

**BHARATHIAR UNIVERSITY: COIMBATORE - 641 046.**  
**Ph.D. / M.Phil. – Part I: EDUCATIONAL TECHNOLOGY**

**PAPER I: RESEARCH METHODS AND ADVANCED STATISTICS**

**OBJECTIVES**

1. To enable students to understand advance research methods and statistical tools in education
2. To enable students to understand the principles of evaluation, research and statistics
3. To help students in preparing model research proposals for research studies

**Unit I: RESEARCH METHODS**

Research – Nature, types and scope – Research Trends in Education – Qualitative Research Techniques – Historical case study, Participatory and Ethnography Research Methods – Quantitative Research Techniques – Survey, Experimental, Action, Longitudinal Research Methods – Tools for data collection: Observation, Interview schedule, Checklist Questionnaire, Achievement test and attitude scale – Design, Construction and Standardization of tools – Research Design.

**Unit II: SAMPLING TECHNIQUES AND MEASUREMENT**

Sampling Method – Purposive sampling, simple random sampling, systematic sampling, stratified sampling, cluster sampling, stage sampling – Theories of Probability – levels of confidence – Degrees of freedom – Hypothesis formulation and testing statistical significance, one tailed and two tailed tests – correlated and uncorrelated data – Scales of Measurement – Nominal scale, Ordinal scale, Interval scale and Ratio scale.

**Unit III: INTRODUCTION TO STATISTICS**

Introduction to statistics – meaning, scope, importance and limitations of statistics – concept of statistics, source of data, populations, parameters, samples and statistics – descriptive and inferential statistics, parametric and non-parametric statistics, variables – discrete and continuous variables, independent and dependent, intervening and manipulating variables – classifying and presenting the data, frequency table, presentation of data, Bar graphs, Histogram, Frequency polygon, smoothed frequency polygon, Cumulative frequency graph (or) Ogive and pie graph

**Unit IV: ADVANCED STATISTICAL TECHNIQUE**

Univariate Analysis: mean, median, mode – measures of central tendency, normal curve, practical application of normal probability curve, characteristics of normal probability curve – range– variance – percentile, standard scores (or) ‘Z’ scores – Type I and Type II error, sampling error, statistical significance–Bivariate analysis: Correlation methods – Chi-square, T-test, ANOVA and MANOVA

**Unit V: COMPUTER APPLICATION AND REPORT PREPARATION**

Computer Application: Statistical Package for Social Sciences (SPSS), Computer packages: word processing and graphs – Preparation of Research Documents: Preparation of Research proposals, writing of the report of the research studies, preparation of review of related studies, preparation of the review of research proposals and reports.

## **References**

1. Kerlinger H Fred. (1964) Foundations of Behavioural Research: Educational Psychological Inquiry.
2. Goode & Hatt. (1952) Methods in Social Research
3. Paulin Young. (1961) Scientific Social Survey and Research
4. John Best. (1975) Fundamentals of Social Research
5. Edwards A L (1966) Experimental Design in Psychological and Education
6. Covers, P.S. (1980) Computer Programming In Basic, Madras Allied Publisher (p) ltd.

## **BHARATHIAR UNIVERSITY: COIMBATORE - 641 046. Ph.D / M.Phil – Part I: EDUCATIONAL TECHNOLOGY**

### **PAPER II: ADVANCED EDUCATIONAL TECHNOLOGY**

#### **OBJECTIVES**

1. To study how audio, video, and computer technologies can best be exploited in teaching and learning
2. To study the principles involved in the production of media related materials

#### **Unit I: MODERN COMMUNICATION TECHNOLOGY IN EDUCATION- MEANING, SCOPE AND CHOICE**

- Systems approach to instruction and instructional designs
- Audio visual technology: projected and non-projected aids
- Individualized instruction: Kellar Plan, PSI, CAI, CMI & PLM
- Advanced Techniques In Education: Multimedia, interactive video, teleconferencing, tele-bridge, teletext and videotex

#### **Unit II: TECHNOLOGY IN LANGUAGE TEACHING**

- Principles of Language teaching
- Approaches to Language teaching
- Different methods of teaching English as a second language
- Audio-video media in English language teaching
- Meaning and Need for Language Laboratory

#### **Unit III: EDUCATIONAL TECHNOLOGY FOR FORMAL, INFORMAL AND NONFORMAL SYSTEMS IN LEARNING: CONCEPT AND SCOPE**

- Role, experience and applications of Educational Technology in school education and higher education
- Role, experience and applications of Educational Technology in Special groups: Special education and distance education
- Interpersonal approach: IEC, Social Marketing Approach, Participatory Communication approach
- Media approach: development communication approach, development support communication approach and media forum

**Unit IV: PROGRAMMED LEARNING; THEORETICAL CONSIDERATIONS**

- Programed learning: Theoretical considerations
- Types and Mechanics/steps of programming
- Programmed Learning/Instruction: some applications
- Difference between PLM and other individualized instructional techniques: CAI, CMI, Keller plan. Personalized system of instruction

