Nallamuthu Gounder Mahalingam College (Autonomous)

Pollachi

Department of Computer Technology

Scheme of Examination

Part	Subject Code	Subject	Ins. Hours Per Week	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTER I								
I	20 UTL 101	TAMIL - I	6	3	30	70	100	3
	20 UHN 101	HINDI - I						
II	20 UEN 101	ENGLISH - I	5	3	30	70	100	3
III	20 UCT 101	CORE I: PROGRAMMING IN C	4	3	30	70	100	3
	20 UCT 102	CORE II: DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION	4	3	30	70	100	3
	20 UCT 1A1	ALLIED I: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE	5	3	30	70	100	4
	20 UCT 103	LAB - I :PROGRAMMING IN C	4	3	20	30	50	2
IV	20 UHR 101	HUMAN RIGHTS	1	2	-	50	50	2
	20 HEC 101	HUMAN EXCELLENCE-PERSONAL VALUES & SKY YOGA PRACTICE-I	1	2	25	25	50	1
V	EXTENSION ACTIVITIES - ANNEXURE I		-					
TOTAL			30	-	170	480	650	21
SEMESTER II								
I	20 UTL 202	TAMIL - II	6	3	30	70	100	3
	20 UHN 202	HINDI - II						
II	20 UEN 202	ENGLISH - II	5	3	30	70	100	3
III	20 UCT 204	CORE III: OBJECT ORIENTED PROGRAMMING WITH 'C++'	4	3	30	70	100	3
	20 UCT 205	CORE IV: DATA STRUCTURES	4	3	30	70	100	3
	20 UCT 2A2	ALLIED II: DISCRETE MATHEMATICS	4	3	30	70	100	4
	20 UCT 206	LAB - II : PROGRAMMING IN C++ WITH DATA STRUCTURES	4	3	20	30	50	2
IV	20 EVS 201	ENVIRONMENTAL STUDIES	2	2	-	50	50	2
	20 HEC 202	HUMAN EXCELLENCE - FAMILY VALUES & SKY YOGA PRACTICE - II	1	2	25	25	50	1
V	EXTENSION ACTIVITIES - ANNEXURE I		-					
TOTAL			30	-	170	480	650	21

Part	Subject Code	Subject	Ins.Hours Per Week	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTER III								
III	20 UCT 307	CORE V: JAVA PROGRAMMING	5	3	30	70	100	4
	20 UCT 308	CORE VI: DATABASE MANAGEMENT SYSTEM	5	3	30	70	100	4
	20 UCT 309	CORE VII: OPERATING SYSTEMS	5	3	30	70	100	4
	20 UCT 3A3	ALLIED III: MICRO PROCESSOR AND ITS APPLICATIONS	5	3	30	70	100	4
	20 UCT 310	LAB - III :JAVA PROGRAMMING	4	3	20	30	50	2
	20 UC T311	LAB IV: DATABASE MANAGEMENT SYSTEM	4	3	20	30	50	2
IV	20 HEC 303	HUMAN EXCELLENCE - PROFESSIONAL VALUES & SKY YOGA PRACTICE - III	1	2	25	25	50	1
	20 UCT 3N1/ 20 UCT3N2	SKILL BASED NON- MAJOR ELECTIVE I - HTML LAB / MULTIMEDIA LAB	1	2	-	50	50	2
V	EXTENSION ACTIVITIES - ANNEXURE I		-					
TOTAL			30	-	165	435	600	23
SEMESTER IV								
III	20 UCT 412	CORE VIII: ADVANCED JAVA PROGRAMMING	5	3	30	70	100	4
	20 UCT 413	CORE IX: SOFTWARE ENGINEERING	5	3	30	70	100	4
	20 UCT 414	CORE X: DATA COMMUNICATION AND NETWORKS	5	3	30	70	100	4
	20 UCT 4A4	ALLIED IV: BIG DATA ANALYTICS	5	3	30	70	100	4
	20 UCT 415	LAB - V: ADVANCED JAVA PROGRAMMING	4	3	40	60	100	4
	20 UCT 416	LAB - VI : SOFTWARE ENGINEERING AND TESTING	4	3	40	60	100	4
IV	20 HEC 404	HUMAN EXCELLENCE - SOCIAL VALUES & SKY YOGA PRACTICE - IV	1	2	25	25	50	1
	20 UCT 4N3/ 20 UCT4N4	SKILL BASED NON-MAJOR ELECTIVE II - OFFICE AUTOMATION LAB / CORELDRAW LAB	1	2	-	50	50	2
V	EXTENSION ACTIVITIES - ANNEXURE I		-	-	-	50	50	1
TOTAL			30	-	205	545	750	28

