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SACRED HEART COLLEGE (AUTONOMOUS)

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A Don Bosco Institution of Higher Education, Founded in 1951 * Affiliated to Thiruvalluvar University, Vellore * Autonomous since 1987

Accredited by NAAC (4th Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Sacred Heart College (Autonomous), Tirupattur – 635 601

Attainment of Programme Outcome

B.SC COMPUTER SCIENCE

Mapping of Problem Solving Techiques Course

Programme: B.Sc Computer Science		SEM	I			
Course Code	PROBLEM SOLVING TECHNIQUES	Hours	Credits			
CS120		3	3			
Learning Objectives	<p>The Course aims to</p> <ul style="list-style-type: none"> To develop problem solving skills with top down design principles. To become competent in algorithm design and program implementation. To develop skills to apply appropriate standard methods in problem solving. To appreciate the logic behind every problem. To learn the use of appropriate data structures while developing an algorithm for a problem. 					
Blue Print of the Question Paper	Section	Unit-I	Unit-II	Unit-III	Unit-IV	Unit-V
	Section-A	1-2	3-4	5-6	7-8	9-10
	Section-B	11 (a) Theory (OR) (b) Theory	12(a) Theory (OR) (b) Theory	13(a) Theory (OR) (b) Algorithm	14(a) Theory (OR) (b) Algorithm	15(a) Theory (OR) (b) Algorithm

	Section-C	16. Theory	17. Theory	18. Theory	19. Program	20. Program
UNIT	CONTENTS					HOURS
I	INTRODUCTION TO COMPUTER PROBLEM SOLVING Introduction – Problem Solving Aspect – Implementation of Algorithms – Program verification – Efficiency of Algorithms – Analysis of Algorithms.					10
II	FUNDAMENTAL ALGORITHMS Exchanging the Values of Two Variables – Counting – Summation of a Set of Numbers – Factorial Computation – Generation of the Fibonacci Sequence – Base Conversion.					10
III	FACTORING METHODS Finding the Square Root of a Number – Smallest Divisor of an Integer – GCD of Two Integer – Generating Prime Numbers – Generation of Pseudo-Random Numbers.					9
IV	ARRAY TECHNIQUES Array Order Reversal – Finding Maximum Number in a Set – Removal of Duplicates from an Ordered Array.					8
V	MERGING, SORTING AND SEARCHING Two-way Merge, Sorting by Exchange, Binary Search, Hash Searching.					8
Teaching Resources	i. Textbook 1. Dromey R G, "How to Solve it by Computer", Dorling Kindersley India Pvt.Ltd, Pearson Education :2007. Unit - I : Ch. 1.1, 1.2, 1.4, 1.5, 1.6, 1.7 Unit - II : Ch. 2.1, 2.2, 2.3, 2.4, 2.6, 2.8. Unit - III : Ch. 3.1, 3.2, 3.3, 3.4, 3.6. Unit - IV : Ch. 4.1, 4.3, 4.4.					

	<p>Unit - V : Ch. 5.1, 5.3, 5.7, 5.8</p> <p>ii. References</p> <ol style="list-style-type: none"> 1. Michael Schneider, Steven W. Weingart, David M. Perlman, "An Introduction to Programming and Problem Solving with Pascal", Wiley Eastern Limited, New Delhi:1982. 2. Harold Abelson and Gerald Sussman with Julie Sussman, "Structure and Interpretation of Computer Programs", MIT Press:1985. 3. Ronald A. Pasko, "Problem Solving Basics and Computer Programming", Jones And Bartlett Publishers, 2nd Edition:2001. <p>iii. Web References</p> <p>(i) Online Tutorial</p> <ol style="list-style-type: none"> 1. http://nptel.ac.in/courses/106104074/ 2. http://javahungry.blogspot.com/2014/06/algorithm-problem-solving-techniques-or-approaches-for-software-programmer.html <p>(ii) Online Quiz</p> <ol style="list-style-type: none"> 1. https://www.tutorialspoint.com/cplusplus/cpp_online_quiz.htm 2. http://www.withoutbook.com/OnlineTestStart.php?quizId=11 <p>(iii) Online Compiler</p> <ol style="list-style-type: none"> 1. https://www.tutorialspoint.com/compile_cpp11_online.php 2. https://www.codechef.com/ide 	
Course Outcomes	On completion of the course, students should be able to	
	C01: Develop programming techniques required to solve a given problem.	K1, K2
	C02: Develop problem solving skill using top – down design principles.	K2
	C03: Design an algorithm for a problems that requirement various mathematical techniques along with suitable data structures.	K1, K3
	C04: Develop techniques to handle array structures.	K4
C05: Develop techniques such as searching and sorting.	K5	