**Unit V: COMPUTER IN EDUCATION**

- Methods of computer based instruction: Tutorials, Drill & Practice and instructional packages
- Development of computer based instructional packages
- Evaluation of computer based instructional packages
- Computerized test – construction and administration

**References**

1. J. Brown, et. al. “ An Instructional Technology Media and Methods”, New Delhi: Mc Graw Hill
2. Henry Ellington. (1985) “ A Handbook of Educational Technology” London : Kogan Press
3. Len Masterman. (1985) “ Teaching Of Media”, London : Comedia
4. Keval J. Kumar (1989) “ Reading in media Education” , Columbus: Ohio State University
5. UNESCO. (1984) “Media Education”
6. Duchi (Ed.) (1987) “ Development Communication at Grossroot Level”
7. UNESCO “Distance education in Asia and the Pacific” : Bulletin of the UNESCO regional office for education in Asia and the Pacific” (26) 1-119, I-XL, Dec. 1985
8. Billows (1971) “ The Techniques of Language Teaching” London: Longmans
9. Currie William. (1973). “New Directions In Teaching English Language”
10. Chauhans, S.A. (1978) “ A text book of Programmed instruction”, New Delhi: Sterling Publishers.
11. Dececco, J.P. (1964) “Educational Technology: Reading in Programmed Instruction” New York: Rinechart and Wington
12. David Hardisty and Scott Windeatt (1989) “Computer Assisted Language Learning” Oxford O.U.P
13. Sterhen et.al. (1985). “Computer based instruction methods and development” New York: Prentice hall
14. Kumar K.L (1996) “Educational Technology” New Delhi: New age International Publishers.

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**SPECIAL PAPER I: EDUCATIONAL COMMUNICATION**

**OBJECTIVES**

1. To Understand the principles of Communication
2. To Understand the usage of Audio-Visual medium in education
3. To Understand Educational Technology in teaching learning process
4. To Understand the usage of computers in education

**Unit I**

Types of Communication – Models: Lasswel, Shannon and Weaver’s model – role of communication in social change – Technology in Communication – Media and development – Communication and Information Technology – Research in Communication.

**Unit II**

Educational Technology: meaning and definition objectives, scope and classification, divisions, evolution and development – Hardware and Software – Concept of principles of learning – Application of learning principles in Educational Technology - Teaching models: Definition and meaning, characteristics and types – Glacer’s model, Bruner’s model – Macro and Microteaching

**Unit III**

Audio-Visual medium in Education: Definition and Psychology of the use of Audio-Visual aids – characteristics of good teaching aids – classification – projected and non-projected – Meaning and significance of Radio’s school Broadcasting programme – Education Broadcast in India – Press as medium of Education.

**Unit IV**

Educational Television – Satellite Instructional Television experiment – Cable TV, Community Television – Instructional television – Countrywide classroom – Different types of programmes and formats: - News programmes, TV Documentaries, Interview, Quiz programmes, children’s program, Commercial and Educational programmes.

**Unit V**

Use of Computer Technology In Education – Computers in classroom – Computer literacy – Computer as a teaching and learning tool – Capabilities and application of Computer – CAL, CAI, CML – Use of Computer in Research

**Reference**

1. Kumar J. Keval “Mass Communication in Media” , Jaico Publication House
2. Aggarwal J.C. “Essentials of Educational Technology-Teaching learning innovations in Education” ‘ Vikas Publishing House Pvt. Ltd
3. Kumar K.L. “Educational Technology”
4. Kaplar S. Paul “Educational Psychology for tomorrow’s teachers”

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**SPECIAL PAPER II: EDUCATIONAL INFORMATICS**

**Objectives:**

1. To understand the meaning and significance of Instructional Technology.
2. To learn the importance of instructional theories and models in Instructional System Design.
3. To learn the instructional media and interactivity designing.
4. To know the teaching and learning processes in e-learning environment.

**Unit I – Educational Informatics and Instructional Technology Models**

Educational Informatics: Definition – Aspects – Scope – Prospects

Definition – History of Instructional Technology – Concept of Systems Approach – System Analysis – Curriculum Development and Process – Need Assessment – Task Analysis

Taxonomies of Educational Objectives: Bloom’s Cognitive Domain, Krathwohl’s Affective Domain, Dave’s Psychomotor Domain, Harrow’s Psychomotor Domain, Simpson’s Psychomotor Domain – Writing Objectives: Mager Method, Gagne and Briggs Method, ABCD Method

Instructional Development Models: Kemp Model – Instructional Development Institute Model – Interservice Procedures for Instructional Systems Development Model – CRI Model – ADDIE Model

**Unit II – Instructional Theories**

Gagne-Briggs’ Instructional Events – Gropper’s Behavioral Approach to Instructional Prescription – Landa’s Algo-Heuristic Theory - Scandura’s Structural Learning Theory – Collins-Stevens’ Cognitive Theory of Inquiry Teaching – Merrill’s Component Display Theory – Reigeluth-Stein’s Elaboration Theory of Instruction – Keller’s Motivation Design of Instruction

