Institute of Computer Science
Samrat Vikramaditya Vishwavidyalaya,
Ujjain (MP)

SCHEME OF

M.SC. COMPUTER SCIENCE

(Under the Faculty of Engineering Science)

TWO YEARS (4 SEMESTERS) CBCS

(FOR UTD)

(UNDER NEW EDUCATION POLICY-2025-26)

CHOICE BASED CREDIT SYSTEM (CBCS)

2025-2026 ONWARDS

Institute of Computer Science
Samrat Vikramaditya Vishwavidyalaya, Ujjain
M.Sc.(Computer Science)

Programme Objectives:

The objective of the **M.Sc.(Computer Science)** programme is to prepare graduate students for productive careers in the software industry and academia by providing an outstanding environment for teaching and research in the core and emerging areas of the discipline.

This Bachelor Degree Program has been designed with a semester approach in mind. The first year courses are aimed at skills development in computers using various technologies, the second year, provides the specialization and the project work.

The main objectives of the **M.Sc.(Computer Science)** programme includes:

- Learn various programming languages to solve real world problems from diversified python and Machine learning domain.
- To develop in depth understanding of the key concepts of computer science and to impart knowledge of problem solving techniques, database management, software engineering and Web Technology.
- Develop problem solving skills in interdisciplinary domains.
- Focus on development of advanced knowledge and specific skills required for IT industry working in the domain of AI.
- To make sustained efforts for holistic development of the students and empower them to analyze, develop, configure IT solutions keeping in view the challenges posed by changing industrial requirements.
- To develop competent computer professionals with strong ethical values.

PROGRAMME OUTCOMES (POs)

At the end of this programme, **M.Sc.(Computer Science)**student will be able to:

- Explore software, hardware, application systems and their interplay in Machine learning systems.
- Employ tools and technologies to implement Machine learning applications.
- Acquire experimental learning of algorithms and tools required for capturing, storing, managing and analyzing new language.
- Gain understanding of the key technologies Machine learning, Computer Organization, Computer Architecture, Data Communication, Web Technology, Cloud Computing, Soft computing, Artificial Intelligence and Advance Data Structures.
- Understanding the key concepts of Information Technology to improvise organizational performance.

After Completion of the programme students are able to work as-

- Language Programmer
- -Software Developer
- -Web Application Developer

SAMRAT VIKRAMADITYA VISHWAVIDYALAYA, UJJAIN MP

(Session -2025-2026 onwards)

M.Sc.(Computer Science)

Two Years (Four SEMESTERS), CBCS SCHEME (NEP)

Semester -I

S.No.	Paper code	Course Component and Name of Course	Credits			Marks		Total
			T	P	Total	Max Marks CCE Internals	Max Marks Theory Externals	
1.	MSC -11 Core-I	Computational Mathematics	5	0	5	40	60	100
2.	MSC -12 Core-II	Operating System & system software	5	0	5	40	60	100
3.	MSC -13 Core-III	Computer system Architecture and Parellel Processing	5	0	5	40	60	100
4.	MSC 14 PC-I	Data Structure Using C++	3	2	5	40	60	100
5	MSC 15	Internship/Apprenticeship/Seminar	2	0	2	50	0	50
Total Credits and marks			20	2	22	210	240	450

SAMRAT VIKRAMADITYA VISHWAVIDYALAYA, UJJAIN MP

(Session -2025-2026 onwards)

M.Sc.(Computer Science)

Two Years (Four SEMESTERS), CBCS SCHEME (NEP)

Semester -II

S.No.	Paper code	Course Component and Name of Course	Credits			Marks		Total
			T	P	Total	Max Marks CCE Internals	Max Marks Theory Externals	
1.	MSCS -21 Core-I	Theory of Computation	5	0	5	40	60	100
2.	MSCS -22 Core-II	Data Communication & Computer Network	5	0	5	40	60	100
3.	MSCS -23 Core-III	Data Base Management System	5	0	5	40	60	100
4.	MSCS- 24 PC-II	Object Oriented Programming with java	3	2	5	40	60	100
5	MSCS -25	Seminar	2	0	2	50	0	50
Total Credits and marks			20	2	22	210	240	450

SAMRAT VIKRAMADITYA VISHWAVIDYALAYA, UJJAIN MP

(Session -2025-2026 onwards)

M.Sc.(Computer Science)

Two Years (Four SEMESTERS), CBCS SCHEME (NEP)

