COURSE OUTLINE

Course Code: SCJ4363
Course Name: Software Project Management
Total Contact Hours: 42 hours
Course Pre-requisite: None

SYNOPSIS

Students will study the software project planning, cost estimation and scheduling, project management tools, factors influencing productivity and success. Students will also learn productivity metrics, analysis of options and risks, software process standards and process implementation, software contracts and intellectual property and approaches to maintenance and long term software development.

LEARNING OUTCOMES

By the end of the course, students should be able to:

No.	Course Learning Outcome	Programme Learning Outcome(s) Addressed	Assessment Methods
1.	Describe and apply advanced data structures and algorithms design techniques to solve computational problems.	PO1 (C3, A2, P1)	Q, A, T
2.	Design and implement simple programs in an object-oriented language demonstrating the use of the advanced data structure concepts.	PO2 (C5, P4, A2) PO3 (CTPS2, CTPS3).	A, LB
3.	Analyze the complexity of algorithms and the performance of the algorithms and data structure.	PO1 (C4, P2, A3),	T, F
	(T – Test ; Q – Quiz;A – Assignment; LB – Lab; F – Final Exam)		

STUDENT LEARNING TIME

Teaching and Learning Activities			Student Learning Time (hours)	
Face to face Learning	• Lecturer Centered	Lecture	24	
	• Student Centered	- Practical/Lab/Tutorial	13	
		- Student Centered Activity	5	
	• Others		0	
	Sub Total			42
Self Learning	• Non Face to face or Student Centered Learning (SCL)		34	
	• Revision		14	
	• Assessment Preparation		20	
	• Others		0	

	Sub Total		68
Formal Assessment	• Continuous Assessment	7	
	• Final Examination	3	
	• Others	0	
	Sub Total		10
TOTAL SLT			**120**

TEACHING METHODOLOGY

E-learning, Lecture and Discussion, Lab Activities, Co-operative Learning, Mini Project, Presentation, Independent Study

WEEKLY SCHEDULE

Week	Topic	Activities/hours
Week 1	**1.0 Data Structure** 1.1 Problem Solving 1.2 Types of Data Structure 1.3 Data Structure Applications	Lecture : 2 hours Tutorial : 1 hour Assessment: Nil
Week 2	**2.0 Algorithm Complexity Analysis** 2.1 Big-O Notation 2.2 The best, average and worst cases 2.3 Amortized complexity 2.4 NP-Completeness, NP-hard 2.5 Recurrence equation	Lecture : 2 hours Tutorial: 1 hour Assessment: Nil
Week 3 - 6	**3.0 Search Structures** **4.0 Binary Search Tree** 4.1 AVL Trees 4.2 Splay Trees 4.3 B-Trees	Lecture : 4 hours Lab Activity : 2 hours Assessment: Nil Assessment: **Quiz**
Week 7 - 8	**5.0 Hashing** 5.1 Hash function 5.2 Seperate chaining 5.3 Open Addressing 5.4 Rehashing	Lecture : 2 hours Lab Activity : 1 hours **Assessment:** Assignment 1
Week 9 - 10	**6.0 Heap Structures** 6.1 Nim-max heaps, Binomial heaps, 6.2 Fibonacci heaps, skew heaps 6.3 Algorithms 6.4 Application 6.5 Binomial Queues	Lecture : 2 hours Lab Activity : 2 hour Student Centred learning : 2 hour
Week 11 - 12	**6.0 Advanced Sorting** 6.1 Indirect Sorting 6.2 A general lower bund for sorting 6.3 Bucket Sort 6.4 External Sorting	Lecture : 4 hours Lab Activity : 2 hours Assessment: **Test 1**
Week 13	**8.0 Graph Algorithms** 8.1 Terminology 8.2 Operations 8.3 Storage 8.4 Algorithms 8.5 Networks	Lecture : 4 hours Lab Activity : 2 hours Assessment: **Quiz** **Assessment:** Assignment 2

Week 12-13	**9.0 Algorithms Design Techniques** 9.1 Greedy Algorithms 9.2 Divide and Conquer 9.3 Dynamic Programming 9.4 Randomized Algorithms 9.5 Backtracking Algorithms	Lecture : 4 hours Tutorial: 2 hours Assessment: Nil
Week 14	**Project Presentation**	Student Centred learning : 3 hours Assessment: Assignment 2 Submission and presentation
Week 15	**STUDY WEEK**	
Week 16	**EXAMINATION WEEK**	Assessment: **Final Exam**

REFERENCES :

1. Weiss M. A., *"Data Structures and Algorithm Analysis in C++"* (Third Edition), Addison-Wesley, 2007.
2. Richrd F. Gilberg and Behrouz A. Forouzan, "*Data Structures A Pseudocode Approach With C++"*, Brooks/Cole Thomson Learning, 2001.
3. Frank M Carano, *"Data Abstraction and Problem Solving with C++",* Walls and Mirrors, Prentice Hall, 2007.
4. Drozdek, A., *"Data Structures and Algorithms in C++",* 3rd Edition, Course Technology, 2005.
5. Michael T. Goodrich, Roberto Tamassia David M. Mount, *"Data Structures and Algorithms in C++"*, 2nd Edition, 2011.

GRADING

No.	Assessment	Number	% each	% total
1	Assignments	2	10%	20
2	Quizzes	2	5%	10
3	Test 1	1	20%	20
4	Lab Exercises or tutorial (Problem solving)	4	2.5%	10
4	Final Exam	1	40%	40
	Overall Total			**100**