CO/PO	PO								PSO						
	1	2	3	4	5	6	7	Avg	1	2	3	4	5	6	Avg
CO1	3	2	1	2	3	2	1	2	3	2	1	1	2	2	1.83
CO2	3	3	1	3	3	3	1	2.42	3	3	3	3	1	2	2.5
CO3	3	3	1	3	3	3	1	2.42	3	3	3	2	2	3	2.66
CO4	3	3	1	3	3	3	1	2.42	3	3	3	3	2	3	2.83
CO5	3	3	1	3	3	2	1	2.28	3	3	2	3	3	3	2.83
PO Mean								2.30	PSO Mean						2.53
Strength of Correlation of PO Mean							Moderately Correlating		Strength of Correlation of PSO Mean					Strongly Correlating	

Programme: B.Sc., Computer Science

Sem	Course Code	Course Title	PO1	PO 2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO 5
1	CS120	Problem Solving Techniques	2	2.4 2	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83
1	CS121	Web Development Using HTML	2.29	2.2 9	2.43	2.43	2.43	2.16	2.16	2.33	2.33	2.5
1	PCS108	Practical -I: Web Development Using HTML	2	2.4 2	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83
2	CS221	Digital Computer Fundamentals	2.14	2.1 4	2.14	2.14	2.14	2.33	2.33	2.33	2.33	2.33
2	CS222	Programming Using C										
2	PCS212	Practical -II: Programming Using	2	2.4 2	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83
3		Computer Organization And Architecture	2.14	2.1 4	2.14	2.14	2.14	2.33	2.33	2.33	2.33	2.33
3		Data Structures and Algorithms Using C	2.42	2.2 8	2.42	2.14	2.42	2.16	2.66	2.5	2.33	2.5
4	PCS309	Practical -III: Data Structures And Algorithms Using C	2.14	2.2 8	2.14	2.14	2	2.16	2.16	2.33	2.66	2.83
4	CS422	Software Engineering	2.42	2.2 8	2.57	2	2.28	2.16	2.5	2.66	2.33	2.83
4	CS423	Relational Database Management Systems	2.28	2.2 8	2.28	2.28	2.28	2.33	2.5	3	3	3
4	PCS412	Practical -IV: Relational Databases Management Systems	2.42	2.4 2	2.42	2.42	2.42	3	3	3	3	3
5	CS540	Programming Using Java	2.57	2.5 7	2.57	2.57	2.57	2.83	2.83	2.83	2.83	2.83
5	CS541	Web Development Using XML	2	2.4 2	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83
5	CS542	Programming Using PHP	2	2.4 2	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83
5	CS4543	Operating Systems	2.14	2.4 2	2.57	2.57	2.42	2.33	2.33	2.83	2.5	2.5
5	CS544 A / B / C / D	Elective I : Computer Graphics / Data Mining And Warehousing / Decision Support System / Software Testing And Quality Assurance	2	2.4 2	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83

5	PCS515	Practical -V :Programming Using Java	2.57	2.57	2.57	2.57	2.57	2.67	2.67	2.67	2.67	2.67
5	PCS516	Practical -VI :Web Development Using XML	2	2.42	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83
5	PCS517	Practical -VII :Programming Using PHP	2	2.42	2.42	2.42	2.28	1.83	2.5	2.66	2.83	2.83
6	CS633	Mobile Applications Development	2.28	2.28	2.28	2.28	2.28	2.33	2.5	3	3	3
6	CS634	Linux and Shell Programming	2.42	2.42	2.42	2.42	2.42	2.28	2.28	2.28	2	2.5
6	CS635	Programming Using Python	2	2	2	2	2	2	2	2	2	2
6	CS636	Microprocessor Using 8086/88	2.57	2.57	2.57	2.57	2.57	2.67	2.67	2.67	2.67	2.67
6	CS637 A / B / C /D	Elective II :Computer Networks / Software Project Management / Security Systems / Cognitive Computing	2.42	2.42	2.42	2.42	2.28	2.5	2.66	2.66	2.66	2.66
6	PCS627	Practical - VIII :Mobile Applications Development	2.42	2.42	2.42	2.42	2.42	3	3	3	3	3
6	PCS628	Practical -IX :Programming Using Python	2	2	2.14	2	2	2	2	2	2	2
6	PCS629	Practical -X :Linux and Shell Programming/Microprocessor Using 8086/88	2.57	2.57	2.57	2.57	2.57	2.67	2.67	2.67	2.67	2.67
		Average Correlation	2.23	2.3	2.38	2.34	2.31	2.22	2.4	2.6	2.6	2.68
		Mean Overall Score	2.42	The POs and PSOs are strongly correlated with the Cos of the programme								

