PEDAGOGY OF COMPUTER EDUCATION
SEMESTER I

OBJECTIVES

At the end of the course, the student teacher will be able to

- realise objectives of teaching computer science in secondary and higher secondary schools and help them to plan learning activities according to those objectives.
- acquire skills relating to planning micro lessons and presenting them effectively.
- Understand the various methods of teaching computer science.
- know the new techniques of teaching computer science.
- understand the Individualized Instructional strategies
- develop the skills of maintaining a computer science laboratory.

UNIT I – INTRODUCTION AND OBJECTIVIES OF TEACHING COMPUTER SCIENCE AT DIFFERENT LEVEL   (15 hours)

Computers: The Basic Hardware Components of a Microcomputer –History of Development of Computers – Types of Computers – Software: Definition- Types of Software – Computer Application in Educational Institutions - Academic and Administrative - Aims and Objectives – Based on Blooms Taxonomy of Educational Objectives – Computer Science Teaching at Different Levels: Primary, Secondary and Higher Secondary Levels.

Activity: Group Discussion on the use of computer for administrative and academic purpose.

UNIT II – MICROTEACHING   (15 hours)

Teaching skills – Microteaching Cycle –Planning a micro lesson – Teaching of relevant skills: Skill of Introduction, Demonstration, Explaining, Stimulus Variation, Reinforcement, Questioning, Blackboard Writing - Need for link Lesson in Microteaching.

Activity: Practice microteaching

UNIT III - INSTRUCTIONAL METHODS   (15 hours)

Lecture – Demonstration – Problem Solving – Project Method – Scientific Method – Analytic and Synthetic Methods – Inductive – Deductive Approaches of Teaching Computer Science-Individualized Instruction: Concept – Programmed Learning – Computer Assisted Instruction- CAI mode-CAI frames – Computer Managed Learning .

Activity: Prepare a CAI packages

UNIT IV - MODERN TECHNIQUES IN THE TEACHING OF COMPUTER SCIENCE   (15 hours)

Seminar-Symposium – Group Discussion - Panel Discussion - Workshop Techniques - Team Teaching.

Activity: Practice team teaching

UNIT V- PLANNING AND MAINTENANCE OF A COMPUTER LABORATORY   (15 hours)

Need For Planning a Computer Laboratory - Special Features of Computer Laboratory - Essential Infrastructure - Laboratory Management - Organization of Practical for Pupils - Maintenance of Laboratory Records - Discipline in the Laboratory.

Activity: Prepare a model stock register and other records to be maintained in a computer science laboratory.

REFERENCES

- ❖ Chauhan, S.S., (1985), Innovations in Teaching Learning Process,Vikas Publishing House, New Delhi.
- ❖ Greg Perry, (1998), Teach Yourself Windows in 24 Hours, Techmedia Publications, New Delhi.
- ❖ Mc Disney and H.M. Disney (1983), Microcomputers and School Chemistry, Pitman Publishers Inc.
- ❖ Michael Madera and Faithe Wepmen (1998), Learn Windows 98 – In a Weekend, Galgotia Publishers, New Delhi.

PEDAGOGY OF COMPUTER EDUCATION
SEMESTER II

OBJECTIVES

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

- write lesson plans and unit plans.

- imbibe the qualities of a good computer science teacher.

- acquire the skills in constructing tests.

- Develop the skill of organizing activities in computer science

- skills in preparing and using various teaching aids.

UNIT I - LESSON PLANNING AND UNIT PLANNING: **(15 hours)**

Lesson Planning – Definition – Need, Advantages – Principles of Lesson Planning – Their Importance- Merits And Demerits - Unit Plans – Objectives of the Tamilnadu Text Book Curriculum at Different Levels of School Education.

Activity :Writing 20 lesson plan

UNIT II - EVALUATION OF COMPUTER SCIENCE TEACHER (15 hours)

Academic and Professional Qualification - Special Qualities Required for a Computer Science Teacher - In-Service Training for Computer Science Teacher- Rating by Supervisor from Colleagues - Evaluation by Pupils - Self-Evaluation - Classroom Interaction Analysis.

Activity: Construct a rubrics for self evaluation

UNIT III - EVALUATION IN COMPUTER SCIENCE   **(15 hours)**

The Concept of Evaluation – achievement Test,– Principles of Construction and Administration of an Achievement Test – Characteristic of a Good Test – Item Analysis – Diagnosis and Prediction- Computer Aided Evaluation - Online Examination.

