MASTER OF PHILOSOPHY IN COMPUTER SCIENCE SYLLABUS SESSION 2013-14

CURRICULUM

Sl. No	Code	Papers	Max. Marks	Ex. Hrs.
1	**MPCS 101**	Research Methodology	100	3
2	**MPCS 102**	Advanced Computer Techniques	100	3
3	**MPCS 103**	Specialization on dissertation topic	100	3
4	**MPCS104**	Dissertation	100	-

RESEARCH METHODOLOGY THEORY AND TECHNIQUES
MPCS 101

(Bio Technology, Biochemistry, Botany, Chemistry, Commerce, Computer Science, Corporate Secretaryship, Education, Education, Electronics, Information Technology, Microbiology, Home Science, Hotel Management, Hotel Management, Library Science, Management, Physics, Population Studies, Psychology, Public Administration, Sociology, Tourism Management, Zoology)

Unit - I

Research – Definition – Importance and Meaning of research – Characteristics of research – Types of Research – Steps in research – Identification, Selection and formulation of research problem – Research questions – Research design – Formulation of HypoDissertation – Review of Literature.

Unit – II

Sampling techniques: Sampling theory – types of sampling – Steps in sampling – Sampling and Non-sampling error – Sample size – Advantages and limitations of sampling. Collection of Data : Primary Data – Meaning – Data Collection methods – Secondary data – Meaning – Relevances, limitations and cautions.

Unit – III

Statistics in Research: Measure of Central tendency – Dispersion – Skewness and Kurtosis in research. HypoDissertation – Fundamentals of HypoDissertation testing – Standard Error – Point and Interval estimates – Important Non-Parametric tests : Sign, Run, Kruskal – Wallis tests and Mann-Whitney test.

Unit – IV

Para metric tests: Testing of significance – mean, Proportion, Variance and Correlation – testing for Significance of difference between means, proportions, variances and correlation co-efficient. Chi-square tests – ANOVA – One-way and Two-way

Unit – V

Research Report: Types of reports – contents – styles of reporting – Steps in drafting reports – Editing the final draft – Evaluating the final draft.

Reference Books:

1. Statistical Methods — S.P. Gupta
2. Research Methodology Methods and Techniques — C.R. Kothari
3. Statistics (Theory and Practice) — B.N. Gupta
4. Research Methodology Methods and Statistical Techniques — Santosh Gupta

ADVANCED COMPUTER TECHNIQUES
MPCS 102

(Computer Science, Computer Application, Information Technology, Computer Technology and Software Engineering)

Unit – I

Theory of Programming: Languages Programming Language : Introduction, Characteristics, Uses –Programming Language Processor – Hierarchies of Computers – Data - Elementary data types – Structured data types – expression – statements – procedures – functions – data control and storage management – data abstraction – exception handling – data encapsulation – theoretical models. The above features in C, C++, JAVA

Unit – II

Software Engineering: Introduction to Software Engineering – Software Project Planning – Requirement analysis specification – Software Design- Implementation issues – Software Testing – Verification and Validation – Software maintenance and Reliability.

Unit – III

Compiler Design: Introduction – Lexical analysis – syntax analysis – types – storage organization – storage allocation – parameter passing – symbol table – language facilities for dynamic storage – allocation – dynamic storage allocation techniques – Intermediate code generation – code generation – code optimization.

Unit – IV

Artificial Intelligence and Expert Systems: Introduction : Problem Definition – Search Strategies – Characteristics – Game Playing - Knowledge representation – Expert System – Roles of Expert System – Knowledge acquisition, Meta knowledge – Heuristics knowledge – Interface : Backward and forward chaining – Fuzzy reasoning – Learning – Adaptive Learning – Types of Expert System : MYSIN, PIP, INTERNIST, DART, XOON, Expert Systems Shells.

Unit – V

Neural Networks: Introduction – Humans and computers – Structure of the Brain, Learning in Machine – differences – Pattern Recognition – The Basic Neutron – Perception – Limitation – Multilayer Perception – Organising Networks – Hopfield Networks – Associative Memory.

Reference Books:

1.Data Structures and Algorithms by Alfred V. Aho, John E. Hoperoft and D. Ulman, Wesley Publishing Company, 1987.
2. Computer Algorithms by Ellis Horowitz and Sartaj Sahni, Galgotia Publications Pvt. Ltd., 1993.
3. Software Engineering, Concepts by Richard Fairley, Mc. Graw Hill, 1985.
4. Software Engineering : A Practioner's Approach, Mc. Graw Hill, 1987.
5. Software Engineering by M.L. Shooma, Mc. Graw Hill, 1983.

6. Compiler Principles, techniques and tool by Alfred. V. Aho, Ravi Sethi and Jeffrey D. Ullman, Addison Wesley Publishing Company, 1986.
7. Compiler Construction by William M. Waite and Gerhard Boos, Springer Verlag, New York Inc., 1984.
8. Artificial Intelligence by Elaine Rich – Mc. Graw Hill
9. Principles of Artificial Intelligence by Nildon, N.J. Springer Verlag, 1981.
10. Principles and Case Study by Richard Folrsyth, Champman and Hall 1984.
11. Neural Computing: An Introduction by R. Beale and T. Jackson, Adam Hilger, 1990.
12. Adaptive Pattern Recognition and Neural Networks by Pao. Y.H., Addision Wesley, 1989.