BHARATHIDASAN UNIVERSITY

TIRUCHIRAPPALLI – 620 024

M. Phil. Computer Science (FT / PT) Programme

(For the candidates admitted from the academic year 2009-2010 onwards)

Semester I	Title of the Course	Marks			Credits
		IA	UE	Total	
Course -I	Research Methodology	40	60	100	4
Course - II	Advanced paper in Computer Science	40	60	100	4
Course- III	Paper on Topic of Research. (Guide will prepare the syllabus and it will be sent to the COE)	40	60	100	4
Course – IV	Teaching and Learning skills (Common Paper)	40	60	100	4
Semester II					
	Dissertation and Viva-Voce Viva Voce 50 marks Dissertation 150 marks			200	8

For each Course other than the Dissertation

Continuous Internal Assessment	– 40 Marks
End Semester Examination	– 60 Marks
Total	– 100 Marks

Question paper pattern for Course I - III

10 questions compulsory	10 x 01 = 10 Marks (2 from each unit)
5 questions	05 x 04 = 20 Marks (either or type, one from each unit)
3 questions from 5	03 x 10 = 30 Marks (one question from each unit)
Total	60 Marks

Question paper pattern for Course IV

5 Questions 05 x 12 = 60 Marks (either or type, one from each unit)

CIA components

Tests	(2x10) -	20 Marks
Term Paper	–	10 Marks
Seminar	-	10 Marks

COURSE I – RESEARCH METHODOLOGY

Unit I

Thesis Writing: Research types – objectives and approaches – Literature collection, Web browsing – Software tools – Writing review and journal articles – manuscript publication
Planning a thesis – general format – page and chapter format – footnotes – tables and figures – references and appendices

Unit II

Analysis of algorithm: The role of algorithm in computing – Insertion sort – Analyzing and designing algorithms – growth of functions – introduction to NP – completeness

Unit III

Formal Languages and Finite Automata: Context free grammars – Derivation trees – Simplification of context free Grammars – Chomsky normal form – Greiback normal form – The pumping lemma for context free languages
Finite state systems – Basic definitions – Non deterministic finite automata – Finite automata with epsilon moves – Regular expressions – Applications of finite Automata (Stress on theorem statement and problems only, no proof for theorems)

Unit IV

Probability and Statistical Analysis: Probability – Fail time data analysis – Hazard models – Conditional probability – Bayes rule – System reliability – Stochastic process

Unit V

Logics – Relations and Functions: Propositions – Precedence rules for operators – Laws of equivalence – Natural deduction system – Developing natural deduction system proofs
Relation properties – Matrix and Graph – Graph Notations for relations – Partition and covering – Equivalence relation – Compatibility relations – Partial ordering – Functions – Components – Composition of function – Inverse functions – Binary and n-ary operations

Text Books:

1. Kothari C. R. Research Methodology – methods and techniques, 2nd Edition, Wishwa Prakashjan New Delhi 1999
2. Elis Horowtz and Sartaj Sahni, 'Fundamentals of Computer algorithms', Galgotia Publications, New Delhi 2000
3. John E. Hopcroft, Jeffery D. Ullman, 'Introduction to Automata Theory Language and Computation', narosa Publishing House, 1979
4. L.S. Srinath, 'Reliability Engineering', Third Edition, Affliated East, West press pvt. Ltd, New Delhi, 2005
5. David Gries, 'The Science of Programming' Narosa Publishing House, 1981

Reference Books:

1. Berny H. Durston, M. Poole, 'Thesis and Assignment writing', Wiley Eastern Ltd. ND 1970
2. Misra R.P. Research Methodology – A Hand Book, Concept publishing Company, New Delhi 1988
3. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest 'Introduction to Algorithms', Prentice Hall of India, 1998
4. E. Balagurusamy, 'Reliability Enginering', Tata Mc Graw Hill Publishing Ltd., New Delhi 2003
5. Leon S. Levy, ;Discrete structures of Computer Science', Wiley Eastern Ltd., 1980

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COURSE II–ADVANCE PAPER IN COMPUTER SCIENCE

Unit I

Security problems in Computing – Cryptography – program security – Database security – Security in Networks

Unit II

Grid Computing organization and their role – Grid computing anatomy – Merging the Grid service architecture with web services architecture

Unit III

Fundamental – Remote procedure cells – Distributed shared memory – Synchronization

Unit IV

Distributed Databases – Homogeneous and Heterogeneous databases – Distributed data storage – distributed transactions – commit protocols – concurrent control – availability – Distributed theory processing Heterogeneous distributed databases – Directory systems

Unit V

Fundamentals of Parallel processing – MIMD computers or Multiprocessor 4.1 – 4.2, 4.3

Text Books:

