

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE

(AUTONOMOUS)

U.G DEPARTMENT OF COMPUTER APPLICATIONS

**UNDER CBCS PATTERN GUIDED BY UNIVERSITY AND TANSCH
(FOR THOSE WHO ADMITTED FROM THE ACADEMIC YEAR 2020-2023 BATCH AND
ONWARDS)**

Part	Subject Code	Subject	Ins.Hour s 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	6	3	30	70	100	3
III	20 UBC 101	CORE I: PROGRAMMING IN C	4	3	30	70	100	4
	20 UBC 102	CORE II: DIGITAL COMPUTER FUNDAMENTALS	4	3	30	70	100	4
	20 UBC 1A1	ALLIED I: MATHEMATICS I - COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS	4	3	30	70	100	4
	20 UBC 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 Activity - List Attached - Annexure I		-					
TOTAL			30	-	195	455	650	23
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 UBC 204	CORE III: OBJECT ORIENTED PROGRAMMING WITH 'C++'	4	3	30	70	100	4
	20 UBC 205	CORE IV: DATA STRUCTURES	4	3	30	70	100	4
	20 UBC 2A2	ALLIED II: MATHEMATICS II - MATHEMATICAL FOUNDATION OF COMPUTER APPLICATIONS	4	3	30	70	100	4
	20 UBC 206	LAB - II : PROGRAMMING IN C++	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 Activity - List Attached - Annexure I		-					
TOTAL			30	-	195	455	650	23
SEMESTER III								
	20 UBC 307	CORE V: RELATIONAL DATABASE MANAGEMENT SYSTEM AND ORACLE	5	3	30	70	100	4

	20 UBC 308	CORE VI: OPERATING SYSTEMS	5	3	30	70	100	4
	20 UBC 309	CORE VII: ORGANIZATIONAL BEHAVIOUR	4	3	30	70	100	3
III	20 UBC 3A3	ALLIED III: ACCOUNTANCY FOR DECISION MAKING	5	3	30	70	100	4
	20 UBC 310	LAB - III : RELATIONAL DATABASE MANAGEMENT SYSTEM AND ORACLE	4	3	20	30	50	2
	20 UBC 311	LAB - IV: OPERATING SYSTEMS	4	3	20	30	50	2
	20 UBC 312	LAB - V: GRAPHICS	1	2	20	30	50	1
IV	20 HEC 303	HUMAN EXCELLENCE - PROFESSIONAL VALUES & SKY YOGA PRACTICE - III	1	2	25	25	50	1
	20 UBC 3N1 20 UBC 3N2	NON- MAJOR ELECTIVE I - WEB DESIGNING LAB NON- MAJOR ELECTIVE I -DESKTOP PUBLISHING LAB	1	2	-	50	50	2
V	Extension Activity - List Attached - Annexure I		-					
TOTAL			30	-	205	445	650	23
SEMESTER IV								
III	20 UBC 413	CORE VIII: WEB TECHNOLOGY	5	3	30	70	100	4
	20 UBC 414	CORE IX: COMPUTER SYSTEM ARCHITECTURE	5	3	30	70	100	4
	20 UBC 415	CORE X: SOFTWARE ENGINEERING	4	3	30	70	100	3
	20 UBC 4A4	ALLIED IV: MATHEMATICS III - COMPUTER BASED OPTIMIZATION TECHNIQUES	5	3	30	70	100	4
	20 UBC 416	LAB - VI: ASP.NET	4	3	20	30	50	2
	20 UBC 417	LAB - VII: PHP PROGRAMMING	4	3	20	30	50	2
	20 UBC 418	LAB - VIII: WEB DESIGNING	1	2	20	30	50	1
IV	20 HEC 404	HUMAN EXCELLENCE - SOCIAL VALUES & SKY YOGA PRACTICE - IV	1	2	25	25	50	1
	20 UBC 4N3 20 UBC 4N4	NON-MAJOR ELECTIVE II - PHOTO EFFECTS LAB NON MAJOR ELECTIVE II - ANIMATION LAB	1	2	-	50	50	2
V	Extension Activity - List Attached - Annexure I		-	-	-	50	50	1
TOTAL			30	-	205	495	700	24
Par t	Subject Code	Subject	Ins.Hour s Per Week	Exam				Credit
				Hour s	CIA	ESE	Total	
SEMESTER V								
III	20 UBC 519	CORE XI: JAVA PROGRAMMING	4	3	30	70	100	3
	20 UBC 520	CORE XII: SOFTWARE TESTING	4	3	30	70	100	3
	20 UBC 5E1 20 UBC 5E2	ELECTIVE I	5	3	30	70	100	5
	20 UBC 5E3 20 UBC 5E4	ELECTIVE II	5	3	30	70	100	5
	20 UBC 521	LAB -IX: JAVA PROGRAMMING	5	3	20	30	50	2
	20 UBC 522	LAB - X: SOFTWARE TESTING	5	3	20	30	50	2