Semester -III

S.No.	Paper code	Course Component and Name of Course	Credits			Marks		Total
			T	P	Total	Max Marks CCE Internals	Max Marks Theory Externals	
1.	MSC -31 Core-I	Cyber Security	5	0	5	40	60	100
2.	MSC -32 Core-II	Data Mining and Data Warehousing	5	0	5	40	60	100
3.	MSC -33 Core-III	Artificial intelligence & Machine Learning	5	0	5	40	60	100
4.	MSC- 34 PC-III	Python Programming/R Programming	3	2	5	40	60	100
5	MSC -35	Seminar	2	0	2	50	0	50
Total Credits and marks			20	2	22	210	240	450

SAMRAT VIKRAMADITYA VISHWAVIDYALAYA, UJJAIN MP

(Session -2025-2026 onwards)

M.Sc.(Computer Science)

Two Years (Four SEMESTERS), CBCS SCHEME (NEP)

Semester -IV

S.No.	Paper code	Course Component and Name of Course	Credits			Marks		Total
			T	P	Total	Max Marks CCE Internals	Max Marks Theory Externals	
1.	MSC -41	Dissertation	8	0	8	50	100	150
2.	MSC -42	Seminar	0	6	6	50	100	150
3	MSC -43	Viva Voce	0	8	8	50	100	150
Total Credits and marks			8	14	22	150	300	450

PART A: Introduction				
Program: M.Sc.		Class: I SEM	Year: I Year	Session: 2025-26
Subject: Computer Science				
1.	Course Code	MSC-11		
2.	Course Title	**Computational mathematics**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course-I**		
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Maths.		
5.	Course Learning Outcomes(CLO)	• Students will learn the basic concepts of sets, permutations, relations, graphs, trees. • Students will represent discrete objects and relationships using abstract mathematical structures. • Apply the Operations of Sets and use Venn Diagrams to Solve Applied Problems; • Understand, Explain and Apply the Basic Principles of Sets and Operations in Sets to Solve the Problems • Analyze Modern Problems in Computer Science and solve them Using Graphs and Trees.		
6.	Credit Value	5 Credit		
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40	

PART B: Content of the Course		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	Set Theory: Introduction, Sets and Elements, Universal Set and Empty Set, Subsets, Venn Diagrams. Relations: Introduction, Product Sets, Relations, Pictorial Representation of Relations, Composition of Relations, Types of Relations, Partial Ordering Relations.	12
II	Functions: Introduction, One-to-One, Onto, and Invertible Functions, Cardinality. Logic and Propositional Calculus: Introduction, Propositions and Compound Propositions, Basic Logical Operations, Propositions and Truth Tables, Tautologies and Contradictions. Counting: Introduction, Basic Counting Principles, Factorial Notation, Binomial Coefficients, Permutations and Combinations. Pigeon hole Principle.	12
III	Graph & Tree : Introduction, Graphs and Multigraphs, Subgraphs, Paths, connectivity, Weighted Graphs, Complete, Regular and Bipartite Graphs. Directed Graphs: Introduction, Rooted Trees, Graph Algorithms: Depth first and Breadth-	12

	First Searches. Rooted Trees, Path Lengths in Rooted Trees, Binary Search Trees. Spanning Trees, Minimum Spanning Trees.	
IV	**Statistics:** Frequency Distribution, Measure of Central Tendency: Mean, Mode, Median, Measures of variation: Mean deviation Standard Deviation,	12
V	Correlation Analysis, Karl Pearson's coefficient of Correlation, spearman's rank Correlation, regression, lines of regression	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

1. Elements of Discrete Mathematics, C.L.Liu, Second Edition, TMH
2. Discrete Mathematics and its applications, Kenneth H. Rosen, (Fifth Edition), Tata McGraw Hill Publishing Company.
3. Theory and Problems of Discrete Mathematics, Semmour Lipschutz, Marc Lipson, Second Edition, Schaum's Outline, T.M.H.