**Unit III – E-Media Design**

Text: Guidelines for Creating Text – Spacing – Justification – Fonts – Variable Spacing – Scrolling – Display Speed – Screen Focus Points – Hypertext and Hypermedia

Images: Images and Learning – Displaying Images – Appearance – Costs – Digitization  
Animation: Animations and Learning – Displaying Animations – Costs

Audio: Audio and Learning – Scriptwriting Guidelines – Speech – Sounds – Music – Audio Quality – MIDI – Digitization

Video: Video and Learning – Strengths of Video – Difficulties with Professional Quality Video

#### **Unit IV – Interactivity Design**

Interactivity: Definition – Purpose – Process of Interactive Design

Information Design: Product Definition – Audience and Environment – Development Choices – Organizing Information – Information Flowchart

Interaction Design: Orientation – Image Maps and Metaphors – Navigation – Usability – Functionality – Storyboard

Presentation Design: Tasks of Presentation Design – Resolution – Anti-aliasing – Color and Palettes – Interface Style – Layout – Interface Elements (Background, Panels, Buttons & Controls, Images, Text, Video, Sound, Animation) – Feedback and Error Messages

#### **Unit V – E-Learning Process and Management**

E-learning Standards – Content: E-Content, Dynamic Content, Trends – Technology: Authoring, Delivery, Collaboration – Services: Expert Service, Information Search Service, Knowledge Creation Service – Process of E-Learning: Knowledge acquisition and creation, Sharing of knowledge, Utilization of knowledge – Knowledge Management in E-Learning

#### **References:**

1. Instructional Technology: Foundations, Robert Mills Gagne, Lawrence Erlbaum Associates, 1987
2. Instructional Technology: A Systematic Approach to Education, Frederick G. Knirk, Kent L. Gustafson, Holt, Rinehart and Winston, Inc, 1986
3. Task Analysis Methods for Instructional Design, Book by Wallace H. Hannum, David H. Jonassen, Martin Tessmer; Lawrence Erlbaum Associates, 1999
4. Methods of Teaching: A Skills Approach, David Jacobsen, Paul Eggen, et al, Charles E. Merrill Publishing Company, 1985
5. Instructional-Design Theories and Models: An overview of their current status, Charles M. Reigeluth, Lawrence Erlbaum Associates, 1983, ISBN 0898592755
6. Creating Instructional Multimedia Solutions: Practical Guidelines for the Real World, Peter Fenrich, Informing Science Publication, 2005
7. Interactivity by Design: Creating & Communicating with New Media, Ray Kristof, Amy Satran, Pearson Education Publication, 1995
8. E-Learning: An Expression of the Knowledge Economy, Gaurav Chadha, S.M. Nafay Kumail, Tata McGraw-Hill Publication, 2002

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**SPECIAL PAPER III : LANGUAGE TEACHING**

**OBJECTIVES:**

- To help the students to know methods of language teaching and learning.
- To equip the students for using computer for testing the language competence.
- To provide introductory knowledge about language pedagogy.
- To enable students classify errors and evaluate language use.

**UNIT I: LANGUAGE TEACHING AND LEARNING**

Language-acquisition, learning, -first and second language acquisition/teaching  
 In different socio-cultural settings, cognate and foreign language, teaching /learning .Various  
 Approaches in language teaching. Using technology -teaching aids.

**UNIT II: LANGUAGE, SOCIETY AND COMMUNICATION**

Inter-relationship of language, society and communication- Mass media and society-language  
 use in different media –print, electronic. The process of communication-Models of  
 communication: Shannon and Weaver, Wilbur Schramm, Osgood, Barriers to  
 communication. Language variety-dialect, idiolect, pidgin, creole, sociolect, ecolect and  
 register.

**UNIT III: LANGUAGE PEDAGOGY AND ERROR ANALYSIS**

Developing Language curriculum-syllabus-Textbook evaluation. Errors-Types of errors-  
 Error analysis at Phonological, lexical, semantic and syntactic level.

**UNIT IV : USE OF COMPUTERS IN LANGUAGE TEACHING**

Computer based language learning and Teaching, Use of computer aided packages for  
 teaching and material production, Meaning and Need for Language Laboratory to develop  
 LSRW skills.

**UNIT V :LANGUAGE TESTING AND EVALUATION**

Principles and methods of language testing, Types of Tests- proficiency test, aptitude,  
 diagnostic prognostic test, achievement -reliability, validity, item analysis. Formative and  
 summative evaluation.

**References :**

1. Essentials of Educational Technology:Innovations in Teaching Learning – J.C.Aggarwal
  2. Applied Linguistics and the Learning and teaching of foreign languages – Theo Van Ellis  
 et al
  3. Language Teaching – Robert Lado
  4. Applied Linguistics – P.Corder
  5. Educational Linguistics – Michael Stubbs
  6. Understanding second language acquisition – R.Ellis
  7. Computational Linguistics:An Introduction –R.Grishnan
  8. An Introduction to Human Communication –G.A. Borden
  9. Approaches and Methods in Language Teaching - Jack.C.Richards and Theodore Rodgers
  10. Essentials of Examination System: Evaluation,Tests and Measurement
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