

**MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY**

**MAHARISHI ROAD, MANGLA, BILASPUR(C.G.)**



## **BOARD OF STUDIES**

**(For Ph.D.)**

**Date: 24 /05 / 2024**

**Department of Computer Science and Information  
Technology**

**(CSIT)**

**Venue**

**Seminar Hall**

  
**Chairman/HOD**

**Prof. (Dr.) Vikas Mathur**

**(Dean Academic)**

**MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY**  
**MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)**

**Department of Computer Science & Information Technology**

**Agenda**

Date: 24 / 05 /2024

The following agenda points are to be discussed for the BoS meeting: -

1. To conduct Ph.D. program in the department of Computer Science and Information Technology under the Faculty of Engineering and Technology as per the UGC and University norms prescribed by the time.
2. Preparation and updation of Ph.D. Entrance syllabus 2024-25.
3. Proposal for Ph.D. (Entrance) Examination 2024-25.
4. Preparation and updation of Syllabus of Ph.D. Course Work 2024-25.
5. Proposal for Ph.D course work examination and setting of question papers.
6. To propose the appointment of PhD guide or supervisor in the concerned faculty and subject as per the UGC norms.



**H.O.D./Chairman**

**MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY**  
**MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)**

**Department of Computer Science & Information Technology**

**Board of Studies Meeting**

Date: 24 / 05 /2024

<b>Welcome Address</b>	<b>:</b>	<b>Ms. Rama Soni</b> <b>Assistant Professor</b> <b>Department of CSIT</b> <b>MUMT, Bilaspur (C.G)</b>
<b>Introduction of the Members</b>	<b>:</b>	<b>External Members and Internal Members</b>
<b>Presentation of Syllabus and Curriculum</b>	<b>:</b>	<b>Prof. (Dr.) Vikas Mathur (Dean academic)</b> <b>Chairman, Dep. of Computer Science&amp; IT</b> <b>MUMT, Bilaspur (C.G)</b>
<b>Programme Name</b>	<b>:</b>	<b>BCA, B.Sc.(IT), DCA, DMA, PGDCA, M.Sc.(I.T.)</b>
<b>Full Course Name</b>	<b>:</b>	<b>Bachelor of Computer Application,</b> <b>Bachelor of Science in Information Technology,</b> <b>Diploma in Computer Application,</b> <b>Diploma in Multimedia &amp; Animation,</b> <b>Post-Graduation Diploma in Computer Application,</b> <b>Master of Science in Information Technology,</b>
<b>Vote of Thanks</b>	<b>:</b>	<b>Mr. Devendra Mahilange</b> <b>Assistant Professor</b> <b>Department of CSIT</b> <b>MUMT, Bilaspur (C.G)</b>

# MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)

## Minutes of the Meeting

Date: 24/ 05 / 2024

The Board of studies meeting of Department of Computer Science & Information Technology held on 24/05/2024 at conference Hall of Maharishi University of Management and Technology, Maharishi Road, Mangla, Bilaspur (C.G.)

### Members Presented:

**Prof.(Dr.) Vikas Mathur**

Dean Academic

MUMT, Bilaspur (C.G)

-   
Chairman

**Dr. Sumati Pathak**

Assistant Professor, Computer Science  
Government E. Raghavendra Rao  
Postgraduate Science College,  
Bilaspur, 495001, C.G.

-   
External Member

**Ms. Monika Yadav**

Assistant Professor, Computer Science  
Chouksey College of Science & Commerce,  
B Lalkhadan, Masturi Road  
Bilaspur, 495001, C.G.

-   
External Member

**Ms. Rama Soni**

Assistant Professor

Department of Computer Science & IT

MUMT, Bilaspur (C.G)



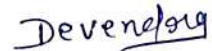
Internal Member

**Mr. Devendra Mahilange**

Assistant Professor

Department of Computer Science & IT

MUMT, Bilaspur (C.G)



Internal Member

**MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY**  
**MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)**

**Minutes of the Meeting**

1.	<p>To conduct Ph.D. program in the department of Computer Science and Information Technology under the Faculty of Engineering and Technology as per the UGC and University norms prescribed by the time</p> <p>Resolution: Approved</p>
2.	<p>Preparation and updation of Ph.D. Entrance syllabus 2024-25.</p> <p>Resolution: Approved.</p> <p>Annexure-1</p>
3.	<p>Proposal for Ph.D. (Entrance) Examination 2024-25.</p> <p>Resolution: Approved.</p>
4.	<p>Preparation and updation of Syllabus of Ph.D. Course Work 2024-25.</p> <p>Resolution: Approved.</p> <p>Annexure-2</p>
5.	<p>Proposal for Ph.D. course work examination and setting of question papers.</p> <p>Resolution: Approved.</p>
6.	<p>To propose the appointment of PhD guide or supervisor in the concerned faculty and subject as per the UGC norms.</p> <p>Resolution: Approved.</p>

