

J.B. INSTITUTE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)



ACADEMIC YEAR

2013-14



COURSE PLAN

2013-14


Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Proffessor,Asst.Professor
Department:: IT

COURSE DETAILS

Name Of The Programme:: B.Tech Batch:: 2012-2016
Designation::
Year II Semester I
Department:: IT
Title of The Subject: Data Structures Subject Code 6753023
Through C++
No of Students 95

	<p style="text-align: center;">COURSE PLAN</p>	2013-14
		Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
 Designation: Assoc.Proffessor,Asst.Professor
 Department:: IT

1. TARGET

- a) Percentage Pass 100%
- b) Percentage I class 90%

2. COURSE PLAN

(Please write how you intend to cover the contents: i.e., coverage of Units by lectures, guest lectures, design exercises, solving numerical problems, demonstration of models, model preparation, or by assignments, etc.)

3. METHOD OF EVALUATION

- 3.1. Continuous Assessment Examinations (CAE 1, CAE 2)
- 3.2. Assignments / Seminars
- 3.3. Mini Projects
- 3.4.
- 3.5.
- 3.6.

4. List of

Signature of
 Date:



GUIDELINES TO STUDY THE SUBJECT

2013-14

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy

Designation: Assoc.Proffessor,Asst.Professor

Department:: IT

Guidelines for Preparing the Course:

Course Description:

The main objective of this course is to introduce students to the basic concepts of a selected language (such as C++) and the ability to write simple correct programs. Topics to be covered include: I/O, data types, function definition, visibility and storage classes, parameter passing, loops, arrays, pointers, strings, files, introducing classes and objects, constructors and destructors, function prototypes, private and public access, and class implementation. The practical part of this course is covered in the lab through exercises, practical assignments, and tutorials.

Course Objectives:

1. Arm the students with the basic programming concepts.
2. Introduce different techniques pertaining problem solving skills
3. Arm the students with the necessary constructs of C++ programming.
4. And to emphasis on guided practical sessions
- 5.To demonstrate the techniques for implementing applications using computer programs

Learning Outcomes:

1. Write clear, elementary C++ programs.
2. Understand algorithmic thinking and apply it to programming.
3. Understand problem-solving techniques.
4. Code with C++ arithmetic, increment, decrement, assignment, relational, equality and logical operators.
5. Code C++ control structures (if, if/else, switch, while, do/while, for) and use built-in data types.
6. Use standard library functions.
7. Write user-defined function definitions.
8. Understand and manipulate arrays.
9. Pass arrays to functions and pointers



COURSE OBJECTIVES

2013-14

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
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On completion of this Subject / Course the student shall be able to:

S.No.	Objectives	Outcomes
1.	Arm the students with the basic programming concepts	Write clear, elementary C++ programs
2.	Introduce different techniques pertaining problem solving skills	Understand algorithmic thinking and apply it to programming
3.	Arm the students with the necessary constructs of C++ programming	Understand problem-solving techniques
4.	And to emphasis on guided practical sessions	Code with C++ arithmetic, increment, decrement, assignment, relational, equality and logical operators
5.	To demonstrate the techniques for implementing applications using computer programs.	. Code C++ control structures (if, if/else, switch, while, do/while, for) and use built-in data types
6.	The main objective of this course is to introduce students to the basic concepts of a selected language	Use standard library functions
7.	the ability to write simple correct programs.	Write user-defined function definitions
8.	Be able to develop a structured and well-documented computer program	Understand and manipulate arrays
9.	Solve problems by using systematic approaches	Pass arrays to functions and pointers
10.	Write technical reports and present the findings	Learn team-working skills

Signature of Faculty

Date:

Note: For each of the OBJECTIVE indicate the appropriate OUTCOMES to be achieved.
Kindly refer Page 16, to know the illustrative verbs that can be used to state the objectives.