Suggestive digital platform web links:

https://www.mbacrystalball.com/blog/2015/10/09/set-theory-tutorial/
https://plato.stanford.edu/entries/set-theory/basic-set-theory.html

Part D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks: **100**
Continuous Comprehensive Evaluation (CCE): **40** Marks
University Exam (UE): **60** Marks

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	20 20 **Total Marks: 40**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	04 × 05 = 20 08 × 05 = 40 **Total Marks: 60**

PART A: Introduction			
Program: M.Sc.	Class: I SEM	Year: I Year	Session: 2025-26
Subject: Computer Science			

1.	Course Code	**MSC-12**	
2.	Course Title	**Operating Systems**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course-II**	
4.	Pre-Requisite (if any)	Students must have the basic knowledge of Computer basics.	
5.	Course Learning Outcomes(CLO)	Upon successful completion of this course, students will be able to: • Identify and describe the Services Provided by Operating Systems. • Understand and Solve Problems Involving Process Control, Mutual Exclusion, Synchronization and Deadlock. • Apply Various Approaches of Memory Management Techniques • Understand the Structure and Organization of the File System. • Implement Processor Scheduling, Synchronization and Disk Allocation Algorithms for a Given Scenario.	
6.	Credit Value	5 Credit	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40

PART B: Content of the Course		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	**Introduction to Operating Systems:** Operating system services, multiprogramming, time-sharing system, storage structures, system calls, multiprocessor system. Basic concepts of CPU scheduling, Scheduling criteria, Scheduling algorithms, algorithm evaluation, multiple processor scheduling, real time scheduling, I/O devices organization, I/O devices organization, 1/0 devices organization, I/O buffering.	12
II	**Process concept:** process scheduling, operations on processes, threads, inter-process communication, precedence graphs, critical section problem, semaphores, problems of synchronization, Deadlock problem: deadlock characterization, deadlock prevention. deadlock avoidance, deadlock detection, recovery from deadlock, Methods for deadlock handling.	12
III	**Concepts of memory management:** logical and physical address space, swapping, contiguous and Non- contiguous allocation, paging, segmentation, and paging combined with segmentation.	12
IV	Concepts of virtual memory, demand paging, page replacement algorithms. allocation of frames, thrashing, demand segmentation, Security threads protection, Intruders- Viruses-trusted system,	12
V	Disk scheduling, file concepts, file access methods, allocation methods, directory systems, file protection, introduction to distributed systems and parallel processing case study.	12

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Reading: 1. Operating System by Silberschatz. 2. Operating System by Deitel 3. Modern operating system by Tanneubacem. 4. Donovan, J.J. : System programming, Mcgraw Hill,1972
Suggestive digital platform web links: https://web.iitd.ac.in/~minati/MTL458.html https://www.cse.iitb.ac.in/~mythili/os/ https://www.youtube.com/watch?v=aCJ3YgoolHQ

Suggested equivalent online courses:
https://nptel.ac.in/courses/106/102/106102132/

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **40** Marks University Exam (UE): **60** Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	20 20 **Total Marks: 40**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	04 × 05 = 20 08 × 05 = 40 **Total Marks: 60**

PART A: Introduction			
Program: M.Sc.	Class: I SEM	Year: I Year	Session: 2025-26
Subject: Computer Science			

1.	Course Code	**MSC-13**	
2.	Course Title	**Computer System Architecture and Parallel Processing**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core- III**	
4.	Pre-Requisite (if any)	Basic knowledge of functional units of a computer system.	
5.	Course Learning Outcomes(CLO)	Upon successful completion of this course, students will be able to: • Be familiar with various measuring tools and functional units of CPU. • Be aware about architecture of microprocessor family. • Acquire knowledge of assembly language programming. • Be aware about computer arithmetic. • Understand about various types of instruction formats and addressing modes.	
6.	Credit Value	6 Credits	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks:40

PART B: Content of the Course		
Total No. of Lectures (in hours per week): 1 Hour per Day		
Total Lectures: 90 Hours		
Unit	Topics	No. of Lectures
I	Data types and Number systems, Binary number system, Octal & Hexa-decimal number system, 1's & 2's complement, Binary Fixed-Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow, Floating Point Representation, Codes, ASCII, EBCDIC codes, Gray code, Excess-3 & BCD, Error detection & correcting codes.	12
II	Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates, Boolean Algebra, Basic Boolean Law's, DeMorgan's theorem, MAP Simplification. Minimization techniques, K-Map, Sum of Product & Product of Sum. Combinational & Sequential circuits, Half Adder & Full Adder, Full subtractor, Flip -flops- RS, D, JK & T Flip-	12

	flops,Multiplexer, Demultiplexer, Encoder, Decoder	
III	. I/O Interface, Properties of simple I/O devices and their controller, isolated versus memory-mapped I/O, Modes of Data transfer, Synchronous & Asynchronous Data transfer, Handshaking, Asynchronous serial transfer, I/O Processor Auxiliary memory, Magnetic Drum, Disk & Tape, Semi-conductor memories, Memory Hierarchy, Associative Memory, Virtual Memory, Address space & Memory Space, Address Mapping, Page table, Page Replacement, Cache Memory.	12
IV	Programming and language : Relationship between Electronics & Programming. Flow Chart, Programming Language, assembly Language. Computer Architecture, Microprocessor Architecture, Microprocessor Families , 6502 family, 6800/6808 family.	12
V	Addressing Modes, Arithmetic Instruction, Logical Instructions, 8086/8088 family, Parallel Processing : Mechanism, Parallelism in uniprocessor system, Parallel Computer Structure, Architecture Classification Scheme. Pipeline and Vector Processing : Instruction and arithmetic Pipeline, SIMD Computers.	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