Master of Computer Applications (MCA)

Mapping of MCA160T - ENTERPRISE APPLICATIONS WITH JAVA

MCA160T

ENTERPRISE APPLICATIONS WITH JAVA

4-1-0-0:100

Introduction

This course will enable you to build desktop application using Swing components. Provide a sound foundation to the students on the concepts, precepts and practices, in a field that is of immense concern to the industry and business. This course will cover web technologies in Java and Struts 2 framework.

Prerequisite

Class and Objects – Inheritance – Interface – Package – Exception Handling – Multi Threading – I/O Streams

Course Outcomes

At the end of this course, the students will be able to

CO. No.	CO- Statement	Cognitive Level
CO 1	Discover and Apply various components and technologies used in Java platform	K1,K3
CO 2	Describe, Understand and adapt the basics of JSTL tags and EJB.	K1,K2,K6
CO 3	Apply AWT and Swing components to design GUI	K3,K6
CO 4	Examine and develop Client-Server programs using Socket, RMI and Servlet.	K4,K6
CO 5	Distinguish and Choose the Struts 2 framework for building Java EE applications.	K2,K5
CO 6	Device and Construct a well-structured MVC web application using Servlet and JSP.	K4, K6

Mapping of CO with PO and PSO

CO	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
1	3	3	3	3	2	3	3	3	3	2	2.8
2	3	3	3	3	2	3	3	3	3	2	2.8
3	3	3	3	3	2	3	3	3	3	2	2.8
4	3	3	3	3	2	3	3	3	3	2	2.8
5	3	3	3	3	2	3	3	3	3	2	2.8
6	3	3	3	3	3	3	3	3	3	2	2.8

Mean Overall Score	2.8
Result	High

Assessment Pattern

Bloom's Category	CA Tests (Marks Allotment)		Term End Exam (100) Marks Allotment
	I CA (50)	II CA (50)	
Remember	10	10	20
Understand	10	10	30
Apply	10	10	10
Analyze	10	10	10
Evaluate	5	5	10
Create	5	5	20

Participatory Assessment

- Application development using Swing components with JDBC.
- Establish client server applications using RMI and Servlet
- Design application using MVC pattern in JSP
- Application development using Struts 2 with JDBC

Course Content

1. ADVANCED JAVA

Java Collections: Collection Interface, List, Set, ArrayList, LinkedList, HashSet, Map, HashMap – Applet: Life Cycle, Applet Class, Execution of a Simple Applet – AWT : Events, Listeners, UI Component Classes, Layout, Windows and Frames, Menus, Dialogs, Mouse Events and Listeners- Swing – Swing Components, Swing with JDBC.

2. SOCKET, OVERVIEW OF J2EE, RMI AND SERVLET

Sockets: Ports, TCP, Server Socket Class with examples, UDP approach with examples – RMI: Introduction, Remote Interface, RMI Server Package, Naming Class, RMI Security Manager Class, Exception, Steps to create RMI application, Example Programs- Servlet: Servlet Basics, Handling the Client Request, Servlet with JDBC- Handling Cookies - Session Tracking.

3. JAVA SERVER PAGES

Overview of JSP Technology - JSP Scripting Elements - The JSP page Directive - Including Files and Applets – Java Beans - Integrating Servlets and JSP using MVC Architecture, Program using JSP, Servlet, MVC with JDBC.

4. JSTL, ENTERPRISE JAVA BEAN

JSTL Tags : Core Tags, SQL Tags – Enterprise Java Bean : Introduction to Enterprise Beans: Session Bean, Entity Bean, Message driven Bean, clients access with interfaces, life cycle of enterprise Bean, Creation of Enterprise Bean with example programs.

5. STRUTS 2.0

Struts 2 Framework - Declarative architecture - Simple Struts 2 program - Struts 2 actions-
Struts tags-Exploring the validation framework- Internationalization - Advanced action using JDBC connection.