COURSE OUTCOMES

2013-14

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
 Designation: Assoc.Professor,Asst.Professor
 Department:: IT

The expected outcomes of the Course / Subject are:

S.No.	General Categories of Outcomes	Specific Outcomes of the Course
A.	An ability to apply knowledge of mathematics, science, and engineering	
B.	An ability to design and conduct experiments, as well as to analyze and interpret data	
C.	An ability to design a system, component, or process to meet desired needs within realistic Constraints such as economic, environmental, social, political, ethical, health and safety, Manufacturability and sustainability	
D.	An ability to function on multi-disciplinary teams	
E.	An ability to identify, formulate, and solve engineering problems	
F.	An understanding of professional and ethical responsibility	
G.	An ability to communicate effectively	
H.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
I.	A recognition of the need for, and an ability to engage in life-long learning	
J.	A knowledge of contemporary issues	
K.	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	

Objectives – Outcome Relationship Matrix (Indicate the relationships by ☒ mark).

Objectives \ Outcomes	A	B	C	D	E	F	G	H	I	J	K
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



COURSE SCHEDULE

2013-14

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
 Designation: Assoc.Proffessor,Asst.Professor
 Department: IT

The Schedule for the whole Course / Subject is:: Data Structures Through C++

S. No.	Description	Duration (Date)		Total No. of Periods
		From	To	
1.	Basic OOP concepts,Class Definition,Objects, ClassMembers,Access Control, Class Scope, Constructors and destructors, parameter passing methods,Inline functions, static classmembers, thispointer,friendfunctions, dynamic memory allocation and exception handling	1/7/2013	15/7/2013	8
2.	Function Overloading, Operator Overloading, Generic Programming Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes, streams I/O.	16/7/2013	29/7/2013	8
3.	Algorithms, performance analysis time complexity and space complexity. Review of basic data structures The list ADT, Stack ADT, Queue ADT,array and linked Implementations using template classes in C++. Trees Basic Terminology, Binary tree ADT,array and linked representations,traversals,threaded binary trees	30/7/2013	8/8/2013	8
4.	Dictionaries, linear list representation, skip list representation, operations insertion, deletion and searching, Hashing hash table representation, hash functions, collision resolution separate chaining, open addressing linear probing, quadratic probing, double hashing, rehashing, extendible hashing, comparison of hashing and skip lists.	12/8/2013	22/8/2013	8
5.	Priority Queues Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Heap sort,,External Sorting Model for external sorting, Multiway merge, Polyphase merge.	24/8/2013	10/9/2013	8
6.	Binary Search Trees, Definition, ADT, Implementation, OperationsSearching, Insertion and Deletion, AVL Trees, Definition, Insertion and Searching	11/9/2013	21/9/2013	8

7	B-Trees, Definition, B-Tree of order m, insertion, deletion and searching, Comparison of Search Trees Basic terminology, representations of Graphs, DFS, BFS.	23/9/2013	1/10/2013	8
8	Text Processing -Pattern matching algorithms Brute force, the Knuth Morris Pratt algorithm, Standard Tries, Compressed Tries, Suffix tries.	3/10/2013	10/10/2013	8

TEXT BOOKS :

1. Data structures, Algorithms and Applications in C++, S. Sahni, University Press (India) Pvt. Ltd, 2nd edition, Universities Press.
2. Data structures and Algorithms in C++, Michael T. Goodrich, R. Tamassia and D. Mount, Wiley student edition, seventh edition, John Wiley and Sons

Total No. of Instructional periods available for the course: 64 Hours / Periods



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - I

Regulation: R11

FACULTY DETAILS:

Name of the Faculty: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Professor,Asst.Professor
Department: IT

The Schedule for the whole Course / Subject is: Data Structures through C++

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	1/7/2013	1	Basic OOP concepts	1& 1	TB1
2	2/7/2013	2	ClassDefinition, Objects, Class Members	1& 1	TB1
3	3/7/2013	3	Access Control, Class Scope	1& 2	TB1
4	4/7/2013	4	Constructors and destructors, parameter passing methods	1& 3	TB1
5	7/7/2013	5	Inline functions, static class members	1& 3	TB1
6	10/7/2013	6	this pointer, friend functions	8& 4	TB1
7	11/7/2013	7	dynamic memory allocation and deallocation (new and delete), exception handling	4& 2	TB1
8	15/7/2013	8	exception handling and Examples	2& 3	TB1

Signature of Faculty:

Date:

- Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.
3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - II

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Professor,Asst.Professor
Department:: IT