1. Chapter 1,2,3,6 & 7 – (Security in Computing, Charles P. Pfleeger, & Shani Lawrence Pfeeger)
2. Joshy Joseph, Graig Felenstern 'Grid Computing' – Pearsons 2004
3. Distributed file systems, Chapter 1,4,5,6 & 9
   Distributed Operating Systems, Pradeep K. Sinha, PHI, 2004
4. Abraham fiberschatz & Hendry F. Korths "Data base systems concepts"
   Mc Graw Hill International fifth edition, 2006
5. Distributed memory multiprocessors 5.1, 5.2, 5.3, 5.4, 5.5
   Data dependence and parallelism – 7.1 – 7.2, 7.3, 7.4, 7.5
   Implementing synchronization and data sharing 8.1, 8.2, 8.3, 8.4
   Harry F. Jordan Gita Alaghband

COURSE –IV – TEACHING AND LEARNING SKILLS

Objectives:

- acquaint different parts of computer system and their functions
- understand the operations and use of computers and common Accessories
- develop skills of ICT and apply them in teaching learning context and Research
- appreciate the role of ICT in teaching, learning and Research
- acquire the knowledge of communication skill with special reference to its elements, types, development and styles
- understand the terms communication Technology and Computer mediated teaching and develop multimedia / e-content in their respective subject
- understand the communication process through the web
- acquire the knowledge of Instructional Technology and its Applications
- develop different teaching skills for putting the content across to targeted audience

Unit I – Computer Application Skills

Computer system: Characteristics, Parts and their functions – Different generations of Computer – Operation of Computer: switching on / off / restart, Mouse control, Use of key board and some functions of key – Information and Communication Technology (ICT): Definition, Meaning, Features, Trends – Integration of ICT in teaching and learning – ICT applications: Using word processors, spread sheets, Power point slides in the classroom – ICT for Research: On-line journals, e-books, Courseware, Tutorials, Technical reports, Theses and Dissertations

Unit II – Communication Skills

Communication: Definitions – Elements of Communication: Sender, Message, Channel, Receiver, Feedback and Noise – Types of Communication: Spoken and written; Non-verbal communication – Intrapersonal, Interpersonal, Group and Mass communication – Barriers to

communication: Mechanical, Physical, Linguistic & Cultural – Skills of communication: Listening, Speaking, Reading and writing – Methods of developing fluency in oral and written communication – style, Diction and Vocabulary – Classroom communication and dynamics

Unit III – Communication Technology

Communication Technology: Bases, Trends and Developments – Skills of using Communication Technology – Computer Mediated Teaching: Multimedia, E-content – Satellite-based communication: EDUSAT and ETV channels, Communication through web: Audio and Video applications on the Internet, interpersonal communication through the web.

Unit IV – Pedagogy

Instructional Technology: Definition, Objectives and Types – Difference between Teaching and Instruction – Lecture Technique: Steps, Planning of a Lecture, Delivery of a lecture – Narration in tune with the nature of different disciplines – Lecture with power point presentation – Versatility of lecture technique – Demonstration, Characteristics, Principles, Planning Implementation and Evaluation – Teaching – Learning Techniques: Team Teaching, Group discussion, Seminar, Workshop, Symposium and Panel Discussion – Models of teaching: CAI, CMI and WBI

Unit V – Teaching Skills

Teaching skill: Definition, Meaning and Nature – Types of Teaching skills: Skill of Set Induction, Skill of Stimulus Variation, Skill of Explaining, Skill of Probing Questions, Skill of Black Board writing and Skill of Closure – Integration of Teaching Skills – Evaluation of Teaching Skills

References:

1. Bela Rani Sharma (2007), Curriculum Reforms and Teaching Methods, Sarup and sons, New Delhi
2. Don Skinner (2005), Teacher Training, Edinburgh University Press Ltd., Edinburgh
3. Information and Communication Technology in Education: A Curriculum for Schools and programme of Teacher development, Jonathan Anderson and Tom Van Weart, UNESCO, 2002

4. Kumar K.I (2008) Educational Technology, New Age International Publishers, New Delhi

5. Mangal, S.K. (2002) Essential of Teaching – Learning and Information Technology, Tandon Publications, Ludhiana

6. Michael D. and William (2000), Integrating Technology into Teaching and Learning: Concepts and Applications, Prentice Hall, New York

7. Pandey S.K. (2005) Teaching Communication, Commonwealth Publishers, New Delhi

8. Ram Babu A. and Dandapani S (2006) Microteaching (Vol.1&2) Neelakamal Publications, Hyderabad

9. Singh V.K. and Sudarshan K.N. (1996) Computer Education, Discovery Publishing Company, New York

10. Sharma R. A. (2006) Fundamentals of Educational Technology, Surya Publications, Meerut

11. Vanaja. M. and Rajasekar S. (2006) Computer Education, Neelkamal Publications, Hyderabad.

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