misconducts.

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UNIT-1</b> | <b>PHILOSOPHY AND ETHICS: (3hrs.)</b> <ul style="list-style-type: none"> <li>➤ Introduction to philosophy: definition, nature and scope, concept, branches</li> <li>➤ Ethics: definition, moral philosophy, nature of moral judgements and reactions 3</li> </ul>                                                                                                                                                                                                                                                                                                                                        |
| <b>UNIT-2</b> | <b>SCIENTIFIC CONDUCT: (5hrs.)</b> <ul style="list-style-type: none"> <li>➤ Ethics with respect to science and research</li> <li>➤ Intellectual honesty and research integrity</li> <li>➤ Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)</li> <li>➤ Redundant publications: duplicate and overlapping publications, salami slicing</li> <li>➤ Selective reporting and misrepresentation of data 5</li> </ul>                                                                                                                                                                   |
| <b>UNIT-3</b> | <b>PUBLICATION ETHICS (7hrs.)</b> <ul style="list-style-type: none"> <li>➤ Publication ethics: definition, introduction and importance</li> <li>➤ Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.</li> <li>➤ Conflicts of interest</li> <li>➤ Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types</li> <li>➤ Violation of publication ethics, authorship and contributorship</li> <li>➤ Identification of publication misconduct, complaints and appeals</li> <li>➤ Predatory publishers and journals</li> </ul> |
| <b>UNIT-4</b> | <b>OPEN ACCESS PUBLISHING (4hrs.)</b> <ul style="list-style-type: none"> <li>➤ Open access publications and initiatives</li> <li>➤ SHERPA/Ro MEO online resource to check publisher copyright &amp; self-archiving policies</li> <li>➤ Software tool to identify predatory publications developed by SPPU</li> <li>➤ Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.</li> </ul>                                                                                                                                                           |
| <b>UNIT-5</b> | <b>PUBLICATION MISCONDUCT (4hrs)</b> <p><b>A. Group Discussions (2 hrs.)</b></p> <ul style="list-style-type: none"> <li>➤ Subject specific ethical issues, FFP, authorship</li> <li>➤ Conflicts of interest</li> <li>➤ Complaints and appeals: examples and fraud from India and abroad</li> </ul> <p><b>B. Software tools (2 hrs.)</b></p> <ul style="list-style-type: none"> <li>➤ Use of plagiarism software like Turnitin, Urkund and other open source software tools</li> </ul>                                                                                                                    |
| <b>UNIT-6</b> | <b>DATABASES AND RESEARCH METRICS (7hrs.)</b> <p><b>A. Databases (4 hrs.)</b></p> <ul style="list-style-type: none"> <li>➤ Indexing databases</li> <li>➤ Citation databases: Web of Science, Scopus, etc.</li> </ul> <p><b>B. Research Metrics (3 hrs.)</b></p> <ul style="list-style-type: none"> <li>➤ Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score</li> <li>➤ Metrics: h-index, g index, i10 index, altmetrics</li> </ul>                                                                                                                                      |

### References

- Bird, A. (2006). Philosophy of Science. Routledge.
- MacIntyre, Alasdair (1967) A Short History of Ethics. London.
- P. Chaddah, (2018) Ethics in Competitive Research: Do not get scooped; do not get plagiarized, ISBN:978-9387480865
- National Academy of Sciences, National Academy of Engineering and Institute of Medicine. (2009). On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition, National Academies Press.
- Resnik, D. B. (2011), What is ethics in research & why is it important. National Institute of Environmental Health Sciences, 1-10. Retrieved from <https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm>
- Beall, J. (2012). Predatory publishers are corrupting open access. Nature, 489 (7415), 179-179.
- <https://doi.org/10.1038/489179a>
- Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance(2019), ISBN:978-81-939482-1-7. <http://www.insaindia.res.in/pdf/Ethics> Book.pdf

## DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper           | Max. Marks | L | T | P | Total Credits |
|-------------|---------------------------------|------------|---|---|---|---------------|
| ECO-EC-141  | AGRICULTURE AND RURAL ECONOMICS | 100        |   |   |   | 4             |

**PREAMBLE:** The objective of this course is to provide a detailed treatment of issues in agricultural & rural economics to those intending to specialize in this area. Its objective is to familiarize students with policy issues.