1. BARTEE, "Digital Computer Fundamentals " TMH Publication
2. MALVINO, " Digital Computer Electronics " TMH Publication
1. MORRIS MANO, "Computer System Architecture PHI Publication
2. Hawang, K.,Briggs, F.A. : Computer Architecture and Parallel processing, Mcgraw Hill,1985.
3. Kogg, H.: The Architecture of pipelined computers Mcgraw Hill,1981.
4. Bear, J.L.: Computer system architecture,computer sci.Press,1980
5. Evans,D.J.: Parallel processing System, Cambridge Univ.1982
6. Hockney,R.W.,Jesshope, C.R.:Parallel computers : Architecture progrmming and Algorithm, Adam.Hilger,1981.
7. Malvino , Brown : Digital Computer electronics

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **40** Marks University Exam (UE): **60** Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	20 20 **Total Marks: 40**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A): Five Short Questions Section (B): Five Long Questions	04× 05 = 20 08 ×05= 40 **Total Marks: 60**

PART A: Introduction				
Program: M.Sc.		Class: I SEM	Year: I Year	Session: 2025-26
Subject: Computer Science				
1.	Course Code	**MSC-14**		
2.	Course Title	**Data Structures Using C++**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**PC-I**		
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of C and C++		
5.	Course Learning Outcomes(CLO)	• Outline basic object-oriented design concepts. i.e., Inheritance, Polymorphism, Dynamic Method Binding etc. • Understand and implement the various data structures such as Lists, Queues. • Understand and implement various hierarchical data structures: Binary search trees, Graphs etc. • Analyses sorting and searching algorithms, and explain their relationship to data structures. • Analyses time and space complexity of algorithms. • Choose and implement appropriate data structures to solve an application problem.		
6.	Credit Value	6 credits		
7.	Total Marks	Max. Marks : 75	Min. Passing Marks: 30	

PART B: Content of the Course		
Total No. of Lectures (in hours per week): 01 Hour per day		
Total Lectures:60 Hours		
Unit	Topics	No. of Lectures
I	**Stacks and Queues:** Introduction to Data Structures, Common operations on data structures, Types of data structures, ADT Stack and its implementation in C++: various operations on stack, various polish notations-infix, prefix, postfix, conversion from one to another-using stack; evaluation of postfix expressions. Contiguous implementation of queue: Linear queue, its drawback; circular queue; various operations on queue; Evaluation of postfix expressions, ADT Queue and its implementation in C++.	12
II	**Searching algorithms:** Linked Lists: Defining & implementing linked lists with creation, insertion and deletion operations in C++, Sequential search & Binary search algorithms, Implementation in C++.	12

III	**Sorting Algorithms:** Implementation and Algorithm Analysis of Insertion sort, Selection sort, Merge Sort, Quick Sort and Bubble sort.	12
IV	**Trees:** Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary Trees, Traversal of binary trees: - In order, Preorder &Post order, Application of Binary tree, Binary Search Tree, Heap Tree, AVL Trees.	12
V	**Graphs:** Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal- Depth first & Breadth first search. **Hashing and Indexing:** Hash Table, Collision resolution Techniques, index techniques, cylinder-surface indexing, tree indexing-B-trees, trie indexing.	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

1. Date Structure: By lipschuists (Schaum's Outline Series Mcgraw Hill Publication)
2. Introduction to Data Structures and Algorithms with C ++, GLENN W.ROWE, Prentice Hall India, 2003
3. Data Structures and Algorithms, Alfred V. Aho, John E. Hopecraft, Jaffrey D. Ullman, Pearson education

Suggested Web Link:

1. **https://nptel.ac.in/courses/106102064**
2. **https://nptel.ac.in/courses/106106133**
3. **https://www.tutorialspoint.com/data_structures_algorithms/data_structures_algorithms_pdf_version.htm**