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT205	Title	Batch:	2020-23
		CORE IV: DATA STRUCTURES	Semester	II
Hrs/Week:	04		Credits:	03

Course Objective

To understand the concepts of array, stack, queue, list, linked list, tree and their computer applications.

Course Outcomes (CO)

K1	CO1	To remember arrays, stack/queue operations and trees
K2	CO2	To understand and develop skills to analyze simple linear and non linear data structures
K3	CO3	To apply the concept of linked lists, graphs and trees for the real world problems
K4	CO4	To evaluate file organizations, various searching and sorting methodologies

Syllabus

Unit - I **[10 Hours]**

Introduction - Definition – Structure and properties of Algorithms – Development of an Algorithm – Data structures and Algorithms – Data structure – Definition and Classification. **Arrays:** Introduction – *Array Operations** - Number of elements in an array, representation of Arrays in Memory, Applications.

Unit - II **[10 Hours]**

Stacks: Introduction – Stack Operations – Applications .**Queues:** Circular Queues – Other types of Queues – Applications.

Unit - III **[10 Hours]**

Linked Lists: Introduction – Singly Linked Lists – Circular Linked Lists – Doubly Linked Lists – Applications.

Unit - IV **[11 Hours]**

Trees: Introduction – Trees – Basic Terminologies - Representation of Trees. **Binary Trees:** Basic Terminologies and Types - Representation of Binary Trees - Binary Tree Traversals – Applications. **Graphs:** Introduction – Definition and basic Terminologies.

Unit – V **[11 Hours]**

File Organizations: Introduction – Files - Keys – Basic File Operations – Sequential File Organizations – Indexed sequential File Organizations – Direct File Organizations. **Searching:** *Linear search** – Binary search. **Sorting:** Merge sort and Quick sort.

Note: **Italicized* texts are for self study

Power point Presentations, Group Discussions, Seminar, Quiz, Assignment

Books for Study

1. GAV Pai, (2011), "Data Structures and Algorithms – Concepts, Techniques and Applications", Tata MCGrawHill Publications, ISBN-13: 978-0-07-066726-6.

Books for Reference

1. Aaron M Tanenbaum, Yedidyeh langsam, Moshe J Augenstein,(2018) "Data Structure using C", Facsimile Edition, Pearson India, ISBN-13: 978-8131702291.

2. Ashok N Kamthane, (2009), "Programming and Data Structures", Pearson Education, 1st Indian Print, ISBN-13: 978-8131724224.

3. https://www.syncfusion.com/resources/ebooks/datastructurespart1

4. https://www.syncfusion.com/resources/ebooks/datastructurespart2

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M
CO2	H	M	M	H	H
CO3	M	M	H	M	M
CO4	M	H	L	M	M

H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. C. Keerthana Signature:	Name: Ms. C. Keerthana Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Muthukumaran Signature:

Head of the Department
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Dr. R. MUTHUKUMARAN
Controller of Examinations
NGM. College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT308	Title	Batch:	2020 - 23
		CORE VI: DATABASE MANAGEMENT SYSTEM	Semester	III
Hrs/Week:	05		Credits:	04

Course Objective

To introduce the fundamental concepts of Relational DBMS using ORACLE.

Course Outcomes (CO)

K1	CO1	To keep in mind relationships, Normal forms, Basic DDL Commands, DML Commands, Grouping Functions using SQL
K2	CO2	To comprehend deep knowledge about the basics of SQL and construct queries using ORACLE
K3	CO3	To apply joins and set operators, control structures and embedded SQL for data management and retrieval techniques
K4	CO4	To analyze the basic issues of transaction processing, concurrency control and understand the importance of PL/SQL Cursors and Exceptions

Syllabus

Unit - I **[13 Hours]**

Database Concepts – A Relational approach: Database – Relationships – DBMS – The Relational Data Model – Integrity Rules – Theoretical Relational Languages. **Database Design: Data Modeling and Normalization:** Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams –De Normalization.