**UNIT-1** Role of Agriculture in Economic Development; Interdependence Between Agriculture and Industry; Problems of Marginal and Small Farmers; Cropping pattern Shifts. Agriculture Price Policy; commission on agricultural costs and prices (CACP). **(14 Hours)**

**UNIT-2** Supply of Inputs; Risk and Uncertainty in Agriculture; Diversification of Indian agriculture; Minimum Support Prices, Input Subsidies, Bonus etc; **(14 Hours)**

**UNIT-3** Need and Important Issues of Rural Development; Rural Development Policy and Strategies: Micro Finance, SHG, MANREGA, Rashtriya Mahila Khosh and CAPART. Alternative Occupations in Rural India: White Revolution, Poultry Farming, Fisheries and Aquaculture, Horticulture and Floriculture, Agro-based Industries. **(16 Hours)**

**UNIT-4** Rural Finance – Role of Capital and Rural Credits; Organized and Unorganized Capital Market; Rural Saving and Capital Formation; Characteristics and Sources of Rural Credits– Institutional and Non-Institutional; Reorganization of Rural Credits - Cooperatives, Commercial Banks, Regional Rural Banks; Role of NABARD. **(16 Hours)**

### Essential Readings:

- Jain, L C, Krishnamurthy B V and : Grass Without Roots: Rural Development
- Tripathy, I M (1988) under Government Auspices, Sage Publications India Pvt. Ltd., New Delhi
- Rao, V M (no date) : Rural Development and The Village Economy: Perspectives for Planning for Development, Sterling Publishers Pvt. Ltd., New Delhi
- कटार सिंह, ग्रामीण विकास, सिद्धांत, नीतियों एवं प्रबंध, रावत पब्लिकेशन्स : नई दिल्ली।
- सूचना एवं प्रकाशन मंत्रालय, ग्रामीण विकास विभाग, नई दिल्ली।
- डॉ. पी. सी. जैन— भारत में कृषि विकास, रिसर्च पब्लिकेशन जयपुर, नई दिल्ली।
- डॉ. सुदर्शन कुमार कपूर— भारतीय कृषि अर्थव्यवस्था, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर।
- दत्त एवं सुंदरम भारतीय अर्थव्यवस्था एस.चन्द एण्ड कम्पनी प्रा. लि., नई दिल्ली

### Suggested Readings:

- Chambers, Robert (1983) : Rural Development: Putting the Last First, Longman Pub. Group.
- McAreavey, Ruth (2009) : Rural Development Theory and Practice, Routledge

### Journals:

- Economic and Political Weekly
- Rural Development Perspectives

## DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper                          | Max. Marks | L | T | P | Total Credits |
|-------------|------------------------------------------------|------------|---|---|---|---------------|
| ECO-EC-142  | <b>BANKS AND OTHERS FINANCIAL INSTITUTIONS</b> | <b>100</b> |   |   |   | <b>4</b>      |

**PREAMBLE:** This course highlights the organization, structure and role of financial markets and institutions. It also discusses monetary management and instruments of monetary control. Financial and banking sector reforms and monetary policy with special reference to India are also covered.

**UNIT-1** Types of Banks and Their Functions, Commercial Banking- Functions, Analysis of Balance Sheet, Credit Creation, Central Bank; Functions, Methods of credit control, Development Banks, Role and Functions. **(15 Hours)**

**UNIT-2** Reserve Bank of India, Monetary Regulation, Objectives and Tools of Monetary Policy, Objectives and limitations of monetary policy with special reference to India. Financial Reforms in India. **(15 Hours)**

**UNIT-3** Definitions and Types of Non Banking Financial Institutions; Their Growth and Impact on India Economic Development. Financial intermediation and financial intermediaries, the structure of the financial system, Functions of the financial sector, Indicators of financial development. **(15 Hours)**

**UNIT-4** Characteristics of a Developed Money Market; Defects of Indian Money Market. The Capital Market: Meaning and Instruments; Difference Between Money Market and Capital Market. SEBI, IDBI. **(15 Hours)**

### Essential Readings:

- Sanjay M. Dandade, Money Banking & Economic Reforms, Chandralok Prakasan, Kanpur.
- Suraj B.Gupta , Monetary Economics: ( Institutional, Theory and Policy), S. Chand Publishers , New Delhi.
- जे. पी. मिश्रा. समष्टि अर्थशास्त्र एवं मुद्रा और बैंकिंग साहित्य भवन पब्लिकेशन्स, आगरा
- वी. सी. सिंह. उन्नत मुद्रा व बैंकिंग. लोक भारती प्रकाशन,इलाहाबाद
- एस. एन. लाल मुद्रा, बैंकिंग तथा लोकवित्त शिव पब्लिशिंग हाउस, इलाहाबाद
- वी.सी. सिन्हा .मुद्रा, बैंकिंग एवं राजस्व. साहित्य भवन पब्लिकेशन्स, आगरा