**MAHARISHI UNIVERSITY OF MANAGEMENT AND TECHNOLOGY**  
**MAHARISHI ROAD, MANGLA, BILASPUR (C.G.)**

**Minutes of the Meeting**

**Prof.(Dr.) Vikas Mathur**

-

  
Chairman

Dean Academic

MUMT, Bilaspur (C.G)

**Dr. Sumati Pathak**

-

  
External Member

Assistant Professor, Computer Science  
Government E. Raghavendra Rao  
Postgraduate Science College,  
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**Ms. Monika Yadav**

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Assistant Professor, Computer Science  
Chouksey College of Science & Commerce,  
B Lalkhadan, Masturi Road  
Bilaspur (C.G)

**Ms. Rama Soni**

-

  
Internal Member

Assistant Professor

Department of Computer Science & IT  
MUMT, Bilaspur (C.G)

**Mr. Devendra Mahilange**

-

  
Internal Member

Assistant Professor

Department of Computer Science & IT  
MUMT, Bilaspur (C.G)

The members had a valuable discussion and interaction among themselves. Based on the suggestions given by the members, BOS resolved to recommend the following to the Academic Council for further approval.

1. To conduct Ph.D. program in the department of Computer Science and Information Technology under the Faculty of Engineering and Technology as per the UGC and University norms prescribed by the time
2. Preparation and updation of Ph.D. Entrance syllabus 2024-25.
3. Proposal for Ph.D. (Entrance) Examination 2024-25.
4. Preparation and updation of Syllabus of Ph.D. Course Work 2024-25.
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6. To propose the appointment of PhD guide or supervisor in the concerned faculty and subject as per the UGC norms.

Prof.(Dr.) Vikas Mathur



Dr. Sumati Pathak



Ms. Monika Yadav



Ms. Rama Soni



Mr. Devendra Mahilange



# **Annexure-1**

**Maharishi University of Management and Technology**

**Mangla, Bilaspur**



**FACULTY OF  
COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CSIT)**

**Entrance Test**

**SYLLABUS**

**2024-25**

**Doctorate of Philosophy  
Ph.D.(C.S.)**

## Subject: Computer Science

### Unit -I

**Computer Arithmetic:** Propositional (Boolean) Logic, Predicate Logic, Well-formed-formulae (WFF), I Satisfiability and Tautology. Logic Families: TTL, RTL and C-MOS gates. Boolean algebra and Minimization of Boolean functions. Flip-flops-types, race condition and comparison. Design of combinational and sequential circuits. **Representation of numbers:** Octal, Hexa Decimal, and Binary. 2's complement and 1's complement arithmetic. Floating point representation.

### Unit-II

**Object Oriented Programming and Data Structure: Object Oriented Programming Concepts:** Class, Object, Overloading, Functions parameter passing, Constructors and destructors. Inheritance, Templates, Exception Handling, Data, Information, Definition of data structure. Arrays, stacks, queues, linked lists, trees, priority queues and heaps. File Structures: Fields, records and files. Sequential, direct, index sequential, Hashing, B trees and B +trees.

### Unit-III

**Operating Systems:** Main functions of operating systems, Multiprogramming, multi-processing and multitasking, Memory Management: Virtual memory, paging, fragmentation, Scheduling: CPU scheduling, I/O scheduling, Resource scheduling/Dead lock and scheduling algorithms, Banker's algorithm for dead-lock handling.

**Data Warehousing and Mining:** Data warehouse, Architecture of a data warehouse methodology, Data modeling strategy, OLAP, OLTP, Architectural component of Data warehousing. Data Mining: Extracting models data mining techniques, classification, regression, clustering, summarization.

### Unit-IV

**Relational Database Management System:** E-R diagrams and their transformation to relational design, normalization-1NF, 2NF, 3NF, BCNF and 4NF, Limitations of 4NF and BCNF.

**SQL:** Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language(DCL) commands, Database objects like-Views, indexes, sequences, synonyms, data dictionary.

**Software Engineering:** System Development Life Cycle (SDLC): Steps, Water fall model. Prototypes, Spiral model. Software Metrics : Software Project Management. Software Design, Coding and Testing.

### Unit-V

**Computer Networks:** Network fundamentals: Local Area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Wireless Networks, Inter Networks. Reference Models : The OSI Model, TCP/IP model, Internetworking : Switch/Hub, Bridge, Router, Gateways, Concatenated virtual circuits. Tunneling, Fragmentation Firewalls, Routing: Virtual circuits and datagram. Routing algorithms, Congestion control, **Network Security:** Cryptography-public key, secret key, Domain Name System (DNS)-Electronic Mail and Worldwide Web (WWW), DNS, Name servers, E-mail architecture and Serves.

