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

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE

M.Phil., (Computer Science)
SYLLABUS 2020– 2021

M.Phil Computer Science (Template)

Yr/ Semester	Subject	Code	Part	Subject Title	Hours	Credits
I YEAR/I SEM	CORE	MCS101A	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**	

M.Phil. Computer Science	RESEARCH METHODOLOGY For the students admitted from the year 2018	MCS101A
I SEMESTER		HRS/WEEK – 6

COURSE OUTCOMES (COs)

At theendoftheCoursethestudentswillbeableto

CO1: Understand the concept of research its process and the problems encountered by researchers in India

CO2: Understand the concept of research problems and research design

CO3: Know the methods of data collection and uses of search engines

CO4: Analyze the data by statistical tools

CO5: Understand the concept of research report and steps in drafting report.

SEMESTER-I	COURSECODE: MCS101A			TITLEOFTHEPAPER: RESEARCH METHODOLOGY				HOURS:6	CREDITS:5
COURSEOUTCOMES	PROGRAMMEOUTCOMES(PO)				PROGRAMMESPECIFICOUTCOMES(PSO)			MEANSCOREOFCO'S	
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	
CO1	4	4	4	4	4	4	4	4	4
CO2	5	5	5	5	5	5	5	5	5
CO3	4	4	4	4	5	5	5	5	4.5
CO4	4	4	4	4	4	4	4	4	4
CO5	5	5	5	5	5	5	5	5	5
MeanOverallScore									4.5

Result: ThisCourseishaving**VERYHIGH**associationwithProgrammeOutcomeandProgrammeSpecificOutcome

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	VeryPoor	Poor	Moderate	High	VeryHigh

UNIT – I

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 – problems encountered by researchers in India – Funding agencies.

UNIT – II

Research problems: selecting the problem - necessity of defining the problem - techniques involved in defining a problem. Research design – needs and features of good design – Different research design – basic principles of experimental designs.

UNIT – III

Data collection methods – data types – processing of data, techniques ofordering data – meaning of primary and secondary data - Uses of computers in research – the library and internet. Uses of search engines – virtual libraries – common software for documentation presentation.

UNIT – IV

Statistical analysis of data – standard deviation – Correlation. Tests of Significance (small samples) based on t and Fdistributions with respect to mean, variance and correlation coefficient. Chi–Square distribution: Test for independence of attributes. Analysis of Variance: One way and two-way classifications.

UNIT –V

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 - C.R.Kothari&Gaurav Garg New Age International Publishers ,III Edition.

2. Research Methodology – R.Paneerselvam , II Edition.

3. Research Methodology ,A step by step Guide for Beginners – Ranjit Kumar , II Edition.

4. Statistical methods – S.P.Gupta , Sultan Chand & Sons ,32nd edition.

M.Phil CS	ADVANCED COMPUTER TECHNIQUES	MCS102C
SEMESTER –I		HRS/WEEK – 6

Objective:

Ability To understand the students to gain the knowledge about the Advanced Computer Techniques

COURSE OUTCOMES:

CO1: To understand the concepts of Artificial Intelligence
CO2: Apply skills and familiarity in Fuzzy System and Network Security
CO3: To understand the concepts of IoT and its applications
CO4: Understandtheconcept of Image processing system
CO5: Able to understand the concept of Big Data
CO6: Understand the Process of Paper Publication and Implementation

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific

SEMESTER I	COURSE CODE: MCS102C					TITLE OF THE PAPER: Advanced Computer Techniques					HOURS: 6	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3.8	3.5	4	3.2	5	5	4.5	4.3	4.2	4.5	4.5	
CO2	4	4	3.3	4	4.8	4.3	4.3	4	3.3	4.5	4.8	
CO3	4.2	4	4	4.9	5	4.5	4.3	4	3.4	4.5	4.1	
CO4	4.5	4.2	5	4.2	3.8	4.5	4.3	4	3.4	4.5	4.14	
CO5	4.6	3.7	4.7	4.1	4.3	4.3	4.3	4.4	4.3	5	4.46	
									Mean Overall Score		4.4	

Outcomes

Result: The Score of this Course is 4.4(Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **Very High** association with Programme Outcome and Programme Specific Outcome

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 and Applications of Fuzzy Systems.

NETWORK SECURITY
Introduction – Cryptographic principles-DES, AES and RSA Algorithms- Digital Signature standards.

ARTIFICIAL NEURAL NETWORK
Basic concepts- single layer perception- Multilayer perception- Supervised and unsupervised algorithm- Back propagation networks- Hopfield network.

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. Machine learning algorithms and Deep learning concept.

UNIT- IV:

BIG DATA AND DATA ANALYTICS
Definition- Character's- Architecture of Big Data- (Best practice for Data Integration in a Big Data World) Fundamentals of Big Data world Integration – Defining Traditional ETL- Using Hadoop as ETL.
IOT: Internet of Things Strategic Research and Innovation Agenda - Scalable Integration Framework for Heterogeneous Smart Objects Applications and Services - Internet of Things Application - From Research and Innovation to Market Deployment.

Unit V:-PAPER PRESENTATION

a) At least one paper should be published in National/International conference-

b)Implementation of Research paper from IEEE/SCI Indexed /Scopus Indexed Journal.

REFFERENCES

Unit I&II
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, Uncertainity 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.
6. Andrew S.Tanenbaum "Computer Networks" –Pearson Education- 4th Edition New Delhi -2003
7. William Stallings- Cryptography and Network Security- Pearson Education- New Delhi-2006
8. Laurence Fdusett- Fundamentals of Neural Networks" – Prentice Hall- 1994

Unit III
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.
4. Machine learning algorithms
5. Deep learning

Unit IV
1. Hrishikesh Karambelkar**Scaling Big Data with Hadoop and Solr**– Packt Publishing
2. AnanthGrama – **Introduction to parallel computing** – Second Edition – Pearson Edition 2003
3. Ovidiu Vermesan& Peter Friess - Internet Of Things – From Research and Innovation to Market Deployment. - River Publishers

Unit-V
1. E-books
2. National and international Journals
3. SCI Indexed Journal & Scopus Indexed journal and IEEE papers.

QUESTION PATTERN

100 MARKS (External: 75 Internal: 25)

PART A (6x5=30)

ANSWER ALL 6 QUESTIONS

Internal Choice (Either OR pattern)

PART B (3x15=45)

ANSWER ANY 3 QUESTIONS

Out Of 6 Questions (Open Choice)

TOTAL (30+45=75)