### Suggested Readings:

- Ankit Khanna , Money Banking and Public Finance, Omega Publications,2013
- Mithani, D.M., Money, Banking, International Trade & Public Finance, Himalaya publication House pvt.Ltd,2014

## DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper | Max. Marks | L | T | P | Total Credits |
|-------------|-----------------------|------------|---|---|---|---------------|
| ECO-EC-143  | PUBLIC FINANCE        | 100        |   |   |   | 4             |

**PREAMBLE:** This paper combines a thorough understanding of fiscal institutions with a careful analysis of the issues which underline budgetary policies in general and Indian experience in particular.

**UNIT -1** Public Finance: Meaning, Importance of Public Finance, Public Vs Private Finance; Principle of Maximum Social Advantage: Public Goods, Private Goods and Merits Goods, Meaning, Characteristics and Problems of Public Sector, Advantage and Disadvantage of Private Sector. **(14 Hours)**

**UNIT –2** Meaning, Classification and Importance of Public Expenditure; Canons of Public Expenditure; Important Reasons for Increase in Public Expenditure, Public Expenditure and Economic Development. Classification of Public Revenue; Tax Revenue and Non Tax Revenue, Characteristics of Good Tax System. Direct and Indirect Taxes, Taxable Capacity: Meaning, Importance and Factor Determining Taxable Capacity. **(16 Hours)**

**UNIT -3** Meaning, Objectives, Classification and Importance of Public Debt, Causes of Increase in Public Debt, Merits and Demerits of Public Debt, Redemption of Public Debt; Debt Liabilities of Government of India; Public Debt during Plan Period. **(15 Hours)**

**UNIT -4** Deficit Finance: Meaning, Objectives and Effects. Meaning, Objectives and Instrument of Fiscal Policy; Meaning. Importance and Objectives of Budget; Finance Commission: Functions of Finance Commission, Recommendations of latest Finance commission. **(15 Hours)**

### Essential Readings:

- Mundle, S. (1999), Public Finance Policy : Issues for India, Oxford University Press, New Delhi
- Bhargava, P.K. (1991), India's Fiscal Crisis, Ashish Publishing House, New Delhi.
- Datt, R.(Ed.) (2001), Second Generation Economic Reforms in India, Deep & Deep Publications, New Delhi
- वी. सी. सिंह, राजस्व. लोक भारती प्रकाशन, इलाहाबाद।
- पी.डी. महेश्वरी. डॉ. शीलचन्द्र गुप्ता, लोक अर्थशास्त्र, कैलाश पुस्तक सदन, भोपाल।
- वी.सी. सिन्हा, राजस्व, साहित्य भवन पब्लिकेशन्स, आगरा।
- बी. एल. माथुर, भारत में लोक वित्त, साहित्य भवन पब्लिकेशन्स, आगरा।

### Suggested Readings:

- Jha, R. (1998), Modern Public Economics, Routledge, London.
- Friedman, A. (1986), Welfare Economics and Social Choice Theory, Martins Nijhoff, Boston.
- तिलक नारायण हजेला— राजस्व, सरस्वती सदन, दिल्ली।
- J.M. (1970), The Public Finances, Richard D. Irwin, Homewood.
- Musgrave, R.A. (1959), The Theory of Public Finance, McGraw Hill, Kogakhusa, Tokyo.

## DEPARTMENT OF ECONOMICS

| Course code | Nomenclature of Paper   | Max. Marks | L | T | P | Total Credits |
|-------------|-------------------------|------------|---|---|---|---------------|
| ECO-EC-144  | INTERNATIONAL ECONOMICS | 100        |   |   |   | 4             |

**Preamble:** The objective of this paper is to provide a detailed treatment of issues in International Economic to assess the overall importance of International Economics in our country

**Unit- 1** Multilateralism and WTO; Emerging International Monetary System; Reform of the International Monetary System, Theory of short-term capital movements and East-Asian Crisis and lessons for developing countries.  
(14 Hours)