The Schedule for the whole Course / Subject is:: Data Structures through C++

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	16/7/2013	1	Function Overloading, Operator Overloading		TB1& TB2
2	17/7/2013	2	Generic Programming Function and class templates		TB1
3	19/7/2013	3	Template class programs		TB1
4	22/7/2013	4	Inheritance basics, base and derived classes,		TB1
5	24/7/2013	5	inheritance types, base class access control		TB1& TB2
6	25/7/2013	6	runtime polymorphism using virtual functions		TB1
7	26/7/2013	7	abstract classes and example programs		TB1& TB2
8	29/7/2013	8	streams I/O.		TB1

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
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MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - III

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Proffessor,Asst.Professor
Department:: IT

The Schedule for the whole Course / Subject is:: Data Structures Through C++

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	30/7/2013	1	Algorithms, performance analysis		TB1& TB2
2	1/8/2013	2	time complexity and space complexity		TB1& TB2
3	3/8/2013	3	Review of basic data structures		TB1& TB2
4	5/8/2013	4	The list ADT,Stack ADT		TB1
5	6/8/2013	5	Queue ADT,array implementation using template class		TB1& TB2
6	7/8/2013	6	Stack and Queue linked Implementations using template classes		TB1& TB2
7	7/8/2013	7	Binary tree ADT,array and linked representations		TB1& TB2
8	8/8/2013	8	Traversals,threaded binary trees		TB1

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

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MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - IV

Regulation: R11

FACULTY DETAILS:

Name of the Faculty: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Proffessor,Asst.Professor
Department: IT

The Schedule for the whole Course / Subject is: Data Structures Through C++

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	12/8/2013	1	Dictionaries, linear list representation		TB1& TB2
2	13/8/2013	2	skip list representation		TB1
3	14/8/2013	3	operations insertion, deletion and searching of skip list		TB1& TB2
4	17/8/2013	4	Hashing ,hash table representation,		TB1
5	19/8/2013	5	hash functions, collision resolution separate chaining		TB1& TB2
6	20/8/2013	6	open addressing linear probing, quadratic probing		TB1& TB2
7	21/8/2013	7	double hashing, rehashing, extendible hashing,		TB1& TB2
8	22/8/2013	8	comparison of hashing and skip lists		TB1& TB2

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - V

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Professor,Asst.Professor
Department:: IT

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	24/8/2013	1	Priority Queues Definition		TB1& TB2
2	2/9/2013	2	ADT, Realizing a Priority Queue using Heaps		TB1& TB2
3	3/9/2013	3	Examples of Priority Queues		TB2
4	4/9/2013	4	Heap Definition, insertion, Deletion		TB1& TB2
5	5/9/2013	5	Examples of Heap sort		TB2
6	6/9/2013	6	Heap sort,External Sorting		TB1& TB2
7	10/9/2013	7	Model for external sorting		TB1& TB2
8	10/9/2013	8	Multiway merge, Polyphase merge		TB1& TB2

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

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MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - VI

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Professor,Asst.Professor
Department:: IT

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	11/9/2013	1	Binary Search Trees, Definition, ADT		TB1& TB2
2	12/9/2013	2	Implementation		TB1& TB2
3	13/9/2013	3	Operations-Searching, Insertion and Deletion		TB1& TB2
4	16/9/2013	4	Examples of Binary Search tree		TB2
5	17/9/2013	5	AVL Trees, Definition		TB1& TB2
6	17/9/2013	6	Methods Of AVL Tree		TB1& TB2
7	19/9/2013	7	Operations –Insertion and Searching		TB1& TB2
8	21/9/2013	8	Examples Of AVL tree		TB2

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - VII

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Professor,Asst.Professor
Department:: IT

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	23/9/2013	1	Trees,Definition, B-Tree of order m,		TB1
2	24/9/2013	2	B-Tree of order m, insertion		TB1& TB2
3	25/9/2013	3	B-Tree of order m, deletion and searching		TB1& TB2
4	26/9/2013	4	Comparison of Search Trees		TB1& TB2
5	27/9/2013	5	Graphs –Basic terminology		TB1& TB2
6	27/9/2013	6	representations of Graphs		TB1& TB2
7	28/9/2013	7	Graph search methods –DFS.		TB1
8	1/10/2013	8	Graph search methods –BFS.		TB1

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.