TEXT

UNIT 1, 2: Muthu C, "Programming with Java", 2nd Edition, McGraw-Hill Education, 2010.

UNIT 3: Marty Hall, Larry Brown, "Core Servlets and Java Server Pages", 2nd Edition, Pearson Education, 2004.

UNIT 4: Stephanie Bodoff etl, "The J2EETM Tutorial", Pearson Education, 2005.

UNIT 5: Donald Brown, Chad Michael Davis, Scott Stanlick, "Struts 2 in Action", 2008.

WEB REFERENCE

www.roseindia.net, www.javapassion.com, www.r4r.co.in, www.java2.com, www.javatutorial.com

Programme : M.C.A

Sem	Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
1	MCA160T	Enterprise Applications with JAVA	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
1	MCA161T	Scripting Technology	2.3	2.4	2.1	2.1	2.1	2.4	2.4	2.3	2.1	2.1
1	MCA162T	Optimization Techniques	2.4	2.6	2.5	2.4	2.3	2.5	2.5	2.4	2.3	2.5
1	MCA163T	Software Testing and Quality Assurance	2.4	2.1	2.1	2.1	2.4	2.4	2.3	2.1	2.4	2.3
1	MCA164I	Pure Practical : Open Source Database Management System	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
1	MCA165P	Practical : JAVA	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
2	MCA260T	Enterprise Applications with .Net	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
2	MCA261T	Computer Graphics	2.4	2.6	2.5	2.4	2.3	2.5	2.5	2.4	2.3	2.5
2	MCA262T	Design and Analysis of Algorithms	2.4	2.6	2.5	2.4	2.3	2.5	2.5	2.4	2.3	2.5
2	MCA263A	Elective I - Artificial Intelligence	2.4	2.1	2.7	2.1	2.7	2.4	2.5	2.1	2.4	2.3
2	MCA263B	Elective I - Internet of Things	2.5	2.6	2.1	2.8	2.4	2.8	2.3	2.5	2.4	2.6
2	MCA264I	Pure Practical : Android Application Development	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
2	MCA265P	Practical : .Net	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
2	MCA266P	Practical : Computer Graphics	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
3	MCA360T	Python Programming	2.5	2.6	2.1	2.8	2.4	2.8	2.3	2.5	2.4	2.6
3	MCA361T	Blockchain Technology	2.6	2.5	2.7	2.5	2.4	2.4	2.3	2.5	2.6	2.3
3	MCA362T	Open Source Frameworks	2.4	2.4	2.6	2.3	2.4	2.4	2.3	2.6	2.4	2.5
3	MCA363A	Elective II - Cloud Computing	2.4	2.5	2.1	2.1	2.4	2.4	2.3	2.5	2.4	2.4
3	MCA363B	Elective II - Social Network Analysis	2.5	2.6	2.5	2.1	2.4	2.4	2.3	2.6	2.4	2.3

3	MCA364A	Elective III – Enterprise Resource Planning	2.6	2.5	2.7	2.5	2.4	2.4	2.3	2.5	2.6	2.3
3	MCA364A	Elective III – Big Data	2.4	2.2	2.1	2.4	2.4	2.4	2.3	2.7	2.8	2.5
4	MCA466A	Elective IV – Data Analytics with Programming	2.4	2.4	2.6	2.3	2.4	2.4	2.3	2.6	2.4	2.5
4	MCA466B	Elective IV – Data and Information Security	2.4	2.4	2.7	2.9	2.4	2.4	2.3	2.6	2.4	2.4
4	MCA467A	Elective V – Data Mining Techniques	2.5	2.4	2.1	2.7	2.4	2.4	2.3	2.4	2.4	2.5
4	MCA467B	Elective V – Game Programming	2.4	2.3	2.6	2.1	2.4	2.4	2.3	2.1	2.4	2.5
4	MCA468J	Software Project II	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
		Average Score	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.5	2.5	2.5
		Mean Overall Score	2.45	Hence the PO, PSOs strongly correlate with overall courses								

Mapping of CO with PO and PSO

CO	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
1	3	3	3	3	2	3	3	3	3	2	2.8
2	3	3	3	3	2	3	3	3	3	2	2.8
3	3	3	3	3	2	3	3	3	3	2	2.8
4	3	3	3	3	2	3	3	3	3	2	2.8
5	3	3	3	3	2	3	3	3	3	2	2.8
6	3	3	3	3	3	3	3	3	3	2	2.8
Mean Overall Score											2.8
Result											High