IV	20 HEC 505	HUMAN EXCELLENCE - NATIONAL VALUES & SKY YOGA PRACTICE - V	1	2	25	25	50	1
	20 GKL 501	GENERAL KNOWLEDGE AND GENERAL AWARENESS	SS	2	-	50	50	2
	20 UBC 5S1 20 UBC 5S2 20 UBC 5S3	SKILL BASED MAJOR ELECTIVE I : MOBILE PHONE SERVICES INTERNET OF THINGS DESKTOP PUBLISHING LAB	1	2	-	50	50	2
TOTAL			30	-	185	465	650	25
SEMESTER VI								
III	20 UBC 623	CORE XIII: PYTHON PROGRAMMING	5	3	30	70	100	4
	20 UBC 624	CORE XIV: INFORMATION SECURITY	4	3	30	70	100	3
	20 UBC 625	CORE XV: MOBILE APPLICATION DEVELOPMENT	4	3	30	70	100	3
	20 UBC 6E5 20 UBC 6E6	ELECTIVE-III	5	3	30	70	100	5
	20 UBC 626	LAB -XI: PYTHON PROGRAMMING	5	3	20	30	50	2
	20 UBC 627	LAB - XII: MOBILE APPLICATION DEVELOPMENT	5	3	20	30	50	2
IV	20 HEC 606	HUMAN EXCELLENCE - GLOBAL VALUES & SKY YOGA PRACTICE - VI	1	2	25	25	50	1
	20 UBC 6S4 20 UBC 6S5 20 UBC 6S6	SKILL BASED MAJOR ELECTIVE II : CORPORATE SYSTEMS MULTIMEDIA AND ANIMATION PERSONALITY DEVELOPMENT SKILLS	1	2	-	50	50	2
	TOTAL			30	-	185	415	600
TOTAL			180	-	1170	2730	3900	140

ADD-ON COURSE: Mini Project	20UBCAD1 - ADD ON COURSE: MINI PROJECT		-	20	80	100	2
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*Note: List of Part - V subjects attached

LIST OF MAJOR ELECTIVE PAPERS

ELECTIVE -I	20 UBC 5E1 - NETWORKS
	20 UBC 5E2 - GRID COMPUTING
ELECTIVE -II	20 UBC 5E3 - STORAGE MANAGEMENT
	20 UBC 5E4 - CURRENT TRENDS AND TECHNOLOGIES
ELECTIVE - III	20 UBC 6E5 - DATA MINING AND WAREHOUSING
	20 UBC 6E6 - CLOUD COMPUTING

Programme Code:	BCA	Programme Title:	Bachelor of Computer Applications	
Course Code:	20 UBC 204	Title	Batch:	2020-2023
Hrs/Week:	4	OBJECT ORIENTED PROGRAMMING WITH C++	Semester	II
			Credits	04

Course Objective

To understand the object oriented concepts and to develop well-structured object oriented programming using C++ language. To train to meet the day – to –day demands of IT industry.

Course Outcomes (CO)

K1	CO1	To recollect the Object Oriented Programming concepts.
K2	CO2	To understand the usage of various significant operators.
K3	CO3	To apply programming concepts such as Functions, Classes and Objects along with overloading concepts.
K4	CO4	To analyze the File concepts and in usage of storing the data in files.

Units	Content	Hrs
Unit I	Procedure Oriented Programming-Object Oriented Programming Paradigm-Basic Concepts of Object -Oriented Programming-Benefits of OOP-Object Oriented Languages-Applications of OOP-Steps in Object Oriented Analysis- Steps in Object Oriented Design.	10
Unit II	Tokens-Keywods-Identifiers and Constants-Data Types-Reference Variables-Operators in C++-Scope Resolution Operator-Member Dereferencing Operator-Memory Management Operators-Manipulators-Type Cast Operators-Expression and their Types-Control Structures.	10

Unit III	Functions: Function Prototype-Call By Reference-Return By Reference-Inline Functions-Default and Constant Arguments-Function Overloading-Friend and Virtual Functions- <i>Classes and Objects</i> - Constructors and Destructors.	12
Unit IV	Operator Overloading-Inheritance-Pointers-Virtual Functions and Polymorphism.	10
Unit V	Managing Console Input / Output operations: C++ Streams-C++ Stream Classes-Formatted and Unformatted I/O Operations-Managing Output Manipulations- <i>Working Files</i> .	10
	Total Contact Hrs	52

- The topics given in **Italics** are noted as Self-Study topics.