Activity: Analyse the item difficulty and item discrimination for multiple choice questions.

UNIT IV - COMPUTER TECHNOLOGY AND CO-CURRICULAR ACTIVITIES IN COMPUTER SCIENCE. (15 hours)

Use of Robots – Artificial Intelligence –Strengthening computer science education-Online course-Social Networks-Blogs-Cloud computing-Virtual University. The Ethical and Practical Issues Involved in the Software Piracy-Cyberspace threats and solution.

Activity: Discuss the uses of blogs/ cloud computing.

UNIT V - AUDIO-VISUAL EDUCATION (15 hours)

Need And Importance of Audio-Visual Aids in Teaching Computer Science and Their Classification - Use of Graphic Materials: Pictures - Charts – Diagrams - Graphs and Tables - Projective Aids – Improvised teaching aids.

Activity: Prepare a improvised teaching aid.

REFERENCES

- ❖ Byran Pfaffenberger, Discover the internet, Comdex Computer publishing, New Delhi, 1997.
- ❖ Bennett, S. Marsh. D & Killen. C (2008) Handbook of online education continuum, New York: International Publishing.
- ❖ Flanders, A.n(Ed) Analyzing teacher Behaviour, Addisson-Welsillley Publishing Co., USA, 1979.
- ❖ Goel H.K (2005) Teaching of Computer Science. New Delhi: R.Lall Books.
- ❖ Gortfried, Programming with C, schaum Series, Tata McGraw Hill Pub.co., Ltd., New Delhi, 1996.
- ❖ Kochhar, S.K (1992) Methods and techniques of teaching, New Delhi: Sterling publishers Pvt Ltd.
- ❖ Sambath, K. Paneerselvam, A & Santhanam, S (2006) Introduction of educational technology, New Delhi: Sterling Publishers Private Limited.

PEDAGOGY OF COMPUTER EDUCATION
SEMESTER III

OBJECTIVES

At the end of the course, the student teacher will be able to

- understand the principles of curriculum construction.
- develop the skill of evaluating a text book.
- acquire the skill in educational statistics.
- understand features of MS -office and their operation.
- acquire skill in accessing World Wide Web and Internet and global accessing of information.

UNIT I - CURRICULUM IN COMPUTER SCIENCE   (15 hours)

Principles of Curriculum Development – Criteria of Selection of Content and Principles of Organizing the Selected Content.

Activity: Discuss the principles of curriculum development.

UNIT II - TEXT BOOKS   (15 hours)

- Instructional resources in computer science-Text book, Teacher manuals, Reference books and Journals-Qualities of Good Computer Science Text Book - Use of Text Book in and Outside the Class Room - Criteria for Evaluating of Computer Science Text Book - Value of the Computer Science Library.

Activity: A comparative evaluation of any two websites bearing on the same unit in the State board School curriculum. Evaluate a XI CBSE computer science text book.

UNIT III - STATISTICAL MEASURES   (15 hours)

Measures of Central Tendency - Mean, Median and Mode – Measure of Variability - Range, Average Deviation, Quartile Deviation and Standard Deviation - Rank Correlation. Graphical Representation of Data – Bar Diagram - Pie Diagram - Histogram, Frequency Polygon, Frequency Curve, Ogive.

Activity: Write the uses of statistical analysis

UNIT VI - MS-Office   **(15 hours)**

Introduction – Entering Texts – Selecting and Inserting Text – Making a Paragraph, Getting Help – Moving and Copying – Searching and Replacing – Formatting Character and Paragraph – Tables of Contents and Index - The Excel Environment – Entering and Changing Information and Formula – Functions – Saving Worksheet – Loading and Printing – Working with Rows and Columns – Protecting the Work – Charts – Create Power Point Slides- Uses of Power Point in Education.

Activity: Prepare a power point presentation for State board higher Secondary Computer science text book.

UNIT V: INTERNET   **(15 hours)**

Meaning – Importance – Types of Networking: LAN,WAN,MAN – Website and Web pages, URL addresses, Search Engine, E-Mail – Sending, Receiving and Storing mail.

Activity: Identify website for teaching computer programming.