SCHEDULE OF INSTRUCTIONS

2013-14

UNIT - VIII

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi ,B.Deepthi Reddy
Designation: Assoc.Professor,Asst.Professor
Department:: IT

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal...) Page No ___ to ___
1	3/10/2013	1	Text Processing -Introduction		TB1& TB2
2	4/10/2013	2	Pattern matching algorithms-Brute force		TB1& TB2
3	5/10/2013	3	Pattern matching algorithms-Knuth Morris Pratt algorithm		TB1& TB2
4	6/10/2013	4	Examples on Pattern matching algorithms		TB2
5	7/10/2013	5	Tries-Standard Tries		TB1& TB2
6	8/10/2013	6	Tries-Compressed Tries		TB1& TB2
7	9/10/2013	7	Tries-Suffix tries.		TB1& TB2
8	10/10/2013	8	Examples on Standard Tries, Compressed Tries, Suffix tries.		TB2

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.

2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.

MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	COURSE COMPLETION STATUS	2013-14
		Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi, B.Deepthi Reddy

Subject:: Data Structures through c++

Subject Code: 6753023

Department:: IT

Actual Date of Completion & Remarks, if any

Units	Remarks	Nos. of Objectives Achieved
Unit 1	Covered the syllabus as per the course plan.	As per course plan
Unit 2	Covered the syllabus as per the course plan.	As per course plan
Unit 3	Covered the syllabus as per the course plan.	As per course plan
Unit 4	Covered the syllabus as per the course plan.	As per course plan
Unit 5	Covered the syllabus as per the course plan.	As per course plan
Unit 6	Covered the syllabus as per the course plan.	As per course plan
Unit 7	Covered the syllabus as per the course plan.	As per course plan
Unit 8	Covered the syllabus as per the course plan.	As per course plan

Signature of Dean of School

Date:

Signature of Faculty

Date:

NOTE: AFTER THE COMPLETION OF EACH UNIT MENTION THE NUMBER OF OBJECTIVES ACHIEVED.



TUTORIAL SHEETS - I

2013-14

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi B.Deepthi Reddy

Designation: Asst.Professor

Department:: IT

The Schedule for the whole Course / Subject is:: Data Structures Through C++

Date:

This Tutorial corresponds to Unit Nos.1,2,3

Time:

Q1. What is object oriented programming? How it is different from procedure-oriented programming

Q2. What are difference between Run-Time Polymorphism and compile time Polymorphism

Q3. Define Exception? Explain the exception handling Mechanism used in C++

Q4. Give List representation of binary tree and explain with program

Q5. What is inheritance? What various types of inheritance used in c++?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:



TUTORIAL SHEETS - II

2013-14

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi B.Deepthi Reddy
Designation: Assoc.Professor,Asst.Professor
Department:: IT

The Schedule for the whole Course / Subject is:: Data Structures Through C++

This Tutorial corresponds to Unit Nos.4,5,6

Date:

Time:

Q1. Define Dictionary? Differentiate Linear list and Skip list?

Q2. Define Hashing? Explain all types of Hashing Methods?

Q3. Implement Heap Sort?

Q4. Define AVL Tree? Explain all types of AVL tree?
Implement the AVL Tree?

Q5. Define Binary Search Tree? Explain it with an example?
Implement the binary search tree for all operations?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:



TUTORIAL SHEETS - III

2013-14

Regulation: R11

FACULTY DETAILS:

Name of the Faculty:: B.Madhavi B.Deepthi Reddy
Designation: Assoc.Proffessor,Asst.Professor
Department:: IT

Date:

This Tutorial corresponds to Unit Nos.7,8

Time:

Q1. What is the Difference between B-Tree and Binary Tree

Q2. Explain B-Tree of order m with example?

Q3. Define Text Processing?Give the types of Pattern matching algorithms?

Q4 Implement Brute force pattern matching algorithm ?.

Q5. What is Trie?Explain Standard Trie with example?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:



ILLUSTRATIVE VERBS FOR STATING INSTRUCTIONAL OBJECTIVES

2013-14

Regulation: R11

These verbs can also be used while framing questions for Continuous Assessment Examinations as well as for End – Semester (final) Examinations.

ILLUSTRATIVE VERBS FOR STATING GENERAL OBJECTIVES

Know

Comprehend

Understand

Apply

Analyze

Design

Generate

Evaluate

ILLUSTRATIVE VERBS FOR STATING SPECIFIC OBJECTIVES:

A. Cognitive Domain

1	2	3	4	5	6
Knowledge	Comprehension Understanding	Application of knowledge & comprehension	Analysis of whole w.r.t. its constituents	Synthesis combination of ideas/constituents	Evaluation judgement

Define	Convert	Change	Breakdown	Categorize	Appraise
Identify	Defend	Compute	Differentiate	Combine	Compare
Label	Describe (a procedure)	Demonstrate	Discriminate	Compile	Conclude
List	Distinguish	Deduce	Distinguish	Compose	Contrast
Match	Estimate	Manipulate	Separate	Create	Criticize
Reproduce	Explain why/how	Modify	Subdivide	Devise	Justify
Select	Extend	Predict		Design	Interpret
State	Generalize	Prepare		Generate	Support
	Give examples	Relate		Organize	
	Illustrate	Show		Plan	
	Infer	Solve		Rearrange	
	Summarize			Reconstruct	
				Reorganize	
				Revise	

B. Affective Domain

Adhere
Assist
Attend
Change
Develop
Help
Influence
Initiate

Resolve
Select
Serve
Share

C. Psychomotor Domain (skill development)


Bend
Calibrate
Compress
Conduct
Connect
Convert
Decrease
Demonstrate

Dissect
Draw
Extend
Feed
File
Grow
Handle
Increase

Insert
Keep
Elongate
Limit
Manipulate
Move precisely
Operate
Paint

Perform
Prepare
Remove
Replace
Report
Reset
Run
Set

Straighten
Strengthen
Time
Transfer
Type
Weigh

	LESSON PLAN Unit-1	2013-14
		Regulation: R11

Name of the Faculty: B.Madhavi B.Deepthi Reddy

Subject Data Structures Through C++

Subject Code 6753023


Unit I

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Basic OOP concepts	50mins	TB1	Lecture
2	ClassDefinition, Objects, Class Members	50mins	TB1	Lecture
3	Access Control, Class Scope	50mins	TB1	Lecture
4	Constructors and destructors, parameter passing methods	50mins	TB1	Lecture
5	Inline functions, static class members	50mins	TB1	Lecture
6	this pointer, friend functions	50mins	TB1	Lecture
7	dynamic memory allocation and deallocation (new and delete), exception handling	50mins	TB1	Lecture
8	exception handling and Examples	50mins	TB1	Lecture

On completion of this lesson the student shall be able to(Outcomes)

1. Understands the basic and practical foundations of computer science
2. how to use standard development tools to implement software solutions to problems
3. Can design, implement, evaluate, improve, and document an algorithmic solution to a problem
- 4.can implement exception handlings.

	ASSIGNMENT Unit-I	2013-14
		Regulation: R11

Assignment / Questions

1. What is object oriented programming? How it is different from procedure-oriented programming.
2. Explain the basic concepts of object-oriented programming?
3. Write notes on
 - a. Inline function
 - b. Default Arguments
4. Explain briefly about
 - c. Static data members
 - d. Static member functions
5. Explain parameter passing methods?
6. What is constructor? Explain the various type of constructors used in C++.
7. Write short notes on
 - a. Constructors with default arguments
 - b. Dynamic initialisation of objects

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Note: Mention for each question the relevant objectives and outcomes.



LESSON PLAN
Unit-II

2013-14

Regulation: R11

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Unit II

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Function Overloading, Operator Overloading	50mins	TB1& TB2	Lecture
2	Generic Programming Function and class templates	50mins	TB1	Lecture
3	Template class programs	50mins	TB1	Lecture
4	Inheritance basics, base and derived classes,	50mins	TB1	Lecture
5	inheritance types, base class access control	50mins	TB1& TB2	Lecture
6	runtime polymorphism using virtual functions	50mins	TB1	Lecture
7	abstract classes and example programs	50mins	TB1& TB2	Lecture
8	streams I/O.	50mins	TB1	Lecture


On completion of this lesson the student shall be able to

1.can implement overloading an overriding concepts

2.can design inheritance types

3.inherit the multiple inheritance

4.abstract class usage.

	ASSIGNMENT Unit-II	2013-14
		Regulation: R11

Assignment / Questions

1. Define operator overloading? How do you overload operators in c++?
2. What are the rules of operator overloading
3. What is inheritance? What various types of inheritance used in c++?
4. What is private derivation and public derivation?
5. What are virtual base classes?
6. Explain runtime polymorphism using virtual functions with example?