Seminar, Assignment, Case Study

Books for Study

2. E.Balagurusamy, *Object Oriented Programming with C++*, Tata McGrawHill Publications Ltd, Second Edition, 1999(Unit 1 to 5).

Books for Reference

1. C.Ravichandran, *Programming in C++*, Tata McGraw Hill Publications, Fourteenth Edition, 2001.
2. K.R Venugopal, Rajkumar Buyya, T Ravishankar, *Mastering C++*, Muhammadali Shaduli Publisher,1997

Mapping

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

H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: Signature:	Name: Dr.K.HARIDAS Signature:	Name: Mr.K.SRINIVASAN Signature:	Name: Dr.R.MUTHUKUMARAN Signature:

Programme Code:	BCA	Programme Title:	Bachelor of Computer Applications	
Course Code:	20 UBC 307	Title	Batch:	2020-2023
Hrs/Week:	5	RELATIONAL DATABASE MANAGEMENT SYSTEM AND ORACLE	Semester	III
			Credits	04

Course Objective

To present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS to improve the programming skill through ORACLE to solve practical problems in variety of disciplines.

Course Outcomes (CO)

K1	CO1	remember the data base system for the decision-support level of organizations
K2	CO2	To understand and carefully apply the system concepts using ORACLE techniques
K3	CO3	implement and evaluate a computer-based system, process, component or program to meet desired needs
K4	CO4	estimate students how to retrieve, display and format data from any data source in numerous reporting styles and publish the output to any destination for different applications.

Units	Content	Hrs
Unit I	Introduction - Database System - Applications - Database System Vs File Systems - View of Data- Data Models - Database Language - Database Users And Administrators – Transactions Management – Database System Structure – Application Architecture. Entity–Relationship Model - Basic Concepts – Constraints Keys - Design Issues – ER Diagram – Weak Entity Sets – <i>Extended ER Features</i> - Design of ER Database Scheme -Reduction of ER Scheme to Tables	13
Unit II	Relationship Model - Structure of Relational Database – The Relational Algebra – Extended Relational Algebra Operation - Modification of Database – Views - The Tuple Relational Calculus - <i>The Domain Relational Calculus</i> .	13
Unit III	Integrity and Security – Domain Constraints – Referential Integrity –	13

	Assertion – Triggers – <i>Security and Authentication</i> – Authorisation in SQL - Encryption and Authentication. Relational Database Design – First Normal Form – Pitfalls in Relational Database Design – Functional Dependencies – Decomposition – Desirable Properties of Decomposition – BCNF (Boyce Code Normal Form) - Third Normal Form – Fourth Normal Form – <i>More Normal Form</i>.	
Unit IV	ORACLE: Introduction – CODD’s Rule – Tools of ORACLE - Introduction to SQL – <i>Benefits of SQL</i> - Data Types – DDL – DML – DCL - TCL - Data Constraints. ORACLE SQL Functions – Single Row Functions: Date, Number, Miscellaneous, Conversions, Character Functions - Group Functions – SQL Operators: Arithmetic, Comparison and Logical Operators – Set Operators – Joins – Sub Queries – Views.	13
Unit V	PL/SQL : Introduction – Advantages of PL/SQL – Architecture of PL/SQL – Introduction to PL/SQL Block - Data Types – Control Structures - <i>Concepts of Error Handling</i> – Cursor - Procedure - Functions – Triggers - Types of Triggers. SQL * Forms – Basic Concepts – Components of ORACLE FORM – SQL * - Forms System Variables – Creating a Form - Generating and Running a Form – Reports.	13
	Total Contact Hrs	65

- The topics given in **Italics** are noted as Self-Study topics.