#### **Text & Reference Books:**

1. Computer System Architecture by M. Morris Mano, Pearson Education India Publication.
2. Database System Concept by A. Silberschatz, H. F. Korth and S. Sudarshan, McGraw Hill International Edition.
3. Operating System Concepts by A. Silberschatz, Peter B. Galvin and Garge Gange, Wiley Publication.
4. Software Engineering by Roger S. Pressman , McGraw Hill International Edition.
5. The Complete R, C++ by Herbert Schildt, McGraw Hill International Edition.
6. Data Structure by Seymour Lipschutz, Tata McGraw Hill Edition.
7. Data Mining Concept and Techniques, by J. Han,M. Kamber and J. Pei, Morgan Kaufmann Publication.
8. Computer Fundamentals, by Priti Sinha, Pradeep K., Sinha, BPB Publications

# **Annexure-2**

**Maharishi University of Management and Technology**

**Mangla, Bilaspur**



**FACULTY OF  
COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CSIT)**

**Course Work**

**SYLLABUS**

**2024-25**

**Doctorate of Philosophy  
Ph.D.(C.S.)**

### Course Work For Ph.D. (Computer Science)

Code	Subject	Credit
PCS2401	Research Methodology	4
PCS2402	Research Ethics	4
PCS2403	Review of Literature	4
PCS2404	New Research Trends in Computer Science	4

### PCS2404: New Research Trends in Computer Science

#### UNIT-I

Hidden Markov Models & Tagging: Markov Models, Hidden Markov Models (HMMs), Trellis Algorithm, Viterbi Algorithm. Estimating the Parameters of HMMs, The Forward-Backward Algorithm, Implementation Issues, Task of Tagging, Tag sets, Morphology, Lemmatization, Tagging Methods, Manually Designed Rules and Grammars, Statistical Methods, HMM Tagging (Supervised, Unsupervised), Evaluation Methodology (examples from tagging), Precision, Recall, Accuracy, Statistical Transformation Rule-Based Tagging, Maximum Entropy, Maximum Entropy Tagging, Feature Based Tagging, Results on Tagging, Various Natural Languages.

#### UNIT-II

Grammars & Parsing Algorithms: Introduction to Parsing, Generative Grammars, Properties of Regular and Context-free Grammars, Overview on Non-Statistical Parsing Algorithms, Simple Top Down Parser with Backtracking, Shift-Reduce Parser, Tree banks and Tree banking, Evaluation of Parsers, Probabilistic Parsing. PCFG: Best Parse, Probability of String. Statistical Parsing & Machine Translation: Lexicalized PCFG, Statistical Machine Translation (MT), Alignment and Parameter Estimation for MT.

#### UNIT - III

Introduction to Artificial Intelligence, AI Problems, AI Techniques, Problems, Problem Space and Search, Defining the problem as a state space search, Production system, Problem characteristics, Heuristic search Technologies: Generate and Test, Hill Climbing, Best First Search, Problem Reduction, means end-analysis, optimal and A\*, AND-OR Graphs, AO\* Algorithms.

#### UNIT - IV

Representation Knowledge using Predicate Logic, Representing simple facts in logic, Representing Instance and ISA relationships, Computable functions and Predicates, Resolution, Representing Knowledge using Rules, Forward Vs Backward Reasoning, Matching, Control Knowledge, Weak slot and Filter structures, Semantic nets, Frames.

#### UNIT-V

General Introduction: Learning Problems, Choosing Training experience/Target Function, Representation of the target function, issues in machine learning. Concept Learning: Concept learning Task-Inductive Learning, Concept Learning as search, FIND-S algorithm, version spaces, The List Then Eliminate algorithm, Representation of version spaces, The Candidate Elimination algorithm, Inductive bias.

## UNIT – VI

Decision Tree Learning: Decision tree representation, ID3 Learning algorithm, Entropy, Information gain, over fitting, reduced error pruning, Rule-post pruning. Bayesian Learning: Bayes' Theorem and concept Learning, Bayes optimal classifier, Bayesian Belief Network.

### REFERENCES:

1. Foundations of Statistical Natural Language Processing, Manning, C. D. and H. Schutze, The MIT Press.
2. Natural Language Understanding, Allen, J., The Benajmins /Cummings Publishing Company Inc.
3. Elements of Information Theory, Cover, T. M. and J. A. Thomas, Wiley.
4. Statistical Language Learning, Charniak, E., The MIT Press.
5. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 2/e, Pearson Education, 2010.
6. Artificial Intelligence Structures and Strategies complex problem Solving-George F. Luger Pearson Education
7. Tom M. Mitchell, Machine Learning, Mac Graw Hill
8. Christopher M. Bishop, Machine Learning and Pattern Recognition, Springer