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Note: Mention for each question the relevant objectives and outcomes.



LESSON PLAN
Unit-III

2013-14

Regulation: R11

Name of the Faculty: B.Madhavi B.Deepthi Reddy

Subject Data Structures Through C++

Subject Code 6753023

Unit III

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Algorithms, performance analysis	50mins	TB1& TB2	Lecture
2	time complexity and space complexity	50mins	TB1& TB2	Lecture
3	Review of basic data structures	50mins	TB1& TB2	Lecture
4	The list ADT,Stack ADT	50mins	TB1	Lecture
5	Queue ADT,array implementation using template class	50mins	TB1& TB2	Lecture
6	Stack and Queue linked Implementations using template classes	50mins	TB1& TB2	Lecture
7	Binary tree ADT,array and linked representations	50mins	TB1& TB2	Lecture
8	Traversals,threaded binary trees	50mins	TB1	Lecture


On completion of this lesson the student shall be able to(Outcomes)

1.implement the stack and queue

2.can analyse the timecomplexity

3.can represent the binary tree in array and list

4.perfect tree traversals are done

	ASSIGNMENT Unit-III	2013-14
		Regulation: R11

Assignment / Questions

- 1.Explain Performance Analysis?
- 2.Implement the stack ADT?
- 3.Write C++ program to implement Queue ADT operations?
- 4.List all Traversals of Binary tree and explain with examples?
- 5.Give List representation of binary tree and explain with program?

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Note: Mention for each question the relevant objectives and outcomes.



LESSON PLAN
Unit-IV

2013-14

Regulation: R11

Name of the Faculty: B.Madhavi ,B.Deepthi Reddy

Subject Data Structures Through C++

Subject Code 6753023

Unit IV

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Dictionaries, linear list representation	50mins	TB1& TB2	Lecture
2	skip list representation	50mins	TB1	Lecture
3	operations insertion, deletion and searching of skip list	50mins	TB1& TB2	Lecture
4	Hashing ,hash table representation,	50mins	TB1	Lecture
5	hash functions, collision resolution separate chaining	50mins	TB1& TB2	Lecture
6	open addressing linear probing, quadratic probing	50mins	TB1& TB2	Lecture
7	double hashing, rehashing, extendible hashing,	50mins	TB1& TB2	Lecture
8	comparison of hashing and skip lists	50mins	TB1& TB2	Lecture


On completion of this lesson the student shall be able to (Outcomes)

1.understood the concept of dictionaries

2.can do skip list representation and operations

3.can implement hash functions

4.can compare the hashing skip lists

	ASSIGNMENT Unit-IV	2013-14
		Regulation: R11

Assignment / Questions

1. Define Dictionary? Differentiate Linear list and Skip list?
2. Explain Skiplist representation with example?
3. Implement Skiplist operations?
4. Define Hashing? Explain all types of Hashing Methods?
5. Differentiate Skiplist and Hashing?

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Note: Mention for each question the relevant objectives and outcomes.



LESSON PLAN
Unit-V

2013-14

Regulation: R11

Name of the Faculty: B.Madhavi B.Deepthi Reddy

Subject Data Structures Through C++

Subject Code 6753023

Unit V

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Priority Queues Definition	50mins	TB1& TB2	Lecture
2	ADT, Realizing a Priority Queue using Heaps	50mins	TB1& TB2	Lecture
3	Examples of Priority Queues	50mins	TB2	Lecture
4	Heap Definition, insertion, Deletion	50mins	TB1& TB2	Lecture
5	Examples of Heap sort	50mins	TB2	Lecture
6	Heap sort, External Sorting	50mins	TB1& TB2	Lecture
7	Model for external sorting	50mins	TB1& TB2	Lecture
8	Multiway merge, Polyphase merge	50mins	TB1& TB2	Lecture

On completion of this lesson the student shall be able to (Outcomes)

1.can know the difference between queue and priority queue

2.implement the heap sort

3.external storage implementation

4.differences multi way and polyphase merge



**ASSIGNMENT
Unit-V**

2013-14

Regulation: R11

Assignment / Questions

1. What is Priority queue? Explain the applications of priority queue?
2. Define Heap? Give description about Heap sort?
3. Implement Heap Sort?
4. Explain the following
 - a) External sorting
 - b) internal sorting
5. Differentiate Multiway merge, Polyphase merge?