Seminar, Assignment, Case Study

Books for Study
1. Silberschatz, Korth, Sudarshan, “<i>Database System Concept</i>”, 5th Edition, McGraw – Hill International Edition (Unit I, II & III) 2. Ivan Bayross – “<i>ORACLE – 7 The Complete Reference</i>”, BPB Publications. (Unit IV & V)
Books for Reference

1. Bipin C.Desai – “*An Introduction to Database System*” – Asian Student Edition – Galgotia Publications.
2. C.J.Date – “*An Introduction to Database System*” – Seventh Edition, Pearson Education.

Mapping

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

H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: Signature:	Name: Dr.K.HARIDAS Signature:	Name: Mr.K.SRINIVASAN Signature:	Name: Dr.R.MUTHUKUMARAN Signature:

Programme Code:	BCA	Programme Title:	Bachelor of Computer Applications	
Course Code:	20 UBC 415	Title	Batch:	2020-2023
Hrs/Week:	4	SOFTWARE ENGINEERING	Semester	IV
			Credits	03

Course Objective

To prepare graduates who will be successful in the chosen career path. It develops a broad understanding of the discipline of software engineering and encompasses with a detailed knowledge of techniques for the analysis and design of complex software intensive systems and to get success in their chosen profession.

Course Outcomes (CO)

K1	CO1	To recollect the system concepts, software models, techniques and technologies to bring out the innovative and novelistic solutions for the growth of the society.
K2	CO2	To understand the issues affecting the organization planning and control of software based systems development.
K3	CO3	To apply the end user requirements into system and software requirements.
K4	CO4	To analyze fundamental concepts in software testing, various testing issues and its types.

Units	Content	Hrs
Unit I	System Concepts and the Information Systems Environment: System Definition-Characteristics of System-Elements of a System- Types of System- The System Development Life Cycle: Recognition of Need - Feasibility Study – Analysis – Design – Implementation - Post implementation and Maintenance-Consideration for Candidate System.	10
Unit II	Software-Software Characteristics-Software Components-Software Applications-The Process-Software Engineering a Layered Technology-The	10

	Process, Methods, Tools-A Generic View of Software Engineering- The Software Process- Software Process Models-Linear Sequential Models-Prototyping Model-RAD Model-Evolutionary Software Model-The Incremental Model-Spiral Model-Component Assembly Model-Concurrent Model.	
Unit III	Analysis Concepts and Principles-Requirement Analysis-Communication Techniques-Initiating the Process-FAST-QFD-Analysis Principles-Information Domain-Modeling-Partitioning-Essential and Implementation Views- Analysis Modeling-Elements of Analysis Model-Data Modeling-Data Objects, Attributes and Relationship Diagram-Function Modeling-Data Flow Diagram - <i>Behavioral Modeling</i> .	10
Unit IV	Design Concepts and Principles-The Design Process-Design Principles-Design Concepts-Abstraction, Refinement, Modularity, Software Architecture, Control Hierarchy, Structured Partitioning, Software Procedure, Information Hiding-Effective Modular Design-Functional Independence-Cohesion-Coupling-Design Documentation.	10
Unit V	An Agile view of Process-Agility-Agility Process-The Politics of Agile Development-Human Factors-Agile Process Models-Extreme Programming-Adaptive Software Development –Dynamic System Development Method-Scrum-Crystal-Feature Driven Development-Agile Modeling. Software Testing Fundamentals – Testing Objectives – Testing Principles – Testability – White-Box Testing – Black-Box Testing – Testing for Specialized Environments and Applications – Testing of Client/Server Architectures – Testing Documentation and Help Facilities – Testing for Real-Time Systems- <i>Software Evolution</i> .	12
	Total Contact Hrs	52

- The topics given in **Italics** are noted as Self-Study topics.

Seminar, Assignment, Case Study

Books for Study

1. Elias M.Awad, *System Analysis and Design*, Galgotia Publications (P) Ltd, Second Edition, 1996 (Unit 1).
2. Roger Pressman, *Software Engineering*, A Practioner's Approach, Fourth Edition, 1997 (Unit 2,3,4 &5).
3. Roger Pressman, *Software Engineering*, A Practioner's Approach, Sixth Edition, 2005 (Unit 5).
4. Sommerville, *Software Engineering*, Pearson education, Sixth Edition.(Unit 5)

Books for Reference

1. Sommerville, *Software Engineering*, Pearson education, Sixth Edition.

Mapping

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

H-High; M-Medium; L-Low

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: Signature:	Name: Dr.K.HARIDAS Signature:	Name: Mr.K.SRINIVASAN Signature:	Name: Dr.R.MUTHUKUMARAN Signature: