

B.Ed OPTIONAL COURSE

COMPUTER SCIENCE - I

OBJECTIVES

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

- acquire knowledge on historical evolution of computer and its hardware, software components.
- acquaint with the aims and 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 lessons and presenting them effectively.
- familiarize with the various methods that can be employed for the teaching of computer science.
- understand the principles of curriculum construction.
- develop skill in constructing tests.

UNIT I Hardware and Software of Computers

Hardware components of a micro computer – Input and Output devices – types of computers – Software : definition – System software – Application software –High level and programming languages – use of computers in schools.

UNIT II Objectives of Teaching Computer Science

Aims and objectives of teaching Computer Science – Blooms taxonomy of Educational objectives – computer science teaching at different levels : primary, secondary, and higher secondary levels.

UNIT III Micro Teaching

Micro teaching – origin, need, procedure, cycle of operation and uses - Communication skills with reference to Micro teaching: Verbal and non-verbal communication- principles and steps in micro teaching - teaching of relevant skills; Skill of Introduction, explaining, demonstration, stimulus variation, reinforcement, questioning, blackboard writing, - need for link lesson in micro teaching programme.

UNIT IV Lesson and Unit Planning

Lesson Planning: Importance of lesson plans, writing instructional objectives and planning for specific behavioural changes.

Unit planning: Preparation and use of unit plan

UNIT V Instructional Methods

Individualized instruction — programmed instruction – Computer Assisted Instruction (CAI), steps for developing CAI, modes of CAI, benefits of CAI, limitations of CAI, role of teacher in CAI – Computer Managed Instruction.

Lecture – demonstration – Problem Solving – Project method – Scientific method – analytic and synthetic methods. Inductive – deductive approaches of teaching computer science.

UNIT VI Instructional Aids

Importance of teaching aids – classification – projected and non-projected aids – criteria for selection of appropriate teaching aids – mass media and its advantages.

UNIT VII Curriculum in Computer Science

Principles of curriculum development – criteria of selection of content - principles of organizing the selected content – critical evaluation of Tamilnadu higher secondary computer science curriculum.

UNIT VIII Evaluation in Computer Science

The concept of evaluation – objective based evaluation – tools and techniques in evaluation - evaluation for achievement, diagnosis and prediction – Criterion and Norm referenced tests – construction of different types of test :- Principles of test construction and administration of an achievement test – Blue print – Characteristic of a good test –Item analysis – Computer Aided Evaluation - On line examination.

Statistical measures : Measures of central tendency : mean, median, mode – measures of variability : range, standard deviation, average deviation, quartile deviation – rank correlation.

UNIT IX Text Books

Qualities of good computer science text book – use of text book in and outside the classroom – criteria for evaluation of computer science text book – value of the computer science library.

UNITX Assignment and Review

Assignment – types – need – characteristics of good assignment – correction – review – characteristics of a good review – need and importance of reviewing lesson.

PRACTICALS :

- Practice of a minimum of three skills on micro teaching
- Preparation of Lesson plan and Unit plan
- Preparation of teaching aids
- Preparation of Programmed Instruction
- Linear Programming (Minimum of 20 frames)
- Multimedia Presentation (Minimum of 20 slides)
- Preparation of transparencies
- Construction of an achievement test
- Critical analysis of content course of standard IX to XII syllabus.
- Identification and cataloguing of three websites relating to the prescribed school curriculum
- Comparative evaluation of any two web pages bearing on the same unit in the school curriculum

SUGGESTED REFERENCE BOOKS:

Singh, Y. K. (2009). *Teaching Practice*. New Delhi: APH Publishing Corporation.

Sharma, R. N. (2008). *Principles and Techniques of Education*. Delhi: Surjeet Publications.

Sharma, R. A. (2008). *Technological foundation of education*. Meerut: R.Lall Books. Depot

Agarwal J. C. (2006). *Essential of educational technology. Teaching and learning*. New Delhi: Vikas Publishing House Pvt. Ltd.

விஜயலட்சுமி. (2008). *கற்பித்தலில் சிக்கல்கள்-தீர்வுகள்*. சென்னை: சாந்தா பதிப்பகம்.

இரத்தின சபாபதி, பி. (2008) *கல்வியில் தேர்வு*. சென்னை: சாந்தா பதிப்பகம்.

கணபதி, வி. & இரத்தின சபாபதி, பி (2008). *நுண்ணிலை கற்பித்தல்*. சென்னை: சாந்தா பதிப்பகம்.

இரத்தின சபாபதி, பி & இரேணுபத்மாமோகன். (2008). *வினாக்களில் விரிகல்கள்*. சென்னை: சாந்தா பதிப்பகம்.

பாஸ்கரன், ப., சூடி பத்மப்ரியா. (2007). *கலைத்திட்ட வளர்ச்சி*. சென்னை சாரதா பதிப்பகம்

விஜயலட்சுமி, வ. (2007). *நுண்ணிலை கற்பித்தல்*. சென்னை சாரதா பதிப்பகம்

Mohanty, L. (2006). *ICT strategies for schools*. New Delhi: Sage Publication.

Sambath, K., Paneerselvam, A., & Santhanam, S. (2006). *Introduction of educational technology*. New Delhi: Sterling Publishers Private Limited.

Sidhu, K. S. (2006). *Teaching of mathematics*. New Delhi: Sterling Publishers Private Ltd.

Vanaja, M. (2006). *Educational technology*. Hyderabad: Neelkamal Publications Pvt. Ltd.

Goel, H. K. (2005). *Teaching of Computer Science*. New Delhi: R.Lall Book Depot.

Krishnamurthy, R. C. (2003). *Educational technology: Expanding our vision*. Delhi: Authors Press.

Srinivasan, T. M. (2002). *Use of computers and multimedia in education*. Jaipur: Aavisakar Publication.

Alexis, M. L. (2001). *Computer for every one*. Leon: Vikas Publishing house Ltd: New Delhi.

Norton, P. (1998). *Introduction to computers*. New Delhi: Tata McGraw Hill Publishing Co Ltd.

Sharma, R. C. (1998). *Modern science teaching*. New Delhi: Dhanpat Raj and Sons.

Kumar, K. L. (1997). *Educational technology*. New Delhi: Angel International (P) Ltd.

Stone, E. (1996). *How to use microsoft access*. California: Emergyville.

Kochhar, S. K. (1992). *Methods and techniques of teaching*. New Delhi: Sterling Publishers Pvt Ltd.

Oosterhof, A. C. (1990) . *Classroom applications of educational measurement*. Ohio: Merrill Publishing.

Chauhan, S. S. (1985). *Innovations in teaching learning process*. New Delhi: Vikas Publishing house Ltd.

Stephen, M. A., & Stanely, R. (1985). *Computer based instruction: Methods and development*. NJ: Prentice Hall.

Balaguruswamy. E., & Sharma, K. D. (1983). *Computer in education and training*. New Delhi: NIIT.

Garrett, H. E. (1979). *Statistics in psychology and education*. Bombay: Vakils, Feffer and Simons Ltd.

Passi, B. K. (1976). *Becoming a better teacher : Micro teaching approach*. Ahemedabad : Sahitya Mudranalaya,.

Passi, B. K. (1976). *Becoming a better teacher : Micro teaching approach*. Ahemedabad: Sahitya Mudranalaya.