Unit - II **[13 Hours]**

Oracle9i: An Overview: Personal Database – Client/Server Databases - Oracle9i: An

Introduction – The SQL *Plus Environment – SQL – Sample Databases. **Oracle Tables: Data Definition Language (DDL)**: Naming Rules and Conventions – Data Types – Constraints – Create, Display, Alter, Drop, *Rename and Truncating Oracle Table** .

Unit - III **[13 Hours]**

Working with Tables: Data Management and Retrieval: DML – Adding a New Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from a Table – Arithmetic Operations – Restricting Data with a WHERE clause – Sorting. **Functions and Grouping**: Built-In functions – Grouping Data.

Unit - IV **[13 Hours]**

Multiple Tables: Joins and Set operators: Join – Set Operators. **PL/SQL – A Programming Language:** History – Fundamentals of PL/SQL – PL/SQL Block Structure – Comments – Data Types – *Other Data Types** – Variable Declaration – Anchored Declaration – Assignment Operation – Substitution Variables – Printing – **Control Structures and Embedded SQL**: Control Structures – SQL in PL/SQL – Data Manipulation – Transaction Control Statements.

Unit - V **[13 Hours]**

PL/SQL Exceptions and Composite Data Types: Cursors: Types of Cursor – Implicit cursor – Explicit cursor- Action on Explicit cursors -Exceptions – Types of Exceptions. Composite Data Types – PL/SQL Records – PL / SQL Tables . **Named Blocks:** Procedures – Functions – Packages – Triggers. Case study: Connection of front end VB 6.0 and Back end Oracle 9i.

Note: **Italicized* texts are for self study

Power point Presentations, Group Discussions, Seminar, Quiz, Assignment

1. Nilesh Shah, (2009), "Database Systems Using Oracle", 2nd Edition, PHI Publication, Indian Reprint, ISBN-13: 9788120332362.

Books for Reference

1. Arun Majumdar and Pritimoy Bhattacharya, (2017), "Database Management Systems", 1st Edition, TMH, ISBN-13: 978-0074622391.
2. Gerald V. Post, (2006), "Database Management Systems", 3rd Edition, TMH Publication, ISBN-13: 9780070635265.
3. Jonathan Gennick, (2006), "Oracle SQLPlus Pocket Reference", 2nd Edition, E. H. J. Pallett Publication, ISBN-13: 978-0596526887.
4. http://freecomputerbooks.com/An-Introduction-to-Relational-Database-Theory.html

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	L
CO2	H	H	H	H	M
CO3	H	H	H	H	M
CO4	H	M	H	M	L

H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. C. Keerthana Signature:	Name: Ms. C. Keerthana Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Muthukumaran Signature:

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Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20 UCT 413	Title	Batch:	2020 - 23
		CORE IX: SOFTWARE ENGINEERING	Semester	IV
Hrs/Week:	05		Credits:	04

Course Objective

To communicate information about software development approaches, process models, requirement engineering, building analysis model, design methodologies and software testing.

Course Outcomes (CO)

K1	CO1	To keep in mind layers of process models, Requirement gathering phases design concepts and testing strategies
K2	CO2	To picture out the main aspects of software engineering and evaluate requirements for a software system and analyzing the requirements through modeling
K3	CO3	To apply the process of analysis and design using the object-oriented approach
K4	CO4	To interpret the design engineering and various Testing tactics

Syllabus

Unit - I **[13 Hours]**

Introduction to Software Engineering: The evolving role of software - Changing Nature of Software - *Software myths**.

A Generic view of process: Software engineering - A layered technology - a process framework - The Capability Maturity Model Integration (CMMI).

Process models: The waterfall model -Incremental process models - Evolutionary process models.

Unit - II **[13 Hours]**

System Engineering: Computer-Based Systems – The system engineering Hierarchy.

Requirements Engineering: A bridge to design and construction- Requirements Engineering Tasks – Initiating the Requirements Engineering Process - Eliciting Requirements – Building the Analysis Model.

Unit - III **[13 Hours]**

Building the Analysis Model: Requirement analysis – Analysis Modeling approaches – Data modeling concepts – Object-Oriented Analysis- Scenario-Based Modeling – Flow - Oriented Modeling – Class-Based Modeling – Creating a Behavioral Model.