SUGGESTED PRACTICAL WORK

- ➢ Critical Analysis of Content Course of Standard IX To XII Syllabus.
- ➢ Preparation for Students Progress Record - Tabulation of Results of an Achievement Test.
- ➢ Preparation for Lesson Plan for Power Point Presentation.
- ➢ Comparative Evolution of any Two Web Pages Bearing on the Same Unit in the School Curriculum.
- ➢ Making 15 Charts & Models.
- ➢ Practice of Micro Teaching.
- ➢ Preparing of Lesson Plan and Unit Plan.
- ➢ Construction of an Achievement Test.

REFERENCES

- ❖ Chauhan, S.S., (1985), Innovations in Teaching Learning Process, Vikas Publishing House, New Delhi.

- ❖ Greg Perry, (1998), Teach You Windows In 24 Hours, Techmedia Publications, New Delhi.

- ❖ Mc Disney and H.M. Disney (1983), Microcomputers and School Chemistry, Pitman Publishers Inc.

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- ❖ Rajaram, V., (1996) Fundamentals of Computers, Prentice Hall Of India Pvt.Ltd, New Delhi.

- ❖ Rojer Hunt and John Shelley (1995) Computers, and Common Sense Prentice Hall of India Pvt Ltd, New Delhi.

- ❖ Siddigi, N.N And Siddigi, M.N (1998) Teaching Of Science Today And Tomorrow, Doaba House, New Delhi.

- ❖ Stanley Pogrom (1983), Education in the Computer Age, Sage Publications, India.

- ❖ Taxali R.K., (1998), Pc Software For Windows Made Simple, Tata McGraw-Hill India Ltd., New Delhi.

- ❖ Xavier, C., (1996) Introduction to Computers and Basic Programming, New Age International Pvt.

OBJECTIVES

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

- develop in the student teachers skills in preparing and using computer instruction programmes.
- Develop the skill in developing programs in C Language.
- acquire knowledge on latest trends in information technology.
- develop web page programs in HTML.
- understand the criteria in selecting and evaluating a computer science text book.

UNIT I - WRITING (CAI) INSTRUCTIONAL PROGRAMMES(15 hours)

A Systematic Plan for Developing CAI Programmes - Designing a CAI Lesson: Specification of Objectives – Front - End Analysis - Outcome - Specifications of Lesson Design - Lesson Development - Lesson Validation - Common CAI Frames: Introduction and Instructions - Menu Page - Teaching Frames - Criterion (Test) Frames - Feedback (Remedial) Frames - Reinforcement Frames - Graphics Frames. Activity: Prepare an on line test

UNIT II - FUNDAMENTALS OF C   (15 hours)

Elements of C language: Character set - C Constant - C Variables, Operators, Control Structures - Loop Structures - Arrays and Structures - Functions - Library Functions .

 ACTIVITY: Developing Simple C programs.

UNIT III - LATEST TRENDS IN INFORMATION TECHNOLOGY(15 hours)

Multimedia - Desk Top Publishing- Internet and Its Uses - E-Commerce and Electronic Data Interchange (EC &EDI) - E-Learning - Web Based Learning – Teleconferencing - Video Conferencing.

Activity: Practice video conferencing using skype.

UNIT IV – HTML   **(15 hours)**

HTML Introduction – Structure – HTML tags – Editing Tools– Hyperlink – Insert Sound and Images – Table, Frames, and Forms – Creating a web Pages programme.

ACTIVITY: Developing Online test using HTML and Visual basic etc.

UNIT V - TEXT BOOK REVIEW   **(15 hours)**

Review of Units in Computer Science. Need and Importance of Reviewing Computer Science Lesson, Characteristics of Good Review - Different Techniques of Reviewing a Lesson.

Activity: Use different techniques and review a computer science lesson.

SUGGESTED PRACTICAL WORK

➢ Preparation of Teaching Aids.

➢ Multimedia Presentation (Minimum of 15 Slides).

REFERENCES

❖ Brian W. Kernighan and Dennis, M. Ritchie, The C-Programming language, prentice Hall of India, P.Ltd. New Delhi,1986.

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❖ Sundararajan, K.   Interner, Kannadhasan Publications, 1998.

❖ Vedanayagam, E.G.   Teaching Technology for College Teachers, Sterlling Publishers.