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Note: Mention for each question the relevant objectives and outcomes.



LESSON PLAN
Unit-VI

2013-14

Regulation: R11

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Subject Data Structures Through C++

Subject Code 6753023


Unit VI

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Binary Search Trees, Definition, ADT	50mins	TB1& TB2	Lecture
2	Implementation	50mins	TB1& TB2	Lecture
3	Operations-Searching, Insertion and Deletion	50mins	TB1& TB2	Lecture
4	Examples of Binary Search tree	50mins	TB2	Lecture
5	AVL Trees, Definition	50mins	TB1& TB2	Lecture
6	Methods Of AVL Tree	50mins	TB1& TB2	Lecture
7	Operations –Insertion and Searching	50mins	TB1& TB2	Lecture
8	Examples Of AVL tree	50mins	TB2	Lecture

On completion of this lesson the student shall be able to (Outcomes)

- 1.can implement AVL tree
- 2.implement operations of AVL tree
- 3.implement Binary search tree
- 4.can differentiate all trees

	ASSIGNMENT Unit-VI	2013-14
		Regulation: R11

Assignment / Questions

1. Define Binary Search Tree? Explain it with an example?
2. Implement the binary search tree for all operations?
3. Differentiate all Trees?
4. Define AVL Tree? Explain all types of AVL tree?
5. Implement the AVL Tree?

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Note: Mention for each question the relevant objectives and outcomes.



LESSON PLAN
Unit-VII

2013-14

Regulation: R11

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Subject Data Structures Through C++

Subject Code 6753023

Unit VII

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Trees, Definition, B-Tree of order m,	50mins	TB1	Lecture
2	B-Tree of order m, insertion	50mins	TB1 & TB2	Lecture
3	B-Tree of order m, deletion and searching	50mins	TB1 & TB2	Lecture
4	Comparison of Search Trees	50mins	TB1 & TB2	Lecture
5	Graphs –Basic terminology	50mins	TB1 & TB2	Lecture
6	representations of Graphs	50mins	TB1 & TB2	Lecture
7	Graph search methods –DFS.	50mins	TB1	Lecture
8	Graph search methods –BFS.	50mins	TB1	Lecture

On completion of this lesson the student shall be able to

1. can implement B-Tree of order m, deletion and searching

2. can implement DFS

3. can implement Bfs



**ASSIGNMENT
Unit-VII**

2013-14

Regulation: R11

Assignment / Questions

1. What is the Difference between B-Tree and Binary Tree?
2. Explain B-Tree of order m with example?
3. Implement the B-Tree using template class?
4. Define Graph? Explain the graph traversal methods?
5. Implement BFS and DFS using template class?

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Note: Mention for each question the relevant objectives and outcomes.



LESSON PLAN
Unit-VIII

2013-14

Regulation: R11

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Unit VIII

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Text Processing -Introduction	50mins	TB1& TB2	Lecture
2	Pattern matching algorithms- Brute force	50mins	TB1& TB2	Lecture
3	Pattern matching algorithms- Knuth Morris Pratt algorithm	50mins	TB1& TB2	Lecture
4	Examples on Pattern matching algorithms	50mins	TB2	Lecture
5	Tries-Standard Tries	50mins	TB1& TB2	Lecture
6	Tries-Compressed Tries	50mins	TB1& TB2	Lecture
7	Tries-Suffix tries.	50mins	TB1& TB2	Lecture
8	Examples on Standard Tries, Compressed Tries, Suffix tries.	50mins	TB2	Lecture

On completion of this lesson the student shall be able to

1.can implement Knuth Morris Pratt algorithm

2.can design Brute force pattern matching algorithm

3.Can design all Trie types.



ASSIGNMENT
Unit-VIII

2013-14

Regulation: R11

Assignment / Questions

1. Define Text Processing? Give the types of Pattern matching algorithms?
2. Explain Knuth Morris Pratt Algorithm with an example?
3. Implement Brute force pattern matching algorithm ?
4. What is Trie? Explain Standard Trie with example?
5. Differentiate Standard, compress, suffix Trie?

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Note: Mention for each question the relevant objectives and outcomes.