Unit – IV **[13 Hours]**

Design Engineering: Design process and Design quality - Design concepts - the design model.

Creating an architectural design: Software architecture - Data design - Architectural Design .

Unit - V **[13 Hours]**

Testing Strategies: *Software Testing Lifecycle* * - Test strategies for conventional software, Validation testing, System testing - The art of Debugging.

Testing Tactics: Black - Box and White-Box Testing - Basis path Testing – Control Structure Testing - Black-Box Testing.

Testing for Web Apps: Performance testing: Performance testing objectives - Load testing – Stress Testing

Note: **Italicized* texts are for self study

Power point Presentations, Group Discussions, Seminar, Quiz, Assignment

Books for Study

1. Roger S. Pressman, (2005), "Software Engineering, A Practitioner's Approach", 6th Edition, TATA McGraw-Hill Publications, ISBN: 007-124083-7.

Books for Reference

1. Ian Sommerville, (2010), "Software Engineering", 9th Edition, Addison Wesley, ISBN-13: 978-0137035151.
2. Stephen Schach, (2007), "Software Engineering", 7th Edition, New Delhi, Tata McGraw Hill Publishing Company, ISBN-13: 9780070647770.
3. http://www.slideshare.net/rhspcte/software-engineering-ebook-roger-s-pressman
4. http://softwaretestingfundamentals.com/software-testing-life-cycle/
5. http://www.softwaretestingclass.com/functional-testing-vs-non-functional-testing/

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	H	H	L
CO2	M	M	M	H	M
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H-High; M-Medium; L-Low

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Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT414	Title	Batch:	2020 - 23
		CORE X: DATA COMMUNICATION AND NETWORKS	Semester	IV
Hrs/Week:	05		Credits:	04

Course Objective

To become skilled at the primary concepts of networking and its topologies with OSI model and various transmission control protocols.

Course Outcomes (CO)

K1	CO1	To remember analog and digital signals, topologies and various modes of data transmission
K2	CO2	To understand the theory behind the OSI protocol stack
K3	CO3	To implement various types of internetworking devices
K4	CO4	To review transmission control protocols like UDP, DNS, E-mail and MIME

Syllabus

Unit- I **[13 Hours]**

Introduction to Data Communications and Networking: Data Communications- Protocols - Analog and Digital Signals. Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing.

Unit -II **[13 Hours]**

Transmission Errors: Detection and Correction. **Transmission Media**: Guided Media, Unguided Media. **Network Topologies**: Mesh, Star, Tree, Ring, Bus. Switching Basics-

Circuit switching - *Packet switching** - Message switching - Router and Routing.

Unit- III **[13 Hours]**

Network Protocols and OSI Model: OSI layer Functions. Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) – Frame Relay.

Unit -IV **[13 Hours]**

Internetworking Concepts, Devices, Internet Basics, History and Architecture: Internetworking Devices, Repeaters, Bridges, Routers and Gateways. **An Introduction to TCP / IP, IP:** TCP/IP Basics, TCP/IP Example, The concept of IP Addres – IPV6.

Unit -V **[13 Hours]**

TCP/IP Part II: User Datagram Protocol (UDP) - UDP Packet, Difference between UDP and TCP – Domain Name System (DNS) – Electronic Mail (Email) – Introduction – E-Mail Transfer protocols – MIME – E-Mail Privacy – *Spam in E-Mail and Phishing**.

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Power point Presentations, Group Discussions, Seminar, Quiz, Assignment

Books for Study

1. Achyut S.Godbole, (2010), "Data Communications and Networks", Tata McGraw-Hill Publishing Company Limited, ISBN-13: 978-0-07-047297.

Books for Reference

1. Behrouz A. Forouzan, (2017), "Data Communications and Networking", 4th Edition TataMcGraw-Hill Publishing Company Limited, ISBN-13: 978-0070634145.
2. Andrew S. Tanenbaum, (2013), "Computer Networks", 5th Edition, Prentice Hall, ISBN-13: 978-9332518742.http://iit.qau.edu.pk/books/Data%20Communications%20and%20Networking%20By%20Behrouz%20A.Forouzan.pdf

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	M	M	M	M
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H-High; M-Medium; L-Low

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