

**ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
CUDDALORE-1**



**PG & RESEARCH DEPARTMENT OF COMPUTER
SCIENCE**

**M.Phil (Computer Science)
SYLLABUS 2017 -2018**

**PG and Research Department of Computer Science
M.Phil Computer Science (Template)**

Yr/ Semester	Subject	Code	Part	Subject Title	Hours	Credits
I YEAR/I SEM	CORE	MCS101	I	RESEARCH METHODOLOGY	6	5
	CORE	MCS102B	II	ADVANCED COMPUTER TECHNIQUES	6	5
	CORE		III	ELECTIVE PAPER (Guide Paper)	6	5
	LIBRARY		IV	SCIENCE-6 (LIBRARY)+6(LAB)	12	
				TOTAL	30	15
II SEM	CORE		II	DISSERTATION AND VIVA VOICE		21
				GRAND TOTAL		36

RESEARCH METHODOLOGY

SUBJECT CODE-MCS101

UNIT – I : RESEARCH METHODOLOGY

Meaning of research objectives of research motivation of research types, approaches and significance methods versus methodology – Research in scientific methods – Research process – Criteria for good research – Problem encountered by research in India – funding agencies.

UNIT – II : RESEARCH PROBLEMS

Research problem: Selecting the problem – Necessity of defining the problem – Techniques involved in defining the problem – Research design – Needs and features of good design – Different research design – Basic principles of experimental designs.

UNIT – III : DATA COLLECTION AND DOCUMENTATION

Data collection methods – Data types – Processing and presentation of data – Techniques of ordering data – Meaning of primary and secondary data – The uses of computers in research – The library and internet – uses of search engines – Virtual libraries – common software for documentation and presentation.

UNIT – IV : DATA AND ERROR ANALYSIS Statistical analysis of data – standard deviation – correlation. Test of significance (small samples) based on T&F distribution with respect to mean variance and correlation coefficient. Chi-Square distribution: test for independence of attributes. Analysis of Variance: One way classification

UNIT – V : RESEARCH COMMUNICATION

Meaning of research report – Logical format for writing thesis and paper – Essential of scientific report abstract, introduction review of literature, materials and methods and discussion – write up steps in drafting report – effective illustrations, tables and figures – Reference styles: Harvard, IEEE and Vancouver Systems.

REFERENCE BOOKS:

1. Research Methodology, Methods and Techniques – CR Kothari – WiswhaPrakasam Publications, II Edition.
2. Research An Introduction – Robert Ross – Harper and Row Publications.
3. Research Mehtodology – P. Saravanel – Kitiab Mahal, Sixth Edition.
4. Abi handbook for methodology of Research – P. Jammai P.A. Devadoss – Vidhayala Press.
5. Introduction to computers – N. Subramanium.
6. Statistical methods – G.W. Snedecor and W. Cocharaco – Oxford and IBH, New Delihi.
7. Research Mehtodology, Methods and Statistical Techniques – Samosh Gupta.
8. Statistical Methods – G.P. Gupta.
9. Scientific Social Surveys and Research – P. Young Asia publishers, Bombay,
10. How to write and publish scientific paper – R.V. Day Cambridge university press Thesis and Assignment Writing – Anderson – Whey Eastern Ltd.

ADVANCED COMPUTER TECHNIQUES

SUBJECT CODE: MCS102B

UNIT – I ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Definition - Introduction - AI techniques – Heuristic Search Techniques – A* Algorithm – AO* Algorithm - Components of an Expert System - Knowledge Representation and Acquisition Techniques - Building an expert system.

UNIT – II FUZZY SYSTEMS

Definition of a Fuzzy set, Fuzzy Relations, Fuzzy Functions, Fuzzy Measures, Fuzzy Reasoning, and Applications of Fuzzy Systems.

UNIT – III DIGITAL IMAGE FUNDAMENTALS AND IMAGE PROCESSING

Introduction – Fundamental steps in Digital Image Processing – Components of an Image Processing System –Basic relationships between pixels – Basic Gray Level Transformation – Histogram Processing. Color Fundamentals – Color Models – Color Transformations – Smoothing and Sharpening – Color Segmentation.

UNIT – IV NEURAL NETWORKS AND PARALLEL COMPUTING

Neural Networks – Perceptron Model – Linear separability and XOR problem – 2 or 3 layered neural nets – Back Propagation – Convergence – Hopfield nets – Current Trends and technologies – Parallel Computing – PVM – MPI – Libraries and Calls.

UNIT – V PAPER PRESENTATION

At least one paper should be published in National and International Conferences.

UNIT – I & II BOOKS FOR STUDY / REFERENCES

1. Nils J. Nilsson – “**Principles of Artificial Intelligence**” – Narosa Publishing House.
2. Elaine Rich, Kevin Knight – **Artificial Intelligence** – 2nd Edition – TMG.
3. George J. Klir, Tina A. Folger – **Fuzzy sets, Uncertainty and Information** – PHI
4. S. Ramani, R. Chandrasekar and K. S. R. Anjaneyulu – **Knowledge based Computer Systems** – Narosa Publishing House.
5. Doanald A Waterman – **A Guide to Expert Systems** – Addison Wesley.

UNIT – III BOOKS FOR STUDY / REFERENCES

1. R. Gonzalez and R. E. Wood – **Digital Image Processing** – Prentice Hall of India, New Delhi, 2002.
2. A. Rosenfeld and A. C. Kak – **Digital Picture Processing** - Prentice Hall of India, New Delhi, 1982.
3. W. K. Pratt – **Digital Image Processing** – MC Graw Hill, New Delhi, 1981.

UNIT – IV BOOKS FOR STUDY / REFERENCES

1. Raul Rojas – **Neural Networks: A Systematic Introduction**- Springer- 2013
2. AnanthGrama – **Introduction to parallel computing** – Second Edition – Pearson Edition - 2003

UNIT – V BOOKS FOR STUDY / REFERENCES

6. E – Books
7. National and International Journals.