**Unit- 2** International trade and financial institutions- Functions of GATT/WTO (TRIPS, TRIMS), UNCTAD, IMF, World Bank and Asian Development Bank - Their achievements and failures; WTO and World Bank from the point of view of India.  
(16 Hours)

**Unit- 3** Trade problems and trade policies in India during the last five decades; Recent changes in the direction and composition of trade and their implications.  
(15 Hours)

**Unit- 4** Rationale and impact of trade reforms since 1991 on balance of payments, employment and growth, problems of India's international debt; Working and regulations of MNCs in India; Instruments of export promotion and recent import and export policies and agenda for future.  
(15 Hours)

### Essential Readings:

- Carbough, R.J. (1999), International Economics, International Thompson Publishing, New York.
- Bhagwati, J. (Ed.) (1981), International Trade, Selected Readings, Cambridge, University Press, Massachusetts
- डॉ. जी. सी. सिंघई, एवं जे. पी. मिश्रा— अंतर्राष्ट्रीय व्यापार एवं वित्त, साहित्य भवन पब्लिकेशन, आगरा।
- एच. एस. अग्रवाल, एवं सी. एस. बरला— अंतर्राष्ट्रीय अर्थशास्त्र, लक्ष्मी नारायण अग्रवाल, आगरा।
- डॉ. राजेश पाठक— अंतर्राष्ट्रीय अर्थशास्त्र, विष्व भारती प्रकाशन, नई दिल्ली।
- डॉ. बी.एस. सिन्हा— अंतर्राष्ट्रीय अर्थशास्त्र, साहित्य भवन पब्लिकेशन, आगरा, (उ.प्र.)।
- डॉ. के. एस. शर्मा— अंतर्राष्ट्रीय अर्थशास्त्र, मीनाक्षी प्रकाशन, मेरठ, (उ.प्र.)

### Suggested Readings:

- Chacholiades, M. (1990), International Trade: Theory and Policy, McGraw Hill, Kogakusha, Japan.
- Dana, M.S. (2000), International Economics: Study, Guide and Work Book, (5th Edition), Routledge Publishers, London.
- Dunn, R.M. and J.H. Mutti (2000), International Economics, Routledge, London.
- Kenen, P.B. (1994), the International Economy, Cambridge, University Press, London.
- King, P.G. (1995). International Economics and International Economic Policy: A Reader, McGraw Hill International, Singapore.

## DEPARTMENT OF ECONOMICS

| Course code       | Nomenclature of Paper                    | Max. Marks | L | T | P | Total Credits |
|-------------------|------------------------------------------|------------|---|---|---|---------------|
| <b>ECO-EC-145</b> | <b>COMPUTER APPLICATION IN ECONOMICS</b> | <b>100</b> |   |   |   | <b>4</b>      |

**Preamble:** The direction towards the knowledge society shall be resting on a healthy economics and proper use of Information Technology. Economics being an empirical science, computers have emerged as the pivotal instruments of economic analysis, research and forecasting. Therefore, the future economists must be equipped with skills and tools based on computers, which this course shall provide to them.

- Unit –1 Data Processing Techniques-** Concept of data, record and file; Types of data and data structure, data analysis; File handling and operations like opening, appending and cascading, closing and attribute control; Data storage and retrieval. **(15 Hours)**
- Unit –2 Statistical Processing Techniques and Methods –** Series, groups, tables, graphs and objects; Time and frequency series, regression methods and techniques; Regression analysis; Data validation; Trends and forecasting. **(15 Hours)**
- Unit –3 MS-Word-** its features and applications. The practical knowledge of this software should enable the candidate to type and prepare the thesis in a presentable format. MS-Excel- construction of worksheet and inserting data according to its characteristics, use of statistical tools and their presentation. **(16 Hours)**
- Unit –4 MS- Power point –** create power point presentation on a topic related to the theme of thesis and use of different presentation techniques. Use of Internet for research work and exploring various websites related to thesis work. **(14 Hours)**

### Essential Readings:

- Rajasekaran, S. (1986), Numerical Methods in Science and Engineering,
- A.H. Wheeler, Allahabad.
- Sanders, D.H. (1988), Computers Today, McGraw-Hill (3rd Edition), New York.

### Suggested Readings:

- Sinha, P.K. (1992), Computer Fundamentals, BPB Publications New Delhi.
- Intrilligator, M.D. (1978), Econometric Models, Techniques and Applications, Prentice Hall, Englewood Cliffs, NJ.