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: **75** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): **45** Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	15 15 **Total Marks: 30**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	$03 \times 05 = 15$ $06 \times 05 = 30$ **Total Marks: 45**

<table>
<tr><th colspan="5">PART A: Introduction</th></tr>
<tr><td colspan="2">Program: M.Sc.</td><td>Class: I SEM</td><td>Year: I Year</td><td>Session: 2025-26</td></tr>
<tr><td colspan="5">Subject: Computer Science</td></tr>
<tr><td>1.</td><td>Course Code</td><td colspan="3">MSCP</td></tr>
<tr><td>2.</td><td>Course Title</td><td colspan="3">Data Structure using C++</td></tr>
<tr><td>3.</td><td>Course Type (Core Course/Elective/Generic Elective/ Vocational</td><td colspan="3">PC-I</td></tr>
<tr><td>4.</td><td>Pre-Requisite (if any)</td><td colspan="3">To study this course, a student must have the basic knowledge of C and C++</td></tr>
<tr><td>5.</td><td>Course Learning Outcomes(CLO)</td><td colspan="3">After the completion of this course, a successful student will be able to do the following:
• Outline basic object-oriented design concepts. i.e., Inheritance, Polymorphism, Dynamic Method Binding etc.
• Understand and implement the various data structures such as Lists, Queues.
• Understand and implement various hierarchical data structures: Binary search trees, Graphs etc.
• Analyses sorting and searching algorithms, and explain their relationship to data structures.
• Analyses time and space complexity of algorithms.
• Choose and implement appropriate data structures to solve an application problem.</td></tr>
<tr><td>6.</td><td>Credit Value</td><td colspan="3">Practical – 2 Credits</td></tr>
<tr><td>7.</td><td>Total Marks</td><td>Max. Marks : 25</td><td colspan="2">Min. Passing Marks: 10</td></tr>
<tr><th colspan="5">PART B: Content of the Course</th></tr>
<tr><td colspan="5">No. of Lab Practicals (in hours per week): 2 hours per week</td></tr>
<tr><td colspan="5">Total No. of Lab.: 60 Hrs.</td></tr>
<tr><td></td><td colspan="3">Suggestive list of Practicals</td><td>No. of Labs.</td></tr>
<tr><td></td><td colspan="3">Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code in C, execute and test it. Students should be given assignments on following :

1. Write a C++ Program to produce the sum of Array elements.
2. Write a C++ Program for addition of two array.
3. Write a C++ Program for Push and pop operation on stack using array.
4. Write a C++ Program for Insertion and deletion operation on queue using array.
5. Write a C++ Program for Insertion and deletion operation on circular queue using array.
6. Write a C++ Program for Insertion sort.</td><td>60</td></tr>
</table>

	7. Write a C++ Program for Bubble sort. 8. Write a C++ Program for Quick sort 9. Write a C++ Program for selection sort. 10. Write a C++ Program for Linear search. 11. Write a C++ Program for Binary search. 12. Write a C++ Program for Linked List creation, insertion and deletion.	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

- J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015
- E. Balguruswamy, "C++ ", TMH Publication ISBN O-07-462038-X
- Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7

Reference Books:

- R. Lafore, 'Object Oriented Programming C++"
- N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett Learning.
- Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning.
- SartajSahani, "Data Structures, Algorithms and Applications with C++", McGraw Hill.
- Robert L. Kruse, "Data Structures and Program Design in C++", Pearson.
- D.S. Malik, "Data Structure using C++", Second edition, Cengage Learning.
- M. A. Weiss, "Data structures and Algorithm Analysis in C", 2nd edition, Pearson.
- Lipschutz,"Schaum's outline series Data structures", Tata McGraw-Hill

Suggestive digital platform web links

https://www.youtube.com/watch?v=BClS40yzssA
https://www.youtube.com/watch?v=vLnPwxZdW4Y&vl=en
https://www.youtube.com/watch?v=Umm1ZQ5ltZw

Suggested equivalent online courses

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **10Marks**		**External Assessment**: University Exam (UE) : **15 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	2 Marks	Practical record file	5 Marks
Viva	3 Marks	Viva voce practical	5 Marks
Lab Test from practical list	2 Marks	Table works/ Exercise Assigned (02) in practical exam	2 Marks
Assignments (Charts/ Model)/ Technology Dissemination/	3 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	3 Marks

Excursion/ Lab visit/ Industrial Training			
Total ***Excursion/ Lab visits/ Industrial Training is compulsory***	**10 Marks**	**Total